

```
In[ ]:= SetDirectory["C:\\drorbn\\AcademicPensieve\\Projects\\SL2Invariant"];
<< SL2Invariant.m
```

Loading KnotTheory` version of January 20, 2015, 10:42:19.1122.
 Read more at <http://katlas.org/wiki/KnotTheory>.

This is Profile.m of <http://www.drorbn.net/AcademicPensieve/Projects/Profile/>.

This version: June 2018. Original version: July 1994.

```
In[ ]:= {tin, zeta_s, L, Q, P} = {27.390000000000015` ,
```

$$\begin{aligned} & \{ \beta_{nn[0]}, \tau_{nn[0]}, a_{nn[0]}, \beta_{nn[4]}, \tau_{nn[4]}, a_{nn[4]} \}, a_0 \alpha_{nn[0]} + a_0 \alpha_{nn[4]} + t \tau_{nn[0]} + t \tau_{nn[4]}, \\ & \left((\hbar - 4 T \hbar + 8 T^2 \hbar - 8 T^3 \hbar + 7 T^4 \hbar - 4 T^5 \hbar + T^6 \hbar) x_{14} y_{14} \right) / (T - 3 T^2 + 5 T^3 - 6 T^4 + 7 T^5 - 4 T^6 + T^7) + \\ & \frac{(\hbar - T^2 \hbar + T^3 \hbar) x_{nn[0]} y_{14}}{1 - 3 T + 5 T^2 - 6 T^3 + 7 T^4 - 4 T^5 + T^6} + \frac{(-\hbar + T \hbar - 2 T^2 \hbar + T^3 \hbar) x_{nn[4]} y_{14}}{1 - 3 T + 5 T^2 - 6 T^3 + 7 T^4 - 4 T^5 + T^6} + \\ & \left((-\hbar + 4 T \hbar - 8 T^2 \hbar + 9 T^3 \hbar - 8 T^4 \hbar + 5 T^5 \hbar - T^6 \hbar) x_{14} y_{nn[0]} \right) / \\ & (T - 3 T^2 + 5 T^3 - 6 T^4 + 7 T^5 - 4 T^6 + T^7) + \frac{(-\hbar + T \hbar - T^4 \hbar) x_{nn[0]} y_{nn[0]}}{1 - 3 T + 5 T^2 - 6 T^3 + 7 T^4 - 4 T^5 + T^6} + \\ & \left((\hbar - 2 T \hbar + 3 T^2 \hbar - 3 T^3 \hbar + 2 T^4 \hbar - T^5 \hbar) x_{nn[4]} y_{nn[0]} \right) / (1 - 3 T + 5 T^2 - 6 T^3 + 7 T^4 - 4 T^5 + T^6) + \\ & \frac{(-T^2 \hbar + T^3 \hbar - T^4 \hbar) x_{14} y_{nn[4]}}{1 - 3 T + 5 T^2 - 6 T^3 + 7 T^4 - 4 T^5 + T^6} + \frac{(-T \hbar + T^2 \hbar - T^3 \hbar + T^4 \hbar) x_{nn[0]} y_{nn[4]}}{1 - 3 T + 5 T^2 - 6 T^3 + 7 T^4 - 4 T^5 + T^6} + \\ & \left((T \hbar - T^2 \hbar + 2 T^3 \hbar - 2 T^4 \hbar + T^5 \hbar) x_{nn[4]} y_{nn[4]} \right) / (1 - 3 T + 5 T^2 - 6 T^3 + 7 T^4 - 4 T^5 + T^6) + \\ & y_0 \eta_{nn[0]} + \frac{y_0 \eta_{nn[4]}}{A_{nn[0]}} + \frac{x_0 \xi_{nn[0]}}{A_{nn[4]}} + \frac{(1 - T) \eta_{nn[4]} \xi_{nn[0]}}{\hbar} + x_0 \xi_{nn[4]}, \\ & \left(\frac{T^3}{1 - 3 T + 5 T^2 - 6 T^3 + 7 T^4 - 4 T^5 + T^6} + \epsilon \left((-4 T^3 \gamma \hbar + 21 T^4 \gamma \hbar - 55 T^5 \gamma \hbar + 95 T^6 \gamma \hbar - 117 T^7 \gamma \hbar + \right. \right. \\ & \quad 101 T^8 \gamma \hbar - 51 T^9 \gamma \hbar - 5 T^{10} \gamma \hbar + 40 T^{11} \gamma \hbar - 46 T^{12} \gamma \hbar + 31 T^{13} \gamma \hbar - 12 T^{14} \gamma \hbar + \\ & \quad \left. \left. 2 T^{15} \gamma \hbar \right) / (1 - 9 T + 42 T^2 - 135 T^3 + 339 T^4 - 705 T^5 + 1247 T^6 - 1902 T^7 + 2529 T^8 - 2943 \right. \\ & \quad \left. T^9 + 2988 T^{10} - 2628 T^{11} + 1984 T^{12} - 1257 T^{13} + 642 T^{14} - 250 T^{15} + 69 T^{16} - 12 T^{17} + T^{18}) + \right. \\ & \quad \left((-2 T^3 \hbar + 4 T^4 \hbar - 4 T^5 \hbar + 6 T^7 \hbar - 6 T^8 \hbar + 2 T^9 \hbar) a_{14} \right) / \\ & \quad (1 - 6 T + 19 T^2 - 42 T^3 + 75 T^4 - 110 T^5 + 132 T^6 - 130 T^7 + 107 T^8 - 68 T^9 + 30 T^{10} - 8 T^{11} + T^{12}) + \\ & \quad (T^3 \hbar a_{14}^2) / (\gamma - 3 T \gamma + 5 T^2 \gamma - 6 T^3 \gamma + 7 T^4 \gamma - 4 T^5 \gamma + T^6 \gamma) + \\ & \quad \left((-T^3 \hbar + T^4 \hbar + T^5 \hbar - 2 T^6 \hbar + T^7 \hbar - 2 T^8 \hbar + T^9 \hbar) a_{nn[0]} \right) / \\ & \quad (1 - 6 T + 19 T^2 - 42 T^3 + 75 T^4 - 110 T^5 + 132 T^6 - 130 T^7 + 107 T^8 - 68 T^9 + 30 T^{10} - 8 T^{11} + T^{12}) + \\ & \quad (T^3 \hbar a_{14} a_{nn[0]}) / (\gamma - 3 T \gamma + 5 T^2 \gamma - 6 T^3 \gamma + 7 T^4 \gamma - 4 T^5 \gamma + T^6 \gamma) - \\ & \quad (zubi T^3 \hbar a_{nn[0]}^2) / (\gamma - 3 T \gamma + 5 T^2 \gamma - 6 T^3 \gamma + 7 T^4 \gamma - 4 T^5 \gamma + T^6 \gamma) + \\ & \quad \left((-3 T^3 \hbar + 7 T^4 \hbar - 7 T^5 \hbar + 2 T^6 \hbar + 7 T^7 \hbar - 8 T^8 \hbar + 3 T^9 \hbar) a_{nn[4]} \right) / \\ & \quad (1 - 6 T + 19 T^2 - 42 T^3 + 75 T^4 - 110 T^5 + 132 T^6 - 130 T^7 + 107 T^8 - 68 T^9 + 30 T^{10} - 8 T^{11} + T^{12}) - \\ & \quad (2 T^3 \hbar a_{14} a_{nn[4]}) / (\gamma - 3 T \gamma + 5 T^2 \gamma - 6 T^3 \gamma + 7 T^4 \gamma - 4 T^5 \gamma + T^6 \gamma) + \\ & \quad (T^3 \hbar a_{nn[4]}^2) / (\gamma - 3 T \gamma + 5 T^2 \gamma - 6 T^3 \gamma + 7 T^4 \gamma - 4 T^5 \gamma + T^6 \gamma) + \\ & \quad \left((T^2 \gamma \hbar^2 - 10 T^3 \gamma \hbar^2 + 47 T^4 \gamma \hbar^2 - 154 T^5 \gamma \hbar^2 + 418 T^6 \gamma \hbar^2 - 976 T^7 \gamma \hbar^2 + 1924 T^8 \gamma \hbar^2 - 3122 \right. \\ & \quad \left. T^9 \gamma \hbar^2 + 4151 T^{10} \gamma \hbar^2 - 4532 T^{11} \gamma \hbar^2 + 4063 T^{12} \gamma \hbar^2 - 2964 T^{13} \gamma \hbar^2 + 1706 T^{14} \gamma \hbar^2 - \right. \\ & \quad \left. 712 T^{15} \gamma \hbar^2 + 165 T^{16} \gamma \hbar^2 + 14 T^{17} \gamma \hbar^2 - 25 T^{18} \gamma \hbar^2 + 8 T^{19} \gamma \hbar^2 - T^{20} \gamma \hbar^2) x_{14} y_{14} \right) / \\ & \quad (1 - 12 T + 74 T^2 - 312 T^3 + 1015 T^4 - 2716 T^5 + 6198 T^6 - 12324 T^7 + 21655 T^8 - \\ & \quad 33948 T^9 + 47762 T^{10} - 60488 T^{11} + 69024 T^{12} - 70896 T^{13} + 65318 T^{14} - 53656 T^{15} + \\ & \quad 38959 T^{16} - 24684 T^{17} + 13388 T^{18} - 6052 T^{19} + 2202 T^{20} - 616 T^{21} + 124 T^{22} - 16 T^{23} + T^{24}) + \\ & \quad \left((2 T^4 \hbar^2 - 12 T^5 \hbar^2 + 34 T^6 \hbar^2 - 68 T^7 \hbar^2 + 98 T^8 \hbar^2 - 86 T^9 \hbar^2 + 40 T^{10} \hbar^2 - 8 T^{11} \hbar^2) a_{14} x_{14} y_{14} \right) / \\ & \quad (1 - 9 T + 42 T^2 - 135 T^3 + 339 T^4 - 705 T^5 + 1247 T^6 - 1902 T^7 + 2529 T^8 - 2943 T^9 + \end{aligned}$$

$$\begin{aligned}
 & (2988 T^{10} - 2628 T^{11} + 1984 T^{12} - 1257 T^{13} + 642 T^{14} - 250 T^{15} + 69 T^{16} - 12 T^{17} + T^{18}) + \\
 & \left((T^2 \hbar^2 - 5 T^3 \hbar^2 + 13 T^4 \hbar^2 - 28 T^5 \hbar^2 + 48 T^6 \hbar^2 - 57 T^7 \hbar^2 + 43 T^8 \hbar^2 - 19 T^9 \hbar^2 - \right. \\
