Journal of Finsler Geometry and its Applications
Vol. 4, No. 2 (2023), pp 128-150
https://doi.org/10.22098/jfga.2023.14082.1108

On Riemannian and Ricci curvatures of Ingarden-Támassy metrics

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Abstract. In this paper, we study reversibility of Riemann Curvature and Ricci curvature for the Ingarden-Támassy metric and prove two global results. First, we prove that a Ingarden-Támassy metric is R-reversible if and only if $s_i = 0, s_{ij|k} = 0$. Then we show that a Ingarden-Támassy metric is Ricci-reversible if and only if $s_i = 0$.

Keywords: Ingarden-Támassy metric, Riemannian curvature, Ricci curvature.

1. Introduction

In this paper, we study the following Finsler metric

$$F = \alpha + \frac{\beta^2}{\alpha}, \tag{1.1}$$

where $\alpha = \sqrt{a_{ij}(x)y^i y^j}$ is a Riemannian metric and $\beta = b_i(x)y^i$ is a 1-form on M. It is remarkable that, this metric was introduced by R. Ingarden and S. Tamássy in [5], when they were studying physical applications of Finsler metrics in electron optic and thermodynamic. Then the Finsler metric (1.1) is called the Ingarden-Tamássy metric.

Recently, Crampin proved that a Randers metric $F = \alpha + \beta$ has reversible geodesics if and only if β is parallel with respect to α [2]. Then Masca-Sabau-Shimada investigate (α, β)-metrics with reversible geodesics and projectively

AMS 2020 Mathematics Subject Classification: 54C35, 54D05

reversible geodesics [7][8]. In general, the Finsler metrics might not be reversible. In spite of the non-reversibility of Finsler metrics, the geodesics and curvatures might be reversible.

In [10], Shen-Yang introduced R-reversibility and Ricci-reversibility. They proved that Randers metrics are R-reversible or Ricci-reversible if and only if they are R-quadratic or Ricci-quadratic, respectively. Recently, in [14], Tayebi-Tabatabeifar studied the reversibility of Riemann curvature and Ricci curvature for a Matsumoto metric $F = \alpha^2/(\alpha - \beta)$ which is called by Matsumoto's slope-of-a-mountain metric, also. This metric was introduced by Matsumoto as a realization of Finsler's idea "a slope measure of a mountain with respect to a time measure" [11][12]. He gave an exact formulation of a Finsler surface to measure the time on the slope of a hill and introduced the Matsumoto metrics in [9][13].

The Riemann curvature $\mathbf{R}_y : T_xM \to T_xM$ is a family of linear maps on tangent spaces. A Finsler metric F on a manifold M is said to be R-quadratic if it's Riemann curvature $\mathbf{R}_y$ is quadratic in $y \in T_xM$ [6][10]. Also, F is called R-reversible if $\mathbf{R}(x, y) = \mathbf{R}(x, -y)$ (see [10]).

A Finsler metric F is called Ricci-quadratic if it's Ricci curvature $\mathbf{Ric}_y$, is quadratic in $y \in T_xM$. F is called Ricci-reversible if $\mathbf{Ric}_y = \mathbf{Ric}_{-y}$ (see [10]). In this paper, we are going to prove the following:

Theorem 1.1. *The Ingarden-Támassy metric is R-reversible if and only if β satisfies $s_i = 0$ and $s_{ij|k} = 0$.*

Theorem 1.2. *The Ingarden-Támassy metric is Ricci-reversible if and only if β satisfies $s_i = 0$.*

2. **Preliminaries**

Let M be an n-dimensional C^∞-manifold. Denote by T_xM the tangent space at $x \in M$ and by $TM := \cup_{x\in M} T_xM$ the tangent bundle of M. Each element of TM has the form (x, y), where $x \in M$ and $y \in T_xM$. Let $TM_0 = TM\backslash\{0\}$ [15]. A Finsler metric on M is a function $F : TM \longrightarrow [0, \infty)$, with the following properties:
(i) F is C^∞ on TM_0,
(ii) F is positively 1-homogeneous on the fibers of tangent bundle TM;
(iii) The Hessian of $F^2/2$ with element $g_{ij} = \frac{1}{2}\frac{\partial^2 F^2}{\partial y^i \partial y^j}$ is positive definite on TM_0.
The pair $F^n = (M, g)$ is called a Finsler space of dimension n. F is called fundamental function and g_{ij} is called the fundamental tensor of the Finsler space F^n. By the homogeneity of F, we have $F(x, y) = \sqrt{g_{ij}(x, y)y^i y^j}$. An important class of Finsler metrics are Riemann metrics, which are in the form of $F(x, y) = \sqrt{g_{ij}(x)y^i y^j}$. Another important class of Finsler metrics are Minkowski metrics, which are in the form of $F(x, y) = \sqrt{g_{ij}(y)y^i y^j}$ [4].

Given a Finsler manifold (M, F), then a global vector field $\mathbf{G}$ is induced by F on TM_0, which in a standard coordinate (x^i, y^i) for TM_0 is given by

$$\mathbf{G} = y^i \frac{\partial}{\partial x^i} - 2G^i(x, y)\frac{\partial}{\partial y^i},$$

where

$$G^i = \frac{1}{4}g^{il}\Big\{[F^2]_{x^m y^l} y^m - [F^2]_{x^l}\Big\}. \tag{2.1}$$

$G = G^i(x, y)$ are called the spray coefficients. $\mathbf{G}$ is called the spray associated with F.

For a non-zero vector $y \in T_xM_0$, the Riemann curvature is a family of linear transformation $\mathbf{R}_y : T_xM \longrightarrow T_xM$ with homogeneity $\mathbf{R}_{\lambda y} = \lambda^2 \mathbf{R}_y, \forall \lambda > 0$ which is defined by
$\mathbf{R}_y(u) := R^i{}_k(y)u^k \frac{\partial}{\partial x^i}$, where

$$R^i{}_k(y) := 2\frac{\partial G^i}{\partial x^k} - \frac{\partial^2 G^i}{\partial x^j \partial y^k}y^j + 2G^j \frac{\partial^2 G^i}{\partial y^j \partial y^k} - \frac{\partial G^i}{\partial y^j}\frac{\partial G^j}{\partial y^k}. \tag{2.2}$$

The family $\mathbf{R} := \{\mathbf{R}_y\}_{y \in TM_0}$ is called the Riemann curvature.
The Ricci curvature is the trace of Riemann curvature means $\mathbf{Ric}(x, y) := R^m{}_m(x, y)$ and the Ricci tensor is defined by

$$\mathbf{Ric}_{ij} := \frac{1}{2}\mathbf{Ric}_{y^i y^j}.$$

Let $F = \alpha\phi(s)$, $s = \beta/\alpha$, be an (α, β)-metric on a manifold M, where $\phi = \phi(s)$ is a scalar function on the interval $(-b_0, b_0)$, $\alpha = \sqrt{a_{ij}(x)y^i y^j}$ is a Riemannian metric and $\beta = b_i(x)y^i$ is a 1-form on M.

$$r_{ij} := \frac{1}{2}(b_{i|j} + b_{j|i}), \qquad s_{ij} := \frac{1}{2}(b_{i|j} - b_{j|i}), \tag{2.3}$$

where '—'denotes the covariant derivative with respect to the Levi-Civita conection of α. Let

$$r^i{}_j := a^{im}r_{mj}, \quad r_{i0} := r_{ij}y^j, \quad r_{00} := r_{ij}y^i y^j, \quad r_j := b^m r_{mj}, \quad r_0 := r_j y^j,$$
$$r := b^i r_i, \quad s_j := b^m s_{mj}, \quad s^i{}_j := a^{im}s_{mj}, \quad s_{i0} := s_{ij}y^j, \quad s_0 := s_j y^j.$$

Lemma 2.1. [1, 3] *Let $G^i = G^i(x, y)$ and $\widehat{G}^i = \widehat{G}^i(x, y)$ denote the geodesic coefficients of F and α respectively. Then we have*

$$G^i = \widehat{G}^i + \alpha Q s^i{}_0 + (r_{00} - 2Q\alpha s_0)(\theta l^i + \psi b^i), \tag{2.4}$$

where

$$Q := \frac{\phi'}{\phi - s\phi'}, \quad \theta := \frac{\phi\phi' - s(\phi\phi'' + \phi'^2)}{2\phi[\phi - s\phi' + (B - s^2)\phi'']}, \quad \psi := \frac{\phi''}{2[\phi - s\phi' + (B - s^2)\phi'']}.$$

Here $l^i := y^i/\alpha$ and $B := b^2$. By (2.4), we can rewrite the geodesic coefficients of an (α, β)-metric as

$$G^i = \widehat{G}^i + T^i, \tag{2.5}$$

where

$$T^i = \alpha Q s^i{}_0 + \theta\{r_{00} - 2Q\alpha s_0\}l^i + \psi\{r_{00} - 2Q\alpha s_0\}b^i.$$

From (2.2) *and by use of a technique for computing Riemannian curvature (see Proposition 3.1 in* [4]*) and* (2.5)*, we have*

$$R^i{}_j = \widehat{R}^i{}_j + RT^i{}_j, \tag{2.6}$$

where $\widehat{R}^i{}_j$ *denotes the Riemann curvature of* α*.*
Also, the Ricci curvature of F *is related to the Ricci curvature* $\widehat{Ric}$ *of* α *(see Proposition 3.3 in* [4]*) by*

$$Ric = \widehat{Ric} + T^m_m. \tag{2.7}$$

3. **Proof of Theorem 1.1**

The Riemannian curvature of Ingarden-Támassy metric $F = \alpha + \beta^2/\alpha$ is given by

$$R^i{}_j = \Big(\frac{1}{\alpha(\alpha-\beta)^3(\alpha+\beta)^3(\alpha^2+\beta^2)^3(2B\alpha^2+\alpha^2-3\beta^2)^4}\Big)\Sigma_{k=0}^{21} t_k\alpha^k, \tag{3.1}$$

where

$$t_0 := 81 s^i{}_{0|0}\beta^{20} y_j.$$

All the coefficients of t_k are tedious, listed in Appendix 1.

Let F be R-reversible, $R(y) = R(-y)$. Then by contracting both sides (3.1) with $\alpha(\alpha-\beta)^3(\alpha+\beta)^3(\alpha^2+\beta^2)^3(2B\alpha^2+\alpha^2-3\beta^2)^4$ and by a quite long computational procedure using Maple program, we obtain

$$\Sigma_{i=0}^{10} t'_{2i}\alpha^{2i} = 0, \tag{3.2}$$

where

$$\begin{cases} t'_0 := -81 s^i{}_{0|0}\beta^{20} y_j, \\ . \\ . \\ . \\ t'_{20} := y_j\,(2B+1)^3\Big(-8\,b^i s^2{}_0 + (2B+1)s^i{}_{0|0}\Big), \end{cases}$$

and other coefficients of t'_{2i} are listed in Appendix 2. By (3.2), it follows that α^2 divides t'_0, which is impossible. Therefore $t'_0 = 0$, we get

$$s^i{}_{0|0} = 0. \tag{3.3}$$

Putting it in others implies that $t'_2 = 0$. Put $s^i{}_{0|0} = 0$ in others. Then, one can show that

$$s^2{}_0 = 0. \tag{3.4}$$

Conversely, by placing $s_i = 0$ and $s_{ij|k} = 0$, in (3.1), we have

$$\Sigma_{i=0}^{10} t''_{2i}\alpha^{2i} = 0, \tag{3.5}$$

where

$$t''_0 := 18\beta^{16}\Big(-24\beta^2 y^i y_j r_{k0} s^k{}_0 + 4B\beta y^i y_j r_{00|0} - 10B y^i y_j r^2{}_{00} + 3\beta^3 \delta^i{}_j r_{00|0} - 5\beta^2 \delta^i{}_j r^2{}_{00} + 27 s^i{}_0 r_{00}\beta^2 y_j - 3 r^i{}_0 r_{00}\beta^2 y_j - 3\beta^2 y^i b_j r_{00|0} + 4\beta y^i b_j r^2{}_{00} + y^i r_{00}\beta^2 r_{j0} + 6\beta^3 y^i r_{j0|0} - 6\beta^3 y^i r_{00|j} + 9 y^i r_{00}\beta^2 s_{0j} + 4\beta y^i y_j r_{00} r_0 - 3 b^i y_j r_{00|0}\beta^2 + 8 b^i y_j \beta r^2{}_{00} - 4\beta y^i y_j r_{00|0} + 12 y^i y_j r^2{}_{00}\Big) - 81\hat{R}^i{}_j \beta^{20},$$

and other coefficients of t''_{2i} are listed in Appendix 3. By (3.5), F is R-reversible.

4. **Proof of Theorem 1.2**

The Ricci curvature of Ingarden-Támassy metric $F = \alpha + \beta^2/\alpha$ is given by

$$\mathbf{Ric} = \Big(\frac{1}{(\alpha^4-\beta^4)^2(\alpha^2-\beta^2)(2B\alpha^2+\alpha^2-3\beta^2)^4}\Big)\Sigma_{k=0}^{18} d_k \alpha^k, \tag{4.1}$$

where

$$d_0 := 18\beta^{16}\Big(3(n-2)\beta r_{00|0} - (5n-22) r^2_{00}\Big) - 81\widehat{\mathbf{Ric}}\beta^{18},$$

and other coefficients of d_k are listed in Appendix 4.

Let the Ricci curvature of F be reversible, i.e., $\mathbf{Ric}(y) = \mathbf{Ric}(-y)$. Then by contracting both of (4.1) with $(\alpha^4-\beta^4)^2(\alpha^2-\beta^2)(2B\alpha^2+\alpha^2-3\beta^2)^4$ and by computational procedure using Maple program, we obtain

$$\Sigma_{i=0}^{7} d'_{2i}\alpha^{2i} = 0, \tag{4.2}$$

where

$$\begin{cases} d'_0 := 1296\Big(n-1\Big) s^2{}_0 \beta^{15} \\ . \\ . \\ . \\ d'_{14} := 16\Big(n-1\Big)\Big(2B+1\Big)^4 s^2{}_0 \beta, \end{cases}$$

and other coefficients of d'_{2i} are listed in Appendix 5. By (4.2), it follows that α^2 divides d'_0, which is impossible. Thus $d'_0 = 0$, we get

$$s^2{}_0 = 0. \tag{4.3}$$

Conversely, by placing $s_i = 0$ in (4.1), we have

$$\Sigma_{i=0}^{9} d''_{2i}\alpha^{2i} = 0, \tag{4.4}$$

where

$$d''_0 := 18\beta^{16}\Big(3(n-2)\beta r_{00|0} - (5n-22) r^2_{00}\Big) - 81\widehat{\mathbf{Ric}}\beta^{18}, \tag{4.5}$$

and other coefficients of d''_{2i} are listed in Appendix 6. By (4.4) F is Ricci-reversible.

5. Appendix 1

$$
\begin{aligned}
t_1 :=\ & 18\beta^{16}\Big(-24\beta^2 y^i y_j r_{k0} s^k{}_0 + 4\beta y^i y_j B r_{00|0} - 10 y^i y_j B r^2_{00} - 9 s^i{}_{0|0}\beta^3 y_j + 3\beta^3 \delta^i{}_j r_{00|0} - 5\beta^2 \delta^i{}_j r^2_{00} + 27 s^i{}_0 r_{00}\beta^2 y_j \\
& -3 r^i{}_0 r_{00}\beta^2 y_j - 3\beta^2 y^i b_j r_{00|0} + 4\beta y^i b_j r^2_{00} + y^i r_{00}\beta^2 r_{j0} + 6\beta^3 y^i r_{j0|0} - 6\beta^3 y^i r_{00|j} + 9 y^i r_{00}\beta^2 s_{0j} + 24\beta^2 y^i y_j s_{0|0} \\
& +4\beta y^i y_j r_{00} r_0 - 28\beta y^i y_j s_0 r_{00} - 3 b^i y_j r_{00|0}\beta^2 + 8 b^i y_j \beta r^2_{00} - 4\beta y^i y_j r_{00|0} + 12 y^i y_j r^2_{00}\Big) - 81\hat{R}^i{}_j \beta^{20}
\end{aligned}
$$

$$
t_2 := -108\,(2B+1)\, s^i{}_{0|0}\beta^{18} y_j
$$

$$
\begin{aligned}
t_3 :=\ & -6\beta^{14}\Big(45 s^i{}_{0|0}\beta^3 y_j - 27 s^i{}_{0|0}\beta^4 b_j - 243 s^i{}_0\beta^4 s_{0j} - 36\beta^4 y^i s_{j|0} + 72\beta^4 y^i s_{0|j} + 8 B y^i r_{00}\beta^2 r_{j0} - 240\beta^2 y^i y_j B s^k_0 r_{k0} \\
& -24\beta y^i y_j B r_0 r_{00} + 104\beta y^i y_j B r_{00} s_0 - 30\beta^2 y^i b_j r_{00|0} + 64\beta y^i b_j r^2_{00} - 3 b^i r_{00}\beta^3 r_{j0} - 144\beta^3 y^i y_j s_k s^k_0 - 54 s^i_{0|j}\beta^5 \\
& +27 s^i{}_{j|0}\beta^5 + 7 r^i_0\beta^3 s_0 y_j - 6 r^i_0 r_{00}\beta^2 y_j - 162 s^i{}_0 r_{00}\beta^2 y_j - 27 b^i r_{00}\beta^3 s_{0j} + 6 y^i r_{00}\beta^3 s_j - 18 s^i r_{00}\beta^3 y_j + 216 y^i\beta^3 s_0 s_{0j} \\
& +18 y^i r_{00}\beta^2 s_{0j} - 72\beta^4 y^i r_{jk} s^k_0 + 36\beta^4 y^i r_{k0} s^k_j + 108\beta^4 s^i{}_k s^k{}_0 y_j + 81 s^i{}_0 r_{00}\,\beta^3 b_j - 72 B s^i{}_{0|0}\beta^3 y_j - 324 s^i{}_0\beta^3 s_0 y_j \\
& -9 r^i{}_0 r_{00}\beta^3 b_j - 12 B r^i{}_0 r_{00}\beta^2 y_j + 18\beta^3\delta^i{}_j B r_{00|0} - 24\beta^3\delta^i{}_j r_{00} r_0 - 16\beta^2\delta^i_j B r^2_{00} + 72\beta^3 y^i b_j s_{0|0} - 80\beta y^i y_j s_0 r_{00} \\
& +96\beta^2 y^i y_j B s_{0|0} + 96\beta^2 y^i y_j r_{k0} s^k_0 - 96\beta^2 y^i y_j s_0 r_0 + 16\beta y^i y_j B^2 r_{00|0} - 8\beta y^i y_j B r_{00|0} + 48\beta y^i y_j r_{00} r_0 - 9 r^i{}_j r_{00}\beta^4 \\
& -36\beta^4\delta^i{}_j s_{0|0} + 18\beta^3\delta^i{}_j r_{00|0} - 38\beta^2\delta^i{}_j r^2_{00} - 36\beta^3 y^i r_{00|j} + 36\beta^3 y^i r_{j0|0} - 72\beta^4\delta^i{}_j r_{k0} s^k_0 + 12 y^i r_{00}\beta^3 r_j \\
& +10 y^i r_{00}\beta^2 r_{j0} - 36 B y^i\beta^3 r_{00|j} + 36 B y^i\beta^3 r_{j0|0} + 36\beta^3 y^i b_j r_{k0} s^k_0 - 6 B\beta^2 y^i b_j r_{00|0} + 36\beta^2 y^i b_j r_{00} r_0 - 162\beta^2 y^i b_j s_0 r_{00} \\
& -22\beta y^i b_j B r^2_{00} + 90 B y^i r_{00}\beta^2 s_{0j} + 162 B s^i{}_0 r_{00}\beta^2 y_j + 140 y^i y_j r^2_{00} + 10 b^i y_j B r^2_{00}\beta - 9 b^i b_j r_{00|0}\beta^3 + 27 b^i b_j r^2_{00}\beta^2 \\
& +36 b^i y_j s^k_0 r_{k0}\beta^3 - 12 b^i y_j B r_{00|0}\beta^2 + 30 b^i y_j r_{00} r_0\beta^2 - 228 b^i y_j\beta^2 s_0 r_{00} + 72 b^i y_j s_{0|0}\beta^3 - 6 b^i y_j r_{00|0}\beta^2 + 8 b^i y_j\beta r^2_{00} \\
& -12 y^i y_j B^2 r^2_{00} + 16 y^i y_j B r^2_{00} + 288\beta^2 y^i y_j s^2_0 + 48\beta^2 y^i y_j s_{0|0} - 44\beta y^i y_j r_{00|0} - 9 b^i\beta^4 r_{00|j} + 9 b^i\beta^4 r_{j0|0} + 9 r^i{}_0\beta^4 r_{j0} \\
& -36\, y^i r_0\beta^3 r_{j0} + 96\beta^3\delta^i{}_j s_0 r_{00}\Big) + 108\hat{R}^i{}_j\beta^{18}\,(2\,B+1)
\end{aligned}
$$

$$
t_4 := 27\beta^{16} y_j\left(8B^2 s^i{}_{0|0} + 24 b^i s^2{}_0 + 8 B s^i{}_{0|0} - 7 s^i{}_{0|0}\right),
$$

$$
\begin{aligned}
t_5 :=\ & 2\beta^{12}\Big(18\, b^i r_{00}\beta^4 r_j - 648 b^i y_j s^k{}_0\beta^4 s_k + 360 b^i y_j B\beta^3 s_{0|0} + 36 b^i y_j s^k{}_0 r_{k0}\,\beta^3 - 432 b^i y_j r_0 s_0\,\beta^3 - 12 b^i y_j B^2 r_{00|0}\,\beta^2 \\
& -36 b^i b_j B r_{00|0}\,\beta^3 + 288\,\beta^3 y^i b_j B s_{0|0} + 612\,\beta^3 y^i b_j r_{k0} s^k{}_0 - 504\,\beta^3 y^i b_j s_0 r_0 + 12\,\beta^2 y^i b_j B^2 r_{00|0} - 36\,\beta y^i b_j B^2 r^2_{00} \\
& -114\,\beta^2 y^i b_j B r_{00|0} + 264\,\beta^2 y^i b_j r_{00} r_0 + 96\,\beta^2 y^i y_j B^2 s_{0|0} + 16\,\beta y^i y_j B^3 r_{00|0} + 96\,\beta^2 y^i y_j B s_{0|0} + 1128\,\beta^2 y^i y_j r_{k0} s^k{}_0 \\
& -384\,\beta^2 y^i y_j s_0 r_0 - 300\beta y^i y_j B r_{00|0} + 260\,\beta y^i y_j r_{00} r_0 - 1900\,\beta y^i y_j s_0 r_{00} + 72 b^i y_j B s^k{}_0 r_{k0}\,\beta^3 + 60 b^i y_j B r_0 r_{00}\,\beta^2 \\
& -420 b^i y_j B r_{00}\beta^2 s_0 + 36 y^i y_j B^2 r^2_{00} + 654 y^i y_j B r^2_{00} - 1728\beta^2 y^i y_j s^2_0 + 24\beta^2 y^i y_j s_{0|0} - 148\beta y^i y_j r_{00|0} + 324\, B^2 s^i{}_0 r_{00}\,\beta^2 y_j \\
& +96\beta^2 y^i y_j B r_0 s_0 - 64\beta y^i y_j B^2 r_0 r_{00} + 128\beta y^i y_j B^2 r_{00} s_0 + 56\beta y^i y_j B r_0 r_{00} - 280\beta y^i y_j B r_{00} s_0 - 288\beta^3 y^i y_j B s^k{}_0 s_k \\
& +162 r^i{}_0\beta^4 s_0 b_j - 18 r^i{}_0 r_{00}\beta^3 b_j - 204 y^i r_0\beta^3 r_{j0} + 18\, y^i r_{00}\,\beta^2 r_{j0} - 216\, B^2 s^i{}_{0|0}\beta^3 y_j - 672\beta^2 y^i y_j B^2 s^k{}_0 r_{k0} + 36 b^i b_j r^2_{00}\beta^2 \\
& -6\, B b^i r_{00}\,\beta^3 r_{j0} - 72\,\beta^3 y^i b_j B s^k{}_0 r_{k0} + 24\,\beta^2 y^i b_j B r_0 r_{00} + 168\,\beta^2 y^i b_j B r_{00} s_0 + 588 y^i y_j r^2_{00} - 1944\, B s^i{}_0\beta^3 s_0 y_j \\
& -1134\, B s^i{}_0 r_{00}\,\beta^2 y_j - 108\, B b^i r_{00}\,\beta^3 s_{0j} + 864\, B y^i\beta^3 s_0 s_{0j} + 216\, B y^i s^k_j\beta^4 r_{k0} - 144\, y^i\beta^4 s_0 r_j + 60\, y^i r_{00}\beta^3 r_j \\
& -18\, B y^i r_{00}\,\beta^2 s_{0j} - 432\, B y^i s^k{}_0\beta^4 r_{jk} + 864\, B s^i{}_k s^k{}_0\beta^4 y_j + 486\, B s^i{}_0 r_{00}\beta^3 b_j + 27 s^i{}_{j|0}\beta^5 - 54 s^i{}_{0|j}\beta^5 - 12\, b^i y_j B r_{00|0}\,\beta^2 \\
& +30 b^i y_j r_{00} r_0\,\beta^2 + 816 b^i y_j\beta^2 s_0\, r_{00} - 12 b^i y_j B r^2_{00}\beta - 144\beta^3 y^i y_j s_k s^k_0 + 432\,\beta^5\delta^i{}_j s_k s^k_0 - 216\,\beta^4\delta^i{}_j B s_{0|0} + 1296\,\beta^3 y^i b_j s^2_0 \\
& +108\beta^4 y^i r_{k0} s^k_j + 144\beta^3 y^i b_j s_{0|0} - 114\beta^2 y^i b_j r_{00|0} + 462\beta y^i b_j r^2_{00} + 810\, b^i\beta^4 s_0\, s_{0j} + 162 s^i_k s^k_0\beta^5 b_j - 972 s^i_0\beta^4 s_0 b_j \\
& -486 s^i{}_0 r_{00}\beta^3 b_j + 252\, B^2 y^i r_{00}\,\beta^2 s_{0j} + 90\,\beta^3\delta^i{}_j B r_{00|0} + 108\, b^i r_{00}\,\beta^3 s_{0j} - 216\, B s^i{}_{0|0}\beta^4 b_j - 216\,\beta^4\delta^i{}_j r_{k0} s^k_0 \\
& +36\,\beta^3\delta^i{}_j B^2 r_{00|0} - 12\,\beta^2\delta^i{}_j B^2 r^2_{00} - 216\beta^5 y^i s_k s^k_j - 120\beta^3\delta^i{}_j r_{00} r_0 + 432\beta^3\delta^i{}_j s_0 r_{00} - 108\beta^2\delta^i{}_j B r^2_{00} + 1584 b^i y_j\beta^3 s^2_0 \\
& -144 b^i y_j s_{0|0}\beta^3 + 78 b^i y_j r_{00|0}\beta^2 - 222 b^i y_j\beta r^2_{00} - 54 b^i\beta^5 s_{j|0} - 54 r^i{}_0\beta^5 s_j - 54 s^i\beta^5 r_{j0} + 135 s^i_{0|0}\beta^4 b_j + 162 s^i_k s^k_j\beta^6 \\
& +288\,\beta^4\delta^i{}_j s_0\, r_0 + 1215 s^i{}_0\beta^4 s_{0j} - 432 B s^i{}_{0|j}\beta^5 + 108\, b^i\beta^5 s_{0|j} + 216 B s^i{}_{j|0}\beta^5 - 108\beta^4 y^i s_{\ j|0} + 216\,\beta^4 y^i s_{0|j} + 108 s^i{}_{0|0}\beta^3 y_j \\
& +90 b^i b_j r_0 r_{00}\,\beta^3 - 738 b^i b_j r_{00}\,\beta^3 s_0 + 36 b^i b_j B r^2_{00}\beta^2 + 360\, B r^i{}_0\beta^3 s_0\, y_j - 40\beta^4 s^i_k s^k_0 y_j - 12 B r^i{}_0 r_{00}\beta^2 y_j + 2916 s^i{}_0\beta^3 s_0 y_j \\
& +624\,\beta^2 y^i y_j B s^k{}_0 r_{k0} + 36\beta^3 y^i r_{00|j} - 36\beta^3 y^i r_{j0|0} + 27 b^i\beta^4 r_{j0|0} + 27 r^i{}_0\beta^4 r_{j0} - 432\,\beta^4\delta^i{}_j s^2_0 - 108\,\beta^4\delta^i{}_j s_{0|0} \\
& -18\,\beta^3\delta^i{}_j r_{00|0} - 60\,\beta^2\delta^i{}_j r^2_{00} + 108 r^i{}_j\beta^5 s_0 - 27 r^i{}_j r_{00}\,\beta^4 - 27\, b^i\beta^4 r_{00|j} - 432\,\beta^4\delta^i{}_j B s^k{}_0 r_{k0} - 648\,\beta^4 y^i b_j s_k s^k_0 \\
& +18\, b^i\beta^4 s_0\, r_{j0} + 54 b^i s^k_j\beta^5 r_{k0} - 12 B^2 r^i{}_0 r_{00}\beta^2 y_j - 96\beta^3\delta^i{}_j B r_0 r_{00} + 28\beta^3\delta^i{}_j B r_{00} s_0 + 162 b^i b_j\beta^4 s_{0|0} - 18 b^i b_j r_{00|0}\beta^3 \\
& -18 b^i r_0\beta^4 r_{j0} - 12\, b^i r_{00}\beta^3 r_{j0} - 72\, B^2 y^i\beta^3 r_{00|j} - 180\, B y^i\beta^3 r_{00|j} + 72\, B^2 y^i\beta^3 r_{j0|0} + 180\, B y^i\beta^3 r_{j0|0} - 36\, B r^i{}_0 r_{00}\,\beta^3 b_j \\
& -192\, B y^i r_0\,\beta^3 r_{j0} + 12 B^2 y^i r_{00}\beta^2 r_{j0} + 60\, B y^i r_{00}\beta^2 r_{j0} - 194 B s^i{}_0\beta^4 s_{0j} + 72\, y^i r_0\beta^4 s_j + 18 y^i r_{00}\beta^3 s_j + 90 s^i r_{00}\beta^3 y_j \\
& +432 B s^i{}_{0|0}\beta^3 y_j - 216 B y^i\beta^4 s_{j|0} + 432 B y^i\beta^4 s_{0|j} - 108 b^i s^k{}_0\beta^5 r_{jk} - 864 y^i\beta^3 s_0 s_{0j} - 234 y^i r_{00}\beta^2 s_{0j} + 36 b^i r_{00}\beta^4 s_j \\
& -216\beta^4 y^i r_{jk} s^k_0 - 162 s^i{}_0 r_{00}\beta^2 y_j\Big) - 27\hat{R}^i{}_j\beta^{16}\left(8B^2 + 8B - 7\right)
\end{aligned}
$$

$$
t_6 := -24\beta^{14} y_j\left(4 s^i{}_{0|0} B^3 + 42 B b^i s^2_0 + 6\, B^2 s^i{}_{0|0} - 24\, b^i s^2_0 - 24 B s^i{}_{0|0} - 13 s^i{}_{0|0}\right),
$$

