

Frobenius manifold potentials of the elliptic orbifolds

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The Frobenius manifold

potential of the orbifold $P_{4,4,2}$ reads :

$$\begin{aligned}
 F_{442} = -w & \left(\frac{t_2^4}{128} + \frac{t_5^4}{128} + \frac{t_1^2 t_3^2}{64} + \frac{t_1^2 t_3^2}{64} + \frac{t_2^2 t_5^2}{64} + \frac{t_2^2 t_7^2}{32} + \frac{t_7^4}{32} + \frac{t_4^2 t_6^2}{32} + \frac{t_1 t_2^2 t_3}{32} + \right. \\
 & \left. \frac{t_4 t_5^2 t_6}{32} + \frac{t_1 t_3 t_5^2}{32} + \frac{t_2^2 t_4 t_6}{32} + \frac{t_5^2 t_7^2}{32} + \frac{t_1 t_3 t_4 t_6}{16} + \frac{t_4 t_6 t_7^2}{16} + \frac{t_1 t_3 t_7^2}{16} \right) + \\
 & (x^2 - 2y^2) \left(\frac{t_2^4}{384} + \frac{t_5^4}{384} \right) + (x^2 - y^2) \left(\frac{t_1^2 t_3^2}{64} + \frac{t_1 t_3 t_5^2}{32} + \frac{t_2^2 t_4 t_6}{32} \right) + \\
 & x^2 \left(\frac{t_1 t_3 t_4 t_6}{16} + \frac{t_5^2 t_7^2}{32} + \frac{t_4 t_6 t_7^2}{16} + \frac{t_2^2 t_5^2}{64} + \frac{t_2^2 t_7^2}{32} + \frac{t_1 t_3 t_7^2}{16} \right) + (2x^2 - y^2) \frac{t_7^4}{96} + \\
 & (x^2 - y^2) \frac{t_4^2 t_6^2}{64} + x^2 (3y^2 - x^2) \frac{t_2^2 t_3^4}{3072} - (x^4 - 6x^2 y^2 + y^4) \frac{t_1 t_3^5}{30720} + \\
 & x (x^4 + 2x^2 y^2 + y^4) \frac{t_2 t_3^6}{73728} + (5x^2 y^2 (x^2 + y^2) - x^6 - y^6) \frac{t_3^8}{4128768} + \\
 & y (x^4 + 2x^2 y^2 + y^4) \frac{t_3^6 t_5}{73728} + y^2 (3x^2 - y^2) \frac{t_3^4 t_5^2}{3072} + \\
 & x y (x^4 + 14x^2 y^2 + y^4) \left(\frac{t_3^2 t_6^6}{294912} + \frac{t_3^6 t_6^2}{294912} \right) + y^2 (3x^2 - y^2) \frac{t_2^2 t_6^4}{3072} + \\
 & x^2 y^2 (5x^2 + 5y^2) \frac{t_3^4 t_6^4}{73728} + x y^2 (4x^2 + y^2) \left(\frac{t_3^4 t_5 t_6^2}{6144} + \frac{t_2 t_3^2 t_6^4}{6144} \right) + \\
 & x^2 y (x^2 + 4y^2) \left(\frac{t_2 t_3^4 t_6^2}{6144} + \frac{t_3^2 t_5 t_6^4}{6144} \right) + y (x^4 + 2x^2 y^2 + y^4) \frac{t_2 t_6^6}{73728} + \\
 & x (x^4 + 2x^2 y^2 + y^4) \frac{t_5 t_6^6}{73728} + x^2 (3y^2 - x^2) \frac{t_5^2 t_6^4}{3072} + (6x^2 y^2 - x^4 - y^4) \frac{t_4 t_6^5}{30720} + \\
 & (5x^4 y^2 + 5x^2 y^4 - x^6 - y^6) \frac{t_6^8}{4128768} + z (x^2 + y^2) \left(\frac{t_2 t_3 t_5 t_6 t_7}{64} + \frac{t_3^3 t_4 t_7}{384} + \frac{t_1 t_6^3 t_7}{384} \right) + \\
 & z (8x^4 + 8y^4 + 19x^2 y^2) \frac{t_3^3 t_6^3 t_7}{294912} + x y z (x^2 + y^2) \left(\frac{t_3^5 t_6 t_7}{6144} + \frac{t_3 t_6^5 t_7}{6144} \right) + \\
 & x z (x^2 + 7y^2) \left(\frac{t_2 t_3 t_6^3 t_7}{1536} + \frac{t_3^3 t_5 t_6 t_7}{1536} \right) + y z (7x^2 + y^2) \left(\frac{t_2 t_3^3 t_6 t_7}{1536} + \frac{t_3 t_5 t_6^3 t_7}{1536} \right) +
 \end{aligned}$$

$$\begin{aligned}
& x y (x^2 + y^2) \left(\frac{t_2 t_5 t_6^4}{1536} + \frac{t_3^2 t_4 t_6^3}{1536} + \frac{t_1 t_3^3 t_6^2}{1536} + \frac{t_2 t_3^4 t_5}{1536} + \frac{t_2^2 t_3^2 t_6^2}{512} + \frac{t_3^2 t_5^2 t_6^2}{512} + \frac{t_3^2 t_6^2 t_7^2}{128} \right) + \\
& x^2 y^2 \left(\frac{t_2 t_3^2 t_5 t_6^2}{128} + \frac{t_1 t_3 t_6^4}{1536} + \frac{t_3^4 t_4 t_6}{1536} + \frac{t_3^4 t_7^2}{384} + \frac{t_6^4 t_7^2}{384} \right) + \\
& x y z \frac{1}{16} \left(\frac{t_3 t_6 t_7^3}{3} + \frac{t_2^2 t_3 t_6 t_7}{4} + \frac{t_1 t_3^2 t_6 t_7}{4} + \frac{t_3 t_5^2 t_6 t_7}{4} + \frac{t_3 t_4 t_6^2 t_7}{4} \right) + x^2 y \\
& \left(\frac{t_2 t_5^2 t_6^2}{128} + \frac{t_2^2 t_3^2 t_5}{128} + \frac{t_3^2 t_5 t_7^2}{32} + \frac{t_2 t_6^2 t_7^2}{32} + \frac{t_3^2 t_4 t_5 t_6}{64} + \frac{t_1 t_2 t_3 t_6^2}{64} + \frac{t_2 t_4 t_6^3}{384} + \frac{t_1 t_3^3 t_5}{384} \right) + \\
& x y^2 \left(\frac{t_2^2 t_5 t_6^2}{128} + \frac{t_2 t_3^2 t_5^2}{128} + \frac{t_5 t_6^2 t_7^2}{32} + \frac{t_2 t_3^2 t_7^2}{32} + \frac{t_1 t_3 t_5 t_6^2}{64} + \right. \\
& \left. \frac{t_2 t_3^2 t_4 t_6}{64} + \frac{t_1 t_2 t_3^3}{384} + \frac{t_4 t_5 t_6^3}{384} \right) + x z \left(\frac{t_2 t_3 t_4 t_7}{16} + \frac{t_1 t_5 t_6 t_7}{16} \right) + \\
& y z \left(\frac{t_3 t_4 t_5 t_7}{16} + \frac{t_1 t_2 t_6 t_7}{16} \right) + x y \left(\frac{t_3^2 t_4^2}{32} + \frac{t_1 t_2 t_3 t_5}{16} + \frac{t_2 t_4 t_5 t_6}{16} + \frac{t_2 t_5 t_7^2}{8} + \frac{t_1^2 t_6^2}{32} \right) + \\
& x^3 \left(\frac{t_2^3 t_3^2}{384} + \frac{t_5^3 t_6^2}{384} + \frac{t_1 t_2 t_3^3}{384} + \frac{t_4 t_5 t_6^3}{384} \right) + \\
& y^3 \left(\frac{t_3^2 t_5^3}{384} + \frac{t_2^3 t_6^2}{384} + \frac{t_2 t_4 t_6^3}{384} + \frac{t_1 t_3^3 t_5}{384} \right) + x \left(\frac{t_1^2 t_2}{8} + \frac{t_4^2 t_5}{8} \right) + \\
& y \left(\frac{t_2 t_4^2}{8} + \frac{t_1^2 t_5}{8} \right) + z \frac{t_1 t_4 t_7}{4} + t_0 \left(\frac{t_2^2}{8} + \frac{t_1 t_3}{4} + \frac{t_5^2}{8} + \frac{t_4 t_6}{4} + \frac{t_7^2}{4} \right) + \frac{1}{2} t_0^2 t_8 ;
\end{aligned}$$