 & \quad \left. 6 T^{10} \hbar^2 + 20 T^{11} \hbar^2 - 16 T^{12} \hbar^2 + 6 T^{13} \hbar^2 - T^{14} \hbar^2) a_{nn[0]} x_{14} y_{14} \right) / \\
 & (1 - 9 T + 42 T^2 - 135 T^3 + 339 T^4 - 705 T^5 + 1247 T^6 - 1902 T^7 + 2529 T^8 - 2943 T^9 + \\
 & \quad 2988 T^{10} - 2628 T^{11} + 1984 T^{12} - 1257 T^{13} + 642 T^{14} - 250 T^{15} + 69 T^{16} - 12 T^{17} + T^{18}) + \\
 & \left((-2 T^4 \hbar^2 + 2 T^5 \hbar^2 + 20 T^6 \hbar^2 - 78 T^7 \hbar^2 + 144 T^8 \hbar^2 - 162 T^9 \hbar^2 + 140 T^{10} \hbar^2 - \right. \\
 & \quad \left. 94 T^{11} \hbar^2 + 46 T^{12} \hbar^2 - 14 T^{13} \hbar^2 + 2 T^{14} \hbar^2) a_{nn[4]} x_{14} y_{14} \right) / \\
 & (1 - 9 T + 42 T^2 - 135 T^3 + 339 T^4 - 705 T^5 + 1247 T^6 - 1902 T^7 + 2529 T^8 - 2943 T^9 + \\
 & \quad 2988 T^{10} - 2628 T^{11} + 1984 T^{12} - 1257 T^{13} + 642 T^{14} - 250 T^{15} + 69 T^{16} - 12 T^{17} + T^{18}) + \\
 & \left((T^3 \gamma \hbar^2 - 8 T^4 \gamma \hbar^2 + 36 T^5 \gamma \hbar^2 - 107 T^6 \gamma \hbar^2 + 240 T^7 \gamma \hbar^2 - 389 T^8 \gamma \hbar^2 + \right. \\
 & \quad 433 T^9 \gamma \hbar^2 - 287 T^{10} \gamma \hbar^2 + 9 T^{11} \gamma \hbar^2 + 244 T^{12} \gamma \hbar^2 - 349 T^{13} \gamma \hbar^2 + \\
 & \quad \left. 303 T^{14} \gamma \hbar^2 - 187 T^{15} \gamma \hbar^2 + 82 T^{16} \gamma \hbar^2 - 23 T^{17} \gamma \hbar^2 + 3 T^{18} \gamma \hbar^2) x_{nn[0]} y_{14} \right) / \\
 & (1 - 12 T + 74 T^2 - 312 T^3 + 1015 T^4 - 2716 T^5 + 6198 T^6 - 12324 T^7 + 21655 T^8 - \\
 & \quad 33948 T^9 + 47762 T^{10} - 60488 T^{11} + 69024 T^{12} - 70896 T^{13} + 65318 T^{14} - 53656 T^{15} + \\
 & \quad 38959 T^{16} - 24684 T^{17} + 13388 T^{18} - 6052 T^{19} + 2202 T^{20} - 616 T^{21} + 124 T^{22} - 16 T^{23} + T^{24}) + \\
 & \left((-2 T^4 \hbar^2 + 6 T^5 \hbar^2 - 12 T^6 \hbar^2 + 18 T^7 \hbar^2 - 6 T^8 \hbar^2 - 16 T^9 \hbar^2 + 20 T^{10} \hbar^2 - 10 T^{11} \hbar^2 + 2 T^{12} \hbar^2) a_{14} \right. \\
 & \quad \left. x_{nn[0]} y_{14} \right) / (1 - 9 T + 42 T^2 - 135 T^3 + 339 T^4 - 705 T^5 + 1247 T^6 - 1902 T^7 + 2529 T^8 - 2943 \\
 & \quad T^9 + 2988 T^{10} - 2628 T^{11} + 1984 T^{12} - 1257 T^{13} + 642 T^{14} - 250 T^{15} + 69 T^{16} - 12 T^{17} + T^{18}) + \\
 & \left((-2 T^4 \hbar^2 + 6 T^5 \hbar^2 - 6 T^6 \hbar^2 + 8 T^8 \hbar^2 - 14 T^9 \hbar^2 + 14 T^{10} \hbar^2 - 8 T^{11} \hbar^2 + 2 T^{12} \hbar^2) a_{nn[0]} x_{nn[0]} \right. \\
 & \quad \left. y_{14} \right) / (1 - 9 T + 42 T^2 - 135 T^3 + 339 T^4 - 705 T^5 + 1247 T^6 - 1902 T^7 + 2529 T^8 - 2943 T^9 + \\
 & \quad 2988 T^{10} - 2628 T^{11} + 1984 T^{12} - 1257 T^{13} + 642 T^{14} - 250 T^{15} + 69 T^{16} - 12 T^{17} + T^{18}) + \\
 & \left((-2 T^4 \hbar^2 + 12 T^5 \hbar^2 - 30 T^6 \hbar^2 + 50 T^7 \hbar^2 - 40 T^8 \hbar^2 + 14 T^9 \hbar^2 + 4 T^{10} \hbar^2 - 6 T^{11} \hbar^2 + 2 T^{12} \hbar^2) \right. \\
 & \quad \left. a_{nn[4]} x_{nn[0]} y_{14} \right) / (1 - 9 T + 42 T^2 - 135 T^3 + 339 T^4 - 705 T^5 + 1247 T^6 - 1902 T^7 + \\
 & \quad 2529 T^8 - 2943 T^9 + 2988 T^{10} - 2628 T^{11} + 1984 T^{12} - 1257 T^{13} + 642 T^{14} - 250 T^{15} + \\
 & \quad 69 T^{16} - 12 T^{17} + T^{18}) + \left((-T^3 \gamma \hbar^2 + 7 T^4 \gamma \hbar^2 - 27 T^5 \gamma \hbar^2 + 74 T^6 \gamma \hbar^2 - 187 T^7 \gamma \hbar^2 + \right. \\
 & \quad 404 T^8 \gamma \hbar^2 - 720 T^9 \gamma \hbar^2 + 1045 T^{10} \gamma \hbar^2 - 1243 T^{11} \gamma \hbar^2 + 1211 T^{12} \gamma \hbar^2 - 970 T^{13} \gamma \hbar^2 + \\
 & \quad \left. 631 T^{14} \gamma \hbar^2 - 321 T^{15} \gamma \hbar^2 + 119 T^{16} \gamma \hbar^2 - 28 T^{17} \gamma \hbar^2 + 3 T^{18} \gamma \hbar^2) x_{nn[4]} y_{14} \right) / \\
 & (1 - 12 T + 74 T^2 - 312 T^3 + 1015 T^4 - 2716 T^5 + 6198 T^6 - 12324 T^7 + 21655 T^8 - \\
 & \quad 33948 T^9 + 47762 T^{10} - 60488 T^{11} + 69024 T^{12} - 70896 T^{13} + 65318 T^{14} - 53656 T^{15} + \\
 & \quad 38959 T^{16} - 24684 T^{17} + 13388 T^{18} - 6052 T^{19} + 2202 T^{20} - 616 T^{21} + 124 T^{22} - 16 T^{23} + T^{24}) + \\
 & \left((2 T^4 \hbar^2 - 6 T^5 \hbar^2 + 14 T^6 \hbar^2 - 30 T^7 \hbar^2 + 42 T^8 \hbar^2 - 44 T^9 \hbar^2 + 30 T^{10} \hbar^2 - 12 T^{11} \hbar^2 + 2 T^{12} \hbar^2) a_{14} \right. \\
 & \quad \left. x_{nn[4]} y_{14} \right) / (1 - 9 T + 42 T^2 - 135 T^3 + 339 T^4 - 705 T^5 + 1247 T^6 - 1902 T^7 + 2529 T^8 - 2943 \\
 & \quad T^9 + 2988 T^{10} - 2628 T^{11} + 1984 T^{12} - 1257 T^{13} + 642 T^{14} - 250 T^{15} + 69 T^{16} - 12 T^{17} + T^{18}) + \\
 & \left((-T^3 \hbar^2 + 4 T^4 \hbar^2 - 10 T^5 \hbar^2 + 18 T^6 \hbar^2 - 28 T^7 \hbar^2 + 28 T^8 \hbar^2 - 23 T^9 \hbar^2 + \right. \\
 & \quad \left. 14 T^{10} \hbar^2 - 6 T^{11} \hbar^2 + T^{12} \hbar^2) a_{nn[0]} x_{nn[4]} y_{14} \right) / \\
 & (1 - 9 T + 42 T^2 - 135 T^3 + 339 T^4 - 705 T^5 + 1247 T^6 - 1902 T^7 + 2529 T^8 - 2943 T^9 + \\
 & \quad 2988 T^{10} - 2628 T^{11} + 1984 T^{12} - 1257 T^{13} + 642 T^{14} - 250 T^{15} + 69 T^{16} - 12 T^{17} + T^{18}) + \\
 & \left((T^3 \hbar^2 - 2 T^4 \hbar^2 + 4 T^5 \hbar^2 - 4 T^6 \hbar^2 - 10 T^7 \hbar^2 + 26 T^8 \hbar^2 - 33 T^9 \hbar^2 + \right. \\
 & \quad \left. 28 T^{10} \hbar^2 - 14 T^{11} \hbar^2 + 3 T^{12} \hbar^2) a_{nn[4]} x_{nn[4]} y_{14} \right) / \\
 & (1 - 9 T + 42 T^2 - 135 T^3 + 339 T^4 - 705 T^5 + 1247 T^6 - 1902 T^7 + 2529 T^8 - 2943 T^9 + \\
 & \quad 2988 T^{10} - 2628 T^{11} + 1984 T^{12} - 1257 T^{13} + 642 T^{14} - 250 T^{15} + 69 T^{16} - 12 T^{17} + T^{18}) + \\
 & \left((-T \gamma \hbar^3 + 16 T^2 \gamma \hbar^3 - 125 T^3 \gamma \hbar^3 + 636 T^4 \gamma \hbar^3 - 2385 T^5 \gamma \hbar^3 + 7060 T^6 \gamma \hbar^3 - \right. \\
 & \quad 17258 T^7 \gamma \hbar^3 + 35932 T^8 \gamma \hbar^3 - 65042 T^9 \gamma \hbar^3 + 103732 T^{10} \gamma \hbar^3 - 146963 T^{11} \gamma \hbar^3 + \\
 & \quad 185516 T^{12} \gamma \hbar^3 - 208137 T^{13} \gamma \hbar^3 + 206348 T^{14} \gamma \hbar^3 - 179667 T^{15} \gamma \hbar^3 + \\