$$
\begin{aligned}
t_7 := 4\beta^{10}\Big[& -96B^2 r^i{}_0\beta^3 s_0 y_j + 192\, B r^i{}_0\beta^3 s_0 y_j - 54\, B r^i{}_0 r_{00}\,\beta^2 y_j + 72\, r^i{}_0\beta^4 s_0\, b_j - 39 r^i{}_0 r_{00}\beta^3 b_j - 50 y^i r_0\beta^3 r_{j0} \\
& -50 b^i y_j s^k{}_0\beta^4 s_k - 9 b^i y_j B^2\beta^3 s_{0|0} - 600 b^i y_j B\beta^3 s^2{}_0 + 54\, B b^i\beta^5 s_{j|0} + 192 b^i y_j B\beta^3 s_{0|0} + 186 b^i y_j s^k{}_0 r_{k0}\,\beta^3 - 168 b^i y_j r_0\, s_0\,\beta^3 \\
& -18\, b^i r_0\,\beta^5 s_j + 864\, b^i\beta^4 s_0 s_{0j} - 90 b^i r_{00}\,\beta^3 s_{0j} + 48\, y^i\beta^4 s_0 r_j + 22\, y^i r_{00}\,\beta^3 r_j + 72\,\beta^4 y^i b_j s_k s^k{}_0 - 594 b^i y_j\beta^2 s_0 r_{00} \\
& +2 y^i r_{00}\beta^2 r_{j0} + 45 b^i y_j B r^2{}_{00}\beta - 4\beta^2 y^i b_j B^3 r_{00|0} + 972\, B s^i{}_0\beta^4 s_0 b_j + 117\beta^2 y^i b_j B r_{00|0} - 86\,\beta^2 y^i b_j r_{00} r_0 + 967\,\beta^2 y^i b_j s_0 r_{00} \\
& -48\,\beta^3 y^i b_j B s_{0|0} - 294\,\beta^3 y^i b_j r_{k0} s^k{}_0 + 264\,\beta^3 y^i b_j s_0 r_0 + 24\,\beta^2 y^i b_j B^2 r_{\ 00|0} - 18\,\beta y^i b_j B^2 r^2{}_{00} + 12\, B b^i r_0\beta^4 r_{j0} \\
& +84 B s^i{}_k s^k{}_0\beta^4 y_j - 18 B b^i r_{00}\beta^4 s_j - 66 b^i b_j B\beta^3 r_{00|0} + 6 b^i b_j B^2 r_{00|0}\beta^3 + 156\beta y^i y_j B r_{00|0} - 96\beta y^i y_j r_{00} r_0 + 1344\beta y^i y_j s_0 r_{00} \\
& -162 B^2 s^i{}_0 r_{00}\beta^3 b_j + 96\,\beta^2 y^i y_j B^3 s^k{}_0 r_{k0} + 192\beta^3 y^i y_j B s^k{}_0 s_k - 288\beta^2 y^i y_j B^2 s^k{}_0 r_{k0} - 96\beta^2 y^i y_j B^2 r_0 s_0 - 126\beta^2 y^i y_j B s^k{}_0 r_{k0} \\
& +192\beta^2 y^i y_j B r_0 s_0 + 144\beta y^i y_j B^2 r_{00} s_0 - 264\beta y^i y_j B r_0 r_{00} + 1752\beta y^i y_j B r_{00} s_0 - 30 b^i b_j B r_0 r_{00}\beta^3 + 6 B^2 r^i{}_0 r_{00}\beta^3 b_j \\
& -72 B^2 y^i s^k{}_j\beta^4 r_{k0} - 72 B y^i s^k{}_j\beta^4 r_{k0} - 54 B b^i s^k{}_j\beta^5 r_{k0} - 72 B s^i\beta^4 s_0 y_j + 60 B^2 s^i r_{00}\beta^3 y_j + 18 B s^i r_{00}\beta^4 b_j - 432 B^2 s^i{}_k s^k{}_0\beta^4 y_j \\
& +108 s^i{}_{j|0}\beta^5 - 216 s^i{}_{0|j}\beta^5 - 216 B s^i{}_k s^k{}_j\beta^6 + 54\, B r^i{}_0\beta^5 s_j + 54 s^i\beta^5 s_0\, b_j + 1134 s^i{}_0\beta^3 s_0\, y_j - 369 s^i{}_0 r_{00}\,\beta^2 y_j - 1458 s^i{}_0\beta^4 s_0 b_j \\
& +81 s^i{}_0 r_{00}\beta^3 b_j - 21\, s^i r_{00}\beta^3 y_j - 45\, s^i r_{00}\beta^4 b_j + 972\, B^2 s^i{}_0\beta^4 s_{0j} - 1944\, B s^i{}_0\beta^4 s_{0j} + 54\,\beta^4 s^i{}_k s^k{}_0 y_j + 216 s^i{}_k s^k{}_0\beta^5 b_j \\
& +114 s^i{}_{0|0}\beta^3 y_j - 48\beta^3 y^i b_j B^2 s_{0|0} - 144\,\beta^3 y^i b_j B s^2{}_0 - 108\, B^2 s^i{}_{j|0}\beta^5 + 90\beta^4 y^i r_{k0} s^k{}_j - 36 B^3 s^i{}_0 r_{00}\beta^2 y_j + 216 B^2 s^i_{0|j}\beta^5 \\
& -180\,\beta^4 y^i r_{jk} s^k{}_0 + 72 s^i\beta^4 s_0 y_j + 54\, B s^i\beta^5 r_{j0} - 144 B^2 y^i\beta^4 s_{0|j} - 144 B y^i\beta^4 s_{0|j} - 252\, y^i\beta^3 s_0 s_{0j} + 81 y^i r_{00}\beta^2 s_{0j} \\
& -24\, y^i r_0\beta^4 s_j - 24\, y^i\beta^4 s_0\, s_j + 19\, y^i r_{00}\beta^3 s_j + 72\, B^2 y^i\beta^4 s_{j|0} + 72\, B y^i\beta^4 s_{j|0} + 54\, b^i\beta^5 s_0\, s_j - 9\, b^i r_{00}\,\beta^4 s_j - 27 B s^i{}_0 r_{00}\beta^2 y_j \\
& +54\, b^i s^k{}_j\beta^6 s_k + 108\, B^2 s^i{}_{0|0}\beta^4 b_j - 216 B s^i{}_{0|0}\beta^4 b_j - 252 B^2 s^i{}_{0|0}\beta^3 y_j - 72 B s^i{}_{0|0}\beta^3 y_j - 108 B b^i\beta^5 s_{0|j} + 144\, B^2 y^i s^k{}_0\beta^4 r_{jk} \\
& +144 B y^i s^k{}_0\beta^4 r_{jk} + 369\, B y^i r_{00}\beta^2 s_{0j} + 216 B y^i s^k{}_j\beta^5 s_k + 72 B^2 y^i r_{00}\beta^2 s_{0j} - 48 B y^i r_0\beta^4 s_j - 48\, B y^i\beta^4 s_0 s_j + 4\, B^2 y^i r_{00}\beta^3 s_j \\
& +4\, B y^i r_{00}\beta^3 s_j - 702\, B b^i\beta^4 s_0\, s_{0j} + 18\, B^2 b^i r_{00}\beta^3 s_{0j} - 90\, B b^i r_{00}\beta^3 s_{0j} + 567\, B s^i{}_0 r_{00}\beta^3 b_j + 648\, B^2 s^i{}_0\beta^3 s_0 y_j \\
& -3240 B s^i{}_0\beta^3 s_0 y_j + 432 B^2 s^i{}_0 r_{00}\beta^2 y_j + 108 B b^i s^k{}_0\beta^5 r_{jk} + 36 b^i\beta^5 s_0 r_j - 6 b^i r_{00}\beta^4 r_j + 18 B^2 b^i\beta^4 r_{00|j} + 18 B b^i\beta^4 r_{00|j} \\
& -18 B^2 r^i{}_0\beta^4 r_{j0} - 18\, B r^i{}_0\beta^4 r_{j0} + 228 r^i{}_0\beta^3 s_0 y_j - 27 r^i{}_0 r_{00}\beta^2 y_j - 162 y^i y_j r^2{}_{00} + 12\beta^3 y^i b_j B^2 s^k{}_0 r_{k0} - 528\beta^3 y^i b_j B s^k{}_0 r_{k0} \\
& +96\beta^3 y^i b_j B r_0 s_0 + 16\beta^2 y^i b_j B^2 r_0 r_{00} - 68\beta^2 y^i b_j B^2 r_{00} s_0 - 92\beta^2 y^i b_j B r_0 r_{00} + 28\beta^2 y^i b_j B r_{00} s_0 - 36 r^i{}_j r_{00}\beta^4 - 36 b^i\beta^4 r_{00|j} \\
& +36 b^i\beta^4 r_{j0|0} + 96\beta^4\delta^i{}_j s^2{}_0 - 90\beta^4\delta^i{}_j s_{0|0} + 49\beta^3\delta^i{}_j r_{00|0} - 27\beta^2\delta^i{}_j r^2{}_{00} - 98\beta^3 y^i r_{00|j} + 98\,\beta^3 y^i r_{j0|0} - 144\,\beta^2 y^i y_j B s_{0|0} \\
& -32\beta^3\delta^i{}_j r_{00} s_0 + 360\beta^4 y^i b_j s^k{}_0 s_k + 36 b^i y_j B^2 r_{00}\beta^2 s_0 - b^i y_j B r_{00}\beta^2 s_0 - 120 B s^i r_{00}\beta^3 y_j + 336\beta^3 y^i y_j s_k s^k{}_0 + 576\,\beta^2 y^i y_j B s^2{}_0 \\
& -240\,\beta^2 y^i y_j r_{k0} s^k{}_0 + 192\,\beta^2 y^i y_j s_0\, r_0 + 120\,\beta y^i y_j B^2 r_{00|0} - 6\,\beta y^i y_j r_{00|0} - 108 y^i y_j B^2 r^2{}_{00} - 360 y^i y_j B r^2{}_{00} + 48\, B^3 s^i{}_{0|0}\beta^3 y_j \\
& -216\, B s^i{}_k s^k{}_0\beta^5 b_j + 36 r^i{}_0\beta^4 r_{j0} - 144\, B^2 y^i\beta^3 s_0\, s_{0j} - 36\, B^3 y^i r_{00}\,\beta^2 s_{0j} + 720\, B y^i\beta^3 s_0\, s_{0j} - 432\,\beta^5\delta^i{}_j B s^k{}_0 s_k + 54 s^i{}_k s^k{}_j\beta^6 \\
& +144\,\beta^4\delta^i{}_j B^2 s^k{}_0 r_{k0} + 144\,\beta^4\delta^i{}_j B s^k{}_0 r_{k0} - \beta^4\delta^i{}_j r_0 s_0 - b^i b_j B\beta^4 s_{0|0} - 18 b^i b_j s^k{}_0 r_{k0}\,\beta^4 + 198 b^i b_j r_0\,\beta^4 s_0 + 16\,\beta^3\delta^i{}_j B^2 r_0 r_{00} \\
& +64\,\beta^3\delta^i{}_j B r_0 r_{00} - 176\,\beta^3\delta^i{}_j B r_{00}\, s_0 + 270 b^i b_j s^k{}_0\beta^5 s_k - 54 s^i{}_{0|0}\beta^4 b_j - 54\, s^i\beta^6 s_j - 90\,\beta^4 y^i s_{j|0} + 66\, B y^i\beta^3 r_{j0|0} + 180\,\beta^4 y^i s_{0|j} \\
& -399 b^i b_j r_{00}\,\beta^3 s_0 + 3 b^i b_j B r^2{}_{00}\beta^2 - 54 b^i y_j B r_{00|0}\beta^2 + 135 b^i y_j r_{00}\, r_0\,\beta^2 - 2304\,\beta^2 y^i y_j s^2{}_0 - 72\,\beta^2 y^i y_j s_{0|0} - 96\,\beta^3 y^i y_j B^2 s^k{}_0 s_k \\
& +504 b^i y_j B s^k{}_0\beta^4 s_k + 24 b^i y_j B^2 s^k{}_0 r_{k0}\beta^3 - 48 b^i y_j B s^k{}_0 r_{k0}\beta^3 + 168 b^i y_j B r_0\beta^3 s_0 - 90 b^i b_j B s^k{}_0 r_{k0}\,\beta^4 + 228 B b^i b_j r_{00}\beta^3 s_0 \\
& -15 b^i b_j r_0 r_{00}\,\beta^3 - 12\, b^i r_{00}\,\beta^3 r_{j0} + 18\, B^2 r^i{}_j r_{00}\,\beta^4 + 18 r^i{}_j r_{00}\beta^4 - 12\, B b^i r_{00} r_j - 108\, B r^i{}_j\beta^5 s_0 - 18 B^2 b^i\beta^4 r_{00|0} - 18 B b^i\beta^4 r_{00|0} \\
& +3 B b^i r_{00}\beta^3 r_{j0} + 40 B^2 y^i r_0\beta^3 r_{j0} + 136 B y^i r_0\beta^3 r_{j0} - 12 B^2 y^i r_{00}\beta^2 r_{j0} + 96 B y^i\beta^4 s_0 r_j - 8 B^2 y^i r_{00}\beta^3 r_j - 32 B y^i r_{00}\beta^3 r_j \\
& -126 B r^i{}_0\beta^4 s_0 b_j + 6 B r^i{}_0 r_{00}\beta^3 b_j + 72\,\beta^4\delta^i{}_j s_{0|0} + 192\beta^4\delta^i{}_j B s^2{}_0 - 4\beta^3\delta^i{}_j B^3 r_{00|0} - 810 b^i b_j\beta^4 s^2{}_0 + b^i b_j\beta^4 s_{0|0} - 8 B^3 y^i\beta^3 r_{j0|0} \\
& -39 b^i b_j r_{00|0}\beta^3 + 2004 b^i y_j\beta^3 s^2{}_0 + 228 b^i y_j s_{0|0}\beta^3 + \beta^4\delta^i{}_j B s_{0|0} - 180\beta^4\delta^i{}_j r_{k0} s^k{}_0 - \beta^4\delta^i{}_j s_0 r_0 - \beta^3\delta^i{}_j B^2 r_{00|0} + 792\beta^3 y^i b_j s^2{}_0 \\
& +12\beta^2\delta^i{}_j B^2 r^2{}_{00} + 33\beta^3\delta^i{}_j B r_{00|0} - \beta^3\delta^i{}_j r_{00} r_0 - 8\,\beta^3\delta^i{}_j s_0 r_{00} + \beta^2\delta^i{}_j B r^2{}_{00} - 12\,\beta^3 y^i b_j s_{0|0} + 25\,\beta^2 y^i b_j r_{00|0} - 48\, B^2 y^i\beta^3 r_{j0|0} \\
& -\beta y^i b_j r^2{}_{00} + b^i b_j r^2{}_{00}\beta^2 + 8\, B^3 y^i\beta^3 r_{00|j} + B^2 y^i\beta^3 r_{00|j} - 27 b^i y_j r_{00|0}\beta^2 + 36 b^i y_j\beta r^2{}_{00} + 6 b^i b_j B r_{00|0}\beta^3 - 351\beta y^i b_j B r^2{}_{00}\Big] \\
& +24\hat{R}^i{}_j\beta^{14}\,(2\,B+1)\left(2\,B^2+2\,B-13\right)\Big)
\end{aligned}
$$

$$
t_8 := 2\beta^{12} y_j\left(8\, B^4 s^i{}_{0|0} + 240\, B^2 b^i s^2{}_0 + 16 B^3 s^i{}_{0|0} - 696\, B b^i s^2{}_0 - 312\, B^2 s^i{}_{0|0} - 624\, b^i s^2{}_0 - 320\, B s^i{}_{0|0} + 41 s^i{}_{0|0}\right)
$$

$$
\begin{aligned}
t_9 := -4\beta^8\Big[& -36 B^2 b^i r_{00}\beta^3 s_{0j} - 90 B b^i r_{00}\beta^3 s_{0j} - 27 B s^i{}_0 r_{00}\beta^3 b_j + 144 B^3 s^i{}_0\beta^3 s_0 y_j - 2376 B^2 s^i{}_0\beta^3 s_0 y_j + 108\, B^3 s^i{}_0 r_{00}\beta^2 y_j \\
& -162\, B^2 s^i{}_0 r_{00}\beta^2 y_j - 729\, B s^i{}_0 r_{00}\beta^2 y_j + 72\, B^2 b^i s^k{}_0\beta^5 r_{jk} - 36\, B b^i s^k{}_0\beta^5 r_{jk} - 48\, B s^i r_{00}\beta^3 y_j - 96\, B^2 s^i\beta^4 s_0\, y_j + 16\,\beta^3 y^i y_j s_k s^k{}_0 \\
& -192\,\beta^2 y^i y_j B^2 s_{0|0} - \beta^2 y^i y_j B s^2{}_0 + 32\beta y^i y_j B^3 r_{00|0} - \beta^2 y^i y_j B s_{0|0} + 324\beta^2 y^i y_j r_{k0} s^k{}_0 + 96\,\beta^2 y^i y_j s_0\, r_0 + 96\,\beta y^i y_j B^2 r_{00|0} \\
& +36\, B s^i\beta^5 s_0\, b_j - 36\, B^3 s^i{}_0 r_{00}\,\beta^3 b_j - 216\, B^2 s^i{}_k s^k{}_0\beta^5 b_j + 648\, B s^i{}_k s^k{}_0\beta^5 b_j - 24\, B b^i r_0\,\beta^5 s_j + 48\, B b^i\beta^5 s_0\, s_j - 4\, B^2 b^i r_{00}\,\beta^4 s_j \\
& +288 B^2 y^i\beta^3 s_0 s_{0j} + B^3 y^i r_{00}\beta^2 s_{0j} - B y^i\beta^3 s_0 s_{0j} - 288\beta^5\delta^i{}_j B^2 s^k{}_0 s_k + 32\beta^4\delta^i{}_j B^3 s^k{}_0 r_{k0} + 144\beta^5\delta^i{}_j B s^k{}_0 s_k + 48\beta^4\delta^i_j B^2 s^k{}_0 r_{k0} \\
& -64\,\beta^4\delta^i{}_j B^2 r_0\, s_0 - 408\,\beta^4\delta^i{}_j B s^k{}_0 r_{k0} - 64\,\beta^4\delta^i{}_j B r_0\, s_0 - 600 b^i b_j B\beta^4 s^2{}_0 + 174 b^i b_j B\beta^4 s_{0|0} + 258 b^i b_j s^k{}_0 r_{k0}\,\beta^4 - 162 b^i b_j r_0\,\beta^4 s_0
\end{aligned}
$$

$$
\begin{aligned}
&+16\,\beta^3\delta^i{}_j\,B^2 r_0 r_{00} - 32\,\beta^3\delta^i{}_j\,B^2 r_{00}\,s_0 - 80\,\beta^3\delta^i{}_j\,B r_0 r_{00} - 32\,\beta^3\delta^i{}_j\,B r_{00}\,s_0 - 450 b^i b_j s^k{}_0 \beta^5 s_k - 60 b^i b_j B^2 \beta^4 s_{0|0} - 54 b^i b_j B r_{00|0}\,\beta^3 \\
&+135 b^i b_j r_0 r_{00}\,\beta^3 - 675 b^i b_j r_{00}\,\beta^3 s_0 + 54 b^i b_j B r^2{}_{00}\beta^2 - 18 b^i y_j B r_{00|0}\,\beta^2 + 45 b^i y_j r_{00}\,r_0\,\beta^2 + 48\,B b^i \beta^5 s_0\,r_j - 4\,B^2 b^i r_{00}\,\beta^4 r_j \\
&-4\,B b^i r_{00}\,\beta^4 r_j - 9\,B b^i r_{00}\beta^3 r_{j0} + 40\,B^2 y^i r_0\,\beta^3 r_{j0} - 152\,B y^i r_0\,\beta^3 r_{j0} + 6\,B^2 y^i r_{00}\beta^2 r_{j0} + 54\,B y^i r_{00}\beta^2 r_{j0} + 32\,B^2 y^i \beta^4 s_0\,r_j \\
&+32\,B y^i \beta^4 s_0\,r_j - 8\,B^2 y^i r_{00}\beta^3 r_j + 40\,B y^i r_{00}\beta^3 r_j - 60\,B^2 r^i{}_0 \beta^4 s_0\,b_j + 174\,B r^i{}_0 \beta^4 s_0\,b_j - 54\,B r^i{}_0 r_{00}\,\beta^3 b_j - 16\,B^3 r^i{}_0 \beta^3 s_0\,y_j \\
&+144\,B^2 r^i{}_0 \beta^3 s_0\,y_j + 300\,B r^i{}_0 \beta^3 s_0\,y_j - 18\,B^2 r^i{}_0 r_{00}\beta^2 y_j - 18\,B r^i{}_0 r_{00}\beta^2 y_j - 16 b^i y_j B^3 \beta^3 s_{0|0} - 144 b^i y_j B^2 \beta^3 s^2{}_0 - 228 b^i y_j s^k{}_0 \beta^4 s_k \\
&+144 b^i y_j B^2 \beta^3 s_{0|0} + 2088 b^i y_j B \beta^3 s^2{}_0 + 300 b^i y_j B \beta^3 s_{0|0} + 14 b^i y_j s^k{}_0 r_{k0}\beta^3 - 464 b^i y_j r_0 s_0 \beta^3 - 18 b^i y_j B^2 r_{00|0}\,\beta^2 + 156\,\beta^4 b^i b_j s_k s^k{}_0 \\
&+720 b^i y_j \beta^2 s_0 r_{00} - 18 b^i y_j B r^2{}_{00}\beta + 69\,\beta^2 y^i b_j B r_{00|0} + 20\,\beta^2 y^i b_j r_{00} r_0 + 1397\,\beta^2 y^i b_j s_0 r_{00} - 396\,\beta y^i b_j B r^2{}_{00} + 576\,\beta^3 y^i b_j B s^2{}_0 \\
&+3348\,B s^i{}_0 \beta^3 s_0\,y_j + 4\,\beta^2 y^i b_j B^3 r_{00|0} - 144\,\beta^3 y^i b_j B s_{0|0} + 78\,\beta^3 y^i b_j r_{k0} s^k{}_0 - 12\,\beta^3 y^i b_j s_0\,r_0 + 90\,\beta^2 y^i b_j B^2 r_{00|0} - 120\,\beta y^i b_j B^2 r^2{}_{00} \\
&+4\,B^2 b^i r_0\,\beta^4 r_{j0} + 4\,B^2 b^i \beta^4 s_0\,r_{j0} + 4\,B b^i r_0\,\beta^4 r_{j0} + 4\,B b^i \beta^4 s_0\,r_{j0} + 648\,B^2 s^i{}_0 \beta^4 s_0\,b_j - 3240\,B s^i{}_0 \beta^4 s_0\,b_j - 16\,B^3 y^i s^k{}_j \beta^4 r_{k0} \\
&-24\,B^2 y^i s^k{}_j \beta^4 r_{k0} + 204\,B y^i s^k{}_j \beta^4 r_{k0} - 16\,B^2 y^i r_0\,\beta^4 s_j - 36\,B^2 b^i s^k{}_j \beta^5 r_{k0} + 18\,B b^i s^k{}_j \beta^5 r_{k0} + 108\,B b^i s^k{}_j \beta^6 s_k - 32\,B^2 y^i \beta^4 s_0\,s_j \\
&+16 B^3 s^i r_{00} \beta^3 y_j + 264 B s^i \beta^4 s_0 y_j - 108\,B^2 s^i r_{00}\beta^3 y_j + 24 B^2 s^i r_{00}\beta^4 b_j - 102 B s^i r_{00}\beta^4 b_j - 192\,B^3 s^i{}_k s^k{}_0 \beta^4 y_j + 1008 B^2 s^i{}_k s^k{}_0 \beta^4 y_j \\
&-144 B s^i{}_k s^k{}_0 \beta^4 y_j - 4\,B b^i r_{00}\beta^4 s_j - 54\,\beta y^i y_j B r_{00|0} + 58\,\beta y^i y_j r_{00} r_0 + 298\,\beta y^i y_j s_0 r_{00} + 432\,B^2 s^i{}_0 r_{00}\beta^3 b_j + 32\,B^3 y^i s^k{}_0 \beta^4 r_{jk} \\
&+48\,B^2 y^i s^k{}_0 \beta^4 r_{jk} - 408\,B y^i s^k{}_0 \beta^4 r_{jk} + 9\,B y^i r_{00}\beta^2 s_{0j} + 144 B^2 y^i s^k{}_j \beta^5 s_k - 72\,B y^i s^k{}_j \beta^5 s_k + 306\,B^2 y^i r_{00}\beta^2 s_{0j} - 16\,B y^i r_0\,\beta^4 s_j \\
&-32\,B y^i \beta^4 s_0\,s_j + 4\,B^2 y^i r_{00}\beta^3 s_j + 4\,B y^i r_{00}\beta^3 s_j - 396\,B^2 b^i \beta^4 s_0\,s_{0j} + 1710\,B b^i \beta^4 s_0\,s_{0j} + 15 r^i{}_0 \beta^4 s_0\,b_j - 27 r^i{}_0 r_{00}\beta^3 b_j \\
&+18\,s^i \beta^5 s_0\,b_j + 342 s^i{}_0 \beta^3 s_0\,y_j + 54 s^i{}_0 r_{00}\beta^2 y_j + 1134 s^i{}_0 \beta^4 s_0\,b_j - 369 s^i{}_0 r_{00}\beta^3 b_j + 59\,s^i r_{00}\beta^3 y_j + 51\,s^i r_{00}\beta^4 b_j + 288\,B s^i{}_{j|0}\beta^5 \\
&-108 B s^i \beta^6 s_j + 432 B^3 s^i{}_0 \beta^4 s_{0j} - B^2 s^i{}_0 \beta^4 s_{0j} + 648 B s^i{}_0 \beta^4 s_{0j} - \beta^4 s^i{}_k s^k{}_0 y_j - 108 s^i{}_k s^k{}_0 \beta^5 b_j - 180 \beta^5 y^i s_k s^k{}_j + 106 \beta^4 y^i r_{k0} s^k{}_j \\
&-212\,\beta^4 y^i r_{jk} s^k{}_0 - 168\,s^i \beta^4 s_0\,y_j + 36\,B^2 s^i \beta^5 r_{j0} - 18\,B s^i \beta^5 r_{j0} - 32\,B^3 y^i \beta^4 s_{0|j} - 48\,B^2 y^i \beta^4 s_{0|j} + 408\,B y^i \beta^4 s_{0|j} - 4\,B^3 b^i \beta^4 r_{j0|0} \\
&-136\,y^i \beta^4 s_0\,r_j + 58\,y^i r_{00}\beta^3 r_j - 174\,B y^i \beta^3 r_{00|j} - 216\,B^2 s^i{}_k s^k{}_j \beta^6 + 216\,B s^i{}_k s^k{}_j \beta^6 + 36\,B^2 r^i{}_0 \beta^5 s_j - 18\,B r^i{}_0 \beta^5 s_j + 96\,B^3 s^i{}_{0|j}\beta^5 \\
&+72\,y^i \beta^3 s_0\,s_{0j} - 108\,y^i r_{00}\beta^2 s_{0j} + 68\,y^i r_0\,\beta^4 s_j - 8\,y^i \beta^4 s_0\,s_j + 19\,y^i r_{00}\,\beta^3 s_j + 16\,B^3 y^i \beta^4 s_{j|0} + 24\,B^2 y^i \beta^4 s_{j|0} - 576\,B s^i{}_{0|j}\beta^5 \\
&-204\,B y^i \beta^4 s_{j|0} - 144\,b^i s^k{}_0 \beta^5 r_{jk} - 30\,b^i \beta^5 s_0\,s_j + 53\,b^i r_{00}\beta^4 s_j - 54\,b^i s^k{}_j \beta^6 s_k + 48 B^3 s^i{}_{0|0}\beta^4 b_j - 252 B^2 s^i{}_{0|0}\beta^4 b_j + 162 s^i{}_k s^k{}_j \beta^6 \\
&-72 B s^i{}_{0|0}\beta^4 b_j + 8\,B^4 s^i{}_{0|0}\beta^3 y_j + 12\,B^2 s^i{}_{0|0}\beta^3 y_j + 328\,B s^i{}_{0|0}\beta^3 y_j + 72\,b^i s^k{}_{0|0}\beta^5 r_{k0} - 72\,B^2 b^i \beta^5 s_{0|j} + 36\,B b^i \beta^5 s_{0|j} + 48 s^i{}_{j|0}\beta^5 \\
&-12\,b^i \beta^5 s_0\,r_j + 26\,b^i r_{00}\beta^4 r_j + 4\,B^3 b^i \beta^4 r_{00|j} + 6 B^2 b^i \beta^4 r_{00|j} - 78 B b^i \beta^4 r_{00|j} - 4 B^3 r^i{}_0 \beta^4 r_{j0} - 6 B^2 r^i{}_0 \beta^4 r_{j0} - 96 s^i{}_{0|j}\beta^5 \\
&+78\,B r^i{}_0 \beta^4 r_{j0} - 104 r^i{}_0 \beta^3 s_0\,y_j + 36 r^i{}_0 r_{00}\beta^2 y_j - 74\,\beta y^i y_j r_{00|0} - 60 y^i y_j B^2 r^2{}_{00} - 57 y^i y_j B r^2{}_{00} - 128\,B^3 s^i{}_{0|0}\beta^3 y_j - 72 B^2 r^i{}_j \beta^5 s_0 \\
&+4\,B^3 r^i{}_j r_{00}\beta^4 - 960\,\beta^2 y^i y_j s^2{}_0 + 60\,\beta^2 y^i y_j s_{0|0} - 26\,b^i r_0\,\beta^4 r_{j0} + 28\,b^i \beta^4 s_0\,r_{j0} - 18 b^i r_{00}\beta^3 r_{j0} + 6\,B^2 r^i{}_j r_{00}\beta^4 - 78\,B r^i{}_j r_{00}\beta^4 \\
&+16\beta^4 \delta^i{}_j B^3 s_{0|0} + \beta^4 \delta^i{}_j B^2 s^2{}_0 + \beta^5 \delta^i{}_j s_k s^k{}_0 + 24\beta^4 \delta^i{}_j B^2 s_{0|0} + 32\beta^4 \delta^i{}_j B s^2{}_0 - 4\beta^3 \delta^i{}_j B^3 r_{00|0} + b^i b_j \beta^4 s^2{}_0 - 194 y^i r_0 \beta^3 r_{j0} \\
&+156 b^i b_j \beta^4 s_{0|0} - b^i b_j r_{00|0}\beta^3 - b^i y_j \beta^3 s^2{}_0 - 104 b^i y_j s_{0|0}\beta^3 - 204\beta^4 \delta^i{}_j B s_{0|0} - 212\beta^4 \delta^i{}_j r_{k0} s^k{}_0 + \beta^4 \delta^i{}_j s_0 r_0 + 30 y^i r_{00}\beta^2 r_{j0} \\
&+30\beta^3 \delta^i{}_j B^2 r_{00|0} + 6\beta^2 \delta^i{}_j B^2 r^2{}_{00} + 87\beta^3 \delta^i{}_j B r_{00|0} - \beta^3 \delta^i{}_j r_{00} r_0 + \beta^3 \delta^i{}_j s_0 r_{00} - 18\beta^2 \delta^i{}_j B r^2{}_{00} - \beta^3 y^i b_j s_{0|0} + 36 B^2 b^i \beta^5 s_{j|0} \\
&-\beta^2 y^i b_j r_{00|0} - \beta y^i b_j r^2{}_{00} + 54 b^i b_j r^2{}_{00}\beta^2 + 8\,B^3 y^i \beta^3 r_{00|j} - B^2 y^i \beta^3 r_{00|j} + 36 b^i y_j r_{00|0}\,\beta^2 - b^i y_j \beta\, r^2{}_{00} - 6\,B^2 b^i \beta^4 r_{j0|0} \\
&-2304\,\beta^3 y^i b_j s^2{}_0 - 8\,B^3 y^i \beta^3 r_{j0|0} + 60\,B^2 y^i \beta^3 r_{j0|0} + 174\,B y^i \beta^3 r_{j0|0} - 18 y^i y_j r^2{}_{00} - 40 b^i \beta^4 r_{00|j} - 40 r^i{}_j r_{00}\beta^4 + 78\,B b^i \beta^4 r_{j0|0} \\
&+144 r^i{}_j \beta^5 s_0 + 40\,b^i \beta^4 r_{\ j0|0} + 40 r^i{}_0 \beta^4 r_{j0} + 8\,\beta^4 \delta^i{}_j s^2{}_0 - 106\,\beta^4 \delta^i{}_j s_{0|0} + 22\beta^3 \delta^i{}_j r_{00|0} - 33\beta^2 \delta^i{}_j r^2{}_{00} - 128\,\beta y^i y_j B^2 r_0 r_{00} \\
&-106\,\beta^4 y^i s_{j|0} + 212\,\beta^4 y^i s_{0|j} - 72 r^i{}_0 \beta^5 s_j + 216 s^i{}_0 \beta^4 s_{0j} + 23 s^i{}_{0|0}\beta^3 y_j - 48\,B^3 s^i{}_{j|0}\beta^5 + 36\,B^2 s^i{}_{j|0}\beta^5 - 684\,\beta^3 y^i b_j B s^k{}_0 r_{k0} \\
&-96\,\beta^2 y^i y_j B^3 s^k{}_0 r_{k0} + 1056\,\beta^3 y^i y_j B s^k{}_0 s_k - 960\,\beta^2 y^i y_j B^2 s^k{}_0 r_{k0} + 96\,\beta^2 y^i y_j B^2 r_0\,s_0 - 240\,\beta^2 y^i y_j B s^k{}_0 r_{k0} + 672\,\beta^2 y^i y_j B r_0\,s_0 \\
&+496\,\beta y^i y_j B^2 r_{00}\,s_0 - 200\,\beta y^i y_j B r_0 r_{00} + 1096\,\beta y^i y_j B r_{00} s_0 - 64\,\beta^3 y^i y_j B^3 s^k{}_0 s_k - 360\,\beta^3 y^i b_j B^2 s^k{}_0 r_{k0} - 48\beta^3 y^i b_j B^2 r_0\,s_0 \\
&+240\beta^3 y^i b_j B r_0\,s_0 - 16\beta^2 y^i b_j B^2 r_0 r_{00} + 140\beta^2 y^i b_j B^2 r_{00} s_0 - 184\,\beta^2 y^i b_j B r_0 r_{00} + 1892\,\beta^2 y^i b_j B r_{00} s_0 + 48\,\beta^4 y^i b_j B^2 s^k{}_0 s_k \\
&+120\,\beta^4 y^i b_j B s^k{}_0 s_k - 108 b^i y_j B^2 r_{00}\,\beta^2 s_0 + 90 b^i y_j B r_0 r_{00}\beta^2 - 18 b^i y_j B r_{00}\beta^2 s_0 + 288\,\beta^3 y^i y_j B^2 s^k{}_0 s_k + 240 b^i y_j B^2 s^k{}_0 \beta^4 s_k \\
&-984 b^i y_j B s^k{}_0 \beta^4 s_k - 72 b^i y_j B^2 s^k{}_0 r_{k0}\beta^3 + 16 b^i y_j B^2 r_0 \beta^3 s_0 + 204 b^i y_j B s^k{}_0 r_{k0}\beta^3 - 200 b^i y_j B r_0 \beta^3 s_0 - 30 b_j b^i B s^k{}_0 r_{k0}\beta^4 \\
&-18\,B b^i \beta^5 s_{j|0} + 126 b^i r_{00}\beta^3 s_{0j} - 72 B^2 s^i{}_{0|j}\beta^5 + 6\,b^i r_0\,\beta^5 s_j - 180\,b^i \beta^4 s_0\,s_{0j} + 144 b^i b_j B r_0 \beta^4 s_0 - 468 b^i b_j B r_{00}\beta^3 s_0 \\
&+36\,B^2 b^i r_{00}\beta^3 s_0\,b_j + 396 b^i b_j B s^k{}_0 \beta^5 s_k - 12 b^i b_j B^2 s^k{}_0 r_{k0}\beta^4 + 48\,\beta^3 y^i b_j B^3 s^k{}_0 r_{k0} + 16 b^i y_j B^3 s^k{}_0 r_{k0}\,\beta^3 \Big] \\
&-2\hat{R}^i{}_j \beta^{12}\left(8\,B^4 + 16\,B^3 - 312\,B^2 - 320\,B + 41\right)
\end{aligned}
$$

$$
t_{10} := 16 y_j \beta^{10}\Big(- 4 B^3 b^i s^2{}_0 + 60 B^2 b^i s^2{}_0 + 18 s^i{}_{0|0} B^3 + 81 B b^i s^2{}_0 + 27 B^2 s^i{}_{0|0} - 56 b^i s^2{}_0 - 27\,B s^i{}_{0|0} - 18 s^i{}_{0|0}\Big)
$$

$$
\begin{aligned}
t_{11} := -4\beta^6 \Big[&- 1080 B^2 b^i \beta^4 s_0 s_{0j} + 918 B b^i \beta^4 s_0 s_{0j} + 18 B^2 b^i r_{00}\beta^3 s_{0j} - 198 B b^i r_{00}\beta^3 s_{0j} + 729 B s^i{}_0 r_{00}\beta^3 b_j + 576 B^3 s^i{}_0 \beta^3 s_0 y_j \\
&- B^2 s^i{}_0 \beta^3 s_0 y_j + 72 B^3 s^i{}_0 r_{00}\beta^2 y_j + 432 B s^i{}_0 \beta^3 s_0\,y_j + B^2 s^i{}_0 r_{00}\beta^2 y_j - 351 B s^i{}_0 r_{00}\beta^2 y_j - 144 B^3 s^i{}_0 \beta^4 s_0 b_j + 48\,B^2 b^i s^k{}_0 \beta^5 r_{jk} \\
&+276\,B b^i s^k{}_0 \beta^5 r_{jk} + 8\,B^3 b^i s^k{}_j \beta^5 r_{k0} + 64\,\beta^2 y_j y^i B^3 s_{0|0} - 144\,B s^i r_{00}\beta^3 y_j - 288\,B^2 s^i \beta^4 s_0\,y_j + 392\,\beta^3 y^i y_j s_k s^k{}_0 + 96\,\beta^2 y^i y_j B^2 s_{0|0} \\
&-832\,\beta^2 y^i y_j B s^2{}_0 - 16\,\beta y^i y_j B^3 r_{00|0} - 240\,\beta^2 y^i y_j B s_{0|0} - 368\,\beta^2 y^i y_j r_{k0} s^k{}_0 + 272\,\beta^2 y^i y_j s_0\,r_0 + 72\,\beta y^i y_j B^2 r_{00|0} - 120\,B s^i \beta^5 s_0\,b_j
\end{aligned}
$$