Where x, y, z are defined as follows. Let $\text{th}_k(\tau)$ be the Jacobi theta constants and $E_2(\tau)$ the second Eisensteinseries and $q := \exp(2\pi i\tau)$

$$x = \left(\text{th}_3[q^8] \right)^2,$$

$$y = \left(\text{th}_2[q^8] \right)^2,$$

$$z = \left(\text{th}_2[q^4] \right)^2,$$

$$w = \frac{1}{3} \left(E_2[q^4] - 2 E_2[q^8] + 4 E_2[q^{16}] \right).$$

The Frobenius manifold

potential of the orbifold $P_{6,3,2}$ reads :

$$\begin{aligned}
F_{6,3,2} = & \frac{x t_3^3}{36} + \frac{1}{6} y t_1 t_2 t_3 + \left(\frac{r^2}{1728} - \frac{w}{576} - \frac{y^2}{576} - \frac{p z}{144} \right) t_3^4 + \frac{1}{12} x t_1^2 t_4 + \\
& \left(\frac{r^2}{432} - \frac{w}{144} - \frac{y^2}{48} - \frac{p z}{36} \right) t_2 t_3^2 t_4 + \left(-\frac{r^2}{432} - \frac{w}{144} - \frac{y^2}{144} \right) t_2^2 t_4^2 + \left(\frac{r^2}{216} - \frac{y^2}{72} \right) t_1 t_3 t_4^2 + \\
& \left(\frac{o^2 p}{648} - \frac{p^3}{216} - \frac{r^2 y}{1296} + \frac{y^3}{432} \right) t_3^2 t_4^3 + \left(\frac{o^2 p}{648} - \frac{p^3}{648} - \frac{r^2 y}{1296} + \frac{y^3}{1296} \right) t_2 t_4^4 +
\end{aligned}$$

$$\begin{aligned}
& \left(\frac{o^3 r}{209952} + \frac{o p^2 r}{38880} - \frac{r^4}{209952} - \frac{y^4}{38880} + \frac{p^2 z^2}{19440} \right) t_4^6 + \left(\frac{r^2}{216} - \frac{y^2}{72} \right) t_2^2 t_3 t_5 + \\
& \left(\frac{r^2}{432} - \frac{w}{144} - \frac{y^2}{144} - \frac{p z}{36} \right) t_1 t_3^2 t_5 + \left(-\frac{r^2}{216} - \frac{w}{72} - \frac{y^2}{72} \right) t_1 t_2 t_4 t_5 + \\
& \left(\frac{p^3}{162} + \frac{y^3}{324} \right) t_3^3 t_4 t_5 + \left(\frac{r^2 y}{432} + \frac{y^3}{144} \right) t_2 t_3 t_4^2 t_5 + \left(\frac{o^2 p}{648} - \frac{p^3}{648} - \frac{r^2 y}{1296} + \frac{y^3}{1296} \right) t_1 t_4^3 t_5 + \\
& \left(\frac{o^3 r}{23328} - \frac{o p^2 r}{2592} + \frac{5 r^4}{93312} - \frac{5 y^4}{10368} \right) t_3 t_4^4 t_5 - \frac{1}{144} w t_1^2 t_5^2 + \left(\frac{o^2 p}{324} - \frac{p^3}{108} - \frac{r^2 y}{1296} + \frac{y^3}{432} \right) t_2 t_3^2 t_5^2 + \\
& \left(\frac{o^2 p}{216} - \frac{p^3}{216} - \frac{r^2 y}{432} + \frac{y^3}{432} \right) t_2^2 t_4 t_5^2 + \left(\frac{o^2 p}{648} + \frac{p^3}{216} + \frac{r^2 y}{1296} + \frac{y^3}{432} \right) t_1 t_3 t_4 t_5^2 + \\
& \left(\frac{7 o^3 r}{69984} - \frac{7 o p^2 r}{7776} - \frac{5 r^4}{139968} - \frac{5 y^4}{5184} + \frac{5 p^2 z^2}{1296} \right) t_3^2 t_4^2 t_5^2 + \\
& \left(\frac{5 o^3 r}{69984} + \frac{o p^2 r}{2592} - \frac{5 r^4}{69984} - \frac{y^4}{2592} + \frac{p^2 z^2}{1296} \right) t_2 t_4^3 t_5^2 + \\
& \left(\frac{49 o^2 p r^2}{2799360} - \frac{p^3 r^2}{34560} - \frac{11 r^4 y}{933120} + \frac{y^5}{34560} + \frac{o^4 z}{279936} + \frac{p^4 z}{17280} \right) t_4^5 t_5^2 + \\
& \left(\frac{o^2 p}{324} - \frac{p^3}{324} - \frac{r^2 y}{1296} + \frac{y^3}{1296} \right) t_1 t_2 t_5^3 + \left(\frac{o^3 r}{26244} + \frac{o p^2 r}{2916} + \frac{r^4}{209952} - \frac{y^4}{7776} - \frac{p^2 z^2}{972} \right) t_3^3 t_5^3 + \\
& \left(\frac{13 o^3 r}{69984} + \frac{o p^2 r}{23328} + \frac{5 r^4}{69984} - \frac{5 y^4}{7776} - \frac{5 p^2 z^2}{3888} \right) t_2 t_3 t_4 t_5^3 + \\
& \left(\frac{7 o^3 r}{209952} + \frac{o p^2 r}{23328} - \frac{5 r^4}{419904} - \frac{y^4}{15552} + \frac{p^2 z^2}{3888} \right) t_1 t_4^2 t_5^3 + \\
& \left(\frac{97 o^2 p r^2}{7558272} + \frac{13 p^3 r^2}{279936} + \frac{55 r^4 y}{2519424} + \frac{11 y^5}{93312} + \frac{65 o^4 z}{3779136} - \frac{11 p^4 z}{46656} \right) t_3 t_4^3 t_5^3 + \\
& \left(\frac{7 o^3 r}{209952} + \frac{o p^2 r}{23328} - \frac{5 r^4}{419904} - \frac{y^4}{15552} + \frac{p^2 z^2}{3888} \right) t_2^2 t_5^4 + \\
& \left(\frac{o^3 r}{34992} + \frac{o p^2 r}{11664} + \frac{r^4}{279936} - \frac{y^4}{31104} - \frac{p^2 z^2}{3888} \right) t_1 t_3 t_5^4 + \\
& \left(\frac{97 o^2 p r^2}{5038848} - \frac{41 p^3 r^2}{559872} - \frac{11 r^4 y}{1679616} + \frac{11 y^5}{186624} + \frac{41 o^4 z}{2519424} + \frac{55 p^4 z}{93312} \right) t_3^2 t_4 t_5^4 + \\
& \left(\frac{19 o^2 p r^2}{629856} - \frac{p^3 r^2}{23328} - \frac{11 r^4 y}{839808} + \frac{y^5}{31104} + \frac{7 o^4 z}{629856} + \frac{p^4 z}{7776} \right) t_2 t_4^2 t_5^4 + \\
& \left(\frac{5 o^6}{11337408} - \frac{o^2 p^4}{93312} + \frac{13 p^6}{559872} + \frac{433 o^3 r^3}{362797056} + \frac{61 o p^2 r^3}{13436928} - \frac{91 r^6}{181398528} - \frac{13 y^6}{2239488} \right) t_4^4 t_5^4 + \\
& \left(\frac{359 o^2 p r^2}{37791360} + \frac{11 p^3 r^2}{1399680} + \frac{11 r^4 y}{5038848} + \frac{11 y^5}{933120} + \frac{5 o^4 z}{944784} - \frac{11 p^4 z}{116640} \right) t_2 t_3 t_5^5 + \\
& \left(\frac{157 o^2 p r^2}{75582720} - \frac{7 p^3 r^2}{2799360} - \frac{11 r^4 y}{25194240} + \frac{y^5}{933120} + \frac{41 o^4 z}{37791360} + \frac{p^4 z}{93312} \right) t_1 t_4 t_5^5 +
\end{aligned}$$