 & \quad 136304 T^{16} \gamma \hbar^3 - 88914 T^{17} \gamma \hbar^3 + 48996 T^{18} \gamma \hbar^3 - 22430 T^{19} \gamma \hbar^3 + 8444 T^{20} \gamma \hbar^3 - \\
 & \quad \left. 2602 T^{21} \gamma \hbar^3 + 648 T^{22} \gamma \hbar^3 - 124 T^{23} \gamma \hbar^3 + 16 T^{24} \gamma \hbar^3 - T^{25} \gamma \hbar^3) x_{14}^2 y_{14} \right) / \\
 & (4 - 60 T + 460 T^2 - 2400 T^3 + 9600 T^4 - 31412 T^5 + 87440 T^6 - 212320 T^7 +
 \end{aligned}$$

$$\begin{aligned}
 & 457\,360\,T^8 - 884\,420\,T^9 + 1\,548\,360\,T^{10} - 2\,468\,880\,T^{11} + 3\,600\,260\,T^{12} - 4\,814\,240\,T^{13} + \\
 & 5\,911\,340\,T^{14} - 6\,666\,584\,T^{15} + 6\,899\,100\,T^{16} - 6\,538\,420\,T^{17} + 5\,656\,020\,T^{18} - \\
 & 4\,444\,600\,T^{19} + 3\,152\,228\,T^{20} - 2\,000\,360\,T^{21} + 1\,122\,820\,T^{22} - 549\,120\,T^{23} + \\
 & 229\,500\,T^{24} - 79\,996\,T^{25} + 22\,540\,T^{26} - 4920\,T^{27} + 780\,T^{28} - 80\,T^{29} + 4\,T^{30} \Big) + \\
 & \left(\left(T^3 \gamma \hbar^3 - 9\,T^4 \gamma \hbar^3 + 40\,T^5 \gamma \hbar^3 - 119\,T^6 \gamma \hbar^3 + 277\,T^7 \gamma \hbar^3 - 537\,T^8 \gamma \hbar^3 + 882\,T^9 \gamma \hbar^3 - \right. \right. \\
 & \quad 1217\,T^{10} \gamma \hbar^3 + 1327\,T^{11} \gamma \hbar^3 - 857\,T^{12} \gamma \hbar^3 - 447\,T^{13} \gamma \hbar^3 + 2254\,T^{14} \gamma \hbar^3 - 3747\,T^{15} \gamma \hbar^3 + \\
 & \quad 4292\,T^{16} \gamma \hbar^3 - 3790\,T^{17} \gamma \hbar^3 + 2622\,T^{18} \gamma \hbar^3 - 1392\,T^{19} \gamma \hbar^3 + 545\,T^{20} \gamma \hbar^3 - \\
 & \quad 148\,T^{21} \gamma \hbar^3 + 25\,T^{22} \gamma \hbar^3 - 2\,T^{23} \gamma \hbar^3 \Big) x_{14} x_{nn[0]} y_{14}^2 \Big) / \left(1 - 15\,T + 115\,T^2 - 600\,T^3 + \right. \\
 & \quad 2400\,T^4 - 7853\,T^5 + 21\,860\,T^6 - 53\,080\,T^7 + 114\,340\,T^8 - 221\,105\,T^9 + 387\,090\,T^{10} - \\
 & \quad 617\,220\,T^{11} + 900\,065\,T^{12} - 1\,203\,560\,T^{13} + 1\,477\,835\,T^{14} - 1\,666\,646\,T^{15} + 1\,724\,775\,T^{16} - \\
 & \quad 1\,634\,605\,T^{17} + 1\,414\,005\,T^{18} - 1\,111\,150\,T^{19} + 788\,057\,T^{20} - 500\,090\,T^{21} + 280\,705\,T^{22} - \\
 & \quad 137\,280\,T^{23} + 57\,375\,T^{24} - 19\,999\,T^{25} + 5635\,T^{26} - 1230\,T^{27} + 195\,T^{28} - 20\,T^{29} + T^{30} \Big) + \\
 & \left(-T^3 \gamma \hbar^3 + 12\,T^4 \gamma \hbar^3 - 57\,T^5 \gamma \hbar^3 + 172\,T^6 \gamma \hbar^3 - 392\,T^7 \gamma \hbar^3 + 740\,T^8 \gamma \hbar^3 - 1174\,T^9 \gamma \hbar^3 + \right. \\
 & \quad 1532\,T^{10} \gamma \hbar^3 - 1591\,T^{11} \gamma \hbar^3 + 1180\,T^{12} \gamma \hbar^3 - 475\,T^{13} \gamma \hbar^3 - 8\,T^{14} \gamma \hbar^3 + 8\,T^{15} \gamma \hbar^3 + \\
 & \quad 204\,T^{16} \gamma \hbar^3 - 275\,T^{17} \gamma \hbar^3 + 176\,T^{18} \gamma \hbar^3 - 63\,T^{19} \gamma \hbar^3 + 12\,T^{20} \gamma \hbar^3 - T^{21} \gamma \hbar^3 \Big) x_{nn[0]}^2 y_{14}^2 \Big) / \\
 & \left(4 - 60\,T + 460\,T^2 - 2400\,T^3 + 9600\,T^4 - 31\,412\,T^5 + 87\,440\,T^6 - 212\,320\,T^7 + \right. \\
 & \quad 457\,360\,T^8 - 884\,420\,T^9 + 1\,548\,360\,T^{10} - 2\,468\,880\,T^{11} + 3\,600\,260\,T^{12} - 4\,814\,240\,T^{13} + \\
 & \quad 5\,911\,340\,T^{14} - 6\,666\,584\,T^{15} + 6\,899\,100\,T^{16} - 6\,538\,420\,T^{17} + 5\,656\,020\,T^{18} - \\
 & \quad 4\,444\,600\,T^{19} + 3\,152\,228\,T^{20} - 2\,000\,360\,T^{21} + 1\,122\,820\,T^{22} - 549\,120\,T^{23} + \\
 & \quad 229\,500\,T^{24} - 79\,996\,T^{25} + 22\,540\,T^{26} - 4920\,T^{27} + 780\,T^{28} - 80\,T^{29} + 4\,T^{30} \Big) + \\
 & \left(-2\,T^3 \gamma \hbar^3 + 21\,T^4 \gamma \hbar^3 - 111\,T^5 \gamma \hbar^3 + 398\,T^6 \gamma \hbar^3 - 1100\,T^7 \gamma \hbar^3 + 2490\,T^8 \gamma \hbar^3 - \right. \\
 & \quad 4779\,T^9 \gamma \hbar^3 + 7960\,T^{10} \gamma \hbar^3 - 11\,696\,T^{11} \gamma \hbar^3 + 15\,265\,T^{12} \gamma \hbar^3 - 17\,658\,T^{13} \gamma \hbar^3 + \\
 & \quad 18\,011\,T^{14} \gamma \hbar^3 - 16\,071\,T^{15} \gamma \hbar^3 + 12\,426\,T^{16} \gamma \hbar^3 - 8216\,T^{17} \gamma \hbar^3 + 4548\,T^{18} \gamma \hbar^3 - \\
 & \quad 2037\,T^{19} \gamma \hbar^3 + 702\,T^{20} \gamma \hbar^3 - 173\,T^{21} \gamma \hbar^3 + 27\,T^{22} \gamma \hbar^3 - 2\,T^{23} \gamma \hbar^3 \Big) x_{14} x_{nn[4]} y_{14}^2 \Big) / \\
 & \left(1 - 15\,T + 115\,T^2 - 600\,T^3 + 2400\,T^4 - 7853\,T^5 + 21\,860\,T^6 - 53\,080\,T^7 + 114\,340\,T^8 - \right. \\
 & \quad 221\,105\,T^9 + 387\,090\,T^{10} - 617\,220\,T^{11} + 900\,065\,T^{12} - 1\,203\,560\,T^{13} + \\
 & \quad 1\,477\,835\,T^{14} - 1\,666\,646\,T^{15} + 1\,724\,775\,T^{16} - 1\,634\,605\,T^{17} + 1\,414\,005\,T^{18} - \\
 & \quad 1\,111\,150\,T^{19} + 788\,057\,T^{20} - 500\,090\,T^{21} + 280\,705\,T^{22} - 137\,280\,T^{23} + \\
 & \quad 57\,375\,T^{24} - 19\,999\,T^{25} + 5635\,T^{26} - 1230\,T^{27} + 195\,T^{28} - 20\,T^{29} + T^{30} \Big) + \\
 & \left(-T^4 \gamma \hbar^3 + 6\,T^5 \gamma \hbar^3 - 20\,T^6 \gamma \hbar^3 + 46\,T^7 \gamma \hbar^3 - 85\,T^8 \gamma \hbar^3 + 136\,T^9 \gamma \hbar^3 - 200\,T^{10} \gamma \hbar^3 + \right. \\
 & \quad 283\,T^{11} \gamma \hbar^3 - 335\,T^{12} \gamma \hbar^3 + 294\,T^{13} \gamma \hbar^3 - 151\,T^{14} \gamma \hbar^3 - 8\,T^{15} \gamma \hbar^3 + \\
 & \quad 92\,T^{16} \gamma \hbar^3 - 84\,T^{17} \gamma \hbar^3 + 40\,T^{18} \gamma \hbar^3 - 10\,T^{19} \gamma \hbar^3 + T^{20} \gamma \hbar^3 \Big) x_{nn[0]} x_{nn[4]} y_{14}^2 \Big) / \\
 & \left(1 - 15\,T + 115\,T^2 - 600\,T^3 + 2400\,T^4 - 7853\,T^5 + 21\,860\,T^6 - 53\,080\,T^7 + 114\,340\,T^8 - \right. \\
 & \quad 221\,105\,T^9 + 387\,090\,T^{10} - 617\,220\,T^{11} + 900\,065\,T^{12} - 1\,203\,560\,T^{13} + \\
 & \quad 1\,477\,835\,T^{14} - 1\,666\,646\,T^{15} + 1\,724\,775\,T^{16} - 1\,634\,605\,T^{17} + 1\,414\,005\,T^{18} - \\
 & \quad 1\,111\,150\,T^{19} + 788\,057\,T^{20} - 500\,090\,T^{21} + 280\,705\,T^{22} - 137\,280\,T^{23} + \\
 & \quad 57\,375\,T^{24} - 19\,999\,T^{25} + 5635\,T^{26} - 1230\,T^{27} + 195\,T^{28} - 20\,T^{29} + T^{30} \Big) + \\