$$
\begin{aligned}
&-108\,B^3 s^i{}_0 r_{00}\beta^3 b_j + 24\,B^2 s^i \beta^5 s_0\, b_j - 8\,B^3 s^i r_{00}\beta^4 b_j - 720\,B^2 s^i{}_k s^k{}_0 \beta^5 b_j + 504\,B s^i{}_k s^k{}_0 \beta^5 b_j + 8\,B^2 b^i r_0\,\beta^5 s_j - 8\,B^2 b^i \beta^5 s_0\, s_j \\
&-16\,B b^i r_0\,\beta^5 s_j + 40\,B b^i \beta^5 s_0 s_j + 864\,B^2 y^i \beta^3 s_0\, s_{0j} - 72\,B^3 y^i r_{00}\beta^2 s_{0j} - 864\,B y^i \beta^3 s_0\, s_{0j} + 64\,\beta^5 \delta^i{}_j B^3 s^k{}_0 s_k - 192\beta^5 \delta^i{}_j B^2 s^k{}_0 s_k \\
&-672\beta^5 \delta^i{}_j B s^k{}_0 s_k + 288\beta^4 \delta^i{}_j B^2 s^k{}_0 r_{k0} + 28\beta^4 \delta^i{}_j B s^k{}_0 r_{k0} - 384\,\beta^4 \delta^i{}_j B r_0\, s_0 - 2096 b^i b_j B \beta^4 s^2{}_0 - 162 b^i b_j B \beta^4 s_{0|0} - 22 b^i b_j s^k{}_0 r_{k0}\,\beta^4 \\
&+418 b^i b_j r_0\,\beta^4 s_0 + 32\,\beta^3 \delta^i{}_j B^2 r_0 r_{00} + 32\,\beta^3 \delta^i{}_j B^2 r_{00} s_0 + 128\,\beta^3 \delta^i{}_j B r_0 r_{00} + 32\,\beta^3 \delta^i{}_j B r_{00} s_0 + 8 b^i b_j B^3 \beta^4 s_{0|0} + 136 b^i b_j B^2 \beta^4 s^2{}_0 \\
&+138 b^i b_j s^k{}_0 \beta^5 s_k - 120 b^i b_j B^2 \beta^4 s_{0|0} + 18 b^i b_j B r_{00|0}\,\beta^3 - 45 b^i b_j r_0 r_{00}\beta^3 - 693 b^i b_j r_{00}\beta^3 s_0 + 9 b^i b_j B r^2{}_{00}\beta^2 - 54\, y_j b^i B r_{00|0}\,\beta^2 \\
&+135 b^i y_j r_{00} r_0\,\beta^2 - 16 b^i B^2 \beta^5 s_0\, r_j + 32\,B b^i \beta^5 s_0 r_j - 36\,B b^i r_{00}\beta^4 r_j + 9\,B b^i r_{00}\beta^3 r_{j0} + 80\,B^2 y^i r_0\,\beta^3 r_{j0} + 272\,B y^i r_0\,\beta^3 r_{j0} \\
&-36\,B y^i r_{00}\beta^2 r_{j0} + 192\,B y^i \beta^4 s_0\, r_j - 16\,B^2 y^i r_{00}\beta^3 r_j - 64\,B y^i r_{00}\beta^3 r_j + 8\,B^3 r^i{}_0 \beta^4 s_0\, b_j - 120\,B^2 r^i{}_0 \beta^4 s_0\, b_j - 162\,B r^i{}_0 \beta^4 s_0\, b_j \\
&+18\,B r^i{}_0 r_{00}\,\beta^3 b_j - 32\,B^3 r^i{}_0 \beta^3 s_0\, y_j - 96\,B^2 r^i{}_0 \beta^3 s_0\, y_j + 288\,B r^i{}_0 \beta^3 s_0\, y_j - 54\,B r^i{}_0 r_{00}\beta^2 y_j - 32 b^i y_j B^3 \beta^3 s_{0|0} - 560 b^i y_j B^2 \beta^3 s^2{}_0 \\
&-496 b^i y_j s^k{}_0 \beta^4 s_k - 96 b^i y_j B^2 \beta^3 s_{0|0} + 2368 b^i y_j B \beta^3 s^2{}_0 + 288 b^i y_j B \beta^3 s_{0|0} + 178 b^i y_j s^k{}_0 r_{k0}\,\beta^3 - 304 b^i y_j r_0\, s_0\,\beta^3 + 16\,\beta^4 y^i b_j s_k s^k{}_0 \\
&-306 b^i y_j \beta^2 s_0 r_{00} + 45 b^i y_j B r^2{}_{00}\beta + 69\,\beta^2 y^i b_j B r_{00|0} - 78\,\beta^2 y^i b_j r_{00}\, r_0 - 297\,\beta^2 y^i b_j s_0 r_{00} + 69\,\beta y^i b_j B r^2{}_{00} + 192\,\beta^3 y^i b_j B^2 s_{0|0} \\
&+\beta^3 y^i b_j B s^2{}_0 - 24\,\beta^2 y^i b_j B^3 r_{00|0} + \beta^3 y^i b_j B s_{0|0} - 270\,\beta^3 y^i b_j r_{k0} s^k{}_0 + 48\,\beta^3 y^i b_j s_0\, r_0 - \beta^2 y^i b_j B^2 r_{00|0} + 84\,\beta y^i b_j B^2 r^2{}_{00} \\
&+36\,B b^i r_0\,\beta^4 r_{j0} + 96\,B^3 s^i{}_k s^k{}_0 \beta^5 b_j + B^2 s^i{}_0 \beta^4 s_0\, b_j - 3348 B s^i{}_0 \beta^4 s_0 b_j - B^2 y^i s^k{}_j \beta^4 r_{k0} - 144 B y^i s^k{}_j \beta^4 r_{k0} - 24 B^2 b^i s^k{}_j \beta^5 r_{k0} \\
&-24\,B^2 y^i r_{00}\beta^2 r_{j0} - 138\,B b^i s^k{}_j \beta^5 r_{k0} - 72\,B^2 b^i s^k{}_j \beta^6 s_k + B b^i s^k{}_j \beta^6 s_k - B^3 b^i s^k{}_0 \beta^5 r_{jk} + 32\,B^3 s^i r_{00}\beta^3 y_j + 336\,B s^i \beta^4 s_0\, y_j \\
&+24\,B^2 s^i r_{00}\beta^3 y_j + B^2 s^i r_{00}\beta^4 b_j - 90\,B s^i r_{00}\beta^4 b_j + B^3 s^i \beta^4 s_0\, y_j + 32\,B^4 s^i{}_k s^k{}_0 \beta^4 y_j - 512\,B^3 s^i{}_k s^k{}_0 \beta^4 y_j + 480\,B^2 s^i{}_k s^k{}_0 \beta^4 y_j \\
&+448\,B s^i{}_k s^k{}_0 \beta^4 y_j - 54\,B b^i r_{00}\beta^4 s_j + 18 b^i b_j B^2 r_{00|0}\,\beta^3 + 156\,\beta y^i y_j B r_{00|0} - 152\,\beta y^i y_j r_{00} r_0 - 8\,\beta y^i y_j s_0 r_{00} + 162\,B^2 s^i{}_0 r_{00}\beta^3 b_j \\
&+18\,B^2 r^i{}_0 r_{00}\beta^3 b_j + \beta^2 y_j y^i B^2 s^2{}_0 + B^2 y^i s^k{}_0 \beta^4 r_{jk} + 288\,B y^i s^k{}_0 \beta^4 r_{jk} + 333\,B y^i r_{00}\,\beta^2 s_{0j} - 32\,B^3 y^i s^k{}_j \beta^5 s_k + 96\,B^2 y^i s^k{}_j \beta^5 s_k \\
&+144\,B^2 y^i r_{00}\beta^2 s_{0j} - 96\,B y^i r_0\,\beta^4 s_j - 96\,B y^i \beta^4 s_0\, s_j + 8\,B^2 y^i r_{00}\beta^3 s_j + 8\,B y^i r_{00}\,\beta^3 s_j + 72\,B^3 b^i \beta^4 s_0\, s_{0j} + 112 r^i{}_0 \beta^4 s_0\, b_j \\
&-36 r^i{}_0 r_{00}\beta^3 b_j + 62\, y^i r_0\,\beta^3 r_{j0} - 3\, y^i r_{00}\beta^2 r_{j0} - 8\,B^3 b^i \beta^5 s_{j|0} + 24\,B^2 b^i \beta^5 s_{j|0} + 138\,B b^i \beta^5 s_{j|0} - 46\, b^i r_0\,\beta^5 s_j + 336\,B y^i s^k{}_j \beta^5 s_k \\
&+576 b^i \beta^4 s_0 s_{0j} - 63 b^i r_{00}\beta^3 s_{0j} + 96 B^3 s^i{}_k s^k{}_j \beta^6 + y^i \beta^4 s_0 r_j - 10 y^i r_{00}\beta^3 r_j + B y^i \beta^3 r_{00|j} - 288 B^2 s^i{}_k s^k{}_j \beta^6 + b^i y_j B^2 s^k{}_0 \beta^4 s_k \\
&-54 s^i{}_0 r_{00}\beta^3 b_j + 72\,B^2 s^i \beta^6 s_j + 7\, s^i r_{00}\beta^3 y_j - 67\, s^i r_{00}\beta^4 b_j - 144\,B s^i \beta^6 s_j - 72\,B^4 s^i{}_0 \beta^4 s_{0j} + 1152\,B^3 s^i{}_0 \beta^4 s_{0j} - 1404\,B^2 s^i{}_0 \beta^4 s_{0j} \\
&-360\,B s^i{}_0 \beta^4 s_{0j} + 38\,\beta^4 s^i{}_k s^k{}_0 y_j + 120 s^i{}_k s^k{}_0 \beta^5 b_j + 32\,\beta^5 y^i s_k s^k{}_j + 18\,\beta^4 y^i r_{k0} s^k{}_j - 36\,\beta^4 y^i r_{jk} s^k{}_0 - 80\, s^i \beta^4 s_0\, y_j - 8\,B^3 s^i \beta^5 r_{j0} \\
&+24\,B^2 s^i \beta^5 r_{j0} + 138\,B s^i \beta^5 r_{j0} - 288\,B^2 y^i \beta^4 s_{0|j} - 288\,B y^i \beta^4 s_{0|j} - 324\, y^i \beta^3 s_0\, s_{0j} + 81\, y^i r_{00}\beta^2 s_{0j} - 48\, y^i r_0\,\beta^4 s_j - 48\, y^i \beta^4 s_0 s_j \\
&+11\, y^i r_{00}\,\beta^3 s_j + 144\,B^2 y^i \beta^4 s_{j|0} + 144\,B y^i \beta^4 s_{j|0} + 16\, b^i s^k{}_0 \beta^5 r_{jk} + 130\, b^i \beta^5 s_0\, s_j - 27\, b^i r_{00}\beta^4 s_j + 90\, b^i s^k{}_j \beta^6 s_k + 128\,B^3 s^i{}_{0|0} \beta^4 b_j \\
&-360\,B s^i{}_k s^k{}_j \beta^6 - 8\,B^3 r^i{}_0 \beta^5 s_j + 24\,B^2 r^i{}_0 \beta^5 s_j + 138\,B r^i{}_0 \beta^5 s_j + 258\, s^i \beta^5 s_0\, b_j + 558 s^i{}_0 \beta^3 s_0 y_j - 153 s^i{}_0 r_{00}\beta^2 y_j - 342 s^i{}_0 \beta^4 s_0 b_j \\
&-12 B^2 s^i{}_{0|0} \beta^4 b_j - B s^i{}_{0|0} \beta^4 b_j + 24 B^4 s^i{}_{0|0} \beta^3 y_j - 8 B^4 s^i{}_{0|0} \beta^4 b_j - B^2 s^i{}_{0|0} \beta^3 y_j + B s^i{}_{0|0} \beta^3 y_j - 8 b^i s^k{}_j \beta^5 r_{k0} + 16 B^3 b^i \beta^5 s_{0|j} \\
&-48\,B^2 b^i \beta^5 s_{0|j} - 276\,B b^i \beta^5 s_{0|j} + 92\, b^i \beta^5 s_0 r_j - 18\, b^i r_{00}\beta^4 r_j + 54\,B^2 b^i \beta^4 r_{00|j} + 54\,B b^i \beta^4 r_{00|j} - 54\,B^2 r^i{}_0 \beta^4 r_{j0} - 54\,B r^i{}_0 \beta^4 r_{j0} \\
&+164 r^i{}_0 \beta^3 s_0\, y_j - 27 r^i{}_0 r_{00}\beta^2 y_j + 58\,\beta y^i y_j r_{00|0} - 18 y^i y_j B^2 r^2{}_{00} - 24 y^i y_j B r^2{}_{00} - 48\,B^3 s^i{}_{0|0} \beta^3 y_j - 208\,\beta^2 y^i y_j s^2{}_0 - 136\,\beta^2 y^i y_j s_{0|0} \\
&+18\, b^i r_0\,\beta^4 r_{j0} - 9\, b^i r_{00}\beta^3 r_{j0} + 54\,B^2 r^i{}_j r_{00}\beta^4 + 54\,B r^i{}_j r_{00}\beta^4 + 16\,B^3 r^i{}_j \beta^5 s_0 - 48\,B^2 r^i{}_j \beta^5 s_0 - 276\,B r^i{}_j \beta^5 s_0 - 54\,B^2 b^i \beta^4 r_{j0|0} \\
&-54\,B b^i \beta^4 r_{j0|0} - 64\,\beta^5 \delta^i{}_j s_k s^k{}_0 + \beta^4 \delta^i{}_j B^2 s_{0|0} - 192\beta^4 \delta^i{}_j B s^2{}_0 - 8\beta^3 \delta^i{}_j B^3 r_{00|0} + b_j b^i \beta^4 s^2{}_0 + 112 b_j b^i \beta^4 s_{0|0} - 36 b_j b^i r_{00|0}\beta^3 \\
&+y_j b^i \beta^3 s^2{}_0 + 164 y_j b^i s_{0|0}\beta^3 + \beta^4 \delta^i{}_j B s_{0|0} - 36\beta^4 \delta^i{}_j r_{k0} s^k{}_0 - \beta^4 \delta^i{}_j s_0 r_0 - 48\beta^3 \delta^i{}_j B^2 r_{00|0} - 15\beta^3 \delta^i{}_j B r_{00|0} + 20\beta^3 \delta^i{}_j r_{00} r_0 \\
&-64\,\beta^3 \delta^i{}_j s_0 r_{00} + \beta^2 \delta^i{}_j B r^2{}_{00} - \beta^3 y^i b_j s_{0|0} + \beta^2 y^i b_j r_{00|0} + 126 b^i b_j r^2{}_{00}\beta^2 + 16 y^i B^3 \beta^3 r_{00|j} + 96 B^2 y^i \beta^3 r_{00|j} - 27 b^i y_j r_{00|0}\beta^2 \\
&+36 b^i y_j \beta r^2{}_{00} + 11\beta^3 y^i b_j s^2{}_0 - 16 B^3 y^i \beta^3 r_{j0|0} - 9 B^2 y^i \beta^3 r_{j0|0} - 30 B y^i \beta^3 r_{j0|0} - 2 r^i{}_j r_{00}\beta^4 - 16 r^i{}_j \beta^5 s_0 - 27 b^i \beta^4 r_{00|j} \\
&+6 y^i y_j r^2{}_{00} + 27 b^i \beta^4 r_{j0|0} + 27 r^i{}_0 \beta^4 r_{j0} - 9\beta^4 \delta^i{}_j s^2{}_0 - 18\beta^4 \delta^i{}_j s_{0|0} + 17\beta^3 \delta^i{}_j r_{00|0} + 21\beta^2 \delta^i{}_j r^2{}_{00} - 34\beta^3 y^i r_{00|j} + 34\beta^3 y^i r_{j0|0} \\
&+8\, b^i \beta^5 s_{j|0} - 23 s^i{}_{0|0} \beta^4 b_j - 90\, s^i \beta^6 s_j - 18\,\beta^4 y^i s_{j|0} + 36\,\beta^4 y^i s_{0|j} + 8 r^i{}_0 \beta^5 s_j - 45 s^i{}_0 \beta^4 s_{0j} + 57 s^i{}_{0|0} \beta^3 y_j + 8\,B^4 s^i{}_{j|0} \beta^5 \\
&-32\,B^3 s^i{}_{j|0} \beta^5 - 276\,B^2 s^i{}_{j|0} \beta^5 + 64\,B^3 s^i{}_{0|j} \beta^5 + 552\,B^2 s^i{}_{0|j} \beta^5 + 64\,B s^i{}_{0|j} \beta^5 + 66 s^i{}_k s^k{}_j \beta^6 + 89 s^i{}_{j|0} \beta^5 - 178 s^i{}_{0|j} \beta^5 \\
&+384\,\beta^3 y_j y^i B s^k{}_0 s_k - 96\beta^2 y^i y_j B^2 s^k{}_0 r_{k0} - 352\beta^2 y^i y_j B^2 r_0 s_0 - 840\beta^2 y^i y_j B s^k{}_0 r_{k0} - 64\beta^2 y^i y_j B r_0 s_0 + 64\beta y^i y_j B^2 r_0 r_{00} \\
&-164\beta y^i y_j B r_0 r_{00} + 316\beta y^i y_j B r_{00} s_0 - 128\beta^3 y^i y_j B^3 s^k{}_0 s_k - 90 b^i b_j B r_0 r_{00}\beta^3 + 52\beta^3 y^i b_j B^2 s^k{}_0 r_{k0} - 96\beta^3 y^i b_j B^2 r_0 s_0 \\
&-384\beta^3 y^i b_j B r_0 s_0 + 96\beta^2 y^i b_j B^2 r_0 r_{00} - 600\beta^2 y^i b_j B^2 r_{00} s_0 + 72\beta^2 y^i b_j B r_0 r_{00} - 1344\beta^2 y^i b_j B r_{00} s_0 + 32\beta^4 y^i b_j B^3 s^k{}_0 s_k \\
&+96\beta^3 y^i b_j B^3 s^k{}_0 r_{k0} - 720\beta^4 y^i b_j B s^k{}_0 s_k - 72 b^i y_j B^2 r_{00}\beta^2 s_0 - 648 b^i y_j B r_{00}\beta^2 r_0 - 864\beta^3 y^i y_j B^2 s^k{}_0 s_k - 32 b^i y_j B^3 s^k{}_0 \beta^4 s_k \\
&+32 b^i y_j B^3 s^k{}_0 r_{k0}\,\beta^3 - 48 b^i y_j B s^k{}_0 \beta^4 s_k - 48 b^i y_j B^2 s^k{}_0 r_{k0}\beta^3 + 32 b^i y_j B^2 r_0\,\beta^3 s_0 + 272 b^i y_j B r_0\,\beta^3 s_0 - 342 b^i b_j B s^k{}_0 r_{k0}\,\beta^4 \\
&+72 b^i b_j B r_{00}\beta^3 s_0 + 108\,B^2 b^i b_j r_{00}\beta^3 s_0 - 168 b^i b_j B^2 s^k{}_0 \beta^5 s_k - 8 b^i b_j B^3 s^k{}_0 r_{k0}\beta^4 + 84 b^i b_j B s^k{}_0 \beta^5 s_k + 48 b^i b_j B^2 s^k{}_0 r_{k0}\beta^4 \\
&-8 b^i b_j B^2 r_0 \beta^4 s_0 - 16 b^i \beta^5 s_{0|j} + 224\,\beta^2 y^i y_j B^3 s^k{}_0 r_{k0} + 16\beta y_j y^i B^2 r_{00} s_0 - 192\beta^3 y^i b_j B s^k{}_0 r_{k0} - 32 B s^i{}_{j|0} \beta^5 - 16 B^4 s^i{}_{0|j} \beta^5 \\
&+184 b^i b_j B r_0\,\beta^4 s_0 - 19\beta^4 y^i b_j B^2 s^k{}_0 s_k \Big] - 144 \hat{R}^i{}_j \beta^{10}\,(2\,B+1)\,(B+2)\,(B-1)
\end{aligned}
$$

$$t_{12} := -6y_j\beta^8\left(32B^3b^is^2{}_0 + 8\,B^4s^i{}_{0|0} + 16B^2b^is^2{}_0 + 16s^i{}_{0|0}B^3 - 344Bb^is^2{}_0 - 96\,B^2s^i{}_{0|0} - 136\,b^is^2{}_0 - 104\,Bs^i{}_{0|0} - 13s^i{}_{0|0}\right)$$

$$\begin{aligned}t_{13} := {}& +64By^i\beta^4s_0s_j - 8B^2y^ir_{00}\beta^3s_j - 16B^4s^i{}_ks^k{}_0\beta^5b_j + 32B^3y^is^k{}_j\beta^4r_{k0} + 48B^2y^is^k{}_j\beta^4r_{k0} - 84By^is^k{}_j\beta^4r_{k0} - 576B^3s^i{}_0\beta^4s_0b_j\\
&-104Bb^i\beta^5s_0s_j + 12B^2b^ir_{00}\beta^4s_j - 234B^2y^ir_{00}\beta^2s_{0j} - 45By^ir_{00}\beta^2s_{0j} - 192B^3y^i\beta^3s_0s_{0j} + 1152B^2y^i\beta^3s_0s_{0j} - 72B^3y^ir_{00}\beta^2s_{0j}\\
&+4By^i\beta^3s_0s_{0j} - 28\beta^2y^iy_js_0r_0 + 768\beta^2y^iy_jB^2s^2{}_0 - 216\beta^3y^iy_js_ks^k{}_0 - 432B^2s^i{}_0r_{00}\beta^3b_j - 16B^3s^i\beta^6s_j - 12B^2b^ir_0\beta^4r_{j0}\\
&-12\,Bb^ir_0\,\beta^4r_{j0} - 12\,Bb^i\beta^4s_0\,r_{j0} + 9\,Bb^ir_{00}\beta^3r_{j0} + 128\,B^3s^i{}_{0|0}\beta^3y_j + 300\beta y^iy_jBr_{00}s_0 + 96\,\beta y^iy_jB^2r_0r_{00} - 48\,\beta y^iy_jB^2r_{00}s_0\\
&+192\beta^3y^iy_jB^3s^k{}_0s_k - 62\beta^3y^iy_jB^2s^k{}_0s_k + 96\beta^2y^iy_jB^3s^k{}_0r_{k0} - 816\beta^3y^iy_jBs^k{}_0s_k + 82y^ir_0\beta^3r_{j0} + 624\beta^2y^iy_jB^2s^k{}_0r_{k0}\\
&+552\,\beta^2y^iy_jBs^k{}_0r_{k0} - 15\,y^ir_{00}\beta^2r_{j0} - 16\,B^2b^i\beta^5s_0\,r_j - 112\,Bb^i\beta^5s_0\,r_j + 12\,B^2b^ir_{00}\beta^4r_j + 12\,Bb^ir_{00}\beta^4r_j - 80\,B^2y^ir_0\,\beta^3r_{j0}\\
&-64B^2y^i\beta^4s_0\,r_j - By^i\beta^4s_0\,r_j + 16\,B^2y^ir_{00}\beta^3r_j - 8\,By^ir_{00}r_j + 16\,By^ir_0\beta^3r_{j0} + 6\,B^2y^ir_{00}\beta^2r_{j0} - 18\,By^ir_{00}\beta^2r_{j0} - B^4s^i{}_{0|j}\beta^5\\
&-18y^iy_jr^2{}_{00} + \beta^2y^ib_jB^2r_{00}s_0 - \beta^2y^ib_jBr_{00}s_0 + \beta^4y^ib_jB^3s^k{}_0s_k + \beta^4y^ib_jB^2s^k{}_0s_k - 28\beta^3y^ib_jB^3s^k{}_0r_{k0}\\
&-33\beta^4b_jy^iBs^k{}_0s_k + 256\beta^3y^ib_jB^2r_0s_0 + 58\beta^3y^ib_jBs^k{}_0r_{k0} - 32\beta^3y^ib_jBr_0s_0 - 32\beta^2y^ib_jB^2r_0r_{00} - 35b^ib_jr_0r_{00}\beta^3\\
&-54b^ib_jBr^2{}_{00}\beta^2 + 288b^iy_jB^2s^k{}_0\beta^4s_k + 72b^iy_jBs^k{}_0\beta^4s_k + 48b^iy_jB^2s^k{}_0r_{k0}\beta^3 - 204b^iy_jBs^k{}_0r_{k0}\beta^3 + 33b^iy_jBr_0\beta^3s_0\\
&+387b^ib_jr_{00}\beta^3s_0 + 72b^iy_jB^2r_{00}\beta^2s_0 - 306b^iy_jBr_{00}\beta^2s_0 + 34\,\beta^3y^ir_{00|j} - 34\,\beta^3y^ir_{j0|0} - 184\beta^4\delta^i{}_js^2{}_0 + 50\,\beta^4\delta^i{}_js_{0|0}\\
&-17\beta^3\delta^i{}_jr_{00|0} + 60b^iy_js^k{}_0\beta^4s_k - 192b^iy_jB^2\beta^3s_{0|0} + 560b^iy_jB\beta^3s^2{}_0 - 156\,y_jb^iB\beta^3s_{0|0} - 6b^iy_js^k{}_0r_{k0}\beta^3 - 224\,B^3s^i{}_{0|j}\beta^5\\
&+312b^iy_jr_0s_0\beta^3 + 18b^iy_jB^2r_{00|0}\,\beta^2 + 18b^iy_jBr_{00|0}\,\beta^2 - 45b^iy_jr_{00}r_0\,\beta^2 - 360b^iy_j\beta^2s_0r_{00} + 18b^iy_jBr^2{}_{00}\beta - 832b^iy_jB^2\beta^3s^2{}_0\\
&-64\,\beta^3y^ib_jB^3s_{0|0} - 1088\,\beta^3y^ib_jB^2s^2{}_0 - 324\,\beta^4y^ib_js_ks^k{}_0 - 96\,\beta^3y^ib_jB^2s_{0|0} + 640\,\beta^3y^ib_jBs^2{}_0 - 288\,B^2s^i\beta^4s_0\,y_j - 24\,Bs^ir_{00}\beta^3y_j\\
&+162\,\beta y^iy_js_0r_{00} + 240\,\beta^2y^iy_jB^2s_{0|0} - 192\,\beta^2y^iy_jBs^2{}_0 - 24\,\beta y^iy_jB^3r_{00|0} + 240\,\beta^2y^iy_jBs_{0|0} + 132\,\beta^2y^iy_jr_{k0}s^k{}_0 + 496\,Bs^i{}_{0|j}\beta^5\\
&-14s^i{}_{0|0}\beta^3y_j - 57s^i{}_{0|0}\beta^4b_j - 60\,B^2s^i{}_{j|0}\beta^5 - 248\,Bs^i{}_{j|0}\beta^5 - 124\,b^i\beta^5s_{0|j} + 50\,\beta^4y^is_{j|0} - 100\,\beta^4y^is_{0|j} + 62r^i{}_0\beta^5s_j + 8\,B^4s^i{}_{j|0}\beta^5\\
&+62\,s^i\beta^5r_{j0} - 72\,B^3s^i{}_0r_{00}\beta^3b_j - 32\,B^3s^k{}_jy^i\beta^5s_k - 192\,B^2s^k{}_jy^i\beta^5s_k + 216\,B^3b^i\beta^4s_0s_{0j} - 900\,B^2b^i\beta^4s_0s_{0j}\\
&+96\,B^4s^i{}_ks^k{}_0\beta^4y_j - 384\,B^3s^i{}_ks^k{}_0\beta^4y_j + 3024\,B^2s^i{}_0\beta^4s_0\,b_j - 432\,Bs^i{}_0\beta^4s_0\,b_j + 351\,Bs^i{}_0r_{00}\beta^3b_j + 864\,B^3s^i{}_0\beta^3s_0\,y_j\\
&-1296\,B^2s^i{}_0\beta^3s_0\,y_j - 72\,B^3s^i{}_0r_{00}\beta^2y_j - 972\,Bs_0{}^i\beta^3s_0\,y_j + 189\,Bs^i{}_0r_{00}\beta^2y_j + 24b^ib_jB^3\beta^4s_{0|0} + 552\,b_jb^iB^2\beta^4s^2{}_0\\
&+12\,b_jb^iB^2\beta^4s_{0|0} - 2376\,b_jb^iB\beta^4s^2{}_0 - 258b^ib_jB\beta^4s_{0|0} - 240b^ib_js^k{}_0r_{k0}\,\beta^4 - 124r^i{}_j\beta^5s_0 + 39r^i{}_jr_{00}\beta^4\\
&+294b^ib_jr_0\,\beta^4s_0 + 39\,b^i\beta^4r_{00|j} + 54b^ib_jBr_{00|0}\,\beta^3 - 39\,b^i\beta^4r_{j0|0} - 39r^i{}_0\beta^4r_{j0} + 376\,\beta^3y^ib_js^2{}_0 + 136\,\beta^3y^ib_js_{0|0} + 112\,B^3s^i{}_{j|0}\beta^5\\
&-41\,\beta^2y^ib_jr_{00|0} + 27\,\beta y^ib_jr^2{}_{00} - 16y^iB^3\beta^3r_{00|j} + 12\,B^2y^i\beta^3r_{00|j} + 78\,By^i\beta^3r_{00|j} - 28\,y^ir_0\,\beta^4s_j + 16\,y^i\beta^4s_0\,s_j - 112s^i{}_ks^k{}_j\beta^6\\
&+62\,b^i\beta^5s_{j|0} - 11\,y^ir_{00}\beta^3s_j + 68\,\beta^5y^is_ks^k{}_j - 32\,B^3y^i\beta^4s_{j|0} - 48\,B^2y^i\beta^4s_{j|0} + 84\,By^i\beta^4s_{j|0} - 50\,\beta^4y^ir_{k0}s^k{}_j + 100\,\beta^4y^ir_{jk}s^k{}_0\\
&+96\,B^2y^i\beta^4s_{0|j} - 168\,By^i\beta^4s_{0|j} - 96\,y^i\beta^3s_0\,s_{0j} + 27\,y^ir_{00}\beta^2s_{0j} - 24\,B^4s^i{}_{0|0}\beta^4b_j + 48\,B^3s^i{}_{0|0}\beta^4b_j + 324\,B^2s^i{}_{0|0}\beta^4b_j\\
&-288\beta^2y^iy_js^2{}_0 + 60\,\beta^2y^iy_js_{0|0} - 18\,\beta y^iy_jr_{00|0} - 16\,B^4s^i{}_ks^k{}_j\beta^6 + 8\,\beta^2y^ib_jB^3r_{00|0} + 24\beta^3y^ib_jBs_{0|0}\\
&-188\,\beta^3y^ib_js_0\,r_0 - 66\,\beta^2y^ib_jB^2r_{00|0} + 18\,\beta y^ib_jB^2r^2{}_{00} - 117\,\beta^2y^ib_jBr_{00|0} + 100\,\beta^2y^ib_jr_{00}r_0 - 173\,\beta^2y^ib_js_0r_{00}\\
&-102r^i{}_0\beta^4s_0\,b_j + 27r^i{}_0r_{00}\beta^3b_j - 32\,\beta^4\delta^i{}_jB^3s_{0|0} + 128\,\beta^4\delta^i{}_jB^2s^2{}_0 - 136\,\beta^5\delta^i{}_js_ks^k{}_0 - 48\,\beta^4\delta^i{}_jB^2s_{0|0} + 128\,\beta^4\delta^i{}_jBs^2{}_0\\
&+84\,\beta^4\delta^i{}_jBs_{0|0} - 6\,\beta^3\delta^i{}_jB^2r_{00|0} + 100\,\beta^4\delta^i{}_jr_{k0}s^k{}_0 - 112\,\beta^4\delta^i{}_js_0\,r_0 - 6\,\beta^2\delta^i{}_jB^2r^2{}_{00} - 39\,\beta^3\delta^i{}_jBr_{00|0} + 52\beta^3\delta^i{}_jr_{00}r_0\\
&-30\beta^2\delta^i{}_jBr^2{}_{00} + 16B^3b^is^k{}_j\beta^6s_k - 96\beta y_jy^iB^2r_{00|0} - 78\beta y_jy^iBr_{00|0} + 90\beta y_jy^ir_{00}r_0 + 16B^3y^i\beta^3r_{j0|0} - 12B^2y^i\beta^3r_{j0|0}\\
&-78\,By^i\beta^3r_{j0|0} - 30b^i\beta^4s_0\,r_{j0} + 18b^ir_{00}\beta^3r_{j0} - 1002b^ib_j\beta^4s^2{}_0 - 102b^ib_j\beta^4s_{0|0} + 27b^ib_jr_{00|0}\beta^3 - 54b^ib_jr^2{}_{00}\beta^2\\
&-48Bs^i{}_{0|0}\beta^4b_j - 84\,B^2r^i{}_0\beta^5s_j + 30Br^i{}_0\beta^5s_j + 64\beta^5\delta^i{}_jB^3s^k{}_0s_k + 384\beta^5\delta^i{}_jB^2s^k{}_0s_k - 64\beta^4\delta^i{}_jB^3s^k{}_0r_{k0} - 96\beta^5\delta^i{}_jBs^k{}_0s_k\\
&+76b^iy_j\beta^3s^2{}_0 + 24b^iy_js_{0|0}\beta^3 - 9b^iy_jr_{00|0}\beta^2 + 45b^iy_j\beta r^2{}_{00} - 5s^i{}_{j|0}\beta^5 + 110s^i_{0|j}\beta^5 + 16b^ib_jB^3s^k{}_0\beta^5s_k - 4b^ib_jB^2s^k_0\beta^5s_k\\
&+180b^ib_jBs^k_0\beta^5s_k + 132b^ib_jB^2s^k_0r_{k0}\beta^4 - 24b^ib_jB^2r_0\beta^4s_0 - 30b^ib_jBs^k_0r_{k0}\beta^4 - 216b^ib_jBr_0\beta^4s_0 + 68b^ib_jBr_{00}\beta^3s_0\\
&+72\,B^2b^ir_{00}\beta^3s_0\,b_j + 48\,Bs^i{}_ks^k{}_0\beta^4y_j + 352\,B^3s^i{}_ks^k{}_0\beta^5b_j - 744\,B^2s^i{}_ks^k{}_0\beta^5b_j - 152\,Bs^i{}_ks^k{}_0\beta^5b_j + 60\,B^2s^ir_{00}\beta^4b_j\\
&+48Bs^k{}_jy^i\beta^5s_k - 168B^2b^is^k{}_0\beta^5r_{jk} - 8By^ir_{00}\beta^3s_j + 60\,Bb^is^k{}_0\beta^5r_{jk} + 18Bb^ir_{00}\beta^3s_{0j} + 8B^2b^ir_0\beta^5s_j - 8B^2b^i\beta^5s_0s_j\\
&+56Bb^ir_0\beta^5s_j + 72B^2b^ir_{00}\beta^3s_{0j} + 8\,B^3b^is^k{}_j\beta^5r_{k0} + 84\,B^2b^is^k{}_j\beta^5r_{k0} - 30\,Bb^is^k{}_j\beta^5r_{k0} + 12\,Bb^ir_{00}\beta^4s_j - 64\,B^3s^k{}_0y^i\beta^4r_{jk}\\
&-468\,Bs^i\beta^5s_0\,b_j - 120\,B^2b^is^k{}_j\beta^6s_k - 132\,Bb^is^k{}_j\beta^6s_k - 16\,B^3b^is^k{}_0\beta^5r_{jk} + 96\,B^3s^i\beta^4s_0\,y_j + 144\,Bs^i\beta^4s_0\,y_j + 120\,B^2s^ir_{00}\beta^3y_j\\
&+16B^2s^i\beta^5s_0b_j - 24B^3s^ir_{00}\beta^4b_j + 24B^3r^i_0\beta^4s_0b_j + 12B^2r^i_0\beta^4s_0b_j - 25Br^i_0\beta^4s_0b_j + 54Br^i_0r_{00}\beta^3b_j - 96\beta^4\delta^i_jB^2s^k_0r_{k0}\\
&+168\,\beta^4\delta^i{}_jBs_0{}^kr_{k0} + 128\,\beta^4\delta^i{}_jBr_0\,s_0 - 32\,\beta^3\delta^i{}_jB^2r_0r_{00} - 32\,\beta^3\delta^i{}_jB^2r_{00}s_0 + 16\,\beta^3\delta^i{}_jBr_0r_{00} + 112\,\beta^3\delta^i{}_jBr_{00}s_0\\
&+16\,B^3r^i{}_j\beta^5s_0 + 168\,B^2r^i{}_j\beta^5s_0 - 12\,B^3r^i{}_jr_{00}\beta^4 - 60\,Br^i{}_j\beta^5s_0 - 18\,B^2r^i{}_jr_{00}\beta^4 + 72\,Br^i{}_jr_{00}\beta^4 + 12\,B^3b^i\beta^4r_{j0|0}\\
&-72\,Bb^i\beta^4r_{j0|0} + 12\,B^3r^i{}_0\beta^4r_{j0} + 72\,Br^i{}_jr_{00}\beta^4 + 24r^i{}_0\beta^3s_0\,y_j - 9r^i{}_0r_{00}\beta^2y_j - 12\,B^3b^i\beta^4r_{00|j} - 18B^2b^i\beta^4r_{00|j}\end{aligned}$$

$$
\begin{aligned}
&+72Bb^i\beta^4 r_{00|j} - 72Br^i{}_0\beta^4 r_{j0} + 18B^2 r^i{}_0\beta^4 r_{j0} - 192B^2 r^i{}_0\beta^3 s_0 y_j - 156Br^i{}_0\beta^3 s_0 y_j + 20\, b^i\beta^5 s_0\, r_j - 24\, b^i r_{00}\beta^4 r_j + 56\, y^i\beta^4 s_0\, r_j \\
&-6Bb^i\beta^5 s_{0|j} - 10b^i r_0\beta^5 s_j + 58b^i\beta^5 s_0 s_j - 51b^i r_{00}\beta^4 s_j - 29Bs^i_k s^k_j\beta^6 + 234b^i\beta^4 s_0 s_{0j} - 90b^i r_{00}\beta^3 s_{0j} + 18B^2 r^i{}_0 r_{00}\beta^2 y_j \\
&-84\, B^2 b^i\beta^5 s_{j|0} + 30\, Bb^i\beta^5 s_{j|0} + 160\, B^3 s^i{}_k s^k{}_j\beta^6 + 264\, B^2 s^i{}_k s^k{}_j\beta^6 - 156\, B^2 s^i{}_{0|0}\beta^3 y_j - 136\, Bs^i{}_{0|0}\beta^3 y_j + 48 s^i\beta^4 s_0\, y_j \\
&+154 s^i\beta^5 s_0\, b_j - 69 s^i r_{00}\beta^4 b_j + 120B^2 s^i\beta^6 s_j + 132Bs^i\beta^6 s_j - 8\, B^3 s^i\beta^5 r_{j0} - 84\, B^2 s^i\beta^5 r_{j0} + 30Bs^i\beta^5 r_{j0} + 16B^3 b^i\beta^5 s_{0|j} \\
&+42\,\beta^4 s^i{}_k s^k{}_0 y_j - 216\, B^4 s^i{}_0\beta^4 s_{0j} + 1008\, B^3 s^i{}_0\beta^4 s_{0j} - 108\, B^2 s^i{}_0\beta^4 s_{\ 0j} - 54 s^i{}_0\beta^3 s_0\, y_j - 9 s^i{}_0 r_{00}\beta^2 y_j - 558 s^i{}_0\beta^4 s_0 b_j \\
&-96\beta^2 y^i y_j B^2 r_0 s_0 - 12B^2 b^i\beta^4 s_0 r_{j0} + 153 s^i{}_0 r_{00}\beta^3 b_j + 16\, B^4 s^i{}_{0|0}\beta^3 y_j + 74\, b^i s^k{}_j\beta^6 s_k - 62\, b^i s^k{}_j\beta^5 r_{k0} + 124\, b^i s^k{}_0\beta^5 r_{jk} \\
&+168\, B^2 b^i\beta^5 s_{0|j} - 96\, B^2 s^k{}_0 y^i\beta^4 r_{jk}\Big] + 6\hat{R}^i{}_j\beta^8\left(8\, B^4 + 16\, B^3 - 96\, B^2 - 104\, B - 13\right)
\end{aligned}
$$

$$
t_{14} := -8\beta^6 y_j\left(16\, B^3 b^i s^2_0 + 144\, B^2 b^i s^2_0 + 36 s^i{}_{0|0} B^3 + 42\, Bb^i s^2_0 + 54\, B^2 s^i{}_{0|0} - 40\, b^i s^2_0 - 9 s^i{}_{0|0}\right)
$$