$$\begin{aligned}
& \left(\frac{671 o^6}{680244480} + \frac{11 o^2 p^4}{933120} - \frac{91 p^6}{1399680} + \frac{3103 o^3 r^3}{1360488960} - \frac{71 o p^2 r^3}{16796160} + \frac{1001 r^6}{2720977920} - \frac{91 y^6}{11197440} \right) t_3 t_4^2 t_5^5 + \\
& \left(\frac{11 o^6}{68024448} + \frac{77 p^6}{2799360} + \frac{539 o^3 r^3}{1088391168} - \frac{11 o p^2 r^3}{13436928} - \frac{11 r^6}{544195584} - \frac{11 y^6}{11197440} \right) t_3^2 t_5^6 + \\
& \left(\frac{121 o^6}{680244480} - \frac{o^2 p^4}{933120} + \frac{13 p^6}{1679616} + \frac{2567 o^3 r^3}{5441955840} + \frac{59 o p^2 r^3}{201553920} - \frac{91 r^6}{1360488960} - \frac{13 y^6}{16796160} \right) t_2 t_4 t_5^6 + \\
& \left(\frac{16081 o^5 p r}{29386561536} - \frac{33449 o p^5 r}{9795520512} + \frac{2405 o^2 p r^4}{19591041024} + \right. \\
& \quad \left. \frac{23647 p^3 r^4}{97955205120} + \frac{1573 o^6 y}{24488801280} + \frac{91 y^7}{201553920} - \frac{81263 p^5 z^2}{73466403840} \right) t_4^3 t_5^6 + \\
& \left(\frac{o^6}{340122240} + \frac{p^6}{8398080} + \frac{59 o^3 r^3}{7618738176} - \frac{o p^2 r^3}{282175488} - \frac{r^6}{2720977920} - \frac{y^6}{235146240} \right) t_1 t_5^7 + \\
& \left(\frac{19561 o^5 p r}{48977602560} - \frac{13109 o p^5 r}{16325867520} + \frac{23 o^2 p r^4}{408146688} - \frac{413 p^3 r^4}{4081466880} + \frac{73 o^6 y}{1632586752} + \right. \\
& \quad \left. \frac{43 y^7}{201553920} + \frac{116573 p^5 z^2}{24488801280} \right) t_3 t_4 t_5^7 + \left(\frac{1327 o^5 p r}{73466403840} - \frac{121 o p^5 r}{12244400640} + \right. \\
& \quad \left. \frac{157 o^2 p r^4}{39182082048} - \frac{p^3 r^4}{195910410240} + \frac{13 o^6 y}{6122200320} + \frac{y^7}{201553920} - \frac{3727 p^5 z^2}{36733201920} \right) t_2 t_5^8 + \\
& \left(\frac{64163 o^6 r^2}{5289581076480} + \frac{5579 o^2 p^4 r^2}{21767823360} + \frac{83473 o^3 r^5}{14105549537280} - \frac{16523 o p^2 r^5}{293865615360} + \frac{421379 r^8}{169266594447360} + \right. \\
& \quad \left. \frac{547 o^6 y^2}{146932807680} - \frac{41 y^8}{2418647040} \right) t_4^2 t_5^8 + \left(\frac{9823 o^6 r^2}{5289581076480} - \frac{1921 o^2 p^4 r^2}{21767823360} + \frac{7237 o^3 r^5}{7052774768640} + \right. \\
& \quad \left. \frac{38023 o p^2 r^5}{2350924922880} - \frac{298129 r^8}{338533188894720} + \frac{43 o^6 y^2}{73466403840} - \frac{17 y^8}{9674588160} \right) t_3 t_5^9 + \\
& \left(\frac{796219 o^8 p}{952124593766400} - \frac{28226317 o^4 p^5}{952124593766400} + \frac{8488567 o^5 p r^3}{7616996750131200} + \frac{8455763 o^3 p^3 r^3}{1269499458355200} - \right. \\
& \quad \left. \frac{1281727 o^2 p r^6}{3385331888947200} + \frac{3281 o^6 y^3}{35263873843200} + \frac{809 y^9}{2612138803200} \right) t_4 t_5^{10} + \\
& \left(\frac{8920843 o^9 r}{3393372052183449600} + \frac{972926861 o^5 p^4 r}{3393372052183449600} + \frac{179131207 o^6 r^4}{27146976417467596800} - \right. \\
& \quad \left. \frac{92904751 o^4 p^2 r^4}{1809798427831173120} + \frac{204449671 o^3 r^7}{72391937113246924800} + \frac{809 o^6 y^4}{952124593766400} - \frac{809 y^{10}}{344802322022400} \right) t_5^{12} + \\
& \frac{1}{3} p t_1 t_3 t_6 + \left(-\frac{o r}{54} + \frac{z^2}{18} \right) t_3^2 t_4 t_6 + \left(\frac{o r}{27} - \frac{z^2}{18} \right) t_2 t_3 t_5 t_6 + \frac{1}{18} z^2 t_1 t_4 t_5 t_6 + \\
& \left(\frac{p r^2}{486} + \frac{7 o^2 z}{1944} - \frac{p^2 z}{72} \right) t_3 t_4^2 t_5 t_6 + \left(-\frac{p r^2}{972} + \frac{o^2 z}{1944} + \frac{p^2 z}{72} \right) t_3^2 t_5^2 t_6 + \\
& \left(\frac{o^2 z}{324} + \frac{p^2 z}{108} \right) t_2 t_4 t_5^2 t_6 + \left(\frac{o^4}{11664} + \frac{o^2 p^2}{1944} + \frac{p^4}{1296} \right) t_4^3 t_5^2 t_6 +
\end{aligned}$$