 & \left(\left(T^3 \gamma \hbar^3 - 4\,T^4 \gamma \hbar^3 + 8\,T^5 \gamma \hbar^3 - 46\,T^7 \gamma \hbar^3 + 176\,T^8 \gamma \hbar^3 - 414\,T^9 \gamma \hbar^3 + 756\,T^{10} \gamma \hbar^3 - \right. \right. \\
 & \quad 1174\,T^{11} \gamma \hbar^3 + 1588\,T^{12} \gamma \hbar^3 - 1880\,T^{13} \gamma \hbar^3 + 1912\,T^{14} \gamma \hbar^3 - 1627\,T^{15} \gamma \hbar^3 + 1132\,T^{16} \\
 & \quad \gamma \hbar^3 - 620\,T^{17} \gamma \hbar^3 + 252\,T^{18} \gamma \hbar^3 - 70\,T^{19} \gamma \hbar^3 + 12\,T^{20} \gamma \hbar^3 - T^{21} \gamma \hbar^3 \Big) x_{nn[4]}^2 y_{14}^2 \Big) / \\
 & \left(4 - 60\,T + 460\,T^2 - 2400\,T^3 + 9600\,T^4 - 31\,412\,T^5 + 87\,440\,T^6 - 212\,320\,T^7 + \right. \\
 & \quad 457\,360\,T^8 - 884\,420\,T^9 + 1\,548\,360\,T^{10} - 2\,468\,880\,T^{11} + 3\,600\,260\,T^{12} - 4\,814\,240\,T^{13} + \\
 & \quad 5\,911\,340\,T^{14} - 6\,666\,584\,T^{15} + 6\,899\,100\,T^{16} - 6\,538\,420\,T^{17} + 5\,656\,020\,T^{18} - \\
 & \quad 4\,444\,600\,T^{19} + 3\,152\,228\,T^{20} - 2\,000\,360\,T^{21} + 1\,122\,820\,T^{22} - 549\,120\,T^{23} + \\
 & \quad 229\,500\,T^{24} - 79\,996\,T^{25} + 22\,540\,T^{26} - 4920\,T^{27} + 780\,T^{28} - 80\,T^{29} + 4\,T^{30} \Big) + \\
 & \left(-2\,T^3 \gamma \hbar^2 + 18\,T^4 \gamma \hbar^2 - 76\,T^5 \gamma \hbar^2 + 194\,T^6 \gamma \hbar^2 - 332\,T^7 \gamma \hbar^2 + 388\,T^8 \gamma \hbar^2 - \right. \\
 & \quad 294\,T^9 \gamma \hbar^2 + 100\,T^{10} \gamma \hbar^2 + 62\,T^{11} \gamma \hbar^2 - 106\,T^{12} \gamma \hbar^2 + 62\,T^{13} \gamma \hbar^2 - \\
 & \quad 8\,T^{14} \gamma \hbar^2 - 20\,T^{15} \gamma \hbar^2 + 24\,T^{16} \gamma \hbar^2 - 12\,T^{17} \gamma \hbar^2 + 2\,T^{18} \gamma \hbar^2 \Big) x_{14} y_{nn[0]} \Big) / \\
 & \left(1 - 12\,T + 74\,T^2 - 312\,T^3 + 1015\,T^4 - 2716\,T^5 + 6198\,T^6 - 12\,324\,T^7 + 21\,655\,T^8 - \right.
 \end{aligned}$$

$$\begin{aligned}
& 33\,948\,T^9 + 47\,762\,T^{10} - 60\,488\,T^{11} + 69\,024\,T^{12} - 70\,896\,T^{13} + 65\,318\,T^{14} - 53\,656\,T^{15} + \\
& 38\,959\,T^{16} - 24\,684\,T^{17} + 13\,388\,T^{18} - 6\,052\,T^{19} + 2\,202\,T^{20} - 616\,T^{21} + 124\,T^{22} - 16\,T^{23} + T^{24} \Big) + \\
& \left((-T^2 \hbar^2 + 7 T^3 \hbar^2 - 25 T^4 \hbar^2 + 61 T^5 \hbar^2 - 118 T^6 \hbar^2 + 190 T^7 \hbar^2 - 247 T^8 \hbar^2 + 241 T^9 \hbar^2 - \right. \\
& \quad \left. 177 T^{10} \hbar^2 + 102 T^{11} \hbar^2 - 43 T^{12} \hbar^2 + 11 T^{13} \hbar^2 - T^{14} \hbar^2) a_{14} x_{14} y_{nn[0]} \right) / \\
& (1 - 9 T + 42 T^2 - 135 T^3 + 339 T^4 - 705 T^5 + 1247 T^6 - 1902 T^7 + 2529 T^8 - 2943 T^9 + \\
& \quad 2988 T^{10} - 2628 T^{11} + 1984 T^{12} - 1257 T^{13} + 642 T^{14} - 250 T^{15} + 69 T^{16} - 12 T^{17} + T^{18}) + \\
& \left((-T^2 \hbar^2 + 7 T^3 \hbar^2 - 25 T^4 \hbar^2 + 63 T^5 \hbar^2 - 120 T^6 \hbar^2 + 176 T^7 \hbar^2 - 203 T^8 \hbar^2 + 189 T^9 \hbar^2 - \right. \\
& \quad \left. 139 T^{10} \hbar^2 + 78 T^{11} \hbar^2 - 33 T^{12} \hbar^2 + 9 T^{13} \hbar^2 - T^{14} \hbar^2) a_{nn[0]} x_{14} y_{nn[0]} \right) / \\
& (1 - 9 T + 42 T^2 - 135 T^3 + 339 T^4 - 705 T^5 + 1247 T^6 - 1902 T^7 + 2529 T^8 - 2943 T^9 + \\
& \quad 2988 T^{10} - 2628 T^{11} + 1984 T^{12} - 1257 T^{13} + 642 T^{14} - 250 T^{15} + 69 T^{16} - 12 T^{17} + T^{18}) + \\
& \left((-2 T^3 \hbar^2 + 12 T^4 \hbar^2 - 32 T^5 \hbar^2 + 46 T^6 \hbar^2 - 38 T^7 \hbar^2 + 12 T^8 \hbar^2 + 2 T^9 \hbar^2 - \right. \\
& \quad \left. 2 T^{10} \hbar^2 - 4 T^{11} \hbar^2 + 2 T^{12} \hbar^2) a_{nn[4]} x_{14} y_{nn[0]} \right) / \\
& (1 - 9 T + 42 T^2 - 135 T^3 + 339 T^4 - 705 T^5 + 1247 T^6 - 1902 T^7 + 2529 T^8 - 2943 T^9 + \\
& \quad 2988 T^{10} - 2628 T^{11} + 1984 T^{12} - 1257 T^{13} + 642 T^{14} - 250 T^{15} + 69 T^{16} - 12 T^{17} + T^{18}) + \\
& \left((-2 T^5 \gamma \hbar^2 + 10 T^6 \gamma \hbar^2 - 24 T^7 \gamma \hbar^2 + 2 T^8 \gamma \hbar^2 + 152 T^9 \gamma \hbar^2 - 492 T^{10} \gamma \hbar^2 + \right. \\
& \quad \left. 936 T^{11} \gamma \hbar^2 - 1296 T^{12} \gamma \hbar^2 + 1404 T^{13} \gamma \hbar^2 - 1232 T^{14} \gamma \hbar^2 + 894 T^{15} \gamma \hbar^2 - \right. \\
& \quad \left. 532 T^{16} \gamma \hbar^2 + 246 T^{17} \gamma \hbar^2 - 82 T^{18} \gamma \hbar^2 + 18 T^{19} \gamma \hbar^2 - 2 T^{20} \gamma \hbar^2) x_{nn[0]} y_{nn[0]} \right) / \\
& (1 - 12 T + 74 T^2 - 312 T^3 + 1015 T^4 - 2716 T^5 + 6198 T^6 - 12\,324 T^7 + 21\,655 T^8 - \\
& \quad 33\,948 T^9 + 47\,762 T^{10} - 60\,488 T^{11} + 69\,024 T^{12} - 70\,896 T^{13} + 65\,318 T^{14} - 53\,656 T^{15} + \\
& \quad 38\,959 T^{16} - 24\,684 T^{17} + 13\,388 T^{18} - 6\,052 T^{19} + 2\,202 T^{20} - 616 T^{21} + 124 T^{22} - 16 T^{23} + T^{24}) + \\
& \left((T^3 \hbar^2 - 6 T^4 \hbar^2 + 18 T^5 \hbar^2 - 37 T^6 \hbar^2 + 62 T^7 \hbar^2 - 98 T^8 \hbar^2 + 126 T^9 \hbar^2 - 119 T^{10} \hbar^2 + \right. \\
& \quad \left. 85 T^{11} \hbar^2 - 42 T^{12} \hbar^2 + 13 T^{13} \hbar^2 - 2 T^{14} \hbar^2) a_{14} x_{nn[0]} y_{nn[0]} \right) / \\
& (1 - 9 T + 42 T^2 - 135 T^3 + 339 T^4 - 705 T^5 + 1247 T^6 - 1902 T^7 + 2529 T^8 - 2943 T^9 + \\
& \quad 2988 T^{10} - 2628 T^{11} + 1984 T^{12} - 1257 T^{13} + 642 T^{14} - 250 T^{15} + 69 T^{16} - 12 T^{17} + T^{18}) + \\
& \left((-2 T^3 \hbar^2 + 12 T^4 \hbar^2 - 34 T^5 \hbar^2 + 62 T^6 \hbar^2 - 92 T^7 \hbar^2 + 116 T^8 \hbar^2 - 120 T^9 \hbar^2 + \right. \\
& \quad \left. 104 T^{10} \hbar^2 - 82 T^{11} \hbar^2 + 48 T^{12} \hbar^2 - 16 T^{13} \hbar^2 + 2 T^{14} \hbar^2) a_{nn[0]} x_{nn[0]} y_{nn[0]} \right) / \\
& (1 - 9 T + 42 T^2 - 135 T^3 + 339 T^4 - 705 T^5 + 1247 T^6 - 1902 T^7 + 2529 T^8 - 2943 T^9 + \\
& \quad 2988 T^{10} - 2628 T^{11} + 1984 T^{12} - 1257 T^{13} + 642 T^{14} - 250 T^{15} + 69 T^{16} - 12 T^{17} + T^{18}) + \\
& \left((2 T^4 \hbar^2 - 12 T^5 \hbar^2 + 32 T^6 \hbar^2 - 56 T^7 \hbar^2 + 60 T^8 \hbar^2 - 40 T^9 \hbar^2 + 20 T^{10} \hbar^2 - \right. \\
& \quad \left. 10 T^{11} \hbar^2 + 6 T^{12} \hbar^2 - 2 T^{13} \hbar^2) a_{nn[4]} x_{nn[0]} y_{nn[0]} \right) / \\