$$
\begin{aligned}
t_{15} := 4\beta^2\Big[&384\, B^3 y^i\beta^3 s_0\, s_{0j} - 336\, B^2 s^i\beta^5 s_0\, b_j - 144 B^2 y^i\beta^3 s_0\, s_{0j} - 36\, B^3 y^i r_{00}\beta^2 s_{0j} - 432 By^i\beta^3 s_0\, s_{0j} + 72\, B^2 y^i r_{00}\beta^2 s_{0j} \\
&+80\, Bb^i\beta^5 s_0 s_j - 576\, B^3 s^i{}_0\beta^3 s_0 y_j - 216\, B^2 s^i{}_0\beta^3 s_0\, y_j + 108\, B^3 s^i{}_0 r_{00}\beta^2 y_j + 216\, Bs^i{}_0\beta^3 s_0\, y_j + 16\, B^2 b^i r_0\,\beta^5 s_j - 16\, B^2 b^i\beta^5 s_0\, s_j \\
&-32\, Bb^i r_0\,\beta^5 s_j + 864 B^3 s^i{}_0\beta^4 s_0 b_j - 1296\, B^2 s^i{}_0\beta^4 s_0 b_j - 240\, B^3 b^i\beta^4 s_0 s_{0j} + 144 B^2 b^i\beta^4 s_0 s_{0j} - 16 b^i b_j B^3\beta^4 s_{0|0} - 32\, B^2 b^i\beta^5 s_0 r_j \\
&-36\, Bb^i r_{00}\beta^4 r_j - 64\,\beta^5\delta^i_j s_k s^k_0 + 64\,\beta^2 y^i y_j B^3 s_{0|0} - 640\,\beta^2 y^i y_j B^2 s^2_0 + 96\, B^2 s^i\beta^4 s_0\, y_j + 96\,\beta^2 y^i y_j B^2 s_{0|0} - 640\,\beta^2 y^i y_j Bs^2_0 \\
&-16\,\beta y^i y_j B^3 r_{00|0} + 48\,\beta^2 y^i y_j Bs_{0|0} + 16\,\beta^2 y^i y_j r_{k0} s^k_0 - 64\,\beta^2 y^i y_j s_0\, r_0 + 18 b^i b_j B^2 r_{00|0}\,\beta^3 + 32\, B^3 r^i{}_j\beta^5 s_0 - 96\, B^2 r^i{}_j\beta^5 s_0 \\
&-28Br^i{}_j\beta^5 s_0 + 54B^2 r^i{}_j r_{00}\beta^4 + 54Br^i{}_j r_{00}\beta^4 - 54B^2 b^i\beta^4 r_{j0|0} - 54Bb^i\beta^4 r_{j0|0} + 54B^2 b^i\beta^4 r_{00|j} + 54Bb^i\beta^4 r_{00|j} - 32\beta^3 y_j y^i s_k s^k_0 \\
&-24\beta y^i y_j B^2 r_{00|0} - 2\beta y^i y_j Br_{00|0} - 24Bs^i r_{00}\beta^3 y_j + 16\beta y^i y_j r_{00} r_0 + 64\beta y^i y_j s_0 r_{00} + 2B^4 s^i_k s^k_j\beta^6 + 8\beta^2 y^i y_j s_{0|0} - 2\,\beta y^i y_j r_{00|0} \\
&-24 y^i y_j B^2 r^2_{00} - 24 y^i y_j Br^2_{00} + 48\, B^2 s^i\beta^6 s_j - 192\, Bs^i\beta^6 s_j - 16\, B^3 s^i\beta^5 r_{j0} + 48\, B^2 s^i\beta^5 r_{j0} + 114\, Bs^i\beta^5 r_{j0} - 132\, y^i\beta^3 s_0 s_{0j} \\
&+36\beta^4 y^i r_{jk} s^k_0 - 24 s^i\beta^4 s_0 y_j + 72 B^2 y^i\beta^4 s_{j|0} + 72 By^i\beta^4 s_{j|0} + s^i r_{00}\beta^3 y_j + 8Bs^i{}_{0|0}\beta^3 y_j - 16\beta^2 y^i y_j s^2_0 + 64 Bb^i\beta^5 s_0 r_j \\
&+16 B^4 s^i{}_{0|0}\beta^4 b_j + 128 B^3 s^i{}_{0|0}\beta^4 b_j - 156 B^2 s^i{}_{0|0}\beta^4 b_j - 136 Bs^i{}_{0|0}\beta^4 b_j - 84 B^2 s^i{}_{0|0}\beta^3 y_j - 16 B^3 b^i\beta^5 s_{j|0} + 48 B^2 b^i\beta^5 s_{j|0} \\
&+114 Bb^i\beta^5 s_{j|0} - 228 Bb^i\beta^5 s_{0|j} - 16 B^3 r^i{}_0\beta^5 s_j + 48\, B^2 r^i{}_0\beta^5 s_j + 114\, Br^i{}_0\beta^5 s_j + 32\, B^3 b^i\beta^5 s_{0|j} - 96\, B^2 b^i\beta^5 s_{0|j} - 24\, y^i r_0\,\beta^4 s_j \\
&+y^i r_{00}\beta^3 s_j - 192\beta^4\delta^i_j s^2_0 + 18\beta^4\delta^i_j s_{0|0} - 5\beta^3\delta^i_j r_{00|0} + 10\beta^3 y^i r_{00|j} - 10\beta^3 y^i r_{j0|0} - 20\beta^2 y^i b_j B^3 r_{00|0} + 240\beta^3 y^i b_j Bs_{0|0} \\
&-72 B^3 s^i{}_0 r_{00}\beta^3 b_j + 4 B^2 y^i r_{00}\beta^3 s_j + 4 By^i r_{00}\beta^3 s_j - 48 By^i\beta^4 s_0 s_j + 336\, Bs^i\beta^5 s_0 b_j + 46 Bb^i\beta^4 s_0 s_{0j} - 18 B^2 b^i r_{00}\beta^3 s_{0j} \\
&-126 Bb^i r_{00}\beta^3 s_{0j} + 64\, B^3 s^i\beta^5 s_0 b_j - 114 Bb^i s^k_j\beta^5 r_{k0} + 120 Bs^k_j y^i\beta^5 s_k + 64\, B^4 s^i_k s^k_0\beta^5 b_j - 448 B^3 s^i_k s^k_0\beta^5 b_j + 96\, B^2 s^i_k s^k_0\beta^5 b_j \\
&+248\, Bs^i_k s^k_0\beta^5 b_j + 36\, B^2 s^i{}_0\beta^4 s_{0j} + 120\, Bs^i{}_0 s_{0j} + 50\, b^i s^k_j\beta^6 s_k - 144\, B^2 y^i\beta^4 s_{0|j} - 144\, By^i s_{0|j} + 96\, b^i\beta^4 s_0 s_{0j} - 18 b^i r_{00}\beta^3 s_{0j} \\
&+98 s^i\beta^5 s_0\, b_j - 31\, s^i r_{00}\beta^4 b_j + 98\, b^i\beta^5 s_0\, s_j - 27\, b^i r_{00}\beta^4 s_j + 64\, B^3 s^i_k s^k_j\beta^6 - 384\, B^2 s^i_k s^k_j\beta^6 - 200\, Bs^i_k s^k_j\beta^6 + 32\,\beta^5 y^i s_k s^k_j \\
&-18\,\beta^4 y^i s^k_j - 16\, b^i s^k_j\beta^5 r_{k0} + 32\, b^i s^k_0\beta^5 r_{jk} - 38\, b^i r_0\,\beta^5 s_j + 40 s^i_k s^k_0\beta^5 b_j + 18\,\beta^4 s^i_k s^k_0 y_j - 72\, B^2 s^k_j y^i\beta^4 r_{k0} - 72 Bs^k_j y^i\beta^4 r_{k0} \\
&-48\, B^2 b^i s^k_j\beta^6 s_k + 192\, Bb^i s^k_j\beta^6 s_k + 16\, B^3 b^i s^k_j\beta^5 r_{k0} - 32\, B^3 s^k_j y^i\beta^5 s_k + 96\, B^2 s^k_j y^i\beta^5 s_k - 48\, B^2 b^i s^k_j\beta^5 r_{k0} - 96\, B^4 s^i_k s^k_0\beta^4 y_j \\
&+144\, B^2 s^i_k s^k_0\beta^4 y_j + 96\, Bs^i_k s^k_0 y_j - 32\, B^3 b^i s^k_0\beta^5 r_{jk} + 96\, B^2 b^i s^k_0 r_{jk} + 228\, Bb^i s^k_0\beta^5 r_{jk} + 72\, B^2 s^i r_{00}\beta^4 b_j + 378\, B^2 s^i{}_0 r_{00}\beta^3 b_j \\
&-32 B^3 b^i s^k_j\beta^6 s_k + 18\, B^2 r^i{}_0 r_{00}\beta^3 b_j - 138 Bs^i r_{00}\beta^4 b_j + 16 B^3 s^i r_{00}\beta^4 b_j + 144 B^2\beta^4 y^i s^k_0 r_{jk} + 144\, B\beta^4 y^i s^k_0 r_{jk} - 96\, B^3 s^i\beta^4 s_0 y_j \\
&+32\, B^3 s^i r_{00}\beta^3 y_j + 24 Bs^i\beta^4 s_0\, y_j - 36\, B^2 s^i r_{00}\beta^3 y_j - 972 Bs^i{}_0\beta^4 s_0\, b_j + 189\, Bs^i{}_0 r_{00}\beta^3 b_j + 160\beta^4 y^i b_j B^3 s^k_0 s_k - 576\beta^4 y^i b_j B^2 s^k_0 s_k \\
&+96\beta^3 y^i b_j B^3 s^k_0 r_{k0} - 66 y^i b_j Bs^k_0 s_k + 408\beta^3 y^i b_j B^2 s^k_0 r_{k0} - 96\beta^3 y^i b_j s_0 + 336\beta^3 y^i b_j s^k_0 r_{k0} - 480\beta^3 y^i b_j Br_0 s_0 + 80\beta^2 y^i b_j B^2 r_0 r_{00} \\
&-148\,\beta^2 y^i b_j B^2 r_{00} s_0 + 164\,\beta^2 y^i b_j Br_0 r_{00} - 16\,\beta^2 y^i b_j Br_{00} s_0 + 192\, b^i y_j B^2 s^k_0\beta^4 s_k + 32 b^i y_j B^3 s^k_0 r_{k0}\,\beta^3 - 168 b^i y_j Bs^k_0\beta^4 s_k \\
&+32 b^i y_j B^2 r_0\beta^3 s_0 + 48 b^i y_j Bs^k_0 r_{k0}\beta^3 + 104 b^i y_j Br_0\,\beta^3 s_0 - 108 b^i y_j\beta^2 s_0 - 180 b^i y_j Br_{00}\beta^2 s_0 + 96 b^i y_j B^3 s_k + 36\, Bb^i r_0\,\beta^4 r_{j0} \\
&+9 Bb^i r_{00}\beta^3 r_{j0} - 32 B^3 s_0\, y_j + 96 Br^i{}_0\beta^3 s_0\, y_j - 6 y^i y_j - 18\, Br^i{}_0 r_{00}\beta^2 y_j + 64\beta^3\delta^i_j Br_0 r_{00} + 208\beta^3\delta^i_j Br_{00} s_0 + 64\beta^5\delta^i_j B^3 s^k_0 s_k \\
&-192\,\beta^5\delta^i_j B^2 s^k_0 s_k - \delta^i_j Bs^k_0 s_k + 144\,\beta^4\delta^i_j B^2 s^k_0 r_{k0} + 144\delta^i_j Bs^k_0 r_{k0} - 192\beta^4\delta^i_j Br_0\, s_0 + 16\,\beta^3\delta^i_j B^2 r_0 r_{00} + 64\,\beta^3\delta^i_j B^2 r_{00} s_0 \\
&-848 b_j b^i B^2\beta^4 s^2_0 + 10 b^i b_j s^k_0\beta^5 s_k - 144 b^i b_j B^2\beta^4 s_{0|0} + 544 b^i b_j B\beta^4 s^2_0 - 42 b^i b_j B\beta^4 s_{0|0} - 22 b^i b_j s^k_0 r_{k0}\,\beta^4 + 274 b^i b_j r_0\,\beta^4 s_0 \\
&+18 b^i b_j Br_{00|0}\beta^3 - 5 b^i b_j\beta^3 - 33 b^i b_j r_{00}\beta^3 s_0 + 9 b^i b_j Br^2_{00}\beta^2 + 46 b^i y_j s^k_0 r_{k0}\beta^3 - 16 b^i y_j r_0 s_0\beta^3 - 18 b^i y_j\beta^2 + 45 b^i y_j r_{00} r_0\beta^2 \\
&+240\beta^3 y^i b_j B^2 s_{0|0} + 240\beta^3 y^i b_j Bs^2_0 + 768\beta^3 y^i b_j B^2 s^2_0 - 184\,\beta^4 y^i b_j s_k s^k_0 + 32\, B^3 s^i\beta^6 s_j - 112\, B^3 s^i{}_{0|0}\beta^3 y_j - 8\, B^3 y^i\beta^3 r_{j0|0} \\
&-48\, B^2 y^i\beta^3 r_{j0|0} - 42\, By^i\beta^3 r_{j0|0} + 18\, b^i r_0\,\beta^4 r_{j0} + 16\, s^i{}_{j|0}\beta^5 - 32 s^i{}_{0|j}\beta^5 + 78\,\beta^3 y^i b_j r_{k0} s^k_0 - 50\, s^i\beta^6 s_j - 216\,\beta^3 y^i b_j s_0\, r_0 \\
&-54 b^i y_j\beta^2 s_0 r_{00} + 15 b^i y_j Br^2_{00}\beta + 48\, y^i\beta^4 s_0 r_j - 14 y^i r_{00}\beta^3 r_j + 58\, y^i r_0\beta^3 r_{j0} - 9 y^i r_{00}\beta^2 r_{j0} + 40 r^i_0\beta^4 s_0 b_j - 9 r^i_0 r_{00}\beta^3 b_j \\
&-72\beta^2 y^i b_j B^2 r_{00|0} + 6\,\beta y^i b_j B^2 r^2_{00} - 57\,\beta^2 y^i b_j Br_{00|0} - 12 s^i{}_0\beta^4 s_{0j} + 62\,\beta^2 y^i b_j r_{00} r_0 + 29\beta^2 y^i b_j s_0 r_{00} + 3\,\beta y^i b_j r^2_{00} \\
&+3 b^i b_j B^2 s^k_0\beta^5 s_k + 16 b^i b_j B^3 s^k_0 r_{k0} + 528 b^i b_j Bs^k_0\beta^5 s_k + 16 b^i b_j r_0\beta^4 s_0 - b^i b_j Bs^k_0 r_{k0}\beta^4 + 304 b^i b_j Br_0\beta^4 s_0 - 252 b^i b_j Br_{00}\beta^3 s_0 \\
&-32 b^i y_j B^3\beta^3 s_{0|0} + 576 b^i y_j B^2\beta^3 s^2_0 - 36\beta^4 y^i s_{0|j} - 120 b^i y_j s^k_0\beta^4 s_k + 648 b^i y_j B\beta^3 s^2_0 + 96 b^i y_j B\beta^3 s_{0|0} + 72 B^2 b^i r_{00}\beta^3 s_0 b_j
\end{aligned}
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\begin{aligned}
&-64b^i b_j B^3 s^k{}_0\beta^5 s_k - 32r^i{}_j\beta^5 s_0 - 256\beta^3 y^i y_j B^3 s^k{}_0 s_k - 384\,\beta^3 y^i y_j B^2 s^k{}_0 s_k + 128\beta^2 y^i y_j B^3 s^k{}_0 r_{k0} - 192\beta^3 y^i y_j B s^k{}_0 s_k \\
&+96\,\beta^2 y^i y_j B s^k{}_0 r_{k0} - 256\,\beta^2 y^i y_j B r_0 s_0 - 90\,b^i b_j B r_0 r_{00}\beta^3 + 64\beta y^i y_j B^2 r_0 r_{00} + 256\beta y^i y_j B^2 r_{00} s_0 + 64\beta y^i y_j B r_0 r_{00} \\
&+16\,s^i\beta^5 r_{j0} + 16\,b^i\beta^5 s_{j|0} + 16 r^i{}_0\beta^5 s_j + 16B^4 s^i{}_{j|0}\beta^5 - 32B^4 s^i_{0|j}\beta^5 + 128B^3 s^i{}_{0|j}\beta^5 - 9\beta^2\delta^i{}_j r^2{}_{00} + 45B^2 s^i{}_{0|j}\beta^5 \\
&+2s^i{}_k s^k{}_j\beta^6 - 32b^i\beta^5 s_{0|j} + 128Bs^i{}_{0|j}\beta^5 + 10s^i{}_{0|0}\beta^3 y_j - 14s^i{}_{0|0}\beta^4 b_j - B^3 s^i{}_{j|0}\beta^5 - 2\,B^2 s^i{}_{j|0}\beta^5 - 64\,Bs^i{}_{j|0}\beta^5 + 8\,B^3 y^i\beta^3 r_{00|j} \\
&+48\,B^2 y^i\beta^3 r_{00|j} + 42\,By^i\beta^3 r_{00|j} - 72\beta^3 y^i b_j s^2{}_0 + 60\,\beta^3 y^i b_j s_{0|0} - 13\,\beta^2 y^i b_j r_{00|0} + 108\,b^i y_j\beta^3 s^2{}_0 + 44\,b^i y_j s_{0|0}\,\beta^3 - 9\,b^i y_j r_{00|0}\,\beta^2 \\
&+12\,b^i y_j\beta r^2{}_{00} + 754\,b^i b_j\beta^4 s^2{}_0 + 40\,b^i b_j\beta^4 s_{0|0} - 9\,b^i b_j r_{00|0}\,\beta^3 + 45\,b^i b_j r^2{}_{00}\beta^2 + 72\,\beta^4\delta^i{}_j B^2 s_{0|0} - 384\,\beta^4\delta^i{}_j B s^2{}_0 - 4\,\beta^3\delta^i{}_j B^3 r_{00|0} \\
&+36\,\beta^4\delta^i{}_j r_{k0} s^k{}_0 - 96\,\beta^4\delta^i{}_j s_0\, r_0 - 24\,\beta^3\delta^i{}_j B^2 r_{00|0} - 12\,\beta^2\delta^i{}_j B^2 r^2{}_{00} - 21\,\beta^3\delta^i{}_j B r_{00|0} + 28\,\beta^3\delta^i{}_j r_{00}\, r_0 + 18\beta^4 y^i s_{j|0} \\
&+88\,\beta^3\delta^i{}_j s_0 r_{00} - 24\,\beta^2\delta^i{}_j B r^2{}_{00} + 90 s^i{}_0\beta^3 s_0 y_j - 27 s^i{}_0 r_{00}\beta^2 y_j - 54 s^i{}_0\beta^4 s_0\, b_j - 9 s^i{}_0 r_{00}\beta^3 b_j + 240B^4 s^i{}_0\beta^4 s_{0j} - 384B^3 s^i{}_0\beta^4 s_{0j} \\
&+96By^i\beta^4 s_0 r_j - 8B^2 y^i r_{00}\beta^3 r_j - 32By^i r_{00}\beta^3 r_j + 40\,B^2 y^i r_0\beta^3 r_{j0} - 16B^3 r^i{}_0\beta^4 s_0 b_j - 144\,B^2 r^i{}_0\beta^4 s_0\, b_j - 42\,Br^i{}_0\beta^4 s_0\, b_j \\
&+136\,By^i r_0\,\beta^3 r_{j0} - 12\,B^2 y^i r_{00}\beta^2 r_{j0} - 24\,By^i r_{00}\beta^2 r_{j0} - 54\,B^2 r^i{}_0\beta^4 r_{j0} - 54\,Br^i{}_0\beta^4 r_{j0} + 44 r^i{}_0\beta^3 s_0\, y_j - 9 r^i{}_0 r_{00}\beta^2 y_j \\
&+76\,b^i\beta^5 s_0\, r_j - 18\,b^i r_{00}\beta^4 r_j - 54Bb^i r_{00}\beta^4 s_j - 48\,By^i r_0\,\beta^4 s_j + 192\beta^2 y^i y_j B^2 s^k{}_0 r_{k0}\Big] + 72\hat{R}^i{}_j\beta^6\,(2\,B+1)\left(2\,B^2+2\,B-1\right)
\end{aligned}
$$

$$
t_{16} := \beta^4 y_j\,(2B+1)\left(64\,B^2 b^i s^2{}_0 + 24 s^i{}_{0|0} B^3 - 272\,Bb^i s^2{}_0 + 36\,B^2 s^i{}_{0|0} - 224\,b^i s^2{}_0 - 90Bs^i{}_{0|0} - 51 s^i{}_{0|0}\right)
$$

$$
\begin{aligned}
t_{17} := 2\beta\Big[&-96\,B^2 s^i{}_k s^k{}_0\beta^3 y_j - 32\,Bs^i{}_k s^k{}_0\beta^3 y_j + 72\,B^2 b^i r_{00}\beta^2 s_{0j} - 36\,Bb^i r_{00}\beta^2 s_{0j} - 128\,\beta^2 y^i b_j B^3 s_{0|0} + 896\,\beta^2 y^i b_j B^2 s^2{}_0 \\
&-20\,b^i y_j s^k{}_0 r_{k0}\,\beta^2 + 128\,b^i y_j r_0\, s_0\,\beta^2 + 12b^i y_j B^2 r_{00|0}\,\beta - 36\,b^i b_j B r^2{}_{00}\beta + 32\,b^i b_j B^3\beta^3 s_{0|0} - 1184\,b^i b_j B^2\beta^3 s^2{}_0 + 204\,b^i b_j s^k{}_0\beta^4 s_k \\
&-1328 b^i b_j B\beta^3 s^2{}_0 - 180\,b^i b_j B\beta^3 s_{0|0} - 124\,b^i b_j s^k{}_0 r_{k0}\,\beta^3 - 96\,B^2 r^i{}_0\beta^2 s_0\, y_j - 24\,Bb^i r_0\,\beta^3 r_{j0} - 24\,Bb^i\beta^3 s_0\, r_{j0} + 6\,Bb^i r_{00}\beta^2 r_{j0} \\
&-24\,B^2 b^i\beta^3 s_0\, r_{j0} + 432\,B^2 s^i{}_0\beta^3 s_0\, b_j - 432\,Bs^i{}_0\beta^3 s_0\, b_j + 162\,Bs^i{}_0 r_{00}\beta^2 b_j + 576\,B^2 y^i\beta^2 s_0\, s_{0j} - 72\,B^3 y^i r_{00}\beta\, s_{0j} \\
&-108\,B^2 y^i r_{00}\beta\, s_{0j} - 54\,By^i r_{00}\beta\, s_{0j} + 32\,B^2 b^i r_0\,\beta^4 s_j - 32\,B^2 b^i\beta^4 s_0\, s_j + 80\,Bb^i r_0\,\beta^4 s_j + 48\,B^2 y^i s^k{}_j\beta^3 r_{k0} + 24\,By^i s^k{}_j\beta^3 r_{k0} \\
&-384B^3 s^i{}_k s^k{}_0\beta^4 b_j - 432\,B^2 s^i_k s^k{}_0\beta^4 b_j + 32\,B^3 b^i s^k{}_j\beta^4 r_{k0} + 120\,B^2 b^i s^k{}_j\beta^4 r_{k0} - 12\,Bb^i s^k{}_j\beta^4 r_{k0} - 288\,B^2 b^i s^k{}_j\beta^5 s_k - 72\,Bb^i s^k{}_j\beta^5 s_k \\
&+48\,Bs^i\beta^3 s_0\, y_j - 32b^i y_j B^3\beta^2 s_{0|0} + 56\,b^i y_j s^k{}_0\beta^3 s_k - 96\,b^i y_j B^2\beta^2 s_{0|0} - 72\,b^i y_j B\beta^2 s_{0|0} + 192\,B^2 s^i r_{00}\beta^3 b_j + 36\,Bs^i r_{00}\beta^3 b_j \\
&-96\,B^2 y^i s^k{}_0\beta^3 r_{jk} - 48\,By^i s^k{}_0\beta^3 r_{jk} - 288\,B^3 b^i\beta^3 s_0\, s_{0j} - 216\,B^2 b^i\beta^3 s_0\, s_{0j} + 32\,B^2 y^i r_0\,\beta^3 s_j + 64\,B^2 y^i\beta^3 s_0\, s_j + 32\,By^i r_0\,\beta^3 s_j \\
&+64By^i\beta^3 s_0 s_j - 8\,B^2 y^i r_{\ 00}\beta^2 s_j + 36\beta\, b_j y^i B^2 r_{00|0} + 18\beta\, b_j y^i B r_{00|0} - 24\beta b_j y^i r_{00} r_0 - 78\,\beta\, b_j y^i s_0 r_{00} + 56\,\beta^3 y^i b_j s_k s^k{}_0 \\
&-192\,\beta^2 y^i b_j B^2 s_{0|0} + 352\,b^i y_j B^2\beta^2 s^2{}_0 + 688\,b^i y_j B\beta^2 s^2{}_0 - 128\,Bb^i\beta^4 s_0\, s_j + 24\,B^2 b^i r_{00}\beta^3 s_j + 54\,Bs^i{}_0 r_{00}\beta\, y_j + 12\,b^i y_j B r_{00|0}\beta \\
&-30\,b^i y_j r_{00} r_0\,\beta - 96\,y_j b^i\beta\, s_0 r_{00} - 64\,B^3 y^i s^k{}_j\beta^4 s_k - 96\,B^2 y^i s^k{}_j\beta^4 s_k - 48\,By^i s^k{}_j\beta^4 s_k - 64\,B^3 b^i s^k{}_0\beta^4 r_{jk} - 240\,B^2 b^i s^k{}_0\beta^4 r_{jk} \\
&+128\beta^4\delta^i{}_j B^3 s^k{}_0 s_k - 72\,Br^i{}_0\beta^2 s_0\, y_j + 12\,B^2 r^i{}_0 r_{00}\beta\, y_j + 12\,Br^i{}_0 r_{00}\beta\, y_j - 32\,B^3 r^i{}_0\beta^2 s_0\, y_j + 268 b^i b_j r_0\,\beta^3 s_0 + 36\,b^i b_j B r_{00|0}\,\beta^2 \\
&-90\,b^i b_j r_0 r_{00}\beta^2 + 162\,b^i b_j r_{00}\beta^2 s_0 + \beta^4\delta^i{}_j B^2 s^k{}_0 s_k - \beta^3\delta^i{}_j B^3 s^k{}_0 r_{k0} + 96\,\beta^4\delta^i{}_j B s^k{}_0 s_k - 96\,\beta^3\delta^i{}_j B^2 s^k{}_0 r_{k0} + \beta^3\delta^i{}_j B^2 r_0\, s_0 \\
&-128\,\beta^2\delta^i{}_j B r_{00} s_0 - 64\,B^3 y^i s^k{}_0\beta^3 r_{jk} + 192\,B^4 s^i{}_k s^k{}_0\beta^4 b_j + 288\,By^i\beta^2 s_0\, s_{0j} - 24\,B^2 b^i r_0\,\beta^3 r_{j0} - 120\,b^i b_j B^2\beta^3 s_{0|0} \\
&+128\,\beta^3\delta^i{}_j B r_0\, s_0 - 32\,\beta^2\delta^i{}_j B^2 r_0 r_{00} - 20\,\beta^2 y^i b_j r_{k0} s^k{}_0 + 104\,\beta^2 y^i b_j s_0\, r_0 - 64\,B^2 b^i\beta^4 s_0\, r_j - 160\,Bb^i\beta^4 s_0\, r_j + 24\,B^2 b^i r_{00}\beta^3 r_j \\
&-64\,B^2 y^i\beta^3 s_0\, r_j - 64\,By^i\beta^3 s_0\, r_j + 16\,B^2 y^i r_{00}\beta^2 r_j + 16\,By^i r_{00}\beta^2 r_j - 120\,B^2 r^i{}_0\beta^3 s_0\, b_j - 180\,Br^i{}_0\beta^3 s_0\, b_j + 36\,Br^i{}_0 r_{00}\beta^2 b_j \\
&-80\,By^i r_0\,\beta^2 r_{j0} + 12\,B^2 y^i r_{00}\beta\, r_{j0} + 12\,By^i r_{00}\beta\, r_{j0} + 32\,B^3 r^i{}_0\beta^3 s_0\, b_j - 288\,B^3 s^i{}_0\beta^2 s_0\, y_j - 432\,B^2 s^i{}_0\beta^2 s_0\, y_j + 72\,B^3 s^i{}_0 r_{00}\beta\, y_j \\
&-216\,Bs^i{}_0\beta^2 s_0\, y_j + 192\,B^3 s^i\beta^4 s_0\, b_j - 480\,B^2 s^i\beta^4 s_0\, b_j - 32\,B^3 s^i r_{00}\beta^3 b_j - 120\,Bs^i\beta^4 s_0\, b_j - 64\,B^4 s^i{}_k s^k{}_0\beta^3 y_j - 128\,B^3 s^i{}_k s^k{}_0\beta^3 y_j \\
&+24\,\beta\, y^i b_j B^3 r_{00|0} - 96\,\beta^2 y^i b_j B s_{0|0} + 24\,Bb^i r_{00}\beta^3 s_j + 108\,Bb^i\beta^3 s_0\, s_{0j} - 216\,B^3 s^i{}_0 r_{00}\beta^2 b_j - 64\,B^3 s^i\beta^3 s_0\, y_j + 32\,B^3 s^i r_{00}\beta^2 y_j \\
&-128\,\beta^2\delta^i{}_j B^2 r_{00} s_0 - 32\,\beta^2\delta^i{}_j B r_0 r_{00} + 32\,B^3 y^i s^k{}_j\beta^3 r_{k0} + 24\,Bb^i s^k{}_0\beta^4 r_{jk} + 384\,B^3 y^i\beta^2 s_0\, s_{0j} - 48\,Bs^i{}_k s^k{}_0\beta^4 b_j + 24\,B^2 s^i r_{00}\beta^2 y_j \\
&+\beta^2\delta^i{}_j r_{00|0} + 16\,B^3 y^i\beta^2 r_{j0|0} + 24\,B^2 y^i\beta^2 r_{j0|0} + 12\,By^i\beta^2 r_{j0|0} + 12\,b^i r_{00}\beta^2 r_{j0} - 260\,b_j b^i\beta^3 s^2{}_0 - 56\,b_j b^i\beta^3 s_{0|0} + 18\,b_j b^i r_{00|0}\,\beta^2 \\
&+16\,\beta^4\delta^i{}_j s_k s^k{}_0 - 48\,\beta^3\delta^i{}_j B^2 s_{0|0} + 320\,\beta^3\delta^i{}_j Bs^2{}_0 + 8\,\beta^2\delta^i{}_j B^3 r_{00|0} - 24\,\beta^3\delta^i{}_j Bs_{0|0} - 8\,\beta^3\delta^i{}_j r_{k0} s^k{}_0 + 108\,B^2 s^i{}_0 r_{00}\beta y_j \\
&+32\beta^3\delta^i{}_j s_0\, r_0 + 12\,\beta^2\delta^i{}_j B^2 r_{00|0} + 12\,\beta\delta^i{}_j B^2 r^2{}_{00} + 6\,\beta^2\delta^i{}_j B r_{00|0} - 8\,\beta^2\delta^i{}_j r_{00}\, r_0 - 32\,\beta^2\delta^i{}_j s_0 r_{00} + 12\,\beta\delta^i{}_j B r^2{}_{00} - 32\beta^3\delta^i{}_j B^3 s_{0|0} \\
&-16B^3 y^i\beta^2 r_{00|j} - 24B^2 y^i\beta^2 r_{00|j} - 12\,By^i\beta^2 r_{00|j} + 12\,y_j b^i B r^2{}_{00} - 120\,B^2 r^i{}_0\beta^4 s_j + 12\,Br^i{}_0\beta^4 s_j + 288\,B^4 s^i{}_0\beta^3 s_{0j} \\
&-24\,B^3 r^i{}_j r_{00}\beta^3 - 24\,Br^i_j\beta^4 s_0 - 36\,B^2 r^i{}_j r_{00}\beta^3 + 36\,Br^i{}_j r_{00}\beta^3 - 24\,B^3 b^i\beta^3 r_{00|j} - 36\,B^2 b^i\beta^3 r_{00|j} + 36\,Bb^i\beta^3 r_{00|j} \\
&+64\,B^3 r^i{}_j\beta^4 s_0 + 240\,B^2 r^i{}_j\beta^4 s_0 + 24\,B^3 r^i{}_0\beta^3 r_{j0} + 36\,B^2 r^i{}_0\beta^3 r_{j0} - 36\,Br^i{}_0\beta^3 r_{j0} + 8\,b^i\beta^4 s_0\, r_j - 16\,y^i\beta^3 s_0\, r_j + 4\,y^i r_{00}\beta^2 r_j \\
&-20\,y^i r_0\,\beta^2 r_{j0} + 3\,y^i r_{00}\beta\, r_{j0} - 216\,B^2 s^i{}_0\beta^3 s_{0j} + 144\,Bs^i{}_0\beta^3 s_{0j} + 12\,Bb^i\beta^4 s_{j|0} - 120\,B^2 b^i\beta^4 s_{j|0} + 8\,y^i r_0\beta^3 s_j + 16\,y^i\beta^3 s_0 s_j \\
&-12\,b^i r_{00}\beta^3 r_j + 48 y^i\beta^2 s_0 s_{0j} - 9 y^i r_{00}\beta s_{0j} - 2\,y^i r_{00}\beta^2 s_j - 4b^i r_0\beta^4 s_j + 52b^i\beta^4 s_0 s_j - 30\,b^i r_{00}\beta^3 s_j + 72\,b^i\beta^3 s_0\, s_{0j} - 36\,b^i r_{00}\beta^2 s_{0j} \\
&-32\,B^3 b^i\beta^4 s_{j|0} + 24\,B^3 b^i\beta^3 r_{j0|0} + 36\,B^2 b^i\beta^3 r_{j0|0} - 36\,Bb^i\beta^3 r_{j0|0} - 56 r^i{}_0\beta^3 s_0\, b_j + 18 r^i{}_0 r_{00}\beta^2 b_j - 16 r^i{}_0\beta^2 s_0\, y_j + 3 r^i{}_0 r_{00}\beta\, y_j
\end{aligned}
$$

$$
\begin{aligned}
&-32\,b^i s^k{}_j \beta^4 r_{k0} + 64\,b^i s^k{}_0 \beta^4 r_{jk} - 32\,B^4 s^i{}_{0|0} \beta^3 b_j + 224\,B^3 s^i{}_{0|0} \beta^3 b_j + 168\,B^2 s^i{}_{0|0} \beta^3 b_j - 16\,B s^i{}_{0|0} \beta^3 b_j + 4\,\beta^3 y^i r_{k0} s^k{}_j \\
&-32 B^3 s^i \beta^4 r_{j0} - 120 B^2 s^i \beta^4 r_{j0} + 12 B s^i \beta^4 r_{j0} - 24 B b^i \beta^4 s_{0|j} - 180 s^i{}_0 \beta^3 s_0 b_j + 54 s^i{}_0 r_{00} \beta^2 b_j + 9 s^i{}_0 r_{00} \beta y_j - 8 \beta^4 y^i s_k s^k{}_j \\
&+384 B^3 s^i{}_k s^k{}_j \beta^5 - 32 B^3 y^i \beta^3 s_{j|0} + 48 B^4 s^i{}_{0|0} \beta^2 y_j - 2 s^i r_{00} \beta^2 y_j + 64 B^3 y^i \beta^3 s_{0|j} + 96 B^2 y^i \beta^3 s_{0|j} + 48 B y^i \beta^3 s_{0|j} - 36 s^i{}_0 \beta^2 s_0 y_j \\
&-4 \beta^3 s^i{}_k s^k{}_0 y_j + 24 s^i{}_k s^k{}_0 \beta^4 b_j + 16 s^i \beta^3 s_0 y_j - 32 B^3 r^i{}_0 \beta^4 s_j + 24\,b_j y^i B^2 r^2{}_{00} + 24\,b_j y^i B r^2{}_{00} + 64\,B^3 b^i \beta^4 s_{0|j} + 240\,B^2 b^i \beta^4 s_{0|j} \\
&-24\,B y^i \beta^3 s_{j|0} + 84\,s^i \beta^4 s_0\,b_j - 34\,s^i r_{00} \beta^3 b_j + 256 b^i y_j \beta^2 s^2_0 - 16 b^i y_j s_{0|0}\,\beta^2 + 3 b^i y_j r_{00|0}\,\beta + 224\,\beta^2 y^i b_j s^2_0 - 16\,\beta^2 y^i b_j s_{0|0} \\
&+3\,\beta y^i b_j r_{00|0} + 12\,b^i r_0\,\beta^3 r_{j0} - 24\,b^i \beta^3 s_0\,r_{j0} - 72\,B^2 s^i{}_{0|0} \beta^2 y_j - 48\,B s^i{}_{0|0} \beta^2 y_j + 32\,B^4 s^i{}_{j|0} \beta^4 + 48\,B^2 s^i{}_{0|j} \beta^4 - 9 s^i{}_{0|0} \beta^2 y_j \\
&+256\,B s^i{}_{0|j} \beta^4 + 160\,B^3 s^i{}_{j|0} \beta^4 - 24\,B^2 s^i{}_{j|0} \beta^4 - 128\,B s^i{}_{j|0} \beta^4 - 4\,\beta^3 y^i s_{j|0} + 8\,\beta^3 y^i s_{0|j} - 36\,s^i \beta^5 s_j + 32\,s^i \beta^4 r_{j0} - 64\,b^i \beta^4 s_{0|j} \\
&+32 r^i{}_0 \beta^4 s_j + 32\,b^i \beta^4 s_{j|0} - 60 s^i{}_k s^k{}_j \beta^5 + 72 s^i{}_0 \beta^3 s_{0j} - 20 s^i{}_{0|0} \beta^3 b_j - 64\,B^4 s^i{}_{0|j} \beta^4 - 320\,B^3 s^i{}_{0|j} \beta^4 + 80\,\beta^3 \delta^i{}_j s^2_0 - 4\,\beta^3 \delta^i{}_j s_{0|0} \\
&+3\,\beta \delta^i{}_j r^2_{00} - 2\,\beta^2 y^i r_{\,00|j} + 2\,\beta^2 y^i r_{j0|0} - 64 r^i{}_j \beta^4 s_0 + 24 r^i{}_j r_{00} \beta^3 + 24\,b^i \beta^3 r_{00|j} - 24\,b^i \beta^3 r_{j0|0} - 24 r^i{}_0 \beta^3 r_{j0} + 6 b^i y_j r^2_{00} \\
&+6 y^i b_j r^2_{00} + 288\,B^2 s^i \beta^5 s_j - 40 s^i_{j|0} \beta^4 + 80 s^i{}_{0|j} \beta^4 + 672\,\beta^3 b_j y^i B^2 s^k{}_0 s_k - 160\,\beta^2 y^i b_j B^3 s^k{}_0 r_{k0} + 336\,\beta^3 y^i b_j B s^k{}_0 s_k \\
&+416\,\beta^2 y^i b_j B^2 r_0 s_0 - 120 \beta^2 y^i b_j B s^k{}_0 r_{k0} + 416 \beta^2 y^i b_j B r_0 s_0 - 96 \beta y^i b_j B^2 r_0 r_{00} - 12 \beta y^i b_j B^2 r_{00} s_0 + 72 B s^i \beta^5 s_j + 36 b^i s^k{}_j \beta^5 s_k \\
&-312 \beta y^i b_j B r_{00} s_0 + 48 \beta^3 y^i b_j B^3 s^k{}_0 s_k + 8 b^i y_j B^2 s^k{}_0 \beta^3 s_k + 32 b^i y_j B^3 s^k{}_0 r_{k0} \beta^2 + 24 b^i y_j B s^k{}_0 \beta^3 s_k - 48 b^i y_j B^2 s^k{}_0 r_{k0} \beta^2 \\
&+272 b^i y_j B r_0\,\beta^2 s_0 - 72 b^i y_j B^2 r_{00} \beta\, s_0 - 60 b^i y_j B r_0 r_{00} \beta - 228 b^i y_j B r_{00} \beta\, s_0 + 64 b^i y_j B^3 s^k{}_0 \beta^3 s_k - 32 b^i b_j B^3 s^k{}_0 r_{k0}\,\beta^3 \\
&+24 b^i b_j B^2 s^k{}_0 r_{k0} \beta^3 - 32 b^i b_j B^2 r_0 \beta^3 s_0 - 10 b^i b_j B s^k_0 r_{k0} \beta^3 - 128 b^i b_j B r_0 \beta^3 s_0 + 360 b^i b_j B r_{00} \beta^2 s_0 + 21 B^2 b^i r_{00} \beta^2 s_0 b_j \\
&+144\,B^2 s^i{}_k s^k{}_j \beta^5 - 192 b^i b_j B^3 s^k{}_0 \beta^4 s_k - 96 b^i b_j B^2 s^k{}_0 \beta^4 s_k + 32 b^i y_j B^2 r_0\,\beta^2 s_0 + 896\,\beta^2 y^i b_j B s^2_0 - 80\,B^2 y^i r_0\,\beta^2 r_{j0} + 24\,B b^i r_{00} \beta^3 r_j \\
&-144\,B s^i{}_k s^k{}_j \beta^5 - 240\,\beta^2 y^i b_j B^2 s^k{}_0 r_{k0} \Big] - 3 \hat{R}^i{}_j \beta^4\,(2\,B+1)^2\,\Big(4\,B^2 + 4\,B - 17\Big)
\end{aligned}
$$