$$\begin{aligned}
& \left(\frac{o^2 z}{648} + \frac{p^2 z}{216} \right) t_1 t_5^3 t_6 + \left(\frac{19 o^4}{104976} + \frac{o^2 p^2}{648} - \frac{5 p^4}{1296} + \frac{o r^3}{13122} \right) t_3 t_4 t_5^3 t_6 + \\
& \left(\frac{o^4}{11664} + \frac{o^2 p^2}{1944} + \frac{p^4}{1296} \right) t_2 t_5^4 t_6 + \left(\frac{7 o^3 p r}{104976} + \frac{o p^3 r}{15552} + \frac{5 o^4 y}{419904} - \frac{p^3 z^2}{5184} \right) t_4^2 t_5^4 t_6 + \\
& \left(\frac{299 o^3 p r}{9447840} - \frac{11 o p^3 r}{155520} + \frac{p r^4}{2361960} + \frac{91 o^4 y}{12597120} + \frac{11 p^3 z^2}{51840} \right) t_3 t_5^5 t_6 + \\
& \left(\frac{53 o^4 r^2}{50388480} + \frac{139 o^2 p^2 r^2}{100776960} + \frac{7 p^4 r^2}{11197440} + \frac{11 o^4 y^2}{25194240} - \frac{13 p^5 z}{933120} \right) t_4 t_5^6 t_6 + \\
& \left(\frac{o^6 p}{34012224} - \frac{p^7}{3732480} + \frac{389 o^3 p r^3}{21767823360} - \frac{o p^3 r^3}{483729408} + \frac{o^4 y^3}{302330880} \right) t_5^8 t_6 + \frac{1}{6} z t_2 t_6^2 + \\
& \left(\frac{o^2}{108} + \frac{p^2}{36} \right) t_4^2 t_6^2 + \left(\frac{o^2}{54} - \frac{p^2}{18} \right) t_3 t_5 t_6^2 + \left(\frac{o p r}{108} + \frac{o^2 y}{324} - \frac{p z^2}{108} \right) t_4 t_5^2 t_6^2 + \\
& \left(\frac{23 o^2 r^2}{139968} - \frac{p^2 r^2}{46656} + \frac{o^2 y^2}{11664} - \frac{p^3 z}{1296} \right) t_5^4 t_6^2 + \frac{x t_6^3}{18} + \frac{1}{6} z t_1^2 t_7 + \frac{1}{18} p^2 t_2 t_3^2 t_7 + \\
& \left(\frac{o^2}{54} - \frac{p^2}{18} \right) t_1 t_3 t_4 t_7 + \left(\frac{5 o p r}{648} + \frac{o^2 y}{648} - \frac{p z^2}{72} \right) t_3^2 t_4^2 t_7 + \left(\frac{o^2}{54} + \frac{p^2}{18} \right) t_1 t_2 t_5 t_7 + \\
& \left(-\frac{1}{162} o p r + \frac{p z^2}{54} \right) t_3^3 t_5 t_7 + \left(-\frac{1}{324} o p r + \frac{o^2 y}{324} + \frac{p z^2}{36} \right) t_2 t_3 t_4 t_5 t_7 + \\
& \left(\frac{o p r}{216} + \frac{o^2 y}{648} - \frac{p z^2}{216} \right) t_1 t_4^2 t_5 t_7 + \left(\frac{5 o^2 r^2}{15552} - \frac{p^2 r^2}{1728} + \frac{o^2 y^2}{3888} + \frac{5 p^3 z}{1296} \right) t_3 t_4^3 t_5 t_7 + \\
& \left(\frac{o p r}{216} + \frac{o^2 y}{648} - \frac{p z^2}{216} \right) t_2^2 t_5^2 t_7 + \left(-\frac{1}{648} o p r + \frac{o^2 y}{648} + \frac{p z^2}{72} \right) t_1 t_3 t_5^2 t_7 + \\
& \left(\frac{35 o^2 r^2}{46656} + \frac{11 p^2 r^2}{15552} + \frac{o^2 y^2}{3888} - \frac{5 p^3 z}{432} \right) t_3^2 t_4 t_5^2 t_7 + \\
& \left(\frac{23 o^2 r^2}{46656} - \frac{p^2 r^2}{15552} + \frac{o^2 y^2}{3888} - \frac{p^3 z}{432} \right) t_2 t_4^2 t_5^2 t_7 + \\
& \left(\frac{79 o^4 p}{839808} - \frac{19 o^2 p^3}{93312} + \frac{11 o p r^3}{839808} + \frac{o^2 y^3}{93312} + \frac{p^2 z^3}{3456} \right) t_4^4 t_5^2 t_7 + \\
& \left(\frac{5 o^2 r^2}{15552} - \frac{p^2 r^2}{1728} + \frac{o^2 y^2}{3888} + \frac{5 p^3 z}{1296} \right) t_2 t_3 t_5^3 t_7 + \left(\frac{23 o^2 r^2}{139968} - \frac{p^2 r^2}{46656} + \frac{o^2 y^2}{11664} - \frac{p^3 z}{1296} \right) t_1 t_4 t_5^3 t_7 + \\
& \left(\frac{475 o^4 p}{1259712} + \frac{337 o^2 p^3}{139968} - \frac{25 o p r^3}{1259712} + \frac{5 o^2 y^3}{139968} - \frac{11 p^2 z^3}{5184} \right) t_3 t_4^2 t_5^3 t_7 + \\
& \left(\frac{197 o^4 p}{2519424} - \frac{91 o^2 p^3}{93312} + \frac{73 o p r^3}{2519424} + \frac{o^2 y^3}{93312} + \frac{11 p^2 z^3}{10368} \right) t_3^2 t_5^4 t_7 + \\
& \left(\frac{79 o^4 p}{629856} - \frac{19 o^2 p^3}{69984} + \frac{11 o p r^3}{629856} + \frac{o^2 y^3}{69984} + \frac{p^2 z^3}{2592} \right) t_2 t_4 t_5^4 t_7 + \\
& \left(\frac{13 o^5 r}{1679616} - \frac{43 o p^4 r}{839808} + \frac{577 o^2 r^4}{120932352} - \frac{155 p^2 r^4}{40310784} + \frac{o^2 y^4}{839808} + \frac{13 p^4 z^2}{93312} \right) t_4^3 t_5^4 t_7 +
\end{aligned}$$