& (1 - 9 T + 42 T^2 - 135 T^3 + 339 T^4 - 705 T^5 + 1247 T^6 - 1902 T^7 + 2529 T^8 - 2943 T^9 + \\
& \quad 2988 T^{10} - 2628 T^{11} + 1984 T^{12} - 1257 T^{13} + 642 T^{14} - 250 T^{15} + 69 T^{16} - 12 T^{17} + T^{18}) + \\
& \left((18 T^7 \gamma \hbar^2 - 90 T^8 \gamma \hbar^2 + 236 T^9 \gamma \hbar^2 - 424 T^{10} \gamma \hbar^2 + 576 T^{11} \gamma \hbar^2 - 618 T^{12} \gamma \hbar^2 + 534 T^{13} \gamma \hbar^2 - \right. \\
& \quad \left. 374 T^{14} \gamma \hbar^2 + 210 T^{15} \gamma \hbar^2 - 88 T^{16} \gamma \hbar^2 + 22 T^{17} \gamma \hbar^2 - 2 T^{18} \gamma \hbar^2) x_{nn[4]} y_{nn[0]} \right) / \\
& (1 - 12 T + 74 T^2 - 312 T^3 + 1015 T^4 - 2716 T^5 + 6198 T^6 - 12\,324 T^7 + 21\,655 T^8 - \\
& \quad 33\,948 T^9 + 47\,762 T^{10} - 60\,488 T^{11} + 69\,024 T^{12} - 70\,896 T^{13} + 65\,318 T^{14} - 53\,656 T^{15} + \\
& \quad 38\,959 T^{16} - 24\,684 T^{17} + 13\,388 T^{18} - 6\,052 T^{19} + 2\,202 T^{20} - 616 T^{21} + 124 T^{22} - 16 T^{23} + T^{24}) + \\
& \left((T^3 \hbar^2 - 5 T^4 \hbar^2 + 14 T^5 \hbar^2 - 28 T^6 \hbar^2 + 51 T^7 \hbar^2 - 70 T^8 \hbar^2 + 77 T^9 \hbar^2 - 62 T^{10} \hbar^2 + \right. \\
& \quad \left. 39 T^{11} \hbar^2 - 18 T^{12} \hbar^2 + 6 T^{13} \hbar^2 - T^{14} \hbar^2) a_{14} x_{nn[4]} y_{nn[0]} \right) / \\
& (1 - 9 T + 42 T^2 - 135 T^3 + 339 T^4 - 705 T^5 + 1247 T^6 - 1902 T^7 + 2529 T^8 - 2943 T^9 + \\
& \quad 2988 T^{10} - 2628 T^{11} + 1984 T^{12} - 1257 T^{13} + 642 T^{14} - 250 T^{15} + 69 T^{16} - 12 T^{17} + T^{18}) + \\
& \left((T^3 \hbar^2 - 5 T^4 \hbar^2 + 14 T^5 \hbar^2 - 28 T^6 \hbar^2 + 45 T^7 \hbar^2 - 54 T^8 \hbar^2 + 51 T^9 \hbar^2 - 40 T^{10} \hbar^2 + \right. \\
& \quad \left. 23 T^{11} \hbar^2 - 10 T^{12} \hbar^2 + 4 T^{13} \hbar^2 - T^{14} \hbar^2) a_{nn[0]} x_{nn[4]} y_{nn[0]} \right) / \\
& (1 - 9 T + 42 T^2 - 135 T^3 + 339 T^4 - 705 T^5 + 1247 T^6 - 1902 T^7 + 2529 T^8 - 2943 T^9 + \\
& \quad 2988 T^{10} - 2628 T^{11} + 1984 T^{12} - 1257 T^{13} + 642 T^{14} - 250 T^{15} + 69 T^{16} - 12 T^{17} + T^{18}) + \\
& \left((-T^3 \hbar^2 + 3 T^4 \hbar^2 - 6 T^5 \hbar^2 + 8 T^6 \hbar^2 + T^7 \hbar^2 - 18 T^8 \hbar^2 + 29 T^9 \hbar^2 - 30 T^{10} \hbar^2 + \right. \\
& \quad \left. 21 T^{11} \hbar^2 - 10 T^{12} \hbar^2 + 4 T^{13} \hbar^2 - T^{14} \hbar^2) a_{nn[4]} x_{nn[4]} y_{nn[0]} \right) /
\end{aligned}$$

$$\begin{aligned}
& (1 - 9 T + 42 T^2 - 135 T^3 + 339 T^4 - 705 T^5 + 1247 T^6 - 1902 T^7 + 2529 T^8 - 2943 T^9 + \\
& 2988 T^{10} - 2628 T^{11} + 1984 T^{12} - 1257 T^{13} + 642 T^{14} - 250 T^{15} + 69 T^{16} - 12 T^{17} + T^{18}) + \\
& \left((T \gamma \hbar^3 - 15 T^2 \gamma \hbar^3 + 111 T^3 \gamma \hbar^3 - 539 T^4 \gamma \hbar^3 + 1941 T^5 \gamma \hbar^3 - 5557 T^6 \gamma \hbar^3 + \right. \\
& 13\,219 T^7 \gamma \hbar^3 - 26\,889 T^8 \gamma \hbar^3 + 47\,664 T^9 \gamma \hbar^3 - 74\,590 T^{10} \gamma \hbar^3 + 103\,955 T^{11} \gamma \hbar^3 - \\
& 129\,606 T^{12} \gamma \hbar^3 + 144\,590 T^{13} \gamma \hbar^3 - 143\,974 T^{14} \gamma \hbar^3 + 127\,487 T^{15} \gamma \hbar^3 - \\
& 99\,874 T^{16} \gamma \hbar^3 + 68\,669 T^{17} \gamma \hbar^3 - 40\,975 T^{18} \gamma \hbar^3 + 20\,912 T^{19} \gamma \hbar^3 - 8946 T^{20} \gamma \hbar^3 + \\
& 3109 T^{21} \gamma \hbar^3 - 835 T^{22} \gamma \hbar^3 + 160 T^{23} \gamma \hbar^3 - 19 T^{24} \gamma \hbar^3 + T^{25} \gamma \hbar^3) X_{14}^2 Y_{14} Y_{nn[0]} \Big) / \\
& (1 - 15 T + 115 T^2 - 600 T^3 + 2400 T^4 - 7853 T^5 + 21\,860 T^6 - 53\,080 T^7 + 114\,340 T^8 - \\
& 221\,105 T^9 + 387\,090 T^{10} - 617\,220 T^{11} + 900\,065 T^{12} - 1\,203\,560 T^{13} + \\
& 1\,477\,835 T^{14} - 1\,666\,646 T^{15} + 1\,724\,775 T^{16} - 1\,634\,605 T^{17} + 1\,414\,005 T^{18} - \\
& 1\,111\,150 T^{19} + 788\,057 T^{20} - 500\,090 T^{21} + 280\,705 T^{22} - 137\,280 T^{23} + \\
& 57\,375 T^{24} - 19\,999 T^{25} + 5635 T^{26} - 1230 T^{27} + 195 T^{28} - 20 T^{29} + T^{30}) + \\
& \left((T^2 \gamma \hbar^3 - 9 T^3 \gamma \hbar^3 + 37 T^4 \gamma \hbar^3 - 89 T^5 \gamma \hbar^3 + 119 T^6 \gamma \hbar^3 + 20 T^7 \gamma \hbar^3 - 621 T^8 \gamma \hbar^3 + \right. \\
& 2092 T^9 \gamma \hbar^3 - 4795 T^{10} \gamma \hbar^3 + 8915 T^{11} \gamma \hbar^3 - 14\,413 T^{12} \gamma \hbar^3 + 20\,741 T^{13} \gamma \hbar^3 - \\
& 26\,409 T^{14} \gamma \hbar^3 + 29\,428 T^{15} \gamma \hbar^3 - 28\,552 T^{16} \gamma \hbar^3 + 24\,027 T^{17} \gamma \hbar^3 - \\
& 17\,431 T^{18} \gamma \hbar^3 + 10\,781 T^{19} \gamma \hbar^3 - 5572 T^{20} \gamma \hbar^3 + 2333 T^{21} \gamma \hbar^3 - \\
& 757 T^{22} \gamma \hbar^3 + 178 T^{23} \gamma \hbar^3 - 27 T^{24} \gamma \hbar^3 + 2 T^{25} \gamma \hbar^3) X_{14} X_{nn[0]} Y_{14} Y_{nn[0]} \Big) / \\
& (1 - 15 T + 115 T^2 - 600 T^3 + 2400 T^4 - 7853 T^5 + 21\,860 T^6 - 53\,080 T^7 + 114\,340 T^8 - \\
& 221\,105 T^9 + 387\,090 T^{10} - 617\,220 T^{11} + 900\,065 T^{12} - 1\,203\,560 T^{13} + \\
& 1\,477\,835 T^{14} - 1\,666\,646 T^{15} + 1\,724\,775 T^{16} - 1\,634\,605 T^{17} + 1\,414\,005 T^{18} - \\
& 1\,111\,150 T^{19} + 788\,057 T^{20} - 500\,090 T^{21} + 280\,705 T^{22} - 137\,280 T^{23} + \\
& 57\,375 T^{24} - 19\,999 T^{25} + 5635 T^{26} - 1230 T^{27} + 195 T^{28} - 20 T^{29} + T^{30}) + \\
& \left((-2 T^4 \gamma \hbar^3 + 16 T^5 \gamma \hbar^3 - 66 T^6 \gamma \hbar^3 + 187 T^7 \gamma \hbar^3 - 413 T^8 \gamma \hbar^3 + 748 T^9 \gamma \hbar^3 - \right. \\
& 1113 T^{10} \gamma \hbar^3 + 1338 T^{11} \gamma \hbar^3 - 1243 T^{12} \gamma \hbar^3 + 813 T^{13} \gamma \hbar^3 - 269 T^{14} \gamma \hbar^3 - \\
& 140 T^{15} \gamma \hbar^3 + 346 T^{16} \gamma \hbar^3 - 410 T^{17} \gamma \hbar^3 + 376 T^{18} \gamma \hbar^3 - 266 T^{19} \gamma \hbar^3 + \\
& 136 T^{20} \gamma \hbar^3 - 47 T^{21} \gamma \hbar^3 + 10 T^{22} \gamma \hbar^3 - T^{23} \gamma \hbar^3) X_{nn[0]}^2 Y_{14} Y_{nn[0]} \Big) / \\