$$t_{18} := 12 \beta^2 y_j\,(2B+1)^2\,\Big(4\,B b^i s^2_0 + 2 B s^i{}_{0|0} + s^i{}_{0|0}\Big)$$

$$
\begin{aligned}
t_{19} := 2(2B+1)\Big(&144 B^2 s^i{}_0 \beta^2 s_0 b_j + 144 B s^i{}_0 \beta^2 s_0 b_j - 36 B^2 s^i{}_0 r_{00} \beta b_j - 8 B^2 b^i s^k{}_j \beta^3 r_{k0} + 28\,B b^i s^k{}_j \beta^3 r_{k0} \\
&+12 B^2 s^i{}_{0|0} \beta y_j - 72\,B^2 b^i \beta^2 s_0\, s_{0j} - B b^i \beta^2 s_0\, s_{0j} - s^i{}_0 r_{00} \beta b_j - 6 b^i b_j B r_{00|0}\,\beta + 30 b^i b_j r_{00} r_0\,\beta + 78 b^i b_j \beta\, s_0 r_{00} + 16 b^i y_j B \beta\, s^2_0 \\
&+32\,B^2 b^i s^k{}_j \beta^4 s_k - 40\,B b^i s^k{}_j \beta^4 s_k + 16\,B b^i \beta^3 s_0\,r_j + 8\,B b^i \beta^3 s_0\,s_j + s^i{}_{0|0} \beta y_j + 64\,B^2 s^i \beta^3 s_0\,b_j - 56\,B s^i \beta^3 s_0\,b_j - 24\,B^2 s^i r_{00} \beta^2 b_j \\
&+24\,B s^i r_{00} \beta^2 b_j + 24\,B^2 r^i{}_0 \beta^2 s_0\,b_j + 12\,B r^i{}_0 \beta^2 s_0\,b_j - 6\,B r^i{}_0 r_{00} \beta\,b_j - 8\,B b^i r_0\,\beta^3 s_j - 48\,B s^i{}_k s^k{}_0 \beta^3 b_j - 28 b^i b_j \beta^3 s_k s^k{}_0 + 32 r^i{}_j \beta^3 s_0 \\
&+24 b^i b_j B^2 \beta^2 s_{0|0} - 168 b^i b_j B \beta^2 s^2_0 + 12 b^i b_j B \beta^2 s_{0|0} + 36 b^i b_j \beta^2 r_{k0} s^k_0 - 108 b^i b_j \beta^2 s_0\,r_0 + 18\,B b^i r_{00} \beta\, s_{0j} + 64\,B^3 s^i{}_k s^k{}_0 \beta^3 b_j \\
&+16\,B^2 b^i s^k{}_0 \beta^3 r_{jk} - 56\,B b^i s^k{}_0 \beta^3 r_{jk} + 18\,B b^i \beta^2 r_{j0|0} + 56 B r^i{}_j \beta^3 s_0 - 18 B r^i{}_j r_{00} \beta^2 + 9 b^i r_{00} \beta s_{0j} + 8 B^2 s^i \beta^3 r_{j0} + 8 B^3 s^i{}_{0|0} \beta y_j \\
&+6 B s^i{}_{0|0} \beta y_j + 8 B^2 r^i{}_0 \beta^3 s_j - 12 b^i r_0 \beta^2 r_{j0} - 3 b^i r_{00} \beta r_{j0} - 28 B r^i{}_0 \beta^3 s_j - 18 B b^i \beta^2 r_{00|j} + 8 y_j b^i \beta s^2_0 - 32 b^i s^k{}_0 \beta^3 r_{jk} - 28 B s^i \beta^3 r_{j0} \\
&+16\,b^i s^k{}_j \beta^3 r_{k0} + 12\,B^2 s^i{}_{0|0} \beta^2 b_j + 30\,B s^i{}_{0|0} \beta^2 b_j + 36 s^i{}_0 \beta^2 s_0\,b_j - 9 s^i{}_0 r_{00} \beta\,b_j + 20\,b^i r_0 \beta^3 s_j - 44 b^i \beta^3 s_0\,s_j - 9 r^i{}_j r_{00} \beta^2 \\
&+18\,b^i r_{00} \beta^2 s_j + 8\,B^2 b^i \beta^3 s_{j|0} - 40\,b^i \beta^3 s_0\,r_j + 12\,b^i r_{00} \beta^2 r_j - 36\,B^2 s^i{}_0 \beta^2 s_{0j} - 90\,B s^i{}_0 \beta^2 s_{0j} - 44\,s^i \beta^3 s_0\,b_j + 18\,s^i r_{00} \beta^2 b_j \\
&+48 B^2 s^i{}_k s^k{}_j \beta^4 + 72 B s^i{}_k s^k{}_j \beta^4 - 16 s^i{}_k s_0{}^k \beta^3 b_j - 28 b^i s^k{}_j \beta^4 s_k - 3 r^i{}_0 r_{00} \beta b_j - 22 b^i b_j \beta^2 s^2_0 - 3 b^i b_j r_{00|0} \beta - 28 B b^i \beta^3 s_{j|0} \\
&-16 B^2 b^i \beta^3 s_{0|j} + b^i \beta^3 s_{0|j} - 32 B^2 s^i \beta^4 s_j + 4 B s^i \beta^4 s_j - r^i_j \beta^3 s_0 - 24\,B^3 s^i{}_{0|0} b_j \beta^2 + 72\,B^3 s^i{}_0 s_{0j} \beta^2 + 9 r^i{}_0 \beta^2 r_{j0} - 22 s^i{}_{0|j} \beta^3 \\
&+9\,b^i \beta^2 r_{j0|0} + 18\,B r^i{}_0 \beta^2 r_{j0} + 32\,b^i \beta^3 s_{0|j} - 3\,b_j b^i r^2_{00} + 20 s^i{}_k s^k{}_j \beta^4 - 9\,b^i \beta^2 r_{00|j} - 24 b^i b_j B^2 s^k{}_0 r_{k0} \beta^2 - 88 b^i b_j B s^k{}_0 \beta^3 s_k \\
&+42\,B s^i{}_{j|0} \beta^3 - 16\,s^i \beta^3 r_{j0} - 16\,b^i \beta^3 s_{j|0} + 9 s^i{}_{0|0} \beta^2 b_j + 16\,B^3 s^i{}_{0|j} \beta^3 - 72\,B^2 s^i{}_{0|j} \beta^3 - 84\,B s^i{}_{0|j} \beta^3 + 28\,s^i \beta^4 s_j - 64 b^i b_j B^2 s^k{}_0 \beta^3 s_k \\
&+11 s^i{}_{j|0} \beta^3 + 60 b^i b_j B s^k{}_0 r_{k0}\,\beta^2 - 24 b^i b_j B r_0 \beta^2 s_0 + 36 B b^i b_j r_{00} \beta s_0\Big) - 12 \hat{R}^i{}_j \beta^2\,(2\,B+1)^3
\end{aligned}
$$

$$t_{20} := -y_j\,(2B+1)^3\,\Big(-8\,b^i s^2_0 + (2B+1) s^i{}_{0|0}\Big)$$

$$
\begin{aligned}
t_{21} := 2\,(2B+1)^2\,\Big(&-4 B^2 s^i{}_{0|0} b_j - 4 B s^i{}_{0|0} b_j - 2\beta^2 s^i{}_k s^k{}_j + 2\beta r^i{}_0 s_j - 4\,\beta b^i s_{0|j} - 4\beta^2 s^i s_j + 2\beta\, s^i r_{j0} + 2\,b^i b_j s_{0|0} + 2 B r^i{}_j r_{00} \\
&-2\,B r^i{}_0 r_{j0} + 2\,B b^i r_{00|j} - 2\,b^i r_{00}\,r_j + 2 r^i{}_0 s_0\,b_j + 2\,b^i r_0\,r_{j0} + 2\,b^i s_0\,r_{j0} - 4\,B^2 s^i{}_{j|0} \beta - 4\,B s^i{}_{j|0} \beta + 8\,B^2 s^i{}_{0|j} \beta - 2\,s^i r_{00} b_j \\
&-4 b^i b_j B s^k{}_0 r_{k0} + 8\,B b^i s^k{}_0 \beta\, r_{jk} + 8\,B b^i s^k{}_j \beta^2 s_k + 8\,B s^i \beta\, s_0\,b_j + 8\,B^2 s^i{}_k s^k{}_0 \beta\, b_j + 8\,B s^i{}_k s^k{}_0 \beta\, b_j - 4 b^i b_j s^k{}_0 \beta\, s_k - 4\,B b^i s^k{}_j \beta r_{k0} \\
&+12 B^2 s^i{}_0 s_{0j} + 12 B s^i{}_0 s_{0j} + 3 s^i{}_0 s_{0j} - \beta s^i{}_{j|0} + 2\beta s^i{}_{0|j} - b^i r_{j0|0} - r^i{}_0 r_{j0} + b^i r_{00|j} + r^i{}_j r_{00} - s^i{}_{0|0} b_j - 8\,B b^i \beta\, s_{0|j} - 8\,B s^i \beta^2 s_j \\
&+4\,B s^i \beta\, r_{j0} - 4 B s^i r_{00} b_j + 2\beta s^i{}_k s^k{}_0 b_j + 4\,B r^i{}_0 \beta s_j + 4 B b^i \beta s_{j|0} + 4\beta^2 b^i s_k s^k_j - 2\beta b^i r_{k0} s^k_j + 4\,\beta\, b^i r_{jk} s^k{}_0 - 12\,B b^i s_0 s_{0j} \\
&-4\,b^i r_0\,\beta\, s_j + 4\,b^i \beta\, s_0\, s_j + 8\,b^i \beta s_0\, r_j + 4 B r^i{}_0 s_0 b_j + 4 b^i b_j s_{0|0}\,B - 2 b^i b_j s^k{}_0 r_{k0} - 4 b^i b_j s_0\, r_0 + 4\,s^i \beta\, s_0 b_j - 6\,b^i s_0\, s_{0j} - 4 b^i b_j s^2_0 \\
&+8\,B s^i{}_{0|j} \beta + 2\,\beta\, b^i s_{j|0} - 8\,B^2 s^i{}_k s^k{}_j \beta^2 - 8\,B s^i{}_k s^k{}_j \beta^2 - 8 b^i b_j B s^k{}_0 \beta s_k\Big) + \hat{R}^i{}_j\,(2\,B+1)^4
\end{aligned}
$$

6. Appendix 2

$$
\begin{aligned}
t'_2 &:= +108\,(2B+1)\,s^i{}_{0|0}\beta^{18}y_j\\
t'_4 &:= -27\beta^{16}y_j\left(8B^2s^i{}_{0|0}+24b^is^2{}_0+8Bs^i{}_{0|0}-7s^i{}_{0|0}\right),\\
t'_6 &:= 24\beta^{14}y_j\big(4s^i{}_{0|0}B^3+42Bb^is^2{}_0+6\,B^2s^i{}_{0|0}-24\,b^is^2{}_0-24Bs^i{}_{0|0}-13s^i{}_{0|0}\big),\\
t'_8 &:= -2\beta^{12}y_j\big(8\,B^4s^i{}_{0|0}+240\,B^2b^is^2{}_0+16B^3s^i{}_{0|0}-696\,Bb^is^2{}_0-312\,B^2s^i{}_{0|0}\\
&\quad -624\,b^is^2{}_0-320\,Bs^i{}_{0|0}+41s^i{}_{0|0}\big)\\
t'_{10} &:= -16y_j\beta^{10}\big(-4B^3b^is^2_0+60B^2b^is^2{}_0+18s^i{}_{0|0}B^3+81Bb^is^2_0+27B^2s^i{}_{0|0}-56b^is^2_0\\
&\quad -27\,Bs^i{}_{0|0}-18s^i{}_{0|0}\big)\\
t'_{12} &:= 6y_j\beta^8\big(32B^3b^is^2{}_0+8\,B^4s^i{}_{0|0}+16B^2b^is^2{}_0+16s^i{}_{0|0}B^3-344Bb^is^2{}_0-96\,B^2s^i{}_{0|0}\\
&\quad -136\,b^is^2{}_0-104\,Bs^i{}_{0|0}-13s^i{}_{0|0}\big)\\
t'_{14} &:= 8\beta^6y_j\big(16\,B^3b^is^2_0+144\,B^2b^is^2{}_0+36s^i{}_{0|0}B^3+42\,Bb^is^2{}_0+54\,B^2s^i{}_{0|0}-40\,b^is^2{}_0\\
&\quad -9s^i{}_{0|0}\big)\\
t'_{16} &:= -\beta^4y_j\,(2B+1)\left(64\,B^2b^is^2{}_0+24s^i{}_{0|0}B^3-272\,Bb^is^2{}_0+36\,B^2s^i{}_{0|0}-224\,b^is^2{}_0\right.\\
&\quad \left.-90Bs^i{}_{0|0}-51s^i{}_{0|0}\right)\\
t'_{18} &:= -12\beta^2y_j\,(2B+1)^2\left(4\,Bb^is^2{}_0+2Bs^i{}_{0|0}+s^i{}_{0|0}\right)
\end{aligned}
$$

7. Appendix 3

$$
\begin{aligned}
t''_2 &:= -6\beta^{14}\big(-243s^i{}_0\beta^4s_{0j}+8By^ir_{00}\beta^2r_{j0}-240\beta^2y^iy_jBs^k_0r_{k0}-24\beta y^iy_jBr_0r_{00}-30\beta^2y^ib_jr_{00|0}+64\beta y^ib_jr^2{}_{00}-3b^ir_{00}\beta^3r_{j0}\\
&\quad -6r^i_0r_{00}\beta^2y_j-162s^i{}_0r_{00}\beta^2y_j-27b^ir_{00}\beta^3s_{0j}+18y^ir_{00}\beta^2s_{0j}-72\beta^4y^ir_{jk}s^k_0+36\beta^4y^ir_{k0}s^k_j+108\beta^4s^i{}_ks^k_0y_j+81s^i{}_0r_{00}\,\beta^3b_j\\
&\quad -9r^i{}_0r_{00}\beta^3b_j-12Br^i{}_0r_{00}\beta^2y_j+18\beta^3\delta^i{}_jBr_{00|0}-24\beta^3\delta^i{}_jr_{00}r_0-16\beta^2\delta^i_jBr^2_{00}+96\beta^2y^iy_jr_{k0}s^k_0+16\beta y^iy_jB^2r_{00|0}\\
&\quad -8\beta y^iy_jBr_{00|0}+48\beta y^iy_jr_{00}r_0-9r^i{}_jr_{00}\beta^4+\beta^3\delta^i{}_jr_{00|0}-\beta^2\delta^i{}_jr^2{}_{00}-36\beta^3y^ir_{00|j}+\beta^3y^ir_{j0|0}-72\beta^4\delta^i{}_jr_{k0}s^k_0+12y^ir_{00}\beta^3r_j\\
&\quad +10y^ir_{00}\beta^2r_{j0}-36By^i\beta^3r_{00|j}+36By^i\beta^3r_{j0|0}+36\beta^3y^ib_jr_{k0}s^k_0-6B\beta^2y^ib_jr_{00|0}+36\beta^2y^ib_jr_{00}r_0-22\beta y^ib_jBr^2_{00}\\
&\quad +90By^ir_{00}\beta^2s_{0j}+s^i{}_0r_{00}\beta^2y_j+y^iy_jr^2{}_{00}+10b^iy_jBr^2_{00}\beta-9b^ib_jr_{00|0}\beta^3+b^ib_jr^2{}_{00}\beta^2+36b^iy_js^k_0r_{k0}\beta^3-12b^iy_jBr_{00|0}\beta^2\\
&\quad +30b^iy_jr_{00}r_0\beta^2-6b^iy_jr_{00|0}\beta^2+8b^iy_j\beta r^2{}_{00}-12y^iy_jB^2r^2{}_{00}+16y^iy_jBr^2{}_{00}-44\beta y^iy_jr_{00|0}-9b^i\beta^4r_{00|j}+9b^i\beta^4r_{j0|0}\\
&\quad +9r^i{}_0\beta^4r_{j0}-36\,y^ir_0\beta^3r_{j0}\big)+108\hat R^i{}_j\beta^{18}\,(2\,B+1)\\
t''_4 &:= 2\beta^{12}\big(18\,b^ir_{00}\beta^4r_j-12b^iy_jB^2r_{00|0}\beta^2-36b^ib_jBr_{00|0}\beta^3+612\beta^3y^ib_jr_{k0}s^k_0+12\beta^2y^ib_jB^2r_{00|0}-36\beta y^ib_jB^2r^2{}_{00}\\
&\quad -114\,\beta^2y^ib_jBr_{00|0}+264\,\beta^2y^ib_jr_{00}r_0+16\,\beta y^iy_jB^3r_{00|0}+1128\,\beta^2y^iy_jr_{k0}s^k_0-300\beta y^iy_jBr_{00|0}+260\,\beta y^iy_jr_{00}r_0\\
&\quad +72b^iy_jBs^k{}_0r_{k0}\,\beta^3+60b^iy_jBr_0r_{00}\,\beta^2+36y^iy_jB^2r^2{}_{00}+654y^iy_jBr^2{}_{00}-148\beta y^iy_jr_{00|0}-64\beta y^iy_jB^2r_0r_{00}-18r^i{}_0r_{00}\beta^3b_j\\
&\quad -204y^ir_0\beta^3r_{j0}+18\,y^ir_{00}\,\beta^2r_{j0}-672\beta^2y^iy_jB^2s^k{}_0r_{k0}-6\,Bb^ir_{00}\,\beta^3r_{j0}-72\,\beta^3y^ib_jBs^k{}_0r_{k0}+24\,\beta^2y^ib_jBr_0r_{00}+588y^iy_jr^2{}_{00}\\
&\quad +324\,B^2s^i{}_0r_{00}\,\beta^2y_j-1134\,Bs^i{}_0r_{00}\,\beta^2y_j-108\,Bb^ir_{00}\,\beta^3s_{0j}+216\,By^is^k_j\beta^4r_{k0}+60\,y^ir_{00}\beta^3r_j+252\,B^2y^ir_{00}\,\beta^2s_{0j}\\
&\quad -18\,By^ir_{00}\,\beta^2s_{0j}-432\,By^is^k_0\beta^4r_{jk}+864\,Bs^i{}_ks^k_0\beta^4y_j+486\,Bs^i{}_0r_{00}\beta^3b_j-12\,b^iy_jBr_{00|0}\,\beta^2+30b^iy_jr_{00}r_0\,\beta^2-12b^iy_jBr^2{}_{00}\beta\\
&\quad +108\beta^4y^ir_{k0}s^k_j-114\beta^2y^ib_jr_{00|0}+462\beta y^ib_jr^2{}_{00}+162s^i{}_ks^k_0\beta^5b_j-486s^i{}_0r_{00}\beta^3b_j+90\,\beta^3\delta^i{}_jBr_{00|0}+108\,b^ir_{00}\,\beta^3s_{0j}\\
&\quad -216\,\beta^4\delta^i{}_jr_{k0}s^k_0+36\,\beta^3\delta^i{}_jB^2r_{00|0}-12\,\beta^2\delta^i{}_jB^2r^2{}_{00}-120\beta^3\delta^i{}_jr_{00}r_0-108\beta^2\delta^i{}_jBr^2{}_{00}+78b^iy_jr_{00|0}\beta^2-222b^iy_j\beta r^2_{00}\\
&\quad +162s^i{}_ks^k{}_j\beta^6+1215s^i{}_0\beta^4s_{0j}-432Bs^i{}_{0|j}\beta^5+90b^ib_jr_0r_{00}\,\beta^3+36b^ib_jBr^2{}_{00}\beta^2-40\beta^4s^i{}_ks^k{}_0y_j-12Br^i{}_0r_{00}\beta^2y_j
\end{aligned}
$$

$$
\begin{aligned}
&+624\,\beta^2 y^i y_j B s^k{}_0 r_{k0} + 36\beta^3 y^i r_{00|j} - 36\beta^3 y^i r_{j0|0} + 27 b^i \beta^4 r_{j0|0} + 27 r^i{}_0 \beta^4 r_{j0} - 18\,\beta^3 \delta^i{}_j r_{00|0} - 60\,\beta^2 \delta^i{}_j r^2{}_{00} - 27 r^i{}_j r_{00}\,\beta^4 \\
&-432\,\beta^4 \delta^i{}_j B s^k{}_0 r_{k0} + 54 b^i s^k{}_j \beta^5 r_{k0} - 12 B^2 r^i{}_0 r_{00} \beta^2 y_j - 96\beta^3 \delta^i{}_j B r_0 r_{00} - 18 b^i b_j r_{00|0} \beta^3 + 36 b^i b_j r^2{}_{00} \beta^2 - 18 b^i r_0 \beta^4 r_{j0} \\
&-12\,b^i r_{00} \beta^3 r_{j0} - 72\,B^2 y^i \beta^3 r_{00|j} - 180\,B y^i \beta^3 r_{00|j} + 72\,B^2 y^i \beta^3 r_{j0|0} + 180\,B y^i \beta^3 r_{j0|0} - 36\,B r^i{}_0 r_{00}\,\beta^3 b_j - 192\,B y^i r_\ell\,\beta^3 r_{j0} \\
&+12 B^2 y^i r_{00} \beta^2 r_{j0} + 60\,B y^i r_{00} \beta^2 r_{j0} - 194 B s^i{}_0 \beta^4 s_{0j} - 108 b^i s^k{}_0 \beta^5 r_{jk} - 234 y^i r_{00} \beta^2 s_{0j} - 216 \beta^4 y^i r_{jk} s^k{}_0 - 162 s^i{}_0 r_{00} \beta^2 y_j \Big) \\
&-27 \hat{R}^i{}_j \beta^{16} \left(8B^2 + 8B - 7\right)
\end{aligned}
$$

$$
\begin{aligned}
t_6'' := 4\beta^{10} \Big[&- 54\,B r^i{}_0 r_{00}\,\beta^2 y_j - 39 r^i{}_0 r_{00} \beta^3 b_j - 50 y^i r_0 \beta^3 r_{j0} + 2 y^i r_{00} \beta^2 r_{j0} + 186 b^i y_j s^k{}_0 r_{k0}\,\beta^3 - 90 b^i r_{00}\,\beta^3 s_{0j} + 22\,y^i r_{00}\,\beta^3 r_j \\
&+45 b^i y_j B r^2{}_{00} \beta + 117\,\beta^2 y^i b_j B r_{00|0} - 86\,\beta^2 y^i b_j r_{00} r_0 - 351\,\beta y^i b_j B r^2{}_{00} - 4\,\beta^2 y^i b_j B^3 r_{00|0} - 294\,\beta^3 y^i b_j r_{k0} s^k{}_0 + 24\,\beta^2 y^i b_j B^2 r_{\ 00|0} \\
&-18\,\beta y^i b_j B^2 r^2{}_{00} + 12\,B b^i r_0 \beta^4 r_{j0} + 864 B s^i{}_k s^k{}_0 \beta^4 y_j - 66 b^i b_j B \beta^3 r_{00|0} + 6 b^i b_j B^2 r_{00|0} \beta^3 + 156\,\beta y^i y_j B r_{00|0} - 96 \beta y^i y_j r_{00} r_0 \\
&-162 B^2 s^i{}_0 r_{00} \beta^3 b_j + 96\,\beta^2 y^i y_j B^3 s^k{}_0 r_{k0} - 288\,\beta^2 y^i y_j B^2 s^k{}_0 r_{k0} - 1296\,\beta^2 y^i y_j B s^k{}_0 r_{k0} - 264 \beta y^i y_j B r_0 r_{00} - 30 b^i b_j B r_0 r_{00} \beta^3 \\
&-72 B^2 y^i s^k{}_j \beta^4 r_{k0} - 72 B y^i s^k{}_j \beta^4 r_{k0} - 54 B b^i s^k{}_j \beta^5 r_{k0} - 432\,B^2 s^i{}_k s^k{}_0 \beta^4 y_j + 108 s^i{}_{j|0} \beta^5 - 216 s^i{}_{0|j} \beta^5 - 216 B s^i{}_k s^k{}_j \beta^6 \\
&-369 s^i{}_0 r_{00}\,\beta^2 y_j - 36 s^i_0 r_{00} \beta^3 b_j + 972\,B^2 s^i{}_0 \beta^4 s_{0j} - 1944\,B s^i{}_0 \beta^4 s_{0j} + 54\,\beta^4 s^i{}_k s^k{}_0 y_j + 216 s^i{}_k s^k{}_0 \beta^5 b_j + 90 \beta^4 y^i r_{k0} s^k{}_j \\
&-180\,\beta^4 y^i r_{jk} s^k{}_0 + 81 y^i r_{00} \beta^2 s_{0j} - 27 B s^i{}_0 r_{00} \beta^2 y_j + 144 B y^i s^k{}_0 \beta^4 r_{jk} + 369\,B y^i r_{00} \beta^2 s_{0j} + 216\,B y^i s^k{}_j \beta^5 s_k + 72\,B^2 y^i r_{00} \beta^2 s_{0j} \\
&-90\,B b^i r_{00} \beta^3 s_{0j} + 567\,B s^i{}_0 r_{00} \beta^3 b_j - 36\,B^3 s^i{}_0 r_{00} \beta^2 y_j - 432 B^2 s^i{}_0 r_{00} \beta^2 y_j + 108 B b^i s^k{}_0 \beta^5 r_{jk} - 6 b^i r_{00} \beta^4 r_j \\
&-18 B^2 r^i{}_0 \beta^4 r_{j0} - 18\,B r^i{}_0 \beta^4 r_{j0} - 27 r^i{}_0 r_{00} \beta^2 y_j - 162 y^i y_j r^2{}_{00} + 12 \beta^3 y^i b_j B^2 s^k{}_0 r_{k0} \\
&-528 \beta^3 y^i b_j B s^k{}_0 r_{k0} + 16 \beta^2 y^i b_j B^2 r_0 r_{00} - 92 \beta^2 y^i b_j B r_0 r_{00} - 36 r^i{}_j r_{00} \beta^4 - 36 b^i \beta^4 r_{00|j} + 36 b^i \beta^4 r_{j0|0} + 49 \beta^3 \delta^i{}_j r_{00|0} \\
&-27 \beta^2 \delta^i{}_j r^2{}_{00} - 98 \beta^3 y^i r_{00|j} + 98\,\beta^3 y^i r_{j0|0} + 54 s^i{}_k s^k{}_j \beta^6 - 240\,\beta^2 y^i y_j r_{k0} s^k{}_0 + 120\,\beta y^i y_j B^2 r_{00|0} - 6\,\beta y^i y_j r_{00|0} \\
&-108 y^i y_j B^2 r^2{}_{00} - 360 y^i y_j B r^2{}_{00} - 216\,B s^i{}_k s^k{}_0 \beta^5 b_j + 36 r^i{}_0 \beta^4 r_{j0} - 36 B^3 y^i r_{00} \beta^2 s_{0j} + 144\,\beta^4 \delta^i{}_j B^2 s^k{}_0 r_{k0} + 144\,\beta^4 \delta^i{}_j B s^k{}_0 r_{k0} \\
&-18 b^i b_j s^k{}_0 r_{k0}\,\beta^4 + 16\,\beta^3 \delta^i{}_j B^2 r_\ell r_{00} + 64\,\beta^3 \delta^i{}_j B r_\ell r_{00} + 3 b^i b_j B r^2{}_{00} \beta^2 - 54 b^i y_j B r_{00|0} \beta^2 + 135 b^i y_j r_{00}\,r_\ell\,\beta^2 + 24 b^i y_j B^2 s^k{}_0 r_{k0} \beta^3 \\
&-48 b^i y_j B s^k{}_0 r_{k0} \beta^3 - 90 b^i b_j B s^k{}_0 r_{k0}\,\beta^4 - 15 b^i b_j r_\ell r_{00}\,\beta^3 - 12\,b^i r_{00}\,\beta^3 r_{j0} + 18\,B^2 r^i{}_j r_{00}\,\beta^4 + 18\,B r^i{}_j r_{00} \beta^4 - 12\,B b^i r_{00} \beta^4 r_j \\
&-18 B^2 b^i \beta^4 r_{00|0} - 18 B b^i \beta^4 r_{00|0} + 3 B b^i r_{00} \beta^3 r_{j0} + 40 B^2 y^i r_0 \beta^3 r_{j0} + 136 B y^i r_0 \beta^3 r_{j0} - 12 B^2 y^i r_{00} \beta^2 r_{j0} - 8 B^2 y^i r_{00} \beta^3 r_j \\
&-32 B y^i r_{00} \beta^3 r_j + 6 B r^i{}_0 r_{00} \beta^3 b_j - 4 \beta^3 \delta^i{}_j B^3 r_{00|0} - 8 B^3 y^i \beta^3 r_{j0|0} - 39 b^i b_j r_{00|0} \beta^3 - 180 \beta^4 \delta^i{}_j r_{k0} s^k{}_0 - 24 \beta^3 \delta^i{}_j B^2 r_{00|0} \\
&+12 \beta^2 \delta^i{}_j B^2 r^2{}_{00} + 33 \beta^3 \delta^i{}_j B r_{00|0} - 44\,\beta^3 \delta^i{}_j r_{00} r_0 + 24\,\beta^2 \delta^i{}_j B r^2{}_{00} + 25\,\beta^2 y^i b_j r_{00|0} - 48\,B^2 y^i \beta^3 r_{j0|0} - 288\,\beta y^i b_j r^2{}_{00} \\
&+123 b^i b_j r^2{}_{00} \beta^2 + 8\,B^3 y^i \beta^3 r_{00|j} + 48\,B^2 y^i \beta^3 r_{00|j} - 27 b^i y_j r_{00|0} \beta^2 + 36 b^i y_j \beta r^2{}_{00} + 6 b^i b_j B r_{00|0} \beta^3 \Big] \\
&+24 \hat{R}^i{}_j \beta^{14}\,(2\,B + 1) \left(2\,B^2 + 2\,B - 13\right)
\end{aligned}
$$

$$
\begin{aligned}
t_8'' := -4\beta^8 \Big[&- 36 B^2 b^i r_{00} \beta^3 s_{0j} - 90 B b^i r_{00} \beta^3 s_{0j} - 27 B s^i{}_0 r_{00} \beta^3 b_j + 108\,B^3 s^i{}_0 r_{00} \beta^2 y_j - 162\,B^2 s^i{}_0 r_{00} \beta^2 y_j - 729\,B s^i_0 r_{00} \beta^2 y_j \\
&+72\,B^2 b^i s^k{}_0 \beta^5 r_{jk} - 36\,B b^i s^k{}_0 \beta^5 r_{jk} + 32 \beta y^i y_j B^3 r_{00|0} + 324 \beta^2 y^i y_j r_{k0} s^k{}_0 + 96\,\beta y^i y_j B^2 r_{00|0} - 36\,B^3 s^i{}_0 r_{00}\,\beta^3 b_j \\
&-216\,B^2 s^i{}_k s^k{}_0 \beta^5 b_j + 648\,B s^i{}_k s^k{}_0 \beta^5 b_j + 36 B^3 y^i r_{00} \beta^2 s_{0j} + 32 \beta^4 \delta^i{}_j B^3 s^k{}_0 r_{k0} + 48 \beta^4 \delta^i_j B^2 s^k{}_0 r_{k0} - 408\,\beta^4 \delta^i{}_j B s^k{}_0 r_{k0} \\
&+258 b^i b_j s^k{}_0 r_{k0}\,\beta^4 + 16\,\beta^3 \delta^i{}_j B^2 r_\ell r_{00} - 80\,\beta^3 \delta^i{}_j B r_\ell r_{00} - 54 b^i b_j B r_{00|0}\,\beta^3 + 135 b^i b_j r_0 r_{00}\,\beta^3 + 54 b^i b_j B r^2{}_{00} \beta^2 - 18 b^i y_j B r_{00|0}\,\beta^2 \\
&+45 b^i y_j r_{00}\,r_0\,\beta^2 - 4\,B^2 b^i r_{00}\,\beta^4 r_j - 4\,B b^i r_{00}\,\beta^4 r_j - 9\,B b^i r_{00} \beta^3 r_{j0} + 40\,B^2 y^i r_\ell\,\beta^3 r_{j0} - 152\,B y^i r_\ell\,\beta^3 r_{j0} + 6\,B^2 y^i r_{00} \beta^2 r_{j0} \\
&+54\,B y^i r_{00} \beta^2 r_{j0} - 8\,B^2 y^i r_{00} \beta^3 r_j + 40\,B y^i r_{00} \beta^3 r_j - 54\,B r^i{}_0 r_{00}\,\beta^3 b_j - 18\,B^2 r^i{}_0 r_{00} \beta^2 y_j - 18\,B r^i{}_0 r_{00} \beta^2 y_j + 14 b^i y_j s^k{}_0 r_{k0} \beta^3 \\
&-18 b^i y_j B^2 r_{00|0}\,\beta^2 - 18 b^i y_j B r^2{}_{00} \beta + 69\,\beta^2 y^i b_j B r_{00|0} + 20\,\beta^2 y^i b_j r_{00} r_\ell - 396\,\beta y^i b_j B r^2{}_{00} + 4\,\beta^2 y^i b_j B^3 r_{00|0} + 78\,\beta^3 y^i b_j r_{k0} s^k{}_0 \\
&-120\,\beta y^i b_j B^2 r^2{}_{00} + 4\,B^2 b^i r_0\,\beta^4 r_{j0} + 4\,B b^i r_0\,\beta^4 r_{j0} - 16\,B^3 y^i s^k{}_j \beta^4 r_{k0} - 24\,B^2 y^i s^k{}_j \beta^4 r_{k0} + 204\,B y^i s^k{}_j \beta^4 r_{k0} - 36\,B^2 b^i s^k{}_j \beta^5 r_{k0} \\
&-192\,B^3 s^i{}_k s^k{}_0 \beta^4 y_j + 1008 B^2 s^i{}_k s^k{}_0 \beta^4 y_j - 144 B s^i{}_k s^k{}_0 \beta^4 y_j - 54\,\beta y^i y_j B r_{00|0} + 58\,\beta y^i y_j r_{00} r_0 + 432\,B^2 s^i{}_0 r_{00} \beta^3 b_j \\
&+32\,B^3 y^i s^k{}_0 \beta^4 r_{jk} + 48\,B^2 y^i s^k{}_0 \beta^4 r_{jk} - 408\,B y^i s^k{}_0 \beta^4 r_{jk} + 9\,B y^i r_{00} \beta^2 s_{0j} + 306\,B^2 y^i r_{00} \beta^2 s_{0j} - 27 r^i{}_0 r_{00} \beta^3 b_j + 54 s^i{}_0 r_{00} \beta^2 y_j \\
&-369 s^i{}_0 r_{00} \beta^3 b_j + 432 B^3 s^i_0 \beta^4 s_{0j} - 2268 B^2 s^i{}_0 \beta^4 s_{0j} + 648 B s^i{}_0 \beta^4 s_{0j} - 186 \beta^4 s^i_k s^k{}_0 y_j - 108 s^i{}_k s^k_0 \beta^5 b_j + 106 \beta^4 y^i r_{k0} s^k{}_j
\end{aligned}
$$