$$\begin{aligned}
& \left(\frac{79 o^4 p}{12597120} - \frac{19 o^2 p^3}{1399680} + \frac{11 o p r^3}{12597120} + \frac{o^2 y^3}{1399680} + \frac{p^2 z^3}{51840} \right) t_1 t_5^5 t_7 + \\
& \left(\frac{3509 o^5 r}{453496320} + \frac{155 o p^4 r}{1679616} + \frac{22913 o^2 r^4}{3627970560} - \frac{2761 p^2 r^4}{403107840} + \frac{11 o^2 y^4}{8398080} - \frac{91 p^4 z^2}{311040} \right) t_3 t_4 t_5^5 t_7 + \\
& \left(\frac{13 o^5 r}{16796160} - \frac{43 o p^4 r}{8398080} + \frac{577 o^2 r^4}{1209323520} - \frac{31 p^2 r^4}{80621568} + \frac{o^2 y^4}{8398080} + \frac{13 p^4 z^2}{933120} \right) t_2 t_5^6 t_7 + \\
& \left(\frac{56537 o^4 p r^2}{19591041024} - \frac{377 o^2 p^3 r^2}{453496320} - \frac{2821 p^5 r^2}{1209323520} + \right. \\
& \quad \left. \frac{559 o p r^5}{24488801280} + \frac{13 o^2 y^5}{302330880} + \frac{17459 o^6 z}{24488801280} + \frac{91 p^6 z}{3732480} \right) t_4^2 t_5^6 t_7 + \\
& \left(\frac{6971 o^4 p r^2}{10883911680} + \frac{67 o^2 p^3 r^2}{151165440} + \frac{359 p^5 r^2}{403107840} - \frac{7 o p r^5}{2720977920} + \frac{o^2 y^5}{100776960} + \frac{469 o^6 z}{2720977920} - \frac{43 p^6 z}{3732480} \right) \\
& t_3 t_5^7 t_7 + \left(\frac{5503 o^8}{440798423040} - \frac{667 o^2 p^6}{181398528} + \frac{46613 o^5 r^3}{881596846080} + \frac{913 o p^4 r^3}{1612431360} + \frac{115553 o^2 r^6}{14105549537280} - \right. \\
& \quad \left. \frac{12749 p^2 r^6}{348285173760} + \frac{o^2 y^6}{1813985280} \right) t_4 t_5^8 t_7 + \left(\frac{1639 o^7 p r}{661197634560} + \frac{1114279 o^4 p r^4}{846332972236800} - \frac{25193 o^2 p^3 r^4}{5224277606400} - \right. \\
& \quad \left. \frac{124229 p^5 r^4}{20897110425600} + \frac{591989 o p r^7}{1128443962982400} + \frac{7253 o^8 y}{35263873843200} + \frac{o^2 y^7}{435356467200} \right) t_5^{10} t_7 + \\
& \left(\frac{r^2}{216} - \frac{w}{72} + \frac{y^2}{72} - \frac{p z}{18} \right) t_3^2 t_6 t_7 + \left(\frac{r^2}{108} - \frac{w}{36} + \frac{y^2}{36} \right) t_2 t_4 t_6 t_7 + \left(\frac{o^2 p}{162} - \frac{p^3}{162} \right) t_4^3 t_6 t_7 + \\
& \left(\frac{r^2}{108} - \frac{w}{36} + \frac{y^2}{36} \right) t_1 t_5 t_6 t_7 + \left(\frac{o^2 p}{54} + \frac{p^3}{18} \right) t_3 t_4 t_5 t_6 t_7 + \\
& \left(\frac{o^2 p}{54} - \frac{p^3}{54} \right) t_2 t_5^2 t_6 t_7 + \left(\frac{o^3 r}{1296} - \frac{o p^2 r}{1296} + \frac{p^2 z^2}{216} \right) t_4^2 t_5^2 t_6 t_7 + \\
& \left(\frac{o^3 r}{1296} + \frac{13 o p^2 r}{3888} - \frac{5 p^2 z^2}{648} \right) t_3 t_5^3 t_6 t_7 + \left(\frac{o^2 p r^2}{7776} - \frac{p^3 r^2}{7776} + \frac{o^4 z}{11664} + \frac{p^4 z}{1296} \right) t_4 t_5^4 t_6 t_7 + \\
& \left(\frac{o^6}{1399680} + \frac{o^2 p^4}{466560} + \frac{13 p^6}{466560} + \frac{7 o^3 r^3}{3732480} - \frac{7 o p^2 r^3}{3732480} \right) t_5^6 t_6 t_7 + \frac{1}{18} z^2 t_4 t_6^2 t_7 + \\
& \left(\frac{o^2 z}{162} + \frac{p^2 z}{54} \right) t_5^2 t_6^2 t_7 + \frac{1}{36} z^2 t_2^2 t_7^2 + \left(\frac{o r}{27} - \frac{z^2}{18} \right) t_1 t_3 t_7^2 + \left(-\frac{p r^2}{486} + \frac{o^2 z}{972} + \frac{p^2 z}{36} \right) t_3^2 t_4 t_7^2 + \\
& \left(\frac{o^2 z}{324} + \frac{p^2 z}{108} \right) t_2 t_4^2 t_7^2 + \left(\frac{o^4}{11664} + \frac{o^2 p^2}{1944} + \frac{p^4}{1296} \right) t_4^4 t_7^2 + \left(\frac{p r^2}{243} + \frac{7 o^2 z}{972} - \frac{p^2 z}{36} \right) t_2 t_3 t_5 t_7^2 + \\
& \left(\frac{o^2 z}{324} + \frac{p^2 z}{108} \right) t_1 t_4 t_5 t_7^2 + \left(\frac{19 o^4}{34992} + \frac{o^2 p^2}{216} - \frac{5 p^4}{432} + \frac{o r^3}{4374} \right) t_3 t_4^2 t_5 t_7^2 + \\
& \left(\frac{13 o^4}{34992} + \frac{o^2 p^2}{648} + \frac{5 p^4}{432} - \frac{o r^3}{8748} \right) t_3^2 t_5^2 t_7^2 + \left(\frac{o^4}{1944} + \frac{o^2 p^2}{324} + \frac{p^4}{216} \right) t_2 t_4 t_5^2 t_7^2 + \\
& \left(\frac{7 o^3 p r}{17496} + \frac{o p^3 r}{2592} + \frac{5 o^4 y}{69984} - \frac{p^3 z^2}{864} \right) t_4^3 t_5^2 t_7^2 + \left(\frac{o^4}{11664} + \frac{o^2 p^2}{1944} + \frac{p^4}{1296} \right) t_1 t_5^3 t_7^2 +
\end{aligned}$$