& (1 - 15 T + 115 T^2 - 600 T^3 + 2400 T^4 - 7853 T^5 + 21\,860 T^6 - 53\,080 T^7 + 114\,340 T^8 - \\
& 221\,105 T^9 + 387\,090 T^{10} - 617\,220 T^{11} + 900\,065 T^{12} - 1\,203\,560 T^{13} + \\
& 1\,477\,835 T^{14} - 1\,666\,646 T^{15} + 1\,724\,775 T^{16} - 1\,634\,605 T^{17} + 1\,414\,005 T^{18} - \\
& 1\,111\,150 T^{19} + 788\,057 T^{20} - 500\,090 T^{21} + 280\,705 T^{22} - 137\,280 T^{23} + \\
& 57\,375 T^{24} - 19\,999 T^{25} + 5635 T^{26} - 1230 T^{27} + 195 T^{28} - 20 T^{29} + T^{30}) + \\
& \left((-T^2 \gamma \hbar^3 + 14 T^3 \gamma \hbar^3 - 94 T^4 \gamma \hbar^3 + 411 T^5 \gamma \hbar^3 - 1337 T^6 \gamma \hbar^3 + 3484 T^7 \gamma \hbar^3 - \right. \\
& 7588 T^8 \gamma \hbar^3 + 14\,179 T^9 \gamma \hbar^3 - 23\,157 T^{10} \gamma \hbar^3 + 33\,494 T^{11} \gamma \hbar^3 - 43\,232 T^{12} \gamma \hbar^3 + \\
& 49\,859 T^{13} \gamma \hbar^3 - 51\,279 T^{14} \gamma \hbar^3 + 46\,848 T^{15} \gamma \hbar^3 - 37\,843 T^{16} \gamma \hbar^3 + \\
& 26\,861 T^{17} \gamma \hbar^3 - 16\,608 T^{18} \gamma \hbar^3 + 8831 T^{19} \gamma \hbar^3 - 3968 T^{20} \gamma \hbar^3 + 1472 T^{21} \gamma \hbar^3 - \\
& 435 T^{22} \gamma \hbar^3 + 96 T^{23} \gamma \hbar^3 - 14 T^{24} \gamma \hbar^3 + T^{25} \gamma \hbar^3) X_{14} X_{nn[4]} Y_{14} Y_{nn[0]} \Big) / \\
& (1 - 15 T + 115 T^2 - 600 T^3 + 2400 T^4 - 7853 T^5 + 21\,860 T^6 - 53\,080 T^7 + 114\,340 T^8 - \\
& 221\,105 T^9 + 387\,090 T^{10} - 617\,220 T^{11} + 900\,065 T^{12} - 1\,203\,560 T^{13} + \\
& 1\,477\,835 T^{14} - 1\,666\,646 T^{15} + 1\,724\,775 T^{16} - 1\,634\,605 T^{17} + 1\,414\,005 T^{18} - \\
& 1\,111\,150 T^{19} + 788\,057 T^{20} - 500\,090 T^{21} + 280\,705 T^{22} - 137\,280 T^{23} + \\
& 57\,375 T^{24} - 19\,999 T^{25} + 5635 T^{26} - 1230 T^{27} + 195 T^{28} - 20 T^{29} + T^{30}) + \\
& \left((-T^3 \gamma \hbar^3 + 8 T^4 \gamma \hbar^3 - 34 T^5 \gamma \hbar^3 + 101 T^6 \gamma \hbar^3 - 238 T^7 \gamma \hbar^3 + 472 T^8 \gamma \hbar^3 - \right. \\
& 821 T^9 \gamma \hbar^3 + 1281 T^{10} \gamma \hbar^3 - 1829 T^{11} \gamma \hbar^3 + 2316 T^{12} \gamma \hbar^3 - 2517 T^{13} \gamma \hbar^3 + \\
& 2308 T^{14} \gamma \hbar^3 - 1797 T^{15} \gamma \hbar^3 + 1203 T^{16} \gamma \hbar^3 - 711 T^{17} \gamma \hbar^3 + 372 T^{18} \gamma \hbar^3 - \\
& 162 T^{19} \gamma \hbar^3 + 51 T^{20} \gamma \hbar^3 - 10 T^{21} \gamma \hbar^3 + T^{22} \gamma \hbar^3) X_{nn[0]} X_{nn[4]} Y_{14} Y_{nn[0]} \Big) / \\
& (1 - 15 T + 115 T^2 - 600 T^3 + 2400 T^4 - 7853 T^5 + 21\,860 T^6 - 53\,080 T^7 + 114\,340 T^8 - \\
& 221\,105 T^9 + 387\,090 T^{10} - 617\,220 T^{11} + 900\,065 T^{12} - 1\,203\,560 T^{13} + \\
& 1\,477\,835 T^{14} - 1\,666\,646 T^{15} + 1\,724\,775 T^{16} - 1\,634\,605 T^{17} + 1\,414\,005 T^{18} - \\
& 1\,111\,150 T^{19} + 788\,057 T^{20} - 500\,090 T^{21} + 280\,705 T^{22} - 137\,280 T^{23} +
\end{aligned}$$

$$\begin{aligned}
 & 57\,375\,T^{24} - 19\,999\,T^{25} + 5\,635\,T^{26} - 1\,230\,T^{27} + 195\,T^{28} - 20\,T^{29} + T^{30} \Big) + \\
 & \left((-T^4 \gamma \hbar^3 + 8\,T^5 \gamma \hbar^3 - 36\,T^6 \gamma \hbar^3 + 114\,T^7 \gamma \hbar^3 - 284\,T^8 \gamma \hbar^3 + 583\,T^9 \gamma \hbar^3 - \right. \\
 & \quad 1\,018\,T^{10} \gamma \hbar^3 + 1\,559\,T^{11} \gamma \hbar^3 - 2\,121\,T^{12} \gamma \hbar^3 + 2\,573\,T^{13} \gamma \hbar^3 - 2\,768\,T^{14} \gamma \hbar^3 + \\
 & \quad 2\,619\,T^{15} \gamma \hbar^3 - 2\,163\,T^{16} \gamma \hbar^3 + 1\,543\,T^{17} \gamma \hbar^3 - 940\,T^{18} \gamma \hbar^3 + 479\,T^{19} \gamma \hbar^3 - \\
 & \quad \left. 195\,T^{20} \gamma \hbar^3 + 58\,T^{21} \gamma \hbar^3 - 11\,T^{22} \gamma \hbar^3 + T^{23} \gamma \hbar^3 \right) X_{nn[4]}^2 Y_{14} Y_{nn[0]} \Big) / \\
 & \left(1 - 15\,T + 115\,T^2 - 600\,T^3 + 2\,400\,T^4 - 7\,853\,T^5 + 21\,860\,T^6 - 53\,080\,T^7 + 114\,340\,T^8 - \right. \\
 & \quad 221\,105\,T^9 + 387\,090\,T^{10} - 617\,220\,T^{11} + 900\,065\,T^{12} - 1\,203\,560\,T^{13} + \\
 & \quad 1\,477\,835\,T^{14} - 1\,666\,646\,T^{15} + 1\,724\,775\,T^{16} - 1\,634\,605\,T^{17} + 1\,414\,005\,T^{18} - \\
 & \quad 1\,111\,150\,T^{19} + 788\,057\,T^{20} - 500\,090\,T^{21} + 280\,705\,T^{22} - 137\,280\,T^{23} + \\
 & \quad \left. 57\,375\,T^{24} - 19\,999\,T^{25} + 5\,635\,T^{26} - 1\,230\,T^{27} + 195\,T^{28} - 20\,T^{29} + T^{30} \right) + \\
 & \left((-3\,T \gamma \hbar^3 + 44\,T^2 \gamma \hbar^3 - 323\,T^3 \gamma \hbar^3 + 1\,572\,T^4 \gamma \hbar^3 - 5\,707\,T^5 \gamma \hbar^3 + 16\,512\,T^6 \gamma \hbar^3 - \right. \\
 & \quad 39\,699\,T^7 \gamma \hbar^3 + 81\,520\,T^8 \gamma \hbar^3 - 145\,618\,T^9 \gamma \hbar^3 + 229\,116\,T^{10} \gamma \hbar^3 - 320\,198\,T^{11} \gamma \hbar^3 + \\
 & \quad 399\,364\,T^{12} \gamma \hbar^3 - 445\,177\,T^{13} \gamma \hbar^3 + 442\,980\,T^{14} \gamma \hbar^3 - 392\,275\,T^{15} \gamma \hbar^3 + \\
 & \quad 307\,640\,T^{16} \gamma \hbar^3 - 212\,105\,T^{17} \gamma \hbar^3 + 127\,172\,T^{18} \gamma \hbar^3 - 65\,254\,T^{19} \gamma \hbar^3 + 27\,984\,T^{20} \gamma \hbar^3 - \\
 & \quad \left. 9\,681\,T^{21} \gamma \hbar^3 + 2\,564\,T^{22} \gamma \hbar^3 - 481\,T^{23} \gamma \hbar^3 + 56\,T^{24} \gamma \hbar^3 - 3\,T^{25} \gamma \hbar^3 \right) X_{14}^2 Y_{nn[0]}^2 \Big) / \\
 & \left(4 - 60\,T + 460\,T^2 - 2\,400\,T^3 + 9\,600\,T^4 - 31\,412\,T^5 + 87\,440\,T^6 - 212\,320\,T^7 + \right. \\
 & \quad 457\,360\,T^8 - 884\,420\,T^9 + 1\,548\,360\,T^{10} - 2\,468\,880\,T^{11} + 3\,600\,260\,T^{12} - 4\,814\,240\,T^{13} + \\
 & \quad 5\,911\,340\,T^{14} - 6\,666\,584\,T^{15} + 6\,899\,100\,T^{16} - 6\,538\,420\,T^{17} + 5\,656\,020\,T^{18} - \\
 & \quad 4\,444\,600\,T^{19} + 3\,152\,228\,T^{20} - 2\,000\,360\,T^{21} + 1\,122\,820\,T^{22} - 549\,120\,T^{23} + \\
 & \quad \left. 229\,500\,T^{24} - 79\,996\,T^{25} + 22\,540\,T^{26} - 4\,920\,T^{27} + 780\,T^{28} - 80\,T^{29} + 4\,T^{30} \right) + \\