$$
\begin{aligned}
&-4\,B^3 b^i \beta^4 r_{j0|0} + 58\,y^i r_{00}\beta^3 r_j - 174\,B y^i \beta^3 r_{00|j} - 216\,B^2 s^i{}_k s^k{}_j \beta^6 + 216\,B s^i{}_k s^k{}_j \beta^6 - 108\,y^i r_{00}\beta^2 s_{0j} + 162 s^i{}_k s^k{}_j \beta^6 \\
&+90\,\beta^2 y^i b_j B^2 r_{00|0} + 26\,b^i r_{00}\beta^4 r_j + 4\,B^3 b^i \beta^4 r_{00|j} + 6B^2 b^i \beta^4 r_{00|j} - 78 B b^i \beta^4 r_{00|j} - 4B^3 r^i{}_0 \beta^4 r_{j0} - 6B^2 r^i{}_0 \beta^4 r_{j0} - 96 s^i{}_{0|j}\beta^5 \\
&+78\,B r^i{}_0 \beta^4 r_{j0} + 36 r^i{}_0 r_{00}\beta^2 y_j - 74\,\beta y^i y_j r_{00|0} - 60 y^i y_j B^2 r^2{}_{00} - 57 y^i y_j B r^2{}_{00} + 4B^3 r^i{}_j r_{00}\beta^4 - 26\,b^i r_0\,\beta^4 r_{j0} - 18 b^i r_{00}\beta^3 r_{j0} \\
&+6\,B^2 r^i{}_j r_{00}\beta^4 - 78\,B r^i{}_j r_{00}\beta^4 - 4\beta^3 \delta^i{}_j B^3 r_{00|0} - 194 y^i r_0 \beta^3 r_{j0} - 27 b^i b_j r_{00|0}\beta^3 - 212\beta^4 \delta^i{}_j r_{k0} s^k{}_0 + 30 y^i r_{00}\beta^2 r_{j0} \\
&+30\beta^3 \delta^i{}_j B^2 r_{00|0} + 6\beta^2 \delta^i{}_j B^2 r^2{}_{00} + 87\beta^3 \delta^i{}_j B r_{00|0} - 116\beta^3 \delta^i{}_j r_{00} r_0 - 18\beta^2 \delta^i{}_j B r^2{}_{00} - 28\,\beta^2 y^i b_j r_{00|0} - 159\,\beta y^i b_j r^2{}_{00} \\
&+54 b^i b_j r^2{}_{00}\beta^2 + 8\,B^3 y^i \beta^3 r_{00|j} - 60\,B^2 y^i \beta^3 r_{00|j} + 36 b^i y_j r_{00|0}\,\beta^2 - 117 b^i y_j \beta\, r^2{}_{00} - 6\,B^2 b^i \beta^4 r_{j0|0} - 8\,B^3 y^i \beta^3 r_{j0|0} \\
&+60\,B^2 y^i \beta^3 r_{j0|0} + 174\,B y^i \beta^3 r_{j0|0} - 18 y^i y_j r^2{}_{00} - 40 b^i \beta^4 r_{00|j} - 40 r^i{}_j r_{00}\beta^4 + 78\,B b^i \beta^4 r_{j0|0} + 40\,b^i \beta^4 r_{\ j0|0} \\
&+40 r^i{}_0 \beta^4 r_{j0} + 22\beta^3 \delta^i{}_j r_{00|0} - 33\beta^2 \delta^i{}_j r^2{}_{00} - 128\,\beta y^i y_j B^2 r_0 r_{00} + 216 s^i{}_0 \beta^4 s_{0j} - 684\,\beta^3 y^i b_j B s^k{}_0 r_{k0} - 96\,\beta^2 y^i y_j B^3 s^k{}_0 r_{k0} \\
&-960\,\beta^2 y^i y_j B^2 s^k{}_0 r_{k0} - 240\,\beta^2 y^i y_j B s^k{}_0 r_{k0} - 200\,\beta y^i y_j B r_0 r_{00} - 360\,\beta^3 y^i b_j B^2 s^k{}_0 r_{k0} - 16\beta^2 y^i b_j B^2 r_0 r_{00} - 184\,\beta^2 y^i b_j B r_0 r_{00} \\
&+90 b^i y_j B r_0 r_{00}\beta^2 - 72 b^i y_j B^2 s^k{}_0 r_{k0}\beta^3 + 204 b^i y_j B s^k{}_0 r_{k0}\beta^3 - 30 b_j b^i B s^k{}_0 r_{k0}\beta^4 + 126 b^i r_{00}\beta^3 s_{0j} - 12 b^i b_j B^2 s^k{}_0 r_{k0}\beta^4 \\
&+48\,\beta^3 y^i b_j B^3 s^k{}_0 r_{k0} + 16 b^i y_j B^3 s^k{}_0 r_{k0}\,\beta^3\Big] - 2\hat{R}^i{}_j \beta^{12}\left(8\,B^4 + 16\,B^3 - 312\,B^2 - 320\,B + 41\right)
\end{aligned}
$$

$$
\begin{aligned}
t''_{10} := -4\beta^6\Big[&+18 B^2 b^i r_{00}\beta^3 s_{0j} - 198 B b^i r_{00}\beta^3 s_{0j} + 729 B s^i{}_0 r_{00}\beta^3 b_j + 72 B^3 s^i{}_0 r_{00}\beta^2 y_j + 432 B^2 s^i{}_0 r_{00}\beta^2 y_j - 351 B s^i{}_0 r_{00}\beta^2 y_j \\
&+276\,B b^i s^k{}_0 \beta^5 r_{jk} + 8\,B^3 b^i s^k{}_j \beta^5 r_{k0} - 16\,\beta y^i y_j B^3 r_{00|0} - 368\,\beta^2 y^i y_j r_{k0} s^k{}_0 + 72\,\beta y^i y_j B^2 r_{00|0} - 108\,B^3 s^i{}_0 r_{00}\beta^3 b_j \\
&+288\beta^4 \delta^i{}_j B^2 s^k{}_0 r_{k0} + 28 B\beta^4 \delta^i{}_j s^k{}_0 r_{k0} - 22 b^i b_j s^k{}_0 r_{k0}\,\beta^4 + 32\,\beta^3 \delta^i{}_j B^2 r_0 r_{00} + 128\,\beta^3 \delta^i{}_j B r_0 r_{00} + 18 b^i b_j B r_{00|0}\,\beta^3 \\
&-45 b^i b_j r_0 r_{00}\beta^3 + 9 b^i b_j B r^2{}_{00}\beta^2 - 54\,y_j b^i B r_{00|0}\,\beta^2 + 135 b^i y_j r_{00} r_0\,\beta^2 - 36\,B b^i r_{00}\beta^4 r_j + 9\,B b^i r_{00}\beta^3 r_{j0} + 80\,B^2 y^i r_0\,\beta^3 r_{j0} \\
&+272\,B y^i r_0\,\beta^3 r_{j0} - 36\,B y^i r_{00}\beta^2 r_{j0} - 16\,B^2 y^i r_{00}\beta^3 r_j - 64\,B y^i r_{00}\beta^3 r_j + 18\,B r^i{}_0 r_{00}\,\beta^3 b_j - 54\,B r^i{}_0 r_{00}\beta^2 y_j + 178 b^i y_j s^k{}_0 r_{k0}\,\beta^3 \\
&+45 b^i y_j B r^2{}_{00}\beta + 69\,\beta^2 y^i b_j B r_{00|0} - 78\,\beta^2 y^i b_j r_{00}\, r_0 + 69\,\beta y^i b_j B r^2{}_{00} - 24\,\beta^2 y^i b_j B^3 r_{00|0} - 270\,\beta^3 y^i b_j r_{k0} s^k{}_0 - 48\,\beta^2 y^i b_j B^2 r_{00|0} \\
&+84\,\beta y^i b_j B^2 r^2{}_{00} + 36\,B b^i r_0\,\beta^4 r_{j0} + 96\,B^3 s^i{}_k s^k{}_0 \beta^5 b_j - 144 B^2 y^i s^k{}_j \beta^4 r_{k0} - 144 B y^i s^k{}_j \beta^4 r_{k0} - 24\,B^2 y^i r_{00}\beta^2 r_{j0} - 138\,B b^i s^k{}_j \beta^5 r_{k0} \\
&+32\,B^4 s^i{}_k s^k{}_0 \beta^4 y_j - 512\,B^3 s^i{}_k s^k{}_0 \beta^4 y_j + 480\,B^2 s^i{}_k s^k{}_0 \beta^4 y_j + 448\,B s^i{}_k s^k{}_0 \beta^4 y_j + 18 b^i b_j B^2 r_{00|0}\,\beta^3 + 156\,\beta y^i y_j B r_{00|0} \\
&+162\,B^2 s^i{}_0 r_{00}\beta^3 b_j + 18\,B^2 r^i{}_0 r_{00}\beta^3 b_j + 288\,B^2 y^i s^k{}_0 \beta^4 r_{jk} + 288\,B y^i s^k{}_0 \beta^4 r_{jk} + 333\,B y^i r_{00}\,\beta^2 s_{0j} + 144\,B^2 y^i r_{00}\beta^2 s_{0j} \\
&+48 b^i b_j B^2 s^k{}_0 r_{k0}\beta^4 - 36 r^i{}_0 r_{00}\beta^3 b_j + 62\,y^i r_0\,\beta^3 r_{j0} - 3\,y^i r_{00}\beta^2 r_{j0} - 63 b^i r_{00}\beta^3 s_{0j} + 96 B^3 s^i{}_k s^k{}_j \beta^6 - 10 y^i r_{00}\beta^3 r_j + 30 B y^i \beta^3 r_{00|j} \\
&-288 B^2 s^i{}_k s^k{}_j \beta^6 - 54 s^i{}_0 r_{00}\beta^3 b_j - 72\,B^4 s^i{}_0 \beta^4 s_{0j} + 1152\,B^3 s^i{}_0 \beta^4 s_{0j} - 1404\,B^2 s^i{}_0 \beta^4 s_{0j} - 360\,B s^i{}_0 \beta^4 s_{0j} + 38\,\beta^4 s^i{}_k s^k{}_0 y_j \\
&+120 s^i{}_k s^k{}_0 \beta^5 b_j + 18\,\beta^4 y^i r_{k0} s^k{}_j - 36\,\beta^4 y^i r_{jk} s^k{}_0 - 720\,B^2 s^i{}_k s^k{}_0 \beta^5 b_j + 504\,B s^i{}_k s^k{}_0 \beta^5 b_j - 360\,B s^i{}_k s^k{}_j \beta^6 - 153 s^i{}_0 r_{00}\beta^2 y_j \\
&-8 b^i s^k{}_j \beta^5 r_{k0} - 18\,b^i r_{00}\beta^4 r_j + 54\,B^2 b^i \beta^4 r_{00|j} + 54\,B b^i \beta^4 r_{00|j} - 54\,B^2 r^i{}_0 \beta^4 r_{j0} - 54\,B r^i{}_0 \beta^4 r_{j0} - 27 r^i{}_0 r_{00}\beta^2 y_j \\
&+58\,\beta y^i y_j r_{00|0} - 18 y^i y_j B^2 r^2{}_{00} - 24 y^i y_j B r^2{}_{00} + 18\,b^i r_0\,\beta^4 r_{j0} - 9\,b^i r_{00}\beta^3 r_{j0} + 54\,B^2 r^i{}_j r_{00}\beta^4 + 54\,B r^i{}_j r_{00}\beta^4 - 54\,B^2 b^i \beta^4 r_{j0|0} \\
&-8\beta^3 \delta^i{}_j B^3 r_{00|0} - 36 b_j b^i r_{00|0}\beta^3 - 36\beta^4 \delta^i{}_j r_{k0} s^k{}_0 - 48\beta^3 \delta^i{}_j B^2 r_{00|0} - 15\beta^3 \delta^i{}_j B r_{00|0} + 20\beta^3 \delta^i{}_j r_{00} r_0 + 24\beta^2 \delta^i{}_j B r^2{}_{00} \\
&+126 b^i b_j r^2{}_{00}\beta^2 + 16 y^i B^3 \beta^3 r_{00|j} + 96 B^2 y^i \beta^3 r_{00|j} - 27 b^i y_j r_{00|0}\beta^2 + 36 b^i y_j \beta r^2{}_{00} - 16 B^3 y^i \beta^3 r_{j0|0} - 9 B^2 y^i \beta^3 r_{j0|0} \\
&-30 B y^i \beta^3 r_{j0|0} - 2 r^i{}_j r_{00}\beta^4 + 6 y^i y_j r^2{}_{00} + 27 b^i \beta^4 r_{j0|0} + 27 r^i{}_0 \beta^4 r_{j0} + 17\beta^3 \delta^i{}_j r_{00|0} + 21\beta^2 \delta^i{}_j r^2{}_{00} - 34\beta^3 y^i r_{00|j} + 34\beta^3 y^i r_{j0|0} \\
&-840\beta^2 y^i y_j B s^k{}_0 r_{k0} + 64\beta y^i y_j B^2 r_0 r_{00} - 164\beta y^i y_j B r_0 r_{00} - 90 b^i b_j B r_0 r_{00}\beta^3 + 52\beta^3 y^i b_j B^2 s^k{}_0 r_{k0} + 96\beta^2 y^i b_j B^2 r_0 r_{00} \\
&+72\beta^2 y^i b_j B r_0 r_{00} + 96\beta^3 y^i b_j B^3 s^k{}_0 r_{k0} - 648 b^i y_j B r_{00}\beta^2 r_0 + 32 b^i y_j B^3 s^k{}_0 r_{k0}\,\beta^3 - 48 b^i y_j B^2 s^k{}_0 r_{k0}\beta^3 - 342 b^i b_j B s^k{}_0 r_{k0}\,\beta^4 \\
&+224\,\beta^2 y^i y_j B^3 s^k{}_0 r_{k0} - 192\beta^3 y^i b_j B s^k{}_0 r_{k0} - 45 s^i{}_0 \beta^4 s_{0j}\Big] - 144 \hat{R}^i{}_j \beta^{10}\,(2\,B+1)\,(B+2)\,(B-1)
\end{aligned}
$$

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\begin{aligned}
t''_{12} := &-16 B^4 s^i{}_k s^k{}_0 \beta^5 b_j + 32 B^3 y^i s^k{}_j \beta^4 r_{k0} + 48 B^2 y^i s^k{}_j \beta^4 r_{k0} - 84 B y^i s^k{}_j \beta^4 r_{k0} - 234 B^2 y^i r_{00}\beta^2 s_{0j} - 45 B y^i r_{00}\beta^2 s_{0j} \\
&-72 B^3 y^i r_{00}\beta^2 s_{0j} - 432 B^2 s^i{}_0 r_{00}\beta^3 b_j - 16 B^3 s^i \beta^6 s_j - 12 B^2 b^i r_0 \beta^4 r_{j0} - 12\,B b^i r_0\,\beta^4 r_{j0} + 9\,B b^i r_{00}\beta^3 r_{j0} + 96\,\beta y^i y_j B^2 r_0 r_{00} \\
&+96\beta^2 y^i y_j B^3 s^k{}_0 r_{k0} + 82 y^i r_0 \beta^3 r_{j0} + 624\beta^2 y^i y_j B^2 s^k{}_0 r_{k0} + 552\,\beta^2 y^i y_j B s^k{}_0 r_{k0} - 15\,y^i r_{00}\beta^2 r_{j0} + 12\,B^2 b^i r_{00}\beta^4 r_j + 12\,B b^i r_{00}\beta^4 r_j \\
&-80\,B^2 y^i r_0\,\beta^3 r_{j0} + 16\,B^2 y^i r_{00}\beta^3 r_j - 8\,B y^i r_{00}\beta^3 r_j + 16\,B y^i r_0\,\beta^3 r_{j0} + 6\,B^2 y^i r_{00}\beta^2 r_{j0} - 18\,B y^i r_{00}\beta^2 r_{j0} - 18 y^i y_j r^2{}_{00} \\
&+148\,\beta^2 y^i b_j B r_0 r_{00} - 128\,\beta^3 y^i b_j B^3 s^k{}_0 r_{k0} + 20\beta^3 b_j y^i B^2 s^k{}_0 r_{k0} + 588\beta^3 y^i b_j B s^k{}_0 r_{k0} - 32\,\beta^2 y^i b_j B^2 r_0 r_{00} - 135 b^i b_j r_0 r_{00}\beta^3 \\
&-54 b^i b_j B r^2{}_{00}\beta^2 + 48 b^i y_j B^2 s^k{}_0 r_{k0}\beta^3 - 204 B b^i y_j s^k{}_0 r_{k0}\beta^3 - 90 B b^i y_j r_0 r_{00}\beta^2 + 34\,\beta^3 y^i r_{00|j} - 34\,\beta^3 y^i r_{j0|0} - 17\beta^3 \delta^i{}_j r_{00|0} \\
&-18\beta^2 \delta^i{}_j r^2{}_{00} + 18 b^i y_j B^2 r_{00|0}\,\beta^2 + 18 b^i y_j B r_{00|0}\,\beta^2 - 45 b^i y_j r_{00} r_0\,\beta^2 + 18 b^i y_j B r^2{}_{00}\beta - 24\,\beta y^i y_j B^3 r_{00|0} + 45 s^i{}_0 \beta^4 s_{0j}
\end{aligned}
$$

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\begin{aligned}
&-72\,B^3 s^i{}_0 r_{00}\beta^3 b_j + 96\,B^4 s^i{}_k s^k{}_0 \beta^4 y_j - 384\,B^3 s^i{}_k s^k{}_0 \beta^4 y_j + 351\,B s^i{}_0 r_{00}\beta^3 b_j - 72\,B^3 s^i{}_0 r_{00}\beta^2 y_j + 378\,B^2 s^i{}_0 r_{00}\beta^2 y_j \\
&-240 b^i b_j s^k{}_0 r_{k0}\,\beta^4 + 39 r^i{}_j r_{00}\beta^4 + 39\,b^i \beta^4 r_{00|j} + 54 b^i b_j B r_{00|0}\,\beta^3 - 39\,b^i \beta^4 r_{j0|0} + 112\,B^3 s^i{}_{j|0}\beta^5 - 41\,\beta^2 y^i b_j r_{00|0} \\
&+27\,\beta y^i b_j r^2{}_{00} - 16 y^i B^3 \beta^3 r_{00|j} + 12\,B^2 y^i \beta^3 r_{00|j} + 78\,B y^i \beta^3 r_{00|j} - 50\,\beta^4 y^i r_{k0} s^k{}_j + 100\,\beta^4 y^i r_{jk} s^k{}_0 + 96\,B^2 y^i \beta^4 - 54 b^i b_j r^2{}_{00}\beta^2 \\
&+27\,y^i r_{00}\beta^2 s_{0j} - 18 y^i y_j B^2 r^2{}_{00} - 45 y^i y_j B r^2{}_{00} - 18\,\beta y^i y_j r_{00|0} - 16\,B^4 s^i{}_k s^k{}_j \beta^6 + 8\,\beta^2 y^i b_j B^3 r_{00|0} + 218\,\beta^3 b_j y^i r_{k0} s^k{}_0 \\
&-66\,\beta^2 y^i b_j B^2 r_{00|0} + 18\,\beta y^i b_j B^2 r^2{}_{00} - 117 B \beta^2 y^i b_j r_{00|0} + 100\,\beta^2 y^i b_j r_{00} r_0 + 72\,\beta y^i b_j B r^2{}_{00} + 27 r^i{}_0 r_{00}\beta^3 b_j + 8\,\beta^3 \delta^i{}_j B^3 r_{00|0} \\
&-6\,\beta^3 \delta^i{}_j B^2 r_{00|0} + 100\,\beta^4 \delta^i{}_j r_{k0} s^k{}_0 - 6\,\beta^2 \delta^i{}_j B^2 r^2{}_{00} - 39\,\beta^3 \delta^i{}_j B r_{00|0} + 52 \beta^3 \delta^i{}_j r_{00} r_0 - 96 \beta y_j y^i B^2 r_{00|0} - 78 \beta y_j y^i B r_{00|0} \\
&+90\,\beta\, y_j y^i r_{00} r_0 + 16\,B^3 y^i \beta^3 r_{j0|0} - 12\,B^2 y^i \beta^3 r_{j0|0} - 78\,B y^i \beta^3 r_{j0|0} + 24\,b^i r_0\,\beta^4 r_{j0} + 18\,b^i r_{00}\beta^3 r_{j0} + 27 b^i b_j r_{00|0}\,\beta^3 \\
&-9 b^i y_j r_{00|0}\beta^2 + 45 b^i y_j \beta r^2{}_{00} - 24 b^i b_j B^3 s^k{}_0 r_{k0}\beta^4 + 132 b^i b_j B^2 s^k{}_0 r_{k0}\beta^4 - 288\,B^2 s^i{}_k s^k{}_0 \beta^4 y_j + 48\,B s^i{}_k s^k{}_0 \beta^4 y_j + 352\,B^3 s^i{}_k s^k{}_0 \beta^5 b_j \\
&-744\,B^2 s^i{}_k s^k{}_0 \beta^5 b_j - 168\,B^2 b^i s^k{}_0 \beta^5 r_{jk} + 60\,B b^i s^k{}_0 \beta^5 r_{jk} + 18\,B b^i r_{00}\beta^3 s_{0j} + 72 B^2 b^i r_{00}\beta^3 s_{0j} + 8\,B^3 b^i s^k{}_j \beta^5 r_{k0} + 84\,B^2 b^i s^k{}_j \beta^5 r_{k0} \\
&-30\,B b^i s^k{}_j \beta^5 r_{k0} - 64\,B^3 s^k{}_0 y^i \beta^4 r_{jk} - 16\,B^3 b^i s^k{}_0 \beta^5 r_{jk} + 54 B r^i_0 r_{00}\beta^3 b_j - 96\beta^4 \delta^i{}_j B^2 s^k{}_0 r_{k0} + 168\,\beta^4 \delta^i{}_j B s_0{}^k r_{k0} - 32\,\beta^3 \delta^i{}_j B^2 r_0 r_{00} \\
&+16\,\beta^3 \delta^i{}_j B r_0 r_{00} + 18\,B r^i{}_0 r_{00}\beta^2 y_j - 12\,B^3 r^i{}_j r_{00}\beta^4 - 18\,B^2 r^i{}_j r_{00}\beta^4 + 72\,B r^i{}_j r_{00}\beta^4 + 12\,B^3 b^i \beta^4 r_{j0|0} + 18\,B^2 b^i \beta^4 r_{j0|0} \\
&-72\,B b^i \beta^4 r_{j0|0} + 12\,B^3 r^i{}_0 \beta^4 r_{j0} + 72\,B r^i{}_j r_{00}\beta^4 - 9 r^i{}_0 r_{00}\beta^2 y_j - 12\,B^3 b^i \beta^4 r_{00|j} - 18 B^2 b^i \beta^4 r_{00|j} + 72 B b^i \beta^4 r_{00|j} \\
&-72 B r^i{}_0 \beta^4 r_{j0} + 18 B^2 r^i{}_0 \beta^4 r_{j0} - 24\,b^i r_{00}\beta^4 r_j - 26 y^i r_{00}\beta^3 r_j - 296 B s^i_k s^k_j \beta^6 - 90 b^i r_{00}\beta^3 s_{0j} + 18 B^2 r^i{}_0 r_{00}\beta^2 y_j + 160\,B^3 s^i{}_k s^k{}_j \beta^6 \\
&+264\,B^2 s^i{}_k s^k{}_j \beta^6 + 74 s^i{}_k s^k{}_0 \beta^5 b_j + 42\,\beta^4 s^i{}_k s^k{}_0 y_j - 216\,B^4 s^i{}_0 \beta^4 s_{0j} + 1008\,B^3 s^i{}_0 \beta^4 s_{0j} - 108\,B^2 s^i{}_0 \beta^4 s_{\,0j} - 9 s^i{}_0 r_{00}\beta^2 y_j \\
&+153 s^i{}_0 r_{00}\beta^3 b_j - 62\,b^i s^k{}_j \beta^5 r_{k0} + 124\,b^i s^k{}_0 \beta^5 r_{jk} - 96\,B^2 s^k{}_0 y^i \beta^4 r_{jk}\Big] + 6 \hat{R}^i{}_j \beta^8 \left(8\,B^4 + 16\,B^3 - 96\,B^2 - 104\,B - 13\right)
\end{aligned}
$$

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\begin{aligned}
t''_{14} := 4\beta^2 \Big[&-36\,B^3 y^i r_{00}\beta^2 s_{0j} + 72\,B^2 y^i r_{00}\beta^2 s_{0j} + 108\,B^3 s^i{}_0 r_{00}\beta^2 y_j - 36\,B b^i r_{00}\beta^4 r_j - 16\,\beta y^i y_j B^3 r_{00|0} + 16\,\beta^2 y^i y_j r_{k0} s^k{}_0 \\
&+18 b^i b_j B^2 r_{00|0}\,\beta^3 + 54 B^2 r^i{}_j r_{00}\beta^4 + 54 B r^i{}_j r_{00}\beta^4 - 54 B^2 b^i \beta^4 r_{j0|0} - 54 B b^i \beta^4 r_{j0|0} + 54 B^2 b^i \beta^4 r_{00|j} + 54 B b^i \beta^4 r_{00|j} \\
&-18\,b^i r_{00}\beta^4 r_j - 24\beta y^i y_j B^2 r_{00|0} - 2\beta y^i y_j B r_{00|0} + 16\beta y^i y_j r_{00} r_0 - 2\,\beta y^i y_j r_{00|0} - 24 y^i y_j B^2 r^2{}_{00} - 24 y^i y_j B r^2{}_{00} + 27\,y^i r_{00}\beta^2 s_{0j} \\
&+36\,\beta^4 y^i r_{jk} s^k{}_0 - 5\beta^3 \delta^i{}_j r_{00|0} + 10\beta^3 y^i r_{00|j} - 10\beta^3 y^i r_{j0|0} - 20\beta^2 y^i b_j B^3 r_{00|0} - 81 B s^i{}_0 r_{00}\beta^2 y_j - 72 B^3 s^i{}_0 r_{00}\beta^3 b_j \\
&-9 r^i{}_0 r_{00}\beta^2 y_j - 18\,B^2 b^i r_{00}\beta^3 s_{0j} - 126 B b^i r_{00}\beta^3 s_{0j} - 114 B b^i s^k{}_j \beta^5 r_{k0} + 64\,B^4 s^i{}_k s^k{}_0 \beta^5 b_j - 448 B^3 s^i{}_k s^k{}_0 \beta^5 b_j + 96\,B^2 s^i{}_k s^k{}_0 \beta^5 b_j \\
&+248\,B s^i{}_k s^k{}_0 \beta^5 b_j + 36\,B^2 s^i{}_0 \beta^4 s_{0j} + 120\,B s^i{}_0 \beta^4 s_{0j} - 18 b^i r_{00}\beta^3 s_{0j} + 64\,B^3 s^i{}_k s^k{}_j \beta^6 - 384\,B^2 s^i{}_k s^k{}_j \beta^6 - 200\,B s^i{}_k s^k{}_j \beta^6 \\
&-18\,\beta^4 y^i r_{k0} s^k{}_j - 16\,b^i s^k{}_j \beta^5 r_{k0} + 32\,b^i s^k{}_0 \beta^5 r_{jk} + 40 s^i{}_k s^k{}_0 \beta^5 b_j + 18\,\beta^4 s^i{}_k s^k{}_0 y_j - 72 B s^k{}_j y^i \beta^4 r_{k0} + 16\,B^3 b^i s^k{}_j \beta^5 r_{k0} \\
&-48\,B^2 b^i s^k{}_j \beta^5 r_{k0} + 144\,B^2 s^i{}_k s^k{}_0 \beta^4 y_j + 96\,B s^i{}_k s^k{}_0 \beta^4 y_j - 32\,B^3 b^i s^k{}_0 \beta^5 r_{jk} + 96\,B^2 b^i s^k{}_0 \beta^5 r_{jk} + 228\,B b^i s^k{}_0 \beta^5 r_{jk} \\
&+48 b^i y_j B s^k{}_0 r_{k0}\beta^3 + 378\,B^2 s^i{}_0 r_{00}\beta^3 b_j + 18\,B^2 r^i{}_0 r_{00}\beta^3 b_j + 144 B^2 \beta^4 y^i s^k{}_0 r_{jk} + 144\,B\beta^4 y^i s^k{}_0 r_{jk} + 189\,B s^i{}_0 r_{00}\beta^3 b_j \\
&+96\beta^3 y^i b_j B^3 s^k{}_0 r_{k0} + 408\beta^3 y^i b_j B^2 s^k{}_0 r_{k0} + 336\,\beta^3 y^i b_j s^k{}_0 r_{k0} + 80\beta^2 y^i b_j B^2 r_0 r_{00} + 164\,\beta^2 y^i b_j B r_0 r_{00} + 32 b^i y_j B^3 s^k{}_0 r_{k0}\,\beta^3 \\
&+36\,B b^i r_0\,\beta^4 r_{j0} + 9\,B b^i r_{00}\beta^3 r_{j0} - 6 y^i y_j r^2{}_{00} - 18\,B r^i{}_0 r_{00}\beta^2 y_j + 64\,\beta^3 \delta^i{}_j B r_0 r_{00} + 144\,\beta^4 \delta^i{}_j B^2 s^k{}_0 r_{k0} + 144 \beta^4 \delta^i{}_j B s^k{}_0 r_{k0} \\
&-22 b^i b_j s^k{}_0 r_{k0}\,\beta^4 + 18 b^i b_j B r_{00|0}\beta^3 - 5 b^i b_j r_0 r_{00}\beta^3 + 9 b^i b_j B r^2{}_{00}\beta^2 + 46 b^i y_j s^k{}_0 r_{k0}\beta^3 - 18 b^i y_j B r_{00|0}\beta^2 + 45 b^i y_j r_{00} r_0 \beta^2 \\
&-8\,B^3 y^i \beta^3 r_{j0|0} - 48\,B^2 y^i \beta^3 r_{j0|0} - 42\,B y^i \beta^3 r_{j0|0} + 18\,b^i r_0\,\beta^4 r_{j0} + 78\,\beta^3 y^i b_j r_{k0} s^k{}_0 + 16\,\beta^3 \delta^i{}_j B^2 r_0 r_{00} + 15 b^i y_j B r^2{}_{00}\beta \\
&-14 y^i r_{00}\beta^3 r_j + 58\,y^i r_0 \beta^3 r_{j0} - 9 y^i r_{00}\beta^2 r_{j0} - 9 r^i_0 r_{00}\beta^3 b_j - 72\beta^2 y^i b_j B^2 r_{00|0} + 6\,\beta y^i b_j B^2 r^2{}_{00} - 57\,\beta^2 y^i b_j B r_{00|0} \\
&-12 s^i{}_0 \beta^4 s_{0j} + 62\,\beta^2 y^i b_j r_{00} r_0 + 3\,\beta y^i b_j r^2{}_{00} + 16 b^i b_j B^3 s^k{}_0 r_{k0}\beta^4 - 318 b^i b_j B s^k{}_0 r_{k0}\beta^4 + 128\beta^2 y^i y_j B^3 s^k{}_0 r_{k0} + 192\beta^2 y^i y_j B^2 s^k{}_0 r_{k0} \\
&+96\,\beta^2 y^i y_j B s^k{}_0 r_{k0} - 90\,b^i b_j B r_0 r_{00}\,\beta^3 + 64\,\beta y^i y_j B^2 r_0 r_{00} + 64\beta\, y^i y_j B r_0 r_{00} - 9\beta^2 \delta^i{}_j r^2{}_{00} + 8\,B^3 y^i \beta^3 r_{00|j} + 48\,B^2 y^i \beta^3 r_{00|j} \\
&+42\,B y^i \beta^3 r_{00|j} - 13\,\beta^2 y^i b_j r_{00|0} - 9\,b^i y_j r_{00|0}\,\beta^2 + 12\,b^i y_j \beta r^2{}_{00} - 9\,b^i b_j r_{00|0}\,\beta^3 + 45\,b^i b_j r^2{}_{00}\beta^2 - 4\,\beta^3 \delta^i{}_j B^3 r_{00|0} \\
&+36\,\beta^4 \delta^i{}_j r_{k0} s^k{}_0 - 24\,\beta^3 \delta^i{}_j B^2 r_{00|0} - 12\,\beta^2 \delta^i{}_j B^2 r^2{}_{00} - 21\,\beta^3 \delta^i{}_j B r_{00|0} + 28\,\beta^3 \delta^i{}_j r_{00}\, r_0 - 24\,\beta^2 \delta^i{}_j B r^2{}_{00} - 27 s^i{}_0 r_{00}\beta^2 y_j \\
&-9 s^i{}_0 r_{00}\beta^3 b_j + 240 B^4 s^i{}_0 \beta^4 s_{0j} - 384 B^3 s^i{}_0 \beta^4 s_{0j} - 8 B^2 y^i r_{00}\beta^3 r_j - 32 B y^i r_{00}\beta^3 r_j + 40\,B^2 y^i r_0 \beta^3 r_{j0} + 18\,B r^i{}_0 r_{00}\beta^3 b_j \\
&+136\,B y^i r_0\,\beta^3 r_{j0} - 12\,B^2 y^i r_{00}\beta^2 r_{j0} - 24\,B y^i r_{00}\beta^2 r_{j0} - 54\,B^2 r^i{}_0 \beta^4 r_{j0} - 54\,B r^i{}_0 \beta^4 r_{j0}\Big] + 72 \hat{R}^i{}_j \beta^6\,(2\,B + 1)\left(2\,B^2 + 2\,B - 1\right)
\end{aligned}
$$