$$\begin{aligned}
& \left(\frac{299 o^3 p r}{472392} - \frac{11 o p^3 r}{7776} + \frac{p r^4}{118098} + \frac{91 o^4 y}{629856} + \frac{11 p^3 z^2}{2592} \right) t_3 t_4 t_5^3 t_7^2 + \\
& \left(\frac{7 o^3 p r}{52488} + \frac{o p^3 r}{7776} + \frac{5 o^4 y}{209952} - \frac{p^3 z^2}{2592} \right) t_2 t_5^4 t_7^2 + \\
& \left(\frac{53 o^4 r^2}{1679616} + \frac{139 o^2 p^2 r^2}{3359232} + \frac{7 p^4 r^2}{373248} + \frac{11 o^4 y^2}{839808} - \frac{13 p^5 z}{31104} \right) t_4^2 t_5^4 t_7^2 + \\
& \left(\frac{15869 o^4 r^2}{1360488960} + \frac{587 o^2 p^2 r^2}{302330880} - \frac{113 p^4 r^2}{3732480} + \frac{o r^5}{21257640} + \frac{331 o^4 y^2}{75582720} + \frac{91 p^5 z}{311040} \right) t_3 t_5^5 t_7^2 + \\
& \left(\frac{91 o^6 p}{17006112} - \frac{91 p^7}{1866240} + \frac{35399 o^3 p r^3}{10883911680} - \frac{91 o p^3 r^3}{241864704} + \frac{91 o^4 y^3}{151165440} \right) t_4 t_5^6 t_7^2 + \\
& \left(\frac{4283 o^7 r}{146932807680} + \frac{19 o p^6 r}{8957952} + \frac{105559 o^4 r^4}{2350924922880} - \frac{37097 o^2 p^2 r^4}{261213880320} - \frac{2923 p^4 r^4}{8707129344} + \frac{41 o r^7}{2866544640} + \right. \\
& \quad \left. \frac{43 o^4 y^4}{5441955840} \right) t_5^8 t_7^2 + \left(\frac{o^2}{54} + \frac{p^2}{18} \right) t_2 t_6 t_7^2 + \left(\frac{o p r}{108} + \frac{o^2 y}{324} - \frac{p z^2}{108} \right) t_4^2 t_6 t_7^2 + \\
& \left(-\frac{1}{162} o p r + \frac{o^2 y}{162} + \frac{p z^2}{18} \right) t_3 t_5 t_6 t_7^2 + \left(\frac{23 o^2 r^2}{11664} - \frac{p^2 r^2}{3888} + \frac{o^2 y^2}{972} - \frac{p^3 z}{108} \right) t_4 t_5^2 t_6 t_7^2 + \\
& \left(\frac{79 o^4 p}{314928} - \frac{19 o^2 p^3}{34992} + \frac{11 o p r^3}{314928} + \frac{o^2 y^3}{34992} + \frac{p^2 z^3}{1296} \right) t_5^4 t_6 t_7^2 - \frac{1}{36} w t_6^2 t_7^2 + \left(\frac{o^2 p}{162} - \frac{p^3}{54} \right) t_3^2 t_7^3 + \\
& \left(\frac{o^2 p}{162} - \frac{p^3}{162} \right) t_2 t_4 t_7^3 + \left(\frac{o^3 r}{5832} - \frac{o p^2 r}{5832} + \frac{p^2 z^2}{972} \right) t_4^3 t_7^3 + \left(\frac{o^2 p}{162} - \frac{p^3}{162} \right) t_1 t_5 t_7^3 + \\
& \left(\frac{o^3 r}{648} + \frac{13 o p^2 r}{1944} - \frac{5 p^2 z^2}{324} \right) t_3 t_4 t_5 t_7^3 + \left(\frac{o^3 r}{1944} - \frac{o p^2 r}{1944} + \frac{p^2 z^2}{324} \right) t_2 t_5^2 t_7^3 + \\
& \left(\frac{o^2 p r^2}{2592} - \frac{p^3 r^2}{2592} + \frac{o^4 z}{3888} + \frac{p^4 z}{432} \right) t_4^2 t_5^2 t_7^3 + \left(\frac{23 o^2 p r^2}{69984} + \frac{p^3 r^2}{7776} + \frac{5 o^4 z}{34992} - \frac{11 p^4 z}{3888} \right) t_3 t_5^3 t_7^3 + \\
& \left(\frac{o^6}{69984} + \frac{o^2 p^4}{23328} + \frac{13 p^6}{23328} + \frac{7 o^3 r^3}{186624} - \frac{7 o p^2 r^3}{186624} \right) t_4 t_5^4 t_7^3 + \\
& \left(\frac{221 o^5 p r}{50388480} + \frac{169 o p^5 r}{16796160} + \frac{13 o^2 p r^4}{13436928} - \frac{13 p^3 r^4}{13436928} + \frac{13 o^6 y}{25194240} - \frac{91 p^5 z^2}{2799360} \right) t_5^6 t_7^3 + \\
& \left(\frac{o^2 z}{162} + \frac{p^2 z}{54} \right) t_4 t_6 t_7^3 + \left(\frac{o^4}{1458} + \frac{o^2 p^2}{243} + \frac{p^4}{162} \right) t_5^2 t_6 t_7^3 + \left(\frac{o p r}{216} + \frac{o^2 y}{648} - \frac{p z^2}{216} \right) t_2 t_7^4 + \\
& \left(\frac{23 o^2 r^2}{46656} - \frac{p^2 r^2}{15552} + \frac{o^2 y^2}{3888} - \frac{p^3 z}{432} \right) t_4^2 t_7^4 + \left(\frac{5 o^2 r^2}{7776} - \frac{p^2 r^2}{864} + \frac{o^2 y^2}{1944} + \frac{5 p^3 z}{648} \right) t_3 t_5 t_7^4 + \\
& \left(\frac{79 o^4 p}{104976} - \frac{19 o^2 p^3}{11664} + \frac{11 o p r^3}{104976} + \frac{o^2 y^3}{11664} + \frac{p^2 z^3}{432} \right) t_4 t_5^2 t_7^4 + \\
& \left(\frac{13 o^5 r}{839808} - \frac{43 o p^4 r}{419904} + \frac{577 o^2 r^4}{60466176} - \frac{155 p^2 r^4}{20155392} + \frac{o^2 y^4}{419904} + \frac{13 p^4 z^2}{46656} \right) t_5^4 t_7^4 + \\
& \left(\frac{o^2 p}{108} - \frac{p^3}{108} - \frac{r^2 y}{648} + \frac{y^3}{648} \right) t_6 t_7^4 + \left(\frac{o^4}{5832} + \frac{o^2 p^2}{972} + \frac{p^4}{648} \right) t_4 t_5^5 +
\end{aligned}$$