 & \left((-T^2 \gamma \hbar^3 + 11\,T^3 \gamma \hbar^3 - 60\,T^4 \gamma \hbar^3 + 219\,T^5 \gamma \hbar^3 - 608\,T^6 \gamma \hbar^3 + 1\,376\,T^7 \gamma \hbar^3 - 2\,640\,T^8 \gamma \hbar^3 + \right. \\
 & \quad 4\,403\,T^9 \gamma \hbar^3 - 6\,497\,T^{10} \gamma \hbar^3 + 8\,551\,T^{11} \gamma \hbar^3 - 10\,015\,T^{12} \gamma \hbar^3 + 10\,367\,T^{13} \gamma \hbar^3 - \\
 & \quad 9\,470\,T^{14} \gamma \hbar^3 + 7\,699\,T^{15} \gamma \hbar^3 - 5\,652\,T^{16} \gamma \hbar^3 + 3\,786\,T^{17} \gamma \hbar^3 - 2\,293\,T^{18} \gamma \hbar^3 + 1\,222\,T^{19} \gamma \hbar^3 - \\
 & \quad \left. 558\,T^{20} \gamma \hbar^3 + 209\,T^{21} \gamma \hbar^3 - 59\,T^{22} \gamma \hbar^3 + 11\,T^{23} \gamma \hbar^3 - T^{24} \gamma \hbar^3 \right) X_{14} X_{nn[0]} Y_{nn[0]}^2 \Big) / \\
 & \left(1 - 15\,T + 115\,T^2 - 600\,T^3 + 2\,400\,T^4 - 7\,853\,T^5 + 21\,860\,T^6 - 53\,080\,T^7 + 114\,340\,T^8 - \right. \\
 & \quad 221\,105\,T^9 + 387\,090\,T^{10} - 617\,220\,T^{11} + 900\,065\,T^{12} - 1\,203\,560\,T^{13} + \\
 & \quad 1\,477\,835\,T^{14} - 1\,666\,646\,T^{15} + 1\,724\,775\,T^{16} - 1\,634\,605\,T^{17} + 1\,414\,005\,T^{18} - \\
 & \quad 1\,111\,150\,T^{19} + 788\,057\,T^{20} - 500\,090\,T^{21} + 280\,705\,T^{22} - 137\,280\,T^{23} + \\
 & \quad \left. 57\,375\,T^{24} - 19\,999\,T^{25} + 5\,635\,T^{26} - 1\,230\,T^{27} + 195\,T^{28} - 20\,T^{29} + T^{30} \right) + \\
 & \left((-3\,T^3 \gamma \hbar^3 + 36\,T^4 \gamma \hbar^3 - 208\,T^5 \gamma \hbar^3 + 792\,T^6 \gamma \hbar^3 - 2\,288\,T^7 \gamma \hbar^3 + 5\,420\,T^8 \gamma \hbar^3 - \right. \\
 & \quad 10\,959\,T^9 \gamma \hbar^3 + 19\,280\,T^{10} \gamma \hbar^3 - 29\,906\,T^{11} \gamma \hbar^3 + 41\,356\,T^{12} \gamma \hbar^3 - \\
 & \quad 51\,410\,T^{13} \gamma \hbar^3 + 57\,780\,T^{14} \gamma \hbar^3 - 58\,866\,T^{15} \gamma \hbar^3 + 54\,172\,T^{16} \gamma \hbar^3 - \\
 & \quad 44\,579\,T^{17} \gamma \hbar^3 + 32\,412\,T^{18} \gamma \hbar^3 - 20\,585\,T^{19} \gamma \hbar^3 + 11\,180\,T^{20} \gamma \hbar^3 - 4\,972\,T^{21} \gamma \hbar^3 + \\
 & \quad \left. 1\,696\,T^{22} \gamma \hbar^3 - 407\,T^{23} \gamma \hbar^3 + 60\,T^{24} \gamma \hbar^3 - 4\,T^{25} \gamma \hbar^3 \right) X_{nn[0]}^2 Y_{nn[0]}^2 \Big) / \\
 & \left(4 - 60\,T + 460\,T^2 - 2\,400\,T^3 + 9\,600\,T^4 - 31\,412\,T^5 + 87\,440\,T^6 - 212\,320\,T^7 + \right. \\
 & \quad 457\,360\,T^8 - 884\,420\,T^9 + 1\,548\,360\,T^{10} - 2\,468\,880\,T^{11} + 3\,600\,260\,T^{12} - 4\,814\,240\,T^{13} + \\
 & \quad 5\,911\,340\,T^{14} - 6\,666\,584\,T^{15} + 6\,899\,100\,T^{16} - 6\,538\,420\,T^{17} + 5\,656\,020\,T^{18} - \\
 & \quad 4\,444\,600\,T^{19} + 3\,152\,228\,T^{20} - 2\,000\,360\,T^{21} + 1\,122\,820\,T^{22} - 549\,120\,T^{23} + \\
 & \quad \left. 229\,500\,T^{24} - 79\,996\,T^{25} + 22\,540\,T^{26} - 4\,920\,T^{27} + 780\,T^{28} - 80\,T^{29} + 4\,T^{30} \right) + \\
 & \left((T^2 \gamma \hbar^3 - 13\,T^3 \gamma \hbar^3 + 85\,T^4 \gamma \hbar^3 - 371\,T^5 \gamma \hbar^3 + 1\,220\,T^6 \gamma \hbar^3 - 3\,230\,T^7 \gamma \hbar^3 + \right. \\
 & \quad 7\,165\,T^8 \gamma \hbar^3 - 13\,653\,T^9 \gamma \hbar^3 + 22\,728\,T^{10} \gamma \hbar^3 - 33\,435\,T^{11} \gamma \hbar^3 + 43\,778\,T^{12} \gamma \hbar^3 - \\
 & \quad 51\,166\,T^{13} \gamma \hbar^3 + 53\,377\,T^{14} \gamma \hbar^3 - 49\,592\,T^{15} \gamma \hbar^3 + 40\,875\,T^{16} \gamma \hbar^3 - \\
 & \quad 29\,709\,T^{17} \gamma \hbar^3 + 18\,877\,T^{18} \gamma \hbar^3 - 10\,346\,T^{19} \gamma \hbar^3 + 4\,792\,T^{20} \gamma \hbar^3 - 1\,821\,T^{21} \gamma \hbar^3 + \\
 & \quad \left. 542\,T^{22} \gamma \hbar^3 - 117\,T^{23} \gamma \hbar^3 + 16\,T^{24} \gamma \hbar^3 - T^{25} \gamma \hbar^3 \right) X_{14} X_{nn[4]} Y_{nn[0]}^2 \Big) / \\
 & \left(1 - 15\,T + 115\,T^2 - 600\,T^3 + 2\,400\,T^4 - 7\,853\,T^5 + 21\,860\,T^6 - 53\,080\,T^7 + 114\,340\,T^8 - \right. \\
 & \quad 221\,105\,T^9 + 387\,090\,T^{10} - 617\,220\,T^{11} + 900\,065\,T^{12} - 1\,203\,560\,T^{13} + \\
 & \quad 1\,477\,835\,T^{14} - 1\,666\,646\,T^{15} + 1\,724\,775\,T^{16} - 1\,634\,605\,T^{17} + 1\,414\,005\,T^{18} - \\
 & \quad 1\,111\,150\,T^{19} + 788\,057\,T^{20} - 500\,090\,T^{21} + 280\,705\,T^{22} - 137\,280\,T^{23} + \\
 & \quad \left. 57\,375\,T^{24} - 19\,999\,T^{25} + 5\,635\,T^{26} - 1\,230\,T^{27} + 195\,T^{28} - 20\,T^{29} + T^{30} \right) +
 \end{aligned}$$

$$\begin{aligned}
 & \left(\left(T^3 \gamma \hbar^3 - 9 T^4 \gamma \hbar^3 + 42 T^5 \gamma \hbar^3 - 135 T^6 \gamma \hbar^3 + 338 T^7 \gamma \hbar^3 - 699 T^8 \gamma \hbar^3 + 1232 T^9 \gamma \hbar^3 - \right. \right. \\
 & \quad 1885 T^{10} \gamma \hbar^3 + 2538 T^{11} \gamma \hbar^3 - 2998 T^{12} \gamma \hbar^3 + 3060 T^{13} \gamma \hbar^3 - 2654 T^{14} \gamma \hbar^3 + \\
 & \quad 1915 T^{15} \gamma \hbar^3 - 1099 T^{16} \gamma \hbar^3 + 447 T^{17} \gamma \hbar^3 - 66 T^{18} \gamma \hbar^3 - 87 T^{19} \gamma \hbar^3 + \\
 & \quad \left. \left. 98 T^{20} \gamma \hbar^3 - 52 T^{21} \gamma \hbar^3 + 15 T^{22} \gamma \hbar^3 - 2 T^{23} \gamma \hbar^3 \right) X_{nn[0]} X_{nn[4]} Y_{nn[0]}^2 \right) / \\
 & \left(1 - 15 T + 115 T^2 - 600 T^3 + 2400 T^4 - 7853 T^5 + 21860 T^6 - 53080 T^7 + 114340 T^8 - \right. \\
 & \quad 221105 T^9 + 387090 T^{10} - 617220 T^{11} + 900065 T^{12} - 1203560 T^{13} + \\
 & \quad 1477835 T^{14} - 1666646 T^{15} + 1724775 T^{16} - 1634605 T^{17} + 1414005 T^{18} - \\
 & \quad 1111150 T^{19} + 788057 T^{20} - 500090 T^{21} + 280705 T^{22} - 137280 T^{23} + \\
 & \quad \left. 57375 T^{24} - 19999 T^{25} + 5635 T^{26} - 1230 T^{27} + 195 T^{28} - 20 T^{29} + T^{30} \right) + \\
 & \left(\left(-T^3 \gamma \hbar^3 + 12 T^4 \gamma \hbar^3 - 71 T^5 \gamma \hbar^3 + 284 T^6 \gamma \hbar^3 - 866 T^7 \gamma \hbar^3 + 2148 T^8 \gamma \hbar^3 - 4496 T^9 \gamma \hbar^3 + \right. \right. \\
 & \quad 8128 T^{10} \gamma \hbar^3 - 12909 T^{11} \gamma \hbar^3 + 18200 T^{12} \gamma \hbar^3 - 22898 T^{13} \gamma \hbar^3 + 25748 T^{14} \gamma \hbar^3 - \\