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\begin{aligned}
t''_{16} := 2\beta \Big[&-96\,B^2 s^i{}_k s^k{}_0 \beta^3 y_j - 32\,B s^i{}_k s^k{}_0 \beta^3 y_j + 72\,B^2 b^i r_{00}\beta^2 s_{0j} - 36\,B b^i r_{00}\beta^2 s_{0j} - 20\,b^i y_j s^k{}_0 r_{k0}\,\beta^2 + 12 b^i y_j B^2 r_{00|0}\beta \\
&-36 b^i b_j B r^2{}_{00}\beta - 124 b^i b_j s^k{}_0 r_{k0}\beta^3 - 24\,B b^i r_0 \beta^3 r_{j0} + 6 B b^i r_{00}\beta^2 r_{j0} + 162 B s^i{}_0 r_{00}\beta^2 b_j - 72\,B^3 y^i r_{00}\beta\, s_{0j} - 108\,B^2 y^i r_{00}\beta\, s_{0j} \\
&-54\,B y^i r_{00}\beta\, s_{0j} + B^2 y^i s^k{}_j \beta^3 r_{k0} + B y^i s^k{}_j \beta^3 r_{k0} - B^3 s^i_k s^k_0 \beta^4 b_j - 432\,B^2 s^i_k s^k_0 \beta^4 b_j + 32\,B^3 b^i s^k{}_j \beta^4 r_{k0} + 120\,B^2 b^i s^k{}_j \beta^4 r_{k0}
\end{aligned}
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\begin{aligned}
&-12\,Bb^i s^k{}_j \beta^4 r_{k0} - 96\,B^2 y^i s^k{}_0 \beta^3 r_{jk} - 48\,B y^i s^k{}_0 \beta^3 r_{jk} + 36\beta\, b_j y^i B^2 r_{00|0} + 18\beta\, b_j y^i B r_{00|0} - 24\beta b_j y^i r_{00} r_0 + 54\,Bs^i{}_0 r_{00}\beta\, y_j \\
&+12\, b^i y_j B r_{00|0}\,\beta - 30\, b^i y_j r_{00} r_0\,\beta - 64\,B^3 b^i s^k{}_0 \beta^4 r_{jk} - 240\,B^2 b^i s^k{}_0 \beta^4 r_{jk} + 12\,B^2 r^i{}_0 r_{00}\beta\, y_j + 12\,Br^i{}_0 r_{00}\beta\, y_j + 36\, b^i b_j B r_{00|0}\beta^2 \\
&-90 b^i b_j r_0 r_{00}\beta^2 - \delta^i{}_j B^3 s^k{}_0 r_{k0} - \beta^3 \delta^i{}_j B^2 s^k{}_0 r_{k0} - \beta^3 \delta^i{}_j B s^k{}_0 r_{k0} - 64\,B^3 y^i s^k{}_0 \beta^3 r_{jk} + 192\,B^4 s^i{}_k s^k{}_0 \beta^4 b_j - 24\,B^2 b^i r_0\,\beta^3 r_{j0} \\
&-32\beta^2 \delta^i{}_j B^2 r_0 r_{00} - 20\beta^2 y^i b_j r_{k0} s^k{}_0 + 24\,B^2 b^i r_{00}\beta^3 r_j + 16 B^2 y^i r_{00}\beta^2 r_j + 16\,By^i r_{00}\beta^2 r_j + 36\,Br^i{}_0 r_{00}\beta^2 b_j - 80\,By^i r_0\,\beta^2 r_{j0} \\
&+B^2 y^i r_{00}\beta\, r_{j0} + 12\,By^i \beta\, r_{j0} + B^3 s^i{}_0 r_{00}\beta\, y_j - 64\,B^4 s^i{}_k s^k{}_0 \beta^3 y_j - 128\,B^3 s^i{}_k s^k{}_0 \beta^3 y_j + 24\,\beta\, y^i b_j B^3 r_{00|0} - 216\,B^3 s^i{}_0 r_{00}\beta^2 b_j \\
&-32\beta^2 \delta^i{}_j B r_0 r_{00} + 32\,B^3 y^i s^k{}_j \beta^3 r_{k0} + 24\,Bb^i s^k{}_0 \beta^4 r_{jk} - 48\,Bs^i{}_k s^k{}_0 \beta^4 b_j + \beta^2 \delta^i{}_j r_{00|0} + 16\,B^3 y^i \beta^2 r_{j0|0} + 24\,B^2 y^i \beta^2 r_{j0|0} \\
&+12\,By^i \beta^2 r_{j0|0} + 12\, b^i r_{00}\beta^2 r_{j0} + 18\, b_j b^i r_{00|0}\,\beta^2 - 36\, b_j b^i r^2{}_{00}\beta + 8\,\beta^2 \delta^i{}_j B^3 r_{00|0} - 8\,\beta^3 \delta^i{}_j r_{k0} s^k{}_0 + 108\,B^2 s^i{}_0 r_{00}\beta\, y_j \\
&+12\,\beta^2 \delta^i{}_j B^2 r_{00|0} + 12\,\beta \delta^i_j B^2 r^2{}_{00} + 6\,\beta^2 \delta^i{}_j B r_{00|0} - 8\,\beta^2 \delta^i{}_j r_{00}\, r_0 + 12\,\beta \delta^i_j B r^2{}_{00} - 16 B^3 y^i \beta^2 r_{00|j} - 24 B^2 y^i \beta^2 r_{00|j} \\
&-4\beta^3 s^i{}_k s^k{}_0 y_j - 12\,By^i r_{00|j} + 12\, y_j b^i r^2{}_{00} + B^4 s^i{}_0 \beta^3 s_{0j} - 288\,B^3 s^i{}_0 \beta^3 s_{0j} - 24\,B^3 r^i{}_j r_{00}\beta^3 - 36\,B^2 r^i{}_j r_{00}\beta^3 + 36\,Br^i{}_j r_{00}\beta^3 \\
&-24\,B^3 b^i \beta^3 r_{00|j} - 36\,B^2 b^i \beta^3 r_{00|j} + b^i \beta^3 r_{00|j} + B^3 r^i{}_0 \beta^3 r_{j0} + B^2 r^i{}_0 \beta^3 r_{j0} - Br^i{}_0 \beta^3 r_{j0} + y^i r_{00} r_j \\
&-20\, y^i r_0\,\beta^2 r_{j0} + 3\, y^i r_{00}\beta\, r_{j0} - 216\,B^2 s^i{}_0 \beta^3 s_{0j} + 144\,Bs^i{}_0 \beta^3 s_{0j} - 12\, b^i r_{00}\beta^3 r_j - 9 y^i r_{00}\beta s_{0j} - 36\, b^i r_{00}\beta^2 s_{0j} + 24 s^i{}_k s^k{}_0 \beta^4 b_j \\
&+24\,B^3 b^i \beta^3 r_{j0|0} + 36\,B^2 b^i \beta^3 r_{j0|0} - 36\,Bb^i \beta^3 r_{j0|0} + 18 r^i{}_0 r_{00}\beta^2 b_j + 3 r^i{}_0 r_{00}\beta\, y_j - 32\, b^i s^k{}_j \beta^4 r_{k0} + 64\, b^i s^k{}_0 \beta^4 r_{jk} \\
&+4\,\beta^3 y^i r_{k0} s^k{}_j - 8\,\beta^3 y^i r_{jk} s^k{}_0 + 54 s^i{}_0 r_{00}\beta^2 b_j + 9 s^i{}_0 r_{00}\beta y_j + 384\,B^3 s^i{}_k s^k{}_j \beta^5 + 24\, b_j y^i B^2 r^2{}_{00} + 24\, b_j y^i B r^2{}_{00} + 3 b^i y_j r_{00|0}\,\beta \\
&+3\,\beta y^i b_j r_{00|0} + 12\, b^i r_0\,\beta^3 r_{j0} - 60 s^i{}_k s^k{}_j \beta^5 + 72 s^i{}_0 \beta^3 s_{0j} + 3\,\beta \delta^i{}_j r^2{}_{00} - 2\,\beta^2 y^i r_{\,00|j} + 2\,\beta^2 y^i r_{j0|0} + 24 r^i{}_j r_{00}\beta^3 + 24\, b^i \beta^3 r_{00|j} \\
&-24\, b^i \beta^3 r_{j0|0} - 24 r^i{}_0 \beta^3 r_{j0} + 6 b^i y_j + 6 y^i b_j r^2_{00} - y^i b_j B^3 s^k{}_0 r_{k0} - 120 \beta^2 y^i b_j B s^k{}_0 r_{k0} - 96\beta y^i b_j B^2 r_0 r_{00} - 96\beta y^i b_j B r_0 r_{00} \\
&+32 b^i y_j B^3 s^k{}_0 r_{k0}\beta^2 - 48 b^i y_j B^2 s^k{}_0 r_{k0}\beta^2 - 72 b^i y_j B s^k{}_0 r_{k0}\,\beta^2 - 60 b^i y_j B r_0 r_{00}\beta - 32 b^i b_j B^3 s^k{}_0 r_{k0}\,\beta^3 + 24 b^i b_j B^2 s^k{}_0 r_{k0}\beta^3 \\
&-10 b^i b_j B s^k_0 r_{k0}\beta^3 + 144\,B^2 s^i{}_k s^k{}_j \beta^5 - 80\,B^2 y^i r_0\,\beta^2 r_{j0} + 24\,Bb^i r_{00}\beta^3 r_j - 144\,Bs^i{}_k s^k{}_j \beta^5 - 240\,\beta^2 y^i b_j B^2 s^k{}_0 r_{k0}\Big] \\
&-3\hat{R}^i{}_j \beta^4\,(2\,B+1)^2\left(4\,B^2+4\,B-17\right)
\end{aligned}
$$

$$
\begin{aligned}
t''_{18} :=\ & 2(2B+1)\Big(-36B^2 s^i{}_0 r_{00}\beta b_j - 8B^2 b^i s^k{}_j \beta^3 r_{k0} + 28\,Bb^i s^k{}_j \beta^3 r_{k0} - 36Bs^i{}_0 r_{00}\beta b_j - 6b^i b_j B r_{00|0}\,\beta + 30 b^i b_j r_{00} r_0\,\beta \\
&-6\,Br^i{}_0 r_{00}\beta\, b_j - 48\,Bs^i{}_k s^k{}_0 \beta^3 b_j + 36 b^i b_j \beta^2 r_{k0} s^k{}_0 + 18\,Bb^i r_{00}\beta\, s_{0j} + 64\,B^3 s^i{}_k s^k{}_0 \beta^3 b_j + 16\,B^2 b^i s^k{}_0 \beta^3 r_{jk} - 56\,Bb^i s^k{}_0 \beta^3 r_{jk} \\
&+18\,Bb^i \beta^2 r_{j0|0} - 18 Br^i{}_j r_{00}\beta^2 + 9 b^i r_{00}\beta s_{0j} - 18 Bb^i \beta^2 r_{00|j} - 32 b^i s^k{}_0 \beta^3 r_{jk} - 27 s^i{}_0 \beta^2 s_{0j} + 16\, b^i s^k{}_j \beta^3 r_{k0} - 9 s^i{}_0 r_{00}\beta\, b_j \\
&-9 r^i{}_j r_{00}\beta^2 + 12\, b^i r_{00}\beta^2 r_j - 36\,B^2 s^i{}_0 \beta^2 s_{0j} - 90\,Bs^i{}_0 \beta^2 s_{0j} - 32\,B^3 s^i{}_k s^k{}_j \beta^4 + 48\,B^2 s^i{}_k s^k{}_j \beta^4 + 72\,Bs^i{}_k s^k{}_j \beta^4 - 16 s^i{}_k s_0{}^k \beta^3 b_j \\
&-3 r^i{}_0 r_{00}\beta b_j - 3 b^i b_j r_{00|0}\beta + 72\,B^3 s^i{}_0 s_{0j}\beta^2 + 9 r^i{}_0 \beta^2 r_{j0} + 9\, b^i \beta^2 r_{j0|0} + 18\,Br^i{}_0 \beta^2 r_{j0} - 3\, b_j b^i r^2{}_{00} + 20 s^i{}_k s^k{}_j \beta^4 - 9\, b^i \beta^2 r_{00|j} \\
&-24 b^i b_j B^2 s^k{}_0 r_{k0}\beta^2 + 60 b^i b_j B s^k{}_0 r_{k0}\,\beta^2\Big) - 12\hat{R}^i{}_j \beta^2\,(2\,B+1)^3
\end{aligned}
$$

$$
\begin{aligned}
t''_{20} :=\ & 2\,(2B+1)^2\Big(-2\beta^2 s^i{}_k s^k{}_j + 2Br^i{}_j r_{00} - 2\,Bb^i r_{j0|0} - 2\,Br^i{}_0 r_{j0} + 2\,Bb^i r_{00|j} - 2\, b^i r_{00}\, r_j + 2\, b^i r_0\, r_{j0} - 4 b^i b_j B s^k{}_0 r_{k0} \\
&+8\,Bb^i s^k{}_0 \beta\, r_{jk} + 8\,B^2 s^i{}_k s^k{}_0 \beta\, b_j + 8\,Bs^i{}_k s^k{}_0 \beta\, b_j + 12 B^2 s^i{}_0 s_{0j} + 12 Bs^i{}_0 s_{0j} + 3 s^i{}_0 s_{0j} - b^i r_{j0|0} - r^i{}_0 r_{j0} + b^i r_{00|j} + r^i{}_j r_{00} \\
&+2\beta s^i{}_k s^k{}_0 b_j - 2\beta b^i r_{k0} s^k{}_j + 4\,\beta\, b^i r_{jk} s^k{}_0 - 2 b^i b_j s^k{}_0 r_{k0} - 8\,B^2 s^i{}_k s^k{}_j \beta^2 - 8\,Bs^i{}_k s^k{}_j \beta^2\Big) + \hat{R}^i{}_j\,(2\,B+1)^4
\end{aligned}
$$

8. **Appendix 4**

$$
\begin{aligned}
d_1 :=\ & 0 \\
d_2 :=\ & 6\beta^{14}\Big(18\beta^3 s_{|0} + 79 Br_{00|0}\beta + 250 s_0 r_{00}\beta + 28 B^2 r_{00|0}\,\beta - 6 r r_{00}\beta^2 + 180\, s_\theta r_0 \beta^2 - 82 r_{00} r_0 \beta - 18 B r_{0|0}\beta^2 - 17 B s_{0|0}\beta^2 \\
&-54 s^m_i s^i_m \beta^4 - 108 s^m_0 s_{0m}\beta^2 + 212\,Bs_\theta r_{00}\,\beta - 68\,Br_{00} r_0 \beta + 73\, n r^2_{00} - 21 n r_{00|0}\beta + 72 n s_{0|0}\beta^2 + 288\,\beta^3 s^m_0 s_m + 432\,Bs^m_0 s_{0m}\,\beta^2 \\
&+18\,Br^m_m r_{00}\,\beta^2 + 18 Bb^m r_{00|m}\,\beta^2 - 276\,Bs^m_0 r_{0m}\,\beta^2 + 18 r^m_m r_{00}\,\beta^2 + 18\, b^m r_{00|m}\,\beta^2 - 156 s^m_0 r_{0m}\,\beta^2 - 36\,\beta^3 r^m_m s_\theta - 36\,\beta^3 b^m s_{0|m} \\
&+36\,\beta^3 r^m_0 s_m + 36\,\beta^3 s^m_0 r_m + 4 B^2 n r^2_{00} + 52 Bn r^2_{00} - 240 n s_0 r_{00}\beta + 64 n r_{00} r_0 \beta - 12 n B^2 r_{00|0}\beta - 48 Bn r_{00|0}\beta - 96 s_0 n r_0 \beta^2 \\
&-96\,Bs_\theta\, n r_{00}\,\beta + 32\,Bn r_{00}\, r_\theta\,\beta + 144\,Bs^m_0 n r0m\,\beta^2 + 144 n s^m_0 r_{0m}\,\beta^2 - 144 n s^m_0 s_m \beta^3 + 138 s^2_0 \beta^2 + 6 r^2_0 \beta^2 - 18 r_{0|0}\,\beta^2 - 114 s_{0|0}\beta^2 \\
&+72\,Bn s_{0|0}\beta^2 + 72 s^m_{0|m}\beta^3 + 10 r_{00|0}\beta + 12\,B^4 r^2_{00} - 8\,B^3 r^2_{00} - 12\,B^2 r^2_{00} - 165\,Br^2_{00} + 2 r^2_{00} + 14 Bs^m_{0|m}\beta^3\Big) + 27\widehat{\mathbf{Ric}}\beta^{16}\,(8\,B+7) \\
d_3 :=\ & -1296\Big(n-1\Big) s^2{}_0 \beta^{15}
\end{aligned}
$$

$$
\begin{aligned}
d_4 :=& -6\beta^{12}\Big(-96\,Bs_0\,nr_{00}\beta + 32Bnr_{00}r_0\beta + 144\,Bs_0^m nr_{0m}\,\beta^2 + 212Bs_0r_{00}\beta - 165\,Br_{00}^2 - 68Br_{00}r_0\beta + 432\,Bs_0^m s_{0m}\beta^2 \\
&-294\,Bs_0^m r_{0m}\,\beta^2 + 18\,Br_m^m r_{00}\,\beta^2 - 18Br_0^m r_{0m}\beta^2 + 18Bb^m r_{00|m}\beta^2 - 18Bb^m r_{0m|0}\,\beta^2 - 96ns_0r_0\beta^2 + 72Bs_{0|0}n\beta^2 - 12\,B^2 nr_{00|0}\beta \\
&-48\,Bnr_{00|0}\beta - 240\,s_\theta\,nr_{00}\,\beta + 64\,nr_{00}\,r_\theta\,\beta + 144s_0^m nr_{0m}\,\beta^2 - 144s_0^m s_m\,n\beta^3 + 79\,Br_{00|0}\beta - 82r_{00}\,r_\theta\,\beta + 250\,s_\theta r_{00}\,\beta + 28\,B^2 r_{00|0}\beta \\
&+180\,s_\theta\,r_\theta\,\beta^2 - 174\,Bs_{0|0}\beta^2 - 6\,rr_{00}\,\beta^2 + 144\,Bs_{0|m}^m\beta^3 - 54s_m^i s_i^m\beta^4 + 12B^4 r_{00}^2 - 108s_0^m s_{0m}\,\beta^2 + 306s_0^m s_m\,\beta^3 + 18r_m^m r_{00}\,\beta^2 \\
&-18r_0^m r_{0m}\,\beta^2 + 18\,b^m r_{00|m}\,\beta^2 - 8B^3 r_{00}^2 - 18b^m r_{0m|0}\beta^2 - 174s_0^m r_{0m}\beta^2 - 36\beta^3 r_m^m s_0 + 54\beta^3 r_0^m s_m + 36\beta^3 s_0^m r_m - 36\,\beta^3 b^m s_{0|m} \\
&+18\,\beta^3 b^m s_{0|m} + 4\,B^2 nr_{00}^2 + 52\,Bnr_{00}^2 + 72s_{0|0}n\beta^2 - 21\,nr_{00|0}\beta + 2r_{00}^2 + 138s_0^2\beta^2 + 6r_0^2\beta^2 - 114s_{0|0}\beta^2 + 72s_{0|m}^m\beta^3 + 10r_{00|0}\beta \\
&+73\,nr_{00}^2 - 12B^2 r_{00}^2\Big) - 216\widehat{\mathbf{Ric}}\beta^{14}B\,(B+2) \\
d_5 :=& \,432\Big(n-1\Big)\Big(8\,B-5\Big)s^2{}_0\beta^{13} \\
d_6 :=& -2\,\beta^{10}\Big(-54\beta^3 s_{|0} + 15\,Br_{00|0}\,\beta - 334\,s_\theta r_{00}\,\beta - 108\,\beta^3 Bs_{|0} - 20\,B^3 r_{00|0}\,\beta - 144\,B^2 r_{00|0}\beta - 24\,Br_0^2\beta^2 + 30rr_{00}\,\beta^2 \\
&-540s_0r_\theta\,\beta^2 - 10r_{00}\,r_\theta\,\beta + 216\,s_\theta\,r\beta^3 + 36\,B^2 r_{0|0}\,\beta^2 + 90\,Br_{0|0}\,\beta^2 - 1296\,Bs_0^2\beta^2 + 372\,B^2 s_{0|0}\beta^2 + 570\,Bs_{0|0}\beta^2 - 432\,B^2 s_{0|m}^m\beta^3 \\
&-43s_{0|m}^m\beta^3 + 54s_i^m s_m^i\beta^4 + 216s^m s_m + s_0^m s_{0m}\beta^2 - 160B^2 s_0 r_{00}\beta + 80B^2 r_{00}r_0\beta - 712Bs_0r_{00}\beta + 344Br_{00}r_0\beta - 864Bs_0r_0\beta^2 \\
&-r_{00}^2 - 35nr_{00|0}\beta - 36ns_{0|0}\beta^2 - s_0^2\beta^2 - 288\beta^3 s_0^m s_m + 24Brr_{00}\beta^2 + s_i^m s_m^i\beta^4 - 1296B^2 s_0^m s_{0m}\beta^2 + 1296Bs_0^m s_{0m}\,\beta^2 \\
&-36B^2 r_m^m r_{00} - 36B^2 b^m r_{00|m}\beta^2 - r_m^m r_{00}\beta^2 - 90Bb^m r_{00|m}\beta^2 + s_0^m r_{0m}\beta^2 - 333Br_{00}^2 - 216\beta^3 Bs_0^m r_m + 216\beta^3 Br_m^m s_0 \\
&+216Bb^m s_{0|m} - \beta^3 Br_0^m s_m - B\beta^3 s_0^m s_m + 18r_m^m r_{00}\,\beta^2 + 18\,b^m r_{00|m}\,\beta^2 - 300s_0^m r_{0m}\beta^2 + 108\,\beta^3 r_m^m s_\theta + 108\,\beta^3 b^m s_{0|m} \\
&-108\beta^3 r_0^m s_m - \beta^3 s_0^m r_m + s_0^m\beta^2 r_{0m} - 36nB^2 r_{00}^2 - 204Bnr_{00}^2 + 736ns_0r_{00}\beta - 104nr_{00}r_0\beta + 480nBs_0^2\beta^2 - 144nB^2 s_{0|0}\beta^2 \\
&+8r_{00|0}\beta + 84nB^2 nr_{00|0}\beta + 78Bnr_{00|0}\beta + s_\theta\,nr_\theta\,\beta^2 - 360nBs_{0|0}\beta^2 - 288\,B^2 s_0^m nr_{0m}\,\beta^2 - 32nB^2 nr_{00}\,r_\theta\,\beta + 640nBs_\theta r_{00}\,\beta \\
&-r_{00}\,r_\theta\,\beta - 294r_{00}^2 + 384nBs_0r_0\beta^2 + s_0r_{00}\,\beta - 720\,Bs_0^m nr_{0m}\,\beta^2 + 864nBs_0^m s_m\beta^3 - 72ns_0^m r_{0m}\,\beta^2 + 432ns_0^m s_m\beta^3 \\
&+1350s_0^2\beta^2 - 30r_0^2\beta^2 - 18r_{0|0}\,\beta^2 - 186s_{0|0}\beta^2 + 216s_{0|m}^m\beta^3 + 122r_{00|0}\beta + 12\,B^5 r_{00}^2 - 30\,B^4 r_{00}^2 + 12\,B^3 r_{00}^2 + 264\,B^2 r_{00}^2\Big) \\
&+24\widehat{\mathbf{Ric}}\beta^{12}\,(B-1)\,\Big(4\,B^2+19\,B+13\Big) \\
d_7 :=& -432\Big(n-1\Big)\Big(8B^2-16B-1\Big)s^2{}_0\beta^{11} \\
d_8 :=& \,2\beta^8\Big(90\beta^3 s_{|0} + 279Br_{00|0}\beta - 566s_0r_{00}\beta - 72\beta^3 B^2 s_{|0} - 72\beta^3 Bs_{|0} - 28B^3 r_{00|0}\beta + 60B^2 r_{00|0}\beta - 8B^2 r_0^2\beta^2 - 32Br_0^2\beta^2 \\
&+564s_0r_0\beta^2 - 242r_{00}r_0\beta + 144s_0r\beta^3 + 8B^3 r_{0|0}\beta^2 + 48B^2 r_{0|0}\beta^2 - 66Br_{0|0}\beta^2 - 1208B^2 s_0^2\beta^2 + 2512\,Bs_0^2\beta^2 + 88B^3 s_{0|0}\beta^2 \\
&-606Bs_{0|0}\beta^2 - 192B^3 s_{0|m}^m\beta^3 - 288B^2 s^m{}_{0|m}\beta^3 + 720Bs_{0|m}^m\beta^3 - 270s_i^m s_m^i\beta^4 + 36s_0^m s_{0m}\beta^2 - 80B^2 s_0 r_{00}\beta + 112B^2 r_{00}r_0\beta \\
&-r_{00}r_0\beta - s_0r_0\beta^2 - 624Bs_0r_0\beta^2 - 99nr_{00}^2 - r_{00|0}\beta + 176ns_{0|0}\beta^2 - 928ns_0^2\beta^2 + 960\beta^3 s_0^m s_m + 288s_0r\beta^3 + 8B^2 rr_{00}\beta^2 \\
&+32Brr_{00}\beta^2 + 432B^2 s_i^m s_m^i\beta^4 + 432Bs^m s_m\beta^4 - 576B^3 s_0^m s_{0m}\beta^2 + 1728B^2 s_0^m s_{0m}\beta^2 + 432\,Bs_0^m s_{0m}\,\beta^2 - 48\,B^2 r_m^m r_{00}\,\beta^2 \\
&-48\,B^2 b^m r_{00|m}\beta^2 + 66\,Br_m^m r_{00}\,\beta^2 + 66\,Bb^m r_{00|m}\beta^2 - 948\,Bs_0^m r_{0m}\,\beta^2 - 8\,B^3 r_m^m r_{00}\,\beta^2 - 8\,B^3 b^m r_{00|m}\beta^2 + 144\,B^3 s_0^m r_{0m}\,\beta^2 \\
&-144\,\beta^3 Bs_0^m r_m + 144\,\beta^3 B^2 r_m^m s_\theta + 144\,\beta^3 B^2 b^m s_{0|m} - 144\,\beta^3 B^2 r_0^m s_m - 1344\,\beta^3 B^2 s_0^m s_m - 144\,\beta^3 B^2 s_0^m r_m + 144\,\beta^3 Br_m^m s_0 + 90r_{00}^2 \\
&+144\,\beta^3 Bb^m s_{0|m} - 144\,\beta^3 Br_0^m s_m - 48\,\beta^3 Bs_0^m s_m + 98r_m^m r_{00}\,\beta^2 + 98\,b^m r_{00|m}\,\beta^2 - 444s_0^m r_{0m}\,\beta^2 - 60B^3 r_{00}^2 - 12\,B^2 r_{00}^2 - 513\,Br_{00}^2 \\
&-180\,\beta^3 b^m s_{0|m} + 180\,\beta^3 r_0^m s_m + 180\,\beta^3 s_0^m r_m + 384\,B^2 s_0^m\beta^2 r_{0m} - 48\,B^2 nr_{00}^2 - 168\,Bnr_{00}^2 + 608ns_0r_{00}\,\beta + 128nr_{00}\,r_\theta\,\beta + 78\,B^4 r_{00}^2 \\
&-1600nBs_0^2\beta^2 + 512nB^2 s_0^2\beta^2 - 32nB^3 s_{0|0}\beta^2 - 192\,B^2 ns_{0|0}\beta^2 + 16\,B^3 nr_{00|0}\beta + 24\,B^2 nr_{00|0}\beta - 96\,Bnr_{00|0}\beta - 64ns_{0|0}r_0\beta^2 \\
&+48Bns_{0|0}\beta^2 - 384\,B^2 s_0^m nr_{0m}\,\beta^2 - 64\,B^2 nr_{00}\,r_\theta\,\beta + 704nBs_0r_{00}\,\beta - 64\,Bnr_{00}\,r_\theta\,\beta + 94r_{00|0}\beta + 128nB^2 s_0 r_\theta\,\beta^2 + 408s_{0|m}^m\beta^3 \\
&+512nBs_0r_0\beta^2 + 128nB^2 s_0r_{00}\beta + 96nBs_0^m r_{0m}\beta^2 + 76nB^2 s_0^m s_m\beta^3 + 576nBs_0^m s_m\beta^3 - 64nB^3 s_0^m r_{0m}\beta^2 + 352ns_0^m r_{0m}\beta^2 \\
&+1306s_0^2\beta^2 + 22r_0^2\beta^2 - 98r_{0|0}\,\beta^2 - 418s_{0|0}\beta^2 - 22rr_{00}\beta^2 + 288B^2 s_{0|0}\beta^2 - 180\,\beta^3 r_m^m s_\theta - 20Bs_0r_{00}\beta + 12B^5 r_{00}^2 - 288ns_0^m s_m\beta^3\Big) \\
&-2\widehat{\mathbf{Ric}}\beta^{10}\,\Big(8\,B^4+64\,B^3-132\,B^2-392\,B-115\Big) \\
d_9 :=& \,48\Big(n-1\Big)\Big(32\,B^3-168\,B^2+24\,B+31\Big)s^2{}_0\beta^9 \\
d_{10} :=& \,2\,\beta^6\Big(-282r_{00}^2 + 840\,B^2 s_0^m\beta^2 r_{0m} - 686s_0^2\beta^2 - 58r_0^2\beta^2 + 44r_{0|0}\,\beta^2 - 106\,\beta^3 s_{|0} - 52s_{0|m}^m\beta^3 + 100s_{0|0}\beta^2 + 24\beta^3 B^2 s_{|0} \\
&-204\beta^3 Bs_{|0} - 24B^3 r_{00|0}\beta - 192B^2 r_{00|0}\beta - 129Br_{00|0}\beta + 690s_0r_{00}\beta + 102r_{00}r_0\beta - 1832B^2 s_0^2\beta^2 - 1280Bs_0^2\beta^2 + 8B^2 r_0^2\beta^2 \\
&+540B^2 s_{0|0}\beta^2 + 750Bs_{0|0}\beta^2 - 40Br_0^2\beta^2 + 58rr_{00}\beta^2 - 564s_0r_0\beta^2 + 360s^m s_m\beta^4 + 138s_m^i s_i^m\beta^4 + 24s_0^m s_{0m}\beta^2 + 408s_0r\beta^3 \\
&+60\,B^2 r_{0|0}\beta^2 + 174\,Br_{0|0}\beta^2 + 64B^3 s_{0|m}^m\beta^3 - 816\,B^2 s^m{}_{0|m}\beta^3 - 848\,Bs^m{}_{0|m}\beta^3 - 44r_m^m r_{00}\,\beta^2 - 44\,b^m r_{00|m}\,\beta^2 + 24s_0^m r_{0m}\,\beta^2
\end{aligned}
$$

$$
\begin{aligned}
&-212\,\beta^3 r_0^m s_m - 212\,\beta^3 s_0^m r_m + 288\,B^3 s_0^2\beta^2 - 140 n s_{0|0}\beta^2 + 672 n s_0^2\beta^2 + 45\,n r_{00|0}\beta + 16\,\beta^3 B^3 s_{|0} + 57\,n r_{00}^2 + 32\,B^4 s_{0|m}^m\beta^3\\
&+64 n B^3 s_0^m r_{0m}\,\beta^2 + 212\,\beta^3 b^m s_{0|m} - 192 n B^2 s_0^m r_{0m}\,\beta^2 - 96 n B^2 s_{0|0}\beta^2 - 32\beta^3 B^3 r_m^m s_0 + 32\beta^3 B^3 r_0^m s_m - 96 B^3 s_0^m s_{0m}\beta^2\\
&-672 n B s_0^m r_{0m}\,\beta^2 + 120 n B r_{00}^2 + 48 n B^2 r_{00}^2 + 126 n B r_{00|0}\beta - 480 n s_0 r_{00}\,\beta - 168 n r_{00}\,r_0\,\beta + 1024 n B^2 s_0^2\beta^2 + 1024 n B s_0^2\beta^2\\
&-128 n B^3 s_0^2\beta^2 - 96 B^2 s_0 r\beta^3 + 448 n s_0 r_0\beta^2 + 72 n B^2 n r_{00|0}\beta - 336\,B n s_{0|0}\beta^2 - 32\,\beta^3 B^3 b^m s_{0|m} + 416 n s_0^m s_m\beta^3 - 280 n s_0^m r_{0m}\,\beta^2\\
&+96 B^2 r_{00} r_0\beta + 624\,B s_0 r_{00}\beta + 432 B r_{00} r_0\beta - r_{00}\,\beta^2 + 40\,B r r_{00}\,\beta^2 + s_\partial r_0\beta^2 - s_0 r_0\beta^2 - 96\,B s_\partial\, r\beta^3 + 96\,B^4 s_0^m s_{0m}\,\beta^2\\
&+144\,B^2 s_0^m s_{0m}\,\beta^2 + 48\,B s_0^m s_{0m}\,\beta^2 - 60\,B^4 r_{00}^2 + 320\,B^3 s_0^m s_m\beta^3 + 8\,B^3 r_m^m r_{00}\,\beta^2 + 8\,B^3 b^m r_{00|m}\,\beta^2 - 192\,B^3 s_m^i s_i^m\beta^4 + 24\,B^3 r_{00}^2\\
&+144\,B g^m s_m\beta^4 + 720\,B s_m^i s_i^m\beta^4 + 192\,B^2 r_{00}^2 + 48\,\beta^3 B^2 s_0^m r_m - 60\,B^2 r_m^m r_{00}\,\beta^2 - 60\,B^2 b^m r_{00|m}\,\beta^2 - 174\,B r_m^m r_{00}\,\beta^2 - 321\,B r_{00}^2\\
&+804\,B s_0^m r_{0m}\,\beta^2 - 48\,\beta^3 B^2 r_m^m s_0 - 48\,\beta^3 B^2 b^m s_{0|m} + 48\beta^3 B^2 r_0^m s_m - 384\beta^3 B^2 s_0^m s_m - 48 B^3 s_0^m r_{0m}\beta^2 + 408\beta^3 B r_m^m s_0\\
&-408\,\beta^3 B r_0^m s_m - 2208\,\beta^3 B s_0^m s_m - 408\,\beta^3 B s_0^m r_m - 6 r_{00|0}\beta + 24\,B^5 r_{00}^2 - 174\,B b^m r_{00|m}\,\beta^2 - 288 B^2 s^m s_m\beta^4 + 144 B^2 s_m^i s_i^m\beta^4\\
&-40 B^3 s_{0|0}\beta^2 - 8 B^3 r_{0|0}\beta^2 + 212\,\beta^3 r_m^m s_\partial - 320\,\beta^3 s_0^m s_m + 32\,\beta^3 B^3 s_0^m r_m + 408\beta^3 B b^m s_{0|m}\Big)\\
&+2\widehat{\mathbf{Ric}}\beta^8\left(8B^4 - 80B^3 - 348B^2 - 176B + 29\right)
\end{aligned}
$$

$$
d_{11} := -16\,(2B+1)\left(8B^3 - 132B^2 + 186B + 19\right)(n-1)\,s^2{}_0\beta^7
$$

$$
\begin{aligned}
d_{12} := -2\,\beta^4\Big(&-102 r_{00}^2 - 102 s_0^2\beta^2 - 10 r_0^2\beta^2 + 18\,\beta^3 s_{|0} + 168 s_{0|m}^m\beta^3 - 34 r_{0|0}\,\beta^2 - 66 s_{0|0}\beta^2 - 144\,\beta^3 B^2 s_{|0} - 144\,\beta^3 B s_{|0}\\
&-40\,B^3 r_{00|0}\beta - 36\,B^2 r_{00|0}\beta + 39\,B r_{00|0}\beta + 202 s_0 r_{00}\,\beta - 2 r_{00}\,r_\partial\,\beta - 272\,B^2 s_0^2\beta^2 - 608\,B s_0^2\beta^2 - 16\,B^2 r_0^2\beta^2 + 144 B^3 s_{0|0}\beta^2\\
&+384\,B^2 s_{0|0}\beta^2 - 30 B s_{0|0}\beta^2 - 64 B r_0^2\beta^2 + 10\,r r_{00}\beta^2 + 20 s_0 r_0\beta^2 + 64\,s^m s_m\,\beta^4 - 86 s_m^i s_i^m\beta^4 + 84 s_0^m s_{0m}\,\beta^2 + 288\,s_\partial\, r\beta^3\\
&+16\,B^3 r_{0|0}\,\beta^2 + r_{0|0}\,\beta^2 + r_{0|0}\,\beta^2 + s_{0|m}^m\beta^3 + 34 r_m^m r_{00}\,\beta^2 + 34\,b^m r_{00|m}\,\beta^2 + 4 s_0^m r_{0m}\,\beta^2 - 36\,\beta^3 r_m^m s_0 - 36\,\beta^3 b^m s_{0|m}\\
&+36\,\beta^3 r_0^m s_m + 36\,\beta^3 s_0^m r_m + 384\,B^2 s_0^m\beta^2 r_{0m} + 35 n s_0^2\beta^2 + 11 n r_{00|0}\beta + 21 n r_{00}^2 + 96\beta^3 s_0^m s_m + 352\,B^2 s_0 r_{00}\,\beta + 160\,B^2 r_{00} r_0\beta\\
&+868\,B s_0 r_{00}\,\beta + 76\,B r_{00} r_0\beta + 16 B^2 r r_{00}\,\beta^2 + 64\,B r r_{00}\,\beta^2 - 544\,B^2 s_\partial\, r_\partial\,\beta^2 - 736\,B s_\partial\, r_\partial\,\beta^2 + 576\,B s_\partial\, r\beta^3 - 192\,B^4 s_0^m s_{0m}\,\beta^2\\
&+384\,B^3 s_0^m s_{0m}\,\beta^2 + s_0^m s_{0m}\,\beta^2 - s_0^m s_m\beta^3 - r_m^m r_{00}\,\beta^2 - 512\,B^3 s_0^2\beta^2 - 40 n s_{0|0}\beta^2 - 384\,B^3 s_{0|m}^m\beta^3 - 576\,B^2 s_{0|m}^m\beta^3\\
&-16\,B^3 b^m r_{00|m}\,\beta^2 - 32\,B^4 s_m^i s_i^m\beta^4 - 64 n B^3 s_0^m r_{0m}\,\beta^2 - 256 n B^2 s_0 r_{00}\,\beta - 64\,B^3 s^m s_m\,\beta^4 + 128\,B^3 s_m^i s_i^m\beta^4 + 192\,B^2 s^m s_m\,\beta^4\\
&+672\,B^2 s_m^i s_i^m\beta^4 + s^m s_m\,\beta^4 + 128\,B s_m^i s_i^m\beta^4 - \beta^3 B^2 s_0^m r_m - r_m^m r_{00}\,\beta^2 - 48 B^3 r_{00}^2 - 30\,B r_m^m r_{00}\,\beta^2 - 30\,B b^m r_{00|m}\,\beta^2\\
&-180\,B s_0^m r_{0m}\,\beta^2 + 288\,\beta^3 B^2 r_m^m s_0 + 288\,\beta^3 B^2 b^m s_{0|m} - 288\,\beta^3 B^2 r_0^m s_m - 1536\,\beta^3 B^2 s_0^m s_m - 160\,B n r_{00}\,r_\partial\,\beta + 128 n B^2 s_\partial r_0\beta^2\\
&+512 n B s_0 r_0\beta^2 - 384 n B^2 s_0^m r_{0m}\beta^2 - 336 n B s_0^m r_{0m}\beta^2 + 576 n B^2 s_0^m s_m\beta^3 + 576 n B s_0^m s_m\, n\beta^3 + 224 n s_0 r_0\beta^2 + 36\,B^2 r_{00}^2 + 60 n B r_{00}^2\\
&-64 n B^2 r_{00} r_0\beta - 544 n B s_0 r_{00}\,\beta - 208 n s_0 r_{00}\,\beta + 48 n B r_{00|0}\beta - 96\,\beta^3 B s_0^m s_m - 288\,\beta^3 B s_0^m r_m - 80 n s_0^m r_{0m}\beta^2 + 144 n s_0^m s_m\beta^3\\
&+224 B^3 s_0^m r_{0m}\beta^2 + 288\beta^3 B r_m^m s_\partial + 288\beta^3 B b^m s_{0|m} - 288\,\beta^3 B r_0^m s_m + 10 r_{00|0}\beta + 24\,B^5 r_{00}^2 - 84\,B^2 r_{00}^2 - 405\,B r_{00}^2 + 48 B^4 r_{00}^2\\
&-64 n r_{00} r_0\beta + 128 n B^2 s_0^2\beta^2 + 704 n B s_0^2\beta^2 + 16 n B^3 r_{00|0}\beta + 60\,B^2 n r_{00|0}\beta - 192 n B^2 s_{0|0}\beta^2 - 32 n B^3 s_{0|0}\beta^2 - 168\,B n s_{0|0}\beta^2\\
&+256 n B^3 s_0^2\beta^2 - 96\,B^2 b^m r_{00|m}\,\beta^2\Big) + 8\widehat{\mathbf{Ric}}\beta^6\,(2\,B+1)\,(B-1)\left(2\,B^2 + 17\,B + 17\right)
\end{aligned}
$$