$$\begin{aligned}
& \left(\frac{7 o^3 p r}{21870} + \frac{o p^3 r}{3240} + \frac{o^4 y}{17496} - \frac{p^3 z^2}{1080} \right) t_5^2 t_7^5 + \left(\frac{5 o^3 r}{52488} - \frac{o p^2 r}{29160} - \frac{r^4}{104976} - \frac{y^4}{19440} + \frac{p^2 z^2}{1620} \right) t_7^6 + \\
& \frac{1}{6} r t_1 t_2 t_8 + \left(-\frac{r y}{18} + \frac{o z}{18} \right) t_2 t_3 t_4 t_8 + \frac{1}{36} r y t_1 t_4^2 t_8 + \\
& \left(\frac{o^3}{972} + \frac{o p^2}{108} - \frac{r^3}{972} \right) t_3 t_4^3 t_8 + \frac{1}{36} r y t_2^2 t_5 t_8 + \left(-\frac{r y}{36} + \frac{o z}{18} \right) t_1 t_3 t_5 t_8 + \\
& \left(\frac{o^3}{486} + \frac{r^3}{972} \right) t_3^2 t_4 t_5 t_8 + \left(\frac{o^3}{648} - \frac{o p^2}{72} + \frac{r^3}{324} \right) t_2 t_4^2 t_5 t_8 + \\
& \left(-\frac{o^2 p r}{7776} + \frac{p^3 r}{2592} + \frac{o^3 y}{11664} + \frac{5 r^3 y}{11664} \right) t_4^4 t_5 t_8 + \left(\frac{5 o^3}{1944} + \frac{o p^2}{72} - \frac{r^3}{972} \right) t_2 t_3 t_5^2 t_8 + \\
& \left(\frac{o^3}{486} + \frac{r^3}{972} \right) t_1 t_4 t_5^2 t_8 + \left(\frac{23 o^2 p r}{7776} - \frac{p^3 r}{864} + \frac{7 o^3 y}{11664} - \frac{5 r^3 y}{5832} \right) t_3 t_4^2 t_5^2 t_8 + \\
& \left(\frac{o^2 p r}{1944} + \frac{o^3 y}{5832} + \frac{r^3 y}{11664} \right) t_3^2 t_5^3 t_8 + \left(\frac{17 o^2 p r}{23328} + \frac{p^3 r}{2592} + \frac{13 o^3 y}{34992} + \frac{5 r^3 y}{8748} \right) t_2 t_4 t_5^3 t_8 + \\
& \left(\frac{505 o^3 r^2}{7558272} - \frac{205 o p^2 r^2}{839808} + \frac{11 r^5}{472392} + \frac{7 o^3 y^2}{209952} + \frac{o p^3 z}{7776} \right) t_4^3 t_5^3 t_8 + \\
& \left(\frac{o^2 p r}{5832} + \frac{o^3 y}{17496} + \frac{r^3 y}{34992} \right) t_1 t_5^4 t_8 + \left(\frac{95 o^3 r^2}{944784} + \frac{5 o p^2 r^2}{52488} - \frac{11 r^5}{944784} + \frac{5 o^3 y^2}{104976} \right) t_3 t_4 t_5^4 t_8 + \\
& \left(\frac{607 o^3 r^2}{30233088} - \frac{91 o p^2 r^2}{3359232} + \frac{11 r^5}{4723920} + \frac{41 o^3 y^2}{4199040} + \frac{o p^3 z}{51840} \right) t_2 t_5^5 t_8 + \\
& \left(\frac{2855 o^5 p}{136048896} - \frac{o p^5}{311040} + \frac{5611 o^2 p r^3}{1360488960} + \frac{157 p^3 r^3}{50388480} + \frac{91 r^5 y}{28343520} + \frac{61 o^3 y^3}{25194240} \right) t_4^2 t_5^5 t_8 + \\
& \left(\frac{1309 o^5 p}{170061120} + \frac{4609 o^2 p r^3}{1360488960} - \frac{143 p^3 r^3}{50388480} - \frac{11 r^5 y}{28343520} + \frac{11 o^3 y^3}{12597120} \right) t_3 t_5^6 t_8 + \\
& \left(\frac{2353 o^6 r}{9183300480} + \frac{91 o^2 p^4 r}{113374080} + \frac{631 o^3 r^4}{2295825120} - \frac{67 o p^2 r^4}{136048896} + \frac{43 r^7}{2295825120} + \frac{13 o^3 y^4}{226748160} \right) t_4 t_5^7 t_8 + \\
& \left(\frac{3779 o^5 p r^2}{220399211520} + \frac{5383 o p^5 r^2}{440798423040} + \frac{563 o^2 p r^5}{391820820480} - \frac{8731 p^3 r^5}{3526387384320} + \right. \\
& \quad \left. \frac{o^3 y^5}{2720977920} + \frac{1091 o^7 z}{330598817280} - \frac{17 o p^6 z}{645700815} \right) t_5^9 t_8 + \frac{1}{3} o t_1 t_6 t_8 + \\
& \left(\frac{p r}{18} + \frac{o y}{18} \right) t_3 t_4 t_6 t_8 + \left(\frac{p r}{18} + \frac{o y}{18} \right) t_2 t_5 t_6 t_8 + \left(\frac{o r^2}{648} + \frac{o y^2}{216} + \frac{o p z}{54} \right) t_4^2 t_5 t_6 t_8 + \\
& \left(\frac{o r^2}{648} + \frac{o y^2}{216} + \frac{o p z}{54} \right) t_3 t_5^2 t_6 t_8 + \left(\frac{19 o^3 p}{5832} + \frac{o p^3}{1944} + \frac{p r^3}{11664} + \frac{o y^3}{3888} \right) t_4 t_5^3 t_6 t_8 + \\
& \left(\frac{5 o^4 r}{157464} + \frac{31 o^2 p^2 r}{349920} - \frac{p^4 r}{116640} + \frac{o r^4}{2519424} + \frac{o y^4}{466560} \right) t_5^5 t_6 t_8 + \frac{1}{9} o p t_5 t_6^2 t_8 + \\
& \frac{1}{9} o p t_2 t_3 t_7 t_8 + \frac{1}{9} o p t_1 t_4 t_7 t_8 + \frac{1}{162} o^2 r t_3 t_4^2 t_7 t_8 + \frac{1}{162} o^2 r t_3^2 t_5 t_7 t_8 +
\end{aligned}$$

$$\begin{aligned}
& \frac{1}{81} o^2 r t_2 t_4 t_5 t_7 t_8 + \left(\frac{o p r^2}{1458} + \frac{7 o^3 z}{5832} + \frac{1}{648} o p^2 z \right) t_4^3 t_5 t_7 t_8 + \frac{1}{162} o^2 r t_1 t_5^2 t_7 t_8 + \\
& \left(\frac{1}{486} o p r^2 + \frac{7 o^3 z}{1944} + \frac{1}{216} o p^2 z \right) t_3 t_4 t_5^2 t_7 t_8 + \left(\frac{o p r^2}{1458} + \frac{7 o^3 z}{5832} + \frac{1}{648} o p^2 z \right) t_2 t_5^3 t_7 t_8 + \\
& \left(\frac{13 o^5}{78732} + \frac{175 o^2 r^3}{629856} - \frac{5 p^2 r^3}{23328} \right) t_4^2 t_5^3 t_7 t_8 + \left(\frac{13 o^5}{157464} + \frac{175 o^2 r^3}{1259712} - \frac{5 p^2 r^3}{46656} \right) t_3 t_5^4 t_7 t_8 + \\
& \left(\frac{169 o^4 p r}{1771470} + \frac{41 o^2 p^3 r}{933120} - \frac{p^5 r}{311040} + \frac{11 o p r^4}{7085880} + \frac{521 o^5 y}{37791360} \right) t_4 t_5^5 t_7 t_8 + \\
& \left(\frac{641 o^5 r^2}{816293376} - \frac{13 o p^4 r^2}{16796160} + \frac{751 o^2 r^5}{3265173504} - \frac{403 p^2 r^5}{1813985280} + \frac{31 o^5 y^2}{113374080} \right) t_5^7 t_7 t_8 + \\
& \frac{1}{9} o z t_3 t_6 t_7 t_8 + \left(\frac{o^3}{54} + \frac{o p^2}{18} \right) t_4 t_5 t_6 t_7 t_8 + \left(\frac{7 o^2 p r}{1296} - \frac{p^3 r}{1296} + \frac{o^3 y}{648} \right) t_5^3 t_6 t_7 t_8 + \\
& \left(\frac{p r}{18} + \frac{o y}{18} \right) t_1 t_7^2 t_8 + \left(\frac{o r^2}{324} + \frac{o y^2}{108} + \frac{o p z}{27} \right) t_3 t_4 t_7^2 t_8 + \left(\frac{o r^2}{324} + \frac{o y^2}{108} + \frac{o p z}{27} \right) t_2 t_5 t_7^2 t_8 + \\
& \left(\frac{19 o^3 p}{1944} + \frac{o p^3}{648} + \frac{p r^3}{3888} + \frac{o y^3}{1296} \right) t_4^2 t_5 t_7^2 t_8 + \left(\frac{19 o^3 p}{1944} + \frac{o p^3}{648} + \frac{p r^3}{3888} + \frac{o y^3}{1296} \right) t_3 t_5^2 t_7^2 t_8 + \\
& \left(\frac{25 o^4 r}{39366} + \frac{31 o^2 p^2 r}{17496} - \frac{p^4 r}{5832} + \frac{5 o r^4}{629856} + \frac{o y^4}{23328} \right) t_4 t_5^3 t_7^2 t_8 + \\
& \left(\frac{15533 o^3 p r^2}{226748160} - \frac{187 o p^3 r^2}{8398080} + \frac{11 p r^5}{226748160} + \frac{o y^5}{2799360} + \frac{2801 o^5 z}{113374080} + \frac{o p^4 z}{279936} \right) t_5^5 t_7^2 t_8 + \\
& \frac{2}{81} o^2 r t_5 t_6 t_7^2 t_8 + \left(\frac{o^3}{162} + \frac{o p^2}{54} \right) t_3 t_7^3 t_8 + \left(\frac{7}{648} o^2 p r - \frac{p^3 r}{648} + \frac{o^3 y}{324} \right) t_4 t_5 t_7^3 t_8 + \\
& \left(\frac{25 o^3 r^2}{46656} - \frac{5 o p^2 r^2}{46656} + \frac{o^3 y^2}{3888} + \frac{o p^3 z}{3888} \right) t_5^3 t_7^3 t_8 + \left(\frac{1}{729} o p r^2 + \frac{7 o^3 z}{2916} + \frac{1}{324} o p^2 z \right) t_5 t_7^4 t_8 + \\
& \left(-\frac{r^2}{288} - \frac{w}{96} + \frac{y^2}{96} + \frac{p z}{24} \right) t_3^2 t_8^2 + \left(-\frac{r^2}{48} - \frac{w}{48} + \frac{y^2}{48} + \frac{p z}{12} \right) t_2 t_4 t_8^2 + \left(\frac{o^2 p}{108} - \frac{r^2 y}{216} \right) t_4^3 t_8^2 + \\
& \left(-\frac{r^2}{144} - \frac{w}{48} + \frac{y^2}{48} + \frac{p z}{12} \right) t_1 t_5 t_8^2 + \left(\frac{o^2 p}{54} + \frac{r^2 y}{108} \right) t_3 t_4 t_5 t_8^2 + \left(\frac{o^2 p}{54} - \frac{r^2 y}{216} \right) t_2 t_5 t_8^2 + \\
& \left(\frac{7 o^3 r}{5832} + \frac{1}{216} o p^2 r - \frac{5 r^4}{11664} \right) t_4^2 t_5^2 t_8^2 + \left(\frac{o^3 r}{1458} + \frac{r^4}{11664} \right) t_3 t_5^3 t_8^2 + \\
& \left(\frac{359 o^2 p r^2}{1259712} - \frac{p^3 r^2}{5184} - \frac{11 r^4 y}{209952} + \frac{41 o^4 z}{314928} \right) t_4 t_5^4 t_8^2 + \left(\frac{11 o^6}{7085880} + \frac{11 o^3 r^3}{2834352} - \frac{11 r^6}{56687040} \right) t_5^6 t_8^2 + \\
& \frac{1}{18} o r t_4 t_6 t_8^2 + \left(\frac{p r^2}{324} + \frac{o^2 z}{81} \right) t_5^2 t_6 t_8^2 + \frac{1}{18} o^2 t_2 t_7 t_8^2 + \left(\frac{o p r}{54} + \frac{o^2 y}{108} \right) t_4^2 t_7 t_8^2 + \\
& \left(\frac{o p r}{27} + \frac{o^2 y}{54} \right) t_3 t_5 t_7 t_8^2 + \left(\frac{5 o^2 r^2}{972} - \frac{p^2 r^2}{324} + \frac{o^2 y^2}{324} \right) t_4 t_5^2 t_7 t_8^2 + \\
& \left(\frac{7 o^4 p}{8748} + \frac{o^2 p^3}{1458} + \frac{o p r^3}{17496} + \frac{o^2 y^3}{11664} \right) t_4^4 t_7 t_8^2 + \left(\frac{r^2}{72} - \frac{w}{24} + \frac{y^2}{24} + \frac{p z}{6} \right) t_6 t_7 t_8^2 +
\end{aligned}$$

$$\begin{aligned}
& \left(\frac{p r^2}{162} + \frac{2 o^2 z}{81} \right) t_4 t_7^2 t_8^2 + \left(\frac{2 o^4}{729} + \frac{o^2 p^2}{54} + \frac{o r^3}{2916} \right) t_5^2 t_7^2 t_8^2 + \frac{1}{27} o^2 p t_7^3 t_8^2 + \\
& \left(-\frac{r y}{36} + \frac{o z}{18} \right) t_3 t_8^3 + \left(\frac{o^3}{162} + \frac{r^3}{324} \right) t_4 t_5 t_8^3 + \left(\frac{1}{648} o^2 p r + \frac{o^3 y}{1944} + \frac{r^3 y}{3888} \right) t_5^3 t_8^3 + \\
& \frac{1}{54} o^2 r t_5 t_7 t_8^3 + \left(-\frac{r^2}{576} - \frac{w}{64} + \frac{y^2}{192} + \frac{p z}{48} \right) t_8^4 + t_0 \left(\frac{t_3^2}{12} + \frac{t_2 t_4}{6} + \frac{t_1 t_5}{6} + \frac{t_6 t_7}{3} + \frac{t_8^2}{4} \right) + \frac{1}{2} t_0^2 t_9;
\end{aligned}$$

Where $x, y, z, p, o, r,$

w are defined as follows. Let $th_k(\tau)$ be the Jacobi theta constants,

$\eta(\tau)$ be the Dedekins eta function,

$E_2(\tau)$ be the second Eisensteinseries and $q := \exp(2\pi i\tau)$. Define:

$$As_3[q] := th_2[q^2] th_2[q^6] + th_3[q^2] th_3[q^6],$$

$$Cs_3[q] := 3 \frac{(\eta(q^3))^3}{\eta(q)}.$$

Then the functions x, y, z, p, o, r, w read:

$$x = As_3[q^6],$$

$$y = As_3[q^{12}],$$

$$z = Cs_3[q^6],$$

$$p = Cs_3[q^{12}],$$

$$o = Cs_3[q^3] - Cs_3[q^{12}],$$

$$r = As_3[q^3] - As_3[q^{12}],$$

$$w = E_2[q^6].$$

*the notation is made compatible with the notation of Y. Shen--J. Zhou arXiv:1411.2078