$$
d_{13} := -48\Big(n-1\Big)\Big(2\,B+1\Big)^2\Big(4\,B^2 - 20\,B + 7\Big)s^2{}_0\beta^5
$$

$$
\begin{aligned}
d_{14} := -2\,\beta^2\Big(&6 r_{00}^2 + 264\,B^2 s_0^m\beta^2 r_{0m} - 12 n B^2 r_{00}^2 - 12\,B n r_{00}^2 + 32 n s_0 r_{00}\,\beta + 8 n r_{00}\,r_\partial\,\beta - 128 n B^2 s_0^2\beta^2 - 224 n B s_0^2\beta^2 + 32\beta^3 B^3 s_{|0}\\
&-64 n s_0^2\beta^2 + 24 n B s_{0|0}\beta^2 - 32 n s_0 r_0\beta^2 + 128 n B^3 s_0^2\beta^2 - 192\,B^2 s_\partial\, r\beta^3 + 42 s_{0|0}\beta^2 - 50\,\beta^3 s_{|0} - 104 s_{0|m}^m\beta^3 + 18 s_0^2\beta^2 - 26 r_0^2\beta^2\\
&+48\,\beta^3 B^2 s_{|0} - s_{|0} - 4\,B^3 r_{00|0}\beta - 48\,B^2 r_{00|0}\beta - 27\,B r_{00|0}\beta - 26\,s_\partial r_{00}\,\beta - 14 r_{00}\,r_\partial\,\beta + 144\,B^2 s_0^2\beta^2 + 48\,B s_0^2\beta^2 + 16\,B^2 r_0^2\beta^2\\
&-48\,B^3 s_{0|0}\beta^2 + 156\,B^2 s_{0|0}\beta^2 + 174\,B s_{0|0}\beta^2 - 8\,B r_0^2\beta^2 + 26\,r r_{00}\,\beta^2 - 20\,s_\partial\, r_\partial\,\beta^2 + 136\,s^m s_m\,\beta^4 + 82 s_m^i s_i^m\beta^4 - 68 s_0^m s_{0m}\,\beta^2\\
&-16\,B^3 r_{0|0}\,\beta^2 + 12\,B^2 r_{0|0}\,\beta^2 + 78\,B r_{0|0}\,\beta^2 + 128\,B^3 s_{0|m}^m\beta^3 - 336\,B^2 s_{0|m}^m\beta^3 - 400\,B s_{0|m}^m\beta^3 - 34 r_m^m r_{00}\,\beta^2 - 34\,b^m r_{00|m}\,\beta^2\\
&+100\beta^3 b^m s_{0|m} - r_0^m s_m - 100\,\beta^3 s_0^m r_m - s_0^m s_m\beta^3 + 128 n B^2 s_\partial r_{00}\,\beta + 32 n\,B^2 r_{00}\,r_\partial\,\beta + 128 n B s_\partial r_{00}\,\beta + 32\,B n r_{00}\,r_\partial\,\beta\\
&-192 n\,B^2 s_0^m s_m\beta^3 - 96 n B s_0^m s_m\beta^3 + 64 n B^3 s_0^m r_{0m}\,\beta^2 + 96 n B^2 s_0^m r_{0m}\,\beta^2 + 48 n B s_0^m r_{0m}\,\beta^2 - 8 n B^3 r_{00|0}\,\beta - 12 n B^2 r_{00|0}\,\beta\\
&+48 n B^2 s_{0|0}\beta^2 - 6\,B n r_{00|0}\,\beta - 64\,\beta^3 B^3 b^m s_{0|m} - 16 n s_0^m s_m\beta^3 + 8 n s_0^m r_{0m}\,\beta^2 + 64\,\beta^3 B^3 s_0^m r_m + 64\,\beta^3 B^3 r_0^m s_m - 64\,\beta^3 B^3 r_m^m s_\partial\\
&-s_0 r_{00}\beta + 16\,B^2 r_{00} r_0\beta - s_0 r_{00}\beta + 88\,B r_{00} r_0\,\beta - 16\,B^2 r r_{00}\beta^2 + 8 B r r_{00}\beta^2 + 160 B^2 s_0 r_0\beta^2 - 320 B s_0 r_0\beta^2 - 192 B s_0 r\beta^3\\
&-128 B^4 s_0^m s_{0m}\beta^2 + 128\,B^3 s_0^m s_{0m}\,\beta^2 - 48\,B^2 s_0^m s_{0m}\,\beta^2 - 208\,B s_0^m s_{0m}\,\beta^2 + 320\,B^3 s_0^m s_m\,\beta^3 + 16\,B^3 r_m^m r_{00}\,\beta^2 + 16\,B^3 b^m r_{00|m}\,\beta^2\\
&-s^m s_m\beta^4 - s_m^i s_i^m\beta^4 - s^m s_m\beta^4 + 96 B^2 s_m^i s_i^m\beta^4 + 96 B s^m s_m\beta^4 + 272 B s_m^i s_i^m\beta^4 + 96\beta^3 B^2 s_0^m r_m - 12 B^2 r_m^m r_{00}\beta^2\\
&-s_m^i s_i^m\beta^4 - 128 n B^2 s_\partial r_0\,\beta^2 - s_\partial r_0\beta^2 - b^m r_{00|m}\,\beta^2 - 78 B r_m^m r_{00}\,\beta^2 - 3 n r_{00}^2 + 4 n s_{0|0}\beta^2 - 192\,B^3 s_0^2\beta^2 - n r_{00|0}\beta\\
&-78 B b^m r_{00|m}\,\beta^2 + 36 B s_0^m r_{0m}\beta^2 - 96\beta^3 B^2 r_m^m s_\partial - 96\beta^3 B^2 b^m s_{0|m} + 96\beta^3 B^2 r_0^m s_m - 384\beta^3 B^2 s_0^m s_m - 32 B^3 s_0^m r_{0m}\beta^2\\
&+168\beta^3 B r_m^m s_0 + 168\,\beta^3 B b^m s_{0|m} - 168\,\beta^3 B r_0^m s_m - 336\beta^3 B s_0^m s_m - 168\,\beta^3 B s_0^m r_m - 2 r_{00|0}\beta + 12 B^5 r_{00}^2 - 30\,B^4 r_{00}^2 + 12\,B^3 r_{00}^2\\
&+96\,B^2 r_{00}^2 + 57\,B r_{00}^2 + 32 n B^3 s_{0|0}\beta^2 + 168\,s_\partial\, r\beta^3 + 34 r_{0|0}\,\beta^2 - 52 s_0^m r_{0m}\,\beta^2\Big) - 8\widehat{\mathbf{Ric}}\beta^4\,(2\,B+1)^2\,(B+2)\,(B-4)
\end{aligned}
$$

$$d_{15} := -48\Big(n-1\Big)\Big(2\,B-3\Big)\Big(2\,B+1\Big)^3 {s^2}_0\beta^3$$

$$\begin{aligned}d_{16} :=\ & 2\Big(2B+1\Big)\Big(40B^2 s_0^m\beta^2 r_{0m} + 30 s_0^2\beta^2 - 14 r_0^2\beta^2 + 10 r_{0|0}\beta^2 - 18\beta^3 s_{|0} - 24 s_{0|m}^m\beta^3 + 10 s_{0|0}\beta^2 - 36\beta^3 B s_{|0} - 6B^2 r_{00|0}\beta \\ & -18\,s_0 r_{00}\,\beta - 6 r_{00}\,r_\partial\,\beta - 108\,B s_0^2\beta^2 + 28\,B^2 s_{0|0}\beta^2 + 34\,B s_{0|0}\beta^2 - 4\,B r_0^2\beta^2 + 14\,r r_{00}\,\beta^2 - 4\,s_\partial\,r_\partial\,\beta^2 + 64\,s^m s_m\,\beta^4 + 22 s_m^i s_i^m\beta^4 \\ & -20 s_0^m s_{0m}\,\beta^2 + 144 s_0 r\beta^3 + 4\,B^2 r_{0|0}\,\beta^2 + 22\,B r_{0|0}\,\beta^2 - 96\,B^2 s_{0|m}^m\beta^3 - 96\,B s_{0|m}^m\beta^3 - 10 r_m^m r_{00}\,\beta^2 - 10\,b^m r_{00|m}\,\beta^2 - 20 s_0^m r_{0m}\,\beta^2 \\ & -36\,\beta^3 r_0^m s_m - 36\,\beta^3 s_0^m r_m + 24\,B s_0 r_{00}\,\beta + 24\,B r_{00} r_0\beta + 4\,B r r_{00}\,\beta^2 - 104\,B s_0\,r_\partial\,\beta^2 + 32\,B^3 s_0^m s_{0m}\,\beta^2 - 48\,B^2 s_0^m s_{0m}\,\beta^2 \\ & -16B^3 s_m^i s_i^m\beta^4 - 32\,B^2 s^m s_m\,\beta^4 + 72 B^2 s_m^i s_i^m\beta^4 + 112 B s^m s_m\beta^4 + 84 B s_m^i s_i^m\beta^4 - 4B^2 r_m^m r_{00}\beta^2 - 4B^2 b^m r_{00|m}\beta^2 - 22\,B r_m^m r_{00}\,\beta^2 \\ & -22\,B b^m r_{00|m}\,\beta^2 - 20\,B s_0^m r_{0m}\,\beta^2 + 36\,\beta^3 r_m^m s_0 + 36\,\beta^3 b^m s_{0|m} - 96\,\beta^3 B^2 s_0^m s_m + 72\,\beta^3 B r_m^m s_0 + 72\,\beta^3 B b^m s_{0|m} - 72\,\beta^3 B r_0^m s_m \\ & -48\,\beta^3 B s_0^m s_m - 72\,\beta^3 B s_0^m r_m + 6\,B^4 r_{00}^2 - 6\,B^2 r_{00}^2 - 3\,B r_{00}^2 - 3 B r_{00|0}\beta - 72\,B s_0^m s_{0m}\,\beta^2\Big) - \widehat{\mathbf{Ric}}\beta^2\,(2\,B+1)^3\,(2\,B+13)\end{aligned}$$

$$d_{17} := -16\Big(n-1\Big)\Big(2\,B+1\Big)^4 {s^2}_0\beta$$

$$\begin{aligned}d_{18} :=\ & 2\,(2B+1)^2\,\Bigg((2B+1)\Big[-8\beta^2 s^m s_m - 4\beta s_0 r^m{}_m + 4\beta r_m s^m{}_0 + 4\beta s_m r^m{}_0 - 4\beta b^m s_{0|m} - 2\beta^2 s^i{}_m s^m{}_i + 2\beta s^m{}_{0|m} + 2 s^m{}_0 s_{0m} \\ & +2 s^m{}_0 r_{0m} + 2\beta s_{|0} + r_{00} r^m{}_m + r_{00|m} b^m - s_{0|0} - r_{0|0}\Big] + 2(4B+3) {s^2}_0 - 24\beta r s_0 + 4\,r_\partial\,s_\partial - 2\,r r_{00} + 2 {r^2}_0\Bigg) + \widehat{\mathbf{Ric}}\,(2\,B+1)^4\end{aligned}$$

9. **Appendix 5**

$$\begin{aligned}d_2' &:= -432\Big(n-1\Big)\Big(8\,B-5\Big) {s^2}_0\beta^{13} \\ d_4' &:= 432\Big(n-1\Big)\Big(8B^2-16B-1\Big) {s^2}_0\beta^{11} \\ d_6' &:= -48\Big(n-1\Big)\Big(32B^3-168B^2+24B+31\Big) {s^2}_0\beta^9 \\ d_8' &:= 16\,(n-1)\,(2B+1)\,\Big(8B^3-132B^2+186B+19\Big)\,{s^2}_0\beta^7 \\ d_{10}' &:= 48\Big(n-1\Big)\Big(2B+1\Big)^2\Big(4B^2-20B+7\Big) {s^2}_0\beta^5 \\ d_{12}' &:= 48\Big(n-1\Big)\Big(2B-3\Big)\Big(2B+1\Big)^3 {s^2}_0\beta^3\end{aligned}$$

10. **Appendix 6**

$$\begin{aligned}d_2'' :=\ & 6\beta^{14}\Big(18\beta^3 s_{|0} + 79 B r_{00|0}\beta + 28 B^2 r_{00|0}\,\beta - 6 r r_{00}\beta^2 - 82 r_{00} r_0\beta - 18 B r_{0|0}\beta^2 + 14 B s_{0|m}^m\beta^3 - 54 s_i^m s_m^i\beta^4 - 108 s_0^m s_{0m}\beta^2 \\ & -68\,B r_{00} r_0\beta + 73\,n r_{00}^2 - 21 n r_{00|0}\beta + 288\,\beta^3 s_0^m s_m + 432\,B s_0^m s_{0m}\,\beta^2 + 18\,B r^m{}_m r_{00}\,\beta^2 + 18 B b^m r_{00|m}\,\beta^2 - 276\,B s_0^m r_{0m}\,\beta^2 \\ & +18 r^m{}_m r_{00}\,\beta^2 + 18\,b^m r_{00|m}\,\beta^2 - 156 s_0^m r_{0m}\,\beta^2 + 36\,\beta^3 s^m{}_0 r_m + 4 B^2 n r_{00}^2 + 52 B n r_{00}^2 + r_{00} r_0\beta - 12 n B^2 r_{00|0}\beta - 48 B n r_{00|0}\beta \\ & +32 n B r_{00} r_0\beta + s^m{}_0 r_{0m}\,\beta^2 + s^m{}_0 r_{0m}\,\beta^2 - 144 n s_0^m s_m\beta^3 + 6 r_0^2\beta^2 - 18 r_{0|0}\,\beta^2 + 72 s_{0|m}^m\beta^3 + 10 r_{00|0}\beta + 12 B^4 r_{00}^2 - 8 B^3 r_{00}^2 \\ & -12 B^2 r_{00}^2 - 165 B r_{00}^2 + 2 r_{00}^2\Big) + 27\widehat{\mathbf{Ric}}\beta^{16}\,(8B+7)\end{aligned}$$

$$\begin{aligned}d_4'' :=\ & -6\beta^{12}\Big(+32 B n r_{00} r_0\beta + 144 n B s_0^m r_{0m}\beta^2 - 165 B r_{00}^2 - 68 B r_{00} r_0\beta + 432\,B s_0^m s_{0m}\beta^2 - 294 B s_0^m r_{0m}\beta^2 + 18 B r_m^m r_{00}\beta^2 \\ & -18 B r_0^m r_{0m}\beta^2 + 18 B b^m r_{00|m}\beta^2 - 18 B b^m r_{0m|0}\beta^2 - 12 n B^2 r_{00|0}\beta - 48 n B r_{00|0}\beta + 64 n r_{00} r_0\,\beta + 144 n s_0^m r_{0m}\,\beta^2 + 79 B r_{00|0}\beta \\ & +28\,B^2 r_{00|0}\beta - 6\,r r_{00}\,\beta^2 + 144 B s_{0|m}^m\beta^3 - 54 s_m^i s_i^m\beta^4 + 12 B^4 r_{00}^2 - 108 s_0^m s_{0m}\,\beta^2 + 18 r_m^m r_{00}\,\beta^2 - 18 r_0^m r_{0m}\,\beta^2 + 18\,b^m r_{00|m}\,\beta^2 \\ & -8 B^3 r_{00}^2 - 18 b^m r_{0m|0}\beta^2 - 174 s_0^m r_{0m}\beta^2 + 54\beta^3 r_0^m s_m + 36\beta^3 s_0^m r_m + 4\,B^2 n r_{00}^2 + 52\,B n r_{00}^2 - 21 n r_{00|0}\beta + 2 r_{00}^2 + 72 s_{0|m}^m\beta^3 \\ & +10 r_{00|0}\beta + 73 n r_{00}^2 - 12 B^2 r_{00}^2\Big) - 216\widehat{\mathbf{Ric}}\beta^{14} B\,(B+2)\end{aligned}$$

$$\begin{aligned}d_6'' :=\ & -2\,\beta^{10}\Big(-54\beta^3 s_{|0} + 15\,B r_{00|0}\,\beta - 108\,\beta^3 B s_{|0} - 20\,B^3 r_{00|0}\,\beta - 144\,B^2 r_{00|0}\beta - 24\,B r_0^2\beta^2 + 30 r r_{00}\,\beta^2 - 10 r_{00}\,r_0\,\beta \\ & +r_{0|0}\,\beta^2 + 90\,B r_{0|0}\,\beta^2 - s_{0|m}^m\beta^3 - 432\,B s_{0|m}^m\beta^3 + 54 s_i^m s_m^i\beta^4 + 324 s_0^m s_{0m}\,\beta^2 + 80 B^2 r_{00} r_0\beta + 344 B r_{00} r_0\beta - 165 n r_{00}^2 \\ & -35\,n r_{00|0}\beta + 24\,B r r_{00}\,\beta^2 + 432\,B s_i^m s_m^i\beta^4 - 1296\,B^2 s_0^m s_{0m}\,\beta^2 + 1296\,B s_0^m s_{0m}\,\beta^2 - 36\,B^2 r_m^m r_{00}\,\beta^2 - 36\,B^2 b^m r_{00|m}\,\beta^2 \\ & -90\,B r_m^m r_{00}\,\beta^2 - 90\,B b^m r_{00|m}\,\beta^2 + 780\,B s_0^m r_{0m}\,\beta^2 - 333\,B r_{00}^2 - 216\,\beta^3 B s_0^m r_m + 18 r_m^m r_{00}\,\beta^2 + 18\,b^m r_{00|m}\,\beta^2 - 300 s_0^m r_{0m}\beta^2\end{aligned}$$

$$+600\,B^2 s_0^m \beta^2 r_{0m} - 36\,B^2 n r_{00}^2 - 204 B n r_{00}^2 - 104 n r_{00} r_0\,\beta + 8 n B^3 r_{00|0}\beta + 84 n B^2 r_{00|0}\beta + 78 B n r_{00|0}\beta - 288 n B^2 s_0^m r_{0m}\,\beta^2$$
$$-32 n B^2 r_{00} r_0 \beta - 224\,B n r_{00}\,r_0\,\beta - 294 r_{00}^2 - 720 n B s_0^m r_{0m}\,\beta^2 + 864 n B s_0^m s_m \beta^3 - 72 n s_0^m r_{0m}\,\beta^2 - 30 r_0^2 \beta^2 - 18 r_{0|0}\,\beta^2 + 216 s_{0|m}^m \beta^3$$
$$+122 r_{00|0}\beta + 12\,B^5 r_{00}^2 - 30\,B^4 r_{00}^2 + 12\,B^3 r_{00}^2 + 264\,B^2 r_{00}^2\Big) + 24\widehat{\mathbf{Ric}}\beta^{12}\,(B-1)\Big(4\,B^2 + 19\,B + 13\Big)$$

$$d_8'' := 2\,\beta^8\Big(90\beta^3 s_{|0} + 279 B r_{00|0}\beta - 72\beta^3 B^2 s_{|0} - 72\,\beta^3 B s_{|0} - 28\,B^3 r_{00|0}\beta + 60 B^2 r_{00|0}\beta - 8 B^2 r_0^2 \beta^2 - 32\,B r_0^2 \beta^2 - 22\,r r_{00}\beta^2$$
$$+8 B^3 r_{0|0}\beta^2 + r_{0|0}\beta^2 - 66 B r_{0|0}\beta^2 - 192 B^3 s_{0|m}^m \beta^3 - 288 B^2 s_{0|m}^m \beta^3 + 720 B s_{0|m}^m \beta^3 - 27 s_i^m s_m^i \beta^4 + 36 s_0^m s_{0m}\beta^2 + 112 B^2 r_{00} r_0 \beta$$
$$-140\,B r_{00} r_0 \beta - 99 n r_{00}^2 - 79 n r_{00|0}\beta + 8 B^2 r r_{00}\beta^2 + 32 B r r_{00}\beta^2 + 432 B^2 s_i^m s_m^i \beta^4 - 576 B^3 s_0^m s_{0m}\beta^2 + 1728 B^2 s_0^m s_{0m}\beta^2$$
$$+432\,B s_0^m s_{0m}\,\beta^2 - 48\,B^2 r_m^m r_{00}\,\beta^2 - 48\,B^2 b^m r_{00|m}\beta^2 + 66\,B r_m^m r_{00}\,\beta^2 + 66\,B b^m r_{00|m}\beta^2 - 948\,B s_0^m r_{0m}\,\beta^2 - 8\,B^3 r_m^m r_{00}\,\beta^2$$
$$-8\,B^3 b^m r_{00|m}\beta^2 + 144\,B^3 s_0^m r_{0m}\,\beta^2 - 144\,\beta^3 B s_0^m r_m - 144\,\beta^3 B^2 s_0^m r_m + 90 r_{00}^2 + 98 r_m^m r_{00}\beta^2 + 98\,b^m r_{00|m}\,\beta^2 - 444 s_0^m r_{0m}\,\beta^2$$
$$-60 B^3 r_{00}^2 - 12 B^2 r_{00}^2 - r_{00}^2 + 180\beta^3 s_0^m r_m + 384 B^2 s_0^m \beta^2 r_{0m} - r_{00}^2 - 168 B n r_{00}^2 + 128 n r_{00} r_0 \beta + 78 B^4 r_{00}^2 + 16 n B^3 r_{00|0}\beta$$
$$+24\,B^2 n r_{00|0}\beta - 96\,B n r_{00|0}\beta - 384\,B^2 s_0^m n r_{0m}\,\beta^2 - 64\,B^2 n r_{00} r_0 \beta - 64 B n r_{00}\,r_0\,\beta + 94 r_{00|0}\beta + 408 s_{0|m}^m \beta^3 + 12 B^5 r_{00}^2$$
$$+96 n B s_0^m r_{0m}\beta^2 - 64 n B^3 s_0^m r_{0m}\beta^2 + 352 n s_0^m r_{0m}\beta^2 + 22 r_0^2 \beta^2 - 98 r_{0|0}\,\beta^2\Big) - 2\widehat{\mathbf{Ric}}\beta^{10}\Big(8\,B^4 + 64\,B^3 - 132\,B^2 - 392 B - 115\Big)$$

$$d_{10}'' := 2\,\beta^6\Big(-282 r_{00}^2 + 840\,B^2 s_0^m \beta^2 r_{0m} - 58 r_0^2 \beta^2 + 44 r_{0|0}\,\beta^2 - 106\,\beta^3 s_{|0} - 52 s_{0|m}^m \beta^3 + 24\beta^3 B^2 s_{|0} - 204\beta^3 B s_{|0} - 24 B^3 r_{00|0}\beta$$
$$-192 B^2 r_{00|0}\beta - 129 B r_{00|0}\beta + 69 s_0 r_{00}\beta + 102 r_{00} r_0 \beta + 8 B^2 r_0^2 \beta^2 - 40 B r_0^2 \beta^2 + 58 r r_{00}\beta^2 + 138 s_m^i s_i^m \beta^4 + 24 s_0^m s_{0m}\beta^2 - 8 B^3 r_{0|0}\beta^2$$
$$+60\,B^2 r_{0|0}\beta^2 + 174\,B r_{0|0}\beta^2 + 64 B^3 s_{0|m}^m \beta^3 - 816\,B^2 s_{0|m}^m \beta^3 - 848\,B s_{0|m}^m \beta^3 - 44 r_m^m r_{00}\,\beta^2 - 44\,b^m r_{00|m}\,\beta^2 + 24 s_0^m r_{0m}\,\beta^2$$
$$-212\,\beta^3 s_0^m r_m + 45\,n r_{00|0}\beta + 16\,\beta^3 B^3 s_{|0} + 57\,n r_{00}^2 + 32\,B^4 s_{0|m}^m \beta^3 + 64 n B^3 s_0^m r_{0m}\,\beta^2 + 212\,\beta^3 b^m s_{0|m} - 192 n B^2 s_0^m r_{0m}\,\beta^2$$
$$-96 B^3 s_0^m s_{0m}\beta^2 + 32\,\beta^3 B^3 s_0^m r_m - 672 n B s_0^m r_{0m}\,\beta^2 + 120 n B r_{00}^2 + 48 n B^2 r_{00}^2 + 126 n B r_{00|0}\beta - 168 n r_{00}\,r_0\,\beta + 72 n B^2 n r_{00|0}\beta$$
$$-280 n s_0^m r_{0m}\,\beta^2 + 96 B^2 r_{00} r_0 \beta + 432 B r_{00} r_0 \beta - 8\,B^2 r r_{00}\,\beta^2 + 40\,B r r_{00}\,\beta^2 + 96\,B^4 s_0^m s_{0m}\,\beta^2 + 48\,B s_0^m s_{0m}\,\beta^2 - 60\,B^4 r_{00}^2$$
$$+804\,B s_0^m r_{0m}\,\beta^2 - 48 B^3 s_0^m r_{0m}\beta^2 + 320\,B^3 s_0^m s_m \beta^3 + 8\,B^3 r_m^m r_{00}\,\beta^2 + 8\,B^3 b^m r_{00|m}\,\beta^2 - 192\,B^3 s_m^i s_i^m \beta^4 + 24\,B^3 r_{00}^2$$
$$+144\,B s^m s_m \beta^4 + 720\,B s_m^i s_i^m \beta^4 + 192\,B^2 r_{00}^2 + 48\,\beta^3 B^2 s_0^m r_m - 60\,B^2 r_m^m r_{00}\,\beta^2 - 60\,B^2 b^m r_{00|m}\,\beta^2 - 174\,B r_m^m r_{00}\,\beta^2 - 321\,B r_{00}^2$$
$$-408\,\beta^3 B s_0^m r_m - 6 r_{00|0}\beta + 24\,B^5 r_{00}^2 - 174\,B b^m r_{00|m}\,\beta^2 + 144 B^2 s_m^i s_i^m \beta^4\Big) + 2\widehat{\mathbf{Ric}}\beta^8\Big(8B^4 - 80B^3 - 348B^2 - 176B + 29\Big)$$

$$d_{12}'' := -2\,\beta^4\Big(-102 r_{00}^2 - 10 r_0^2 \beta^2 + 18\,\beta^3 s_{|0} + 168 s_{0|m}^m \beta^3 - 34 r_{0|0}\,\beta^2 - 144\,\beta^3 B^2 s_{|0} - 144\,\beta^3 B s_{|0} - 40\,B^3 r_{00|0}\beta$$
$$-36\,B^2 r_{00|0}\beta + 39 B r_{00|0}\beta - 2 r_{00}\,r_\theta\,\beta - 16\,B^2 r_0^2 \beta^2 - 64 B r_0^2 \beta^2 + 10 r r_{00}\beta^2 - 86 s_m^i s_i^m \beta^4 + 84 s_0^m s_{0m}\,\beta^2 + 16\,B^3 r_{0|0}\,\beta^2$$
$$+96\,B^2 r_{0|0}\,\beta^2 + 30\,B r_{0|0}\,\beta^2 + 144\,B s_{0|m}^m \beta^3 + 34 r_m^m r_{00}\,\beta^2 + 34\,b^m r_{00|m}\,\beta^2 + 4 s_0^m r_{0m}\,\beta^2 - 36\,\beta^3 b^m s_{0|m} + 36\,\beta^3 s_0^m r_m$$
$$+384\,B^2 s_0^m \beta^2 r_{0m} + 11 n r_{00|0}\beta + 21 n r_{00}^2 + 160\,B^2 r_{00} r_0 \beta + 76\,B r_{00} r_0 \beta + 16 B^2 r r_{00}\,\beta^2 + 64\,B r r_{00}\,\beta^2 - 192\,B^4 s_0^m s_{0m}\,\beta^2$$
$$+384\,B^3 s_0^m s_{0m}\,\beta^2 + 48\,B s_0^m s_{0m}\,\beta^2 - 16\,B^3 r_m^m r_{00}\,\beta^2 - 384\,B^3 s_{0|m}^m \beta^3 - 576\,B^2 s_{0|m}^m \beta^3 - 16\,B^3 b^m r_{00|m}\,\beta^2 - 32\,B^4 s_m^i s_i^m \beta^4$$
$$-64 n B^3 s_0^m r_{0m}\,\beta^2 + 128\,B^3 s_m^i s_i^m \beta^4 + 672\,B^2 s_m^i s_i^m \beta^4 + 128\,B s_m^i s_i^m \beta^4 - 288\,\beta^3 B^2 s_0^m r_m - 96\,B^2 r_m^m r_{00}\,\beta^2 - 48 B^3 r_{00}^2$$
$$-30\,B r_m^m r_{00}\,\beta^2 - 30\,B b^m r_{00|m}\,\beta^2 - 180\,B s_0^m r_{0m}\,\beta^2 - 160\,B n r_{00} r_0 \beta - 384 n B^2 s_0^m r_{0m}\beta^2 - 336 n B s_0^m r_{0m}\beta^2 + 36\,B^2 r_{00}^2 + 60 n B r_{00}^2$$
$$-64 n B^2 r_{00} r_0 \beta - 288\,\beta^3 B s_0^m r_m - 80 n s_0^m r_{0m}\beta^2 + 144 n s_0^m s_m \beta^3 + 224 B^3 s_0^m r_{0m}\beta^2 + 10 r_{00|0}\beta + 24\,B^5 r_{00}^2 - 84\,B^2 r_{00}^2$$
$$-405\,B r_{00}^2 + 48 B^4 r_{00}^2 - 64 n r_{00} r_0 \beta + 16 n B^3 r_{00|0}\beta + 60 n B^2 r_{00|0}\beta - 96\,B^2 b^m r_{00|m}\,\beta^2\Big) + 8\widehat{\mathbf{Ric}}\beta^6\,(2\,B+1)\,(B-1)$$

$$d_{14}'' := -2\beta^2\Big(6 r_{00}^2 + 264\,B^2 s_0^m \beta^2 r_{0m} - 12 n B^2 r_{00}^2 - 12 B n r_{00}^2 + 32\beta^3 B^3 s_{|0} - 50\beta^3 s_{|0} - 104 s_{0|m}^m \beta^3 - 26 r_0^2 \beta^2 + 34 r_{0|0}\beta^2 + 48\beta^3 B^2 s_{|0}$$
$$-84\beta^3 B s_{|0} - 4 B^3 r_{00|0}\beta - 48 B^2 r_{00|0}\beta - 14 r_{00} r_0 \beta - 8\,B r_0^2 \beta^2 + 26 r r_{00}\beta^2 + 82 s_m^i s_i^m \beta^4 - 68 s_0^m s_{0m}\beta^2 - 16 B^3 r_{0|0}\beta^2 + 12\,B^2 r_{0|0}\beta^2$$
$$+78\,B r_{0|0}\beta^2 + 128 B^3 s_{0|m}^m \beta^3 - 336 B^2 s_{0|m}^m \beta^3 - 400 B s_{0|m}^m \beta^3 - 34 r_m^m r_{00}\beta^2 - 34 b^m r_{00|m}\beta^2 - 52 s_0^m r_{0m}\beta^2 + 100\beta^3 b^m s_{0|m}$$
$$-10\beta^3 s_0^m r_m - s_0^m s_m \beta^3 + 32 n B^2 r_{00} r_0 \beta + 32 B n r_{00} r_0 \beta + 64 n B^3 s_0^m r_{0m}\beta^2 + 96 n B^2 s_0^m r_{0m}\beta^2 + 48 n B s_0^m r_{0m}\beta^2 - 8 n B^3 r_{00|0}\beta$$
$$-12 n B^2 r_{00|0}\beta - 6\,B n r_{00|0}\beta - B^3 b^m s_{0|m} + 8 n s_0^m r_{0m}\beta^2 + \beta^3 B^3 s_0^m r_m + 16 B^2 r_{00} r_0 \beta + 88 B r_{00} r_0 \beta - 16 B^2 r r_{00}\beta^2 + 8 B r r_{00}\beta^2$$
$$-128 B^4 s_0^m s_{0m}\beta^2 + 128 B^3 s_0^m s_{0m}\beta^2 - 48 B^2 s_0^m s_{0m}\beta^2 - 208 B s_0^m s_{0m}\beta^2 + 16 B^3 r_m^m r_{00}\,\beta^2 + 16\,B^3 b^m r_{00|m}\,\beta^2 - 256 B^3 s_m^i s_i^m \beta^4$$
$$+96 B^2 s_m^i s_i^m \beta^4 + 272\,B s_m^i s_i^m \beta^4 + 96\beta^3 B^2 s_0^m r_m - 12 B^2 r_m^m r_{00}\beta^2 - 32\,B^4 s_m^i s_i^m \beta^4 - 12 B^2 b^m r_{00|m}\beta^2 - 78 B r_m^m r_{00}\beta^2 - 3 n r_{00}^2$$
$$-n r_{00|0}\beta - 78 B b^m r_{00|m}\beta^2 + 36 B s_0^m r_{0m}\beta^2 - 32 B^3 s_0^m r_{0m}\beta^2 - 168\beta^3 B s_0^m r_m - 2 r_{00|0}\beta + 12 B^5 r_{00}^2 + 12 B^3 r_{00}^2 + 96 B^2 r_{00}^2$$
$$+57 B r_{00}^2\Big) - 8\widehat{\mathbf{Ric}}\beta^4\,(2B+1)^2\,(B+2)\,(B-4)$$

$$d_{16}'' := 2\Big(2B+1\Big)\Big(40 B^2 s_0^m \beta^2 r_{0m} - 14 r_0^2 \beta^2 + 10 r_{0|0}\beta^2 - 18\beta^3 s_{|0} - 24 s_{0|m}^m \beta^3 - 36\beta^3 B s_{|0} - 6 B^2 r_{00|0}\beta - 3 B r_{00|0}\beta - 4 B r_0^2 \beta^2$$
$$+14 r r_{00}\beta^2 + 22 s_m^i s_i^m \beta^4 + 4 B^2 r_{0|0}\,\beta^2 + 22\,B r_{0|0}\,\beta^2 - 96\,B^2 s_{0|m}^m \beta^3 - 96 B s_{0|m}^m \beta^3 - 10 r_m^m r_{00}\,\beta^2 - 10 b^m r_{00|m}\beta^2 - 20 s_0^m r_{0m}\beta^2$$
$$-36\beta^3 s_0^m r_m + 24 B r_{00} r_0 \beta + 4 B r r_{00}\beta^2 + 32 B^3 s_0^m s_{0m}\beta^2 - 48 B^2 s_0^m s_{0m}\beta^2 - 72 B s_0^m s_{0m}\beta^2 - 16 B^3 s_m^i s_i^m \beta^4 + 72 B^2 s_m^i s_i^m \beta^4$$
$$+84 B s_m^i s_i^m \beta^4 - 4 B^2 r_m^m r_{00}\beta^2 - 4 B^2 b^m r_{00|m}\beta^2 - 22 B r_m^m r_{00}\beta^2 - 22 B b^m r_{00|m}\beta^2 - 20 B s_0^m r_{0m}\beta^2 - 72\beta^3 B s_0^m r_m + 6 B^4 r_{00}^2$$
$$-6 B^2 r_{00}^2 - 3 B r_{00}^2\Big) - \widehat{\mathbf{Ric}}\beta^2\,(2B+1)^3\,(2B+13)$$

$$d_{18}'' := 2\,(2B+1)^2\,\Big((2B+1)\Big[+4\beta r_m s^m{}_0 - 2\beta^2 s^i{}_m s^m{}_i + 2\beta s^m{}_{0|m} + 2 s^m{}_0 s_{0m} + 2 s^m{}_0 r_{0m} + 2\beta s_{|0} + r_{00} r^m{}_m + r_{00|m} b^m\Big] - 2 r r_{00}$$
$$+2 r^2{}_0\Big) + \widehat{\mathbf{Ric}}\,(2B+1)^4$$

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Received: 21.11.2023
Accepted: 29.12.2023