 & \quad 25849 T^{15} \gamma \hbar^3 + 23116 T^{16} \gamma \hbar^3 - 18336 T^{17} \gamma \hbar^3 + 12816 T^{18} \gamma \hbar^3 - 7819 T^{19} \gamma \hbar^3 + \\
 & \quad \left. \left. 4096 T^{20} \gamma \hbar^3 - 1798 T^{21} \gamma \hbar^3 + 640 T^{22} \gamma \hbar^3 - 174 T^{23} \gamma \hbar^3 + 32 T^{24} \gamma \hbar^3 - 3 T^{25} \gamma \hbar^3 \right) \right. \\
 & \quad \left. X_{nn[4]}^2 Y_{nn[0]}^2 \right) / \left(4 - 60 T + 460 T^2 - 2400 T^3 + 9600 T^4 - 31412 T^5 + 87440 T^6 - \right. \\
 & \quad 212320 T^7 + 457360 T^8 - 884420 T^9 + 1548360 T^{10} - 2468880 T^{11} + 3600260 T^{12} - \\
 & \quad 4814240 T^{13} + 5911340 T^{14} - 6666584 T^{15} + 6899100 T^{16} - 6538420 T^{17} + \\
 & \quad 5656020 T^{18} - 4444600 T^{19} + 3152228 T^{20} - 2000360 T^{21} + 1122820 T^{22} - \\
 & \quad \left. 549120 T^{23} + 229500 T^{24} - 79996 T^{25} + 22540 T^{26} - 4920 T^{27} + 780 T^{28} - 80 T^{29} + 4 T^{30} \right) + \\
 & \left(\left(4 T^5 \gamma \hbar^2 - 30 T^6 \gamma \hbar^2 + 108 T^7 \gamma \hbar^2 - 256 T^8 \gamma \hbar^2 + 440 T^9 \gamma \hbar^2 - 588 T^{10} \gamma \hbar^2 + \right. \right. \\
 & \quad 632 T^{11} \gamma \hbar^2 - 564 T^{12} \gamma \hbar^2 + 424 T^{13} \gamma \hbar^2 - 266 T^{14} \gamma \hbar^2 + \\
 & \quad \left. \left. 136 T^{15} \gamma \hbar^2 - 56 T^{16} \gamma \hbar^2 + 16 T^{17} \gamma \hbar^2 - 2 T^{18} \gamma \hbar^2 \right) X_{14} Y_{nn[4]} \right) / \\
 & \left(1 - 12 T + 74 T^2 - 312 T^3 + 1015 T^4 - 2716 T^5 + 6198 T^6 - 12324 T^7 + 21655 T^8 - \right. \\
 & \quad 33948 T^9 + 47762 T^{10} - 60488 T^{11} + 69024 T^{12} - 70896 T^{13} + 65318 T^{14} - 53656 T^{15} + \\
 & \quad \left. 38959 T^{16} - 24684 T^{17} + 13388 T^{18} - 6052 T^{19} + 2202 T^{20} - 616 T^{21} + 124 T^{22} - 16 T^{23} + T^{24} \right) + \\
 & \left(\left(4 T^8 \hbar^2 - 16 T^9 \hbar^2 + 20 T^{10} \hbar^2 - 16 T^{11} \hbar^2 + 8 T^{12} \hbar^2 - 2 T^{13} \hbar^2 \right) a_{14} X_{14} Y_{nn[4]} \right) / \\
 & \left(1 - 9 T + 42 T^2 - 135 T^3 + 339 T^4 - 705 T^5 + 1247 T^6 - 1902 T^7 + 2529 T^8 - 2943 T^9 + \right. \\
 & \quad \left. 2988 T^{10} - 2628 T^{11} + 1984 T^{12} - 1257 T^{13} + 642 T^{14} - 250 T^{15} + 69 T^{16} - 12 T^{17} + T^{18} \right) + \\
 & \left(\left(2 T^5 \hbar^2 - 4 T^6 \hbar^2 + 4 T^7 \hbar^2 - 2 T^8 \hbar^2 + 2 T^9 \hbar^2 + 2 T^{10} \hbar^2 \right) a_{nn[0]} X_{14} Y_{nn[4]} \right) / \\
 & \left(1 - 9 T + 42 T^2 - 135 T^3 + 339 T^4 - 705 T^5 + 1247 T^6 - 1902 T^7 + 2529 T^8 - 2943 T^9 + \right. \\
 & \quad \left. 2988 T^{10} - 2628 T^{11} + 1984 T^{12} - 1257 T^{13} + 642 T^{14} - 250 T^{15} + 69 T^{16} - 12 T^{17} + T^{18} \right) + \\
 & \left(\left(3 T^5 \hbar^2 - 12 T^6 \hbar^2 + 25 T^7 \hbar^2 - 32 T^8 \hbar^2 + 24 T^9 \hbar^2 - 13 T^{10} \hbar^2 + 4 T^{11} \hbar^2 + T^{12} \hbar^2 - T^{13} \hbar^2 \right) \right. \\
 & \quad \left. a_{nn[4]} X_{14} Y_{nn[4]} \right) / \left(1 - 9 T + 42 T^2 - 135 T^3 + 339 T^4 - 705 T^5 + \right. \\
 & \quad 1247 T^6 - 1902 T^7 + 2529 T^8 - 2943 T^9 + 2988 T^{10} - 2628 T^{11} + \\
 & \quad \left. 1984 T^{12} - 1257 T^{13} + 642 T^{14} - 250 T^{15} + 69 T^{16} - 12 T^{17} + T^{18} \right) + \\
 & \left(\left(T^4 \gamma \hbar^2 - 7 T^5 \gamma \hbar^2 + 22 T^6 \gamma \hbar^2 - 46 T^7 \gamma \hbar^2 + 60 T^8 \gamma \hbar^2 - 40 T^9 \gamma \hbar^2 - 17 T^{10} \gamma \hbar^2 + \right. \right. \\
 & \quad 85 T^{11} \gamma \hbar^2 - 127 T^{12} \gamma \hbar^2 + 133 T^{13} \gamma \hbar^2 - 113 T^{14} \gamma \hbar^2 + 79 T^{15} \gamma \hbar^2 - \\
 & \quad \left. \left. 45 T^{16} \gamma \hbar^2 + 21 T^{17} \gamma \hbar^2 - 7 T^{18} \gamma \hbar^2 + T^{19} \gamma \hbar^2 \right) X_{nn[0]} Y_{nn[4]} \right) / \\
 & \left(1 - 12 T + 74 T^2 - 312 T^3 + 1015 T^4 - 2716 T^5 + 6198 T^6 - 12324 T^7 + 21655 T^8 - \right. \\
 & \quad 33948 T^9 + 47762 T^{10} - 60488 T^{11} + 69024 T^{12} - 70896 T^{13} + 65318 T^{14} - 53656 T^{15} + \\
 & \quad \left. 38959 T^{16} - 24684 T^{17} + 13388 T^{18} - 6052 T^{19} + 2202 T^{20} - 616 T^{21} + 124 T^{22} - 16 T^{23} + T^{24} \right) + \\
 & \left(\left(-6 T^8 \hbar^2 + 6 T^9 \hbar^2 - 4 T^{10} \hbar^2 \right) a_{14} X_{nn[0]} Y_{nn[4]} \right) / \left(1 - 9 T + 42 T^2 - 135 T^3 + \right. \\
 & \quad 339 T^4 - 705 T^5 + 1247 T^6 - 1902 T^7 + 2529 T^8 - 2943 T^9 + 2988 T^{10} - \\
 & \quad \left. 2628 T^{11} + 1984 T^{12} - 1257 T^{13} + 642 T^{14} - 250 T^{15} + 69 T^{16} - 12 T^{17} + T^{18} \right) + \\
 & \left(\left(T^4 \hbar^2 - 2 T^5 \hbar^2 + T^6 \hbar^2 + T^7 \hbar^2 - 3 T^8 \hbar^2 + 6 T^9 \hbar^2 - 6 T^{10} \hbar^2 + 4 T^{11} \hbar^2 - 3 T^{12} \hbar^2 + T^{13} \hbar^2 \right) \right. \\
 & \quad \left. a_{nn[0]} X_{nn[0]} Y_{nn[4]} \right) / \\
 & \left(1 - 9 T + 42 T^2 - 135 T^3 + 339 T^4 - 705 T^5 + 1247 T^6 - 1902 T^7 + 2529 T^8 - 2943 T^9 + \right. \\
 & \quad \left. 2988 T^{10} - 2628 T^{11} + 1984 T^{12} - 1257 T^{13} + 642 T^{14} - 250 T^{15} + 69 T^{16} - 12 T^{17} + T^{18} \right) + \\
 & \left(\left(T^4 \hbar^2 - 2 T^5 \hbar^2 + T^6 \hbar^2 + 3 T^7 \hbar^2 - 17 T^8 \hbar^2 + 28 T^9 \hbar^2 - 26 T^{10} \hbar^2 + 20 T^{11} \hbar^2 - \right. \right.
 \end{aligned}$$

$$\begin{aligned}
& (11 T^{12} \hbar^2 + 3 T^{13} \hbar^2) a_{nn[4]} x_{nn[0]} y_{nn[4]} / \\
& (1 - 9 T + 42 T^2 - 135 T^3 + 339 T^4 - 705 T^5 + 1247 T^6 - 1902 T^7 + 2529 T^8 - 2943 T^9 + \\
& 2988 T^{10} - 2628 T^{11} + 1984 T^{12} - 1257 T^{13} + 642 T^{14} - 250 T^{15} + 69 T^{16} - 12 T^{17} + T^{18}) + \\
& ((-4 T^3 \gamma \hbar^2 + 30 T^4 \gamma \hbar^2 - 118 T^5 \gamma \hbar^2 + 320 T^6 \gamma \hbar^2 - 668 T^7 \gamma \hbar^2 + 1140 T^8 \gamma \hbar^2 - 1622 T^9 \gamma \hbar^2 + \\
& 1936 T^{10} \gamma \hbar^2 - 1930 T^{11} \gamma \hbar^2 + 1562 T^{12} \gamma \hbar^2 - 952 T^{13} \gamma \hbar^2 + 334 T^{14} \gamma \hbar^2 + 80 T^{15} \gamma \hbar^2 - \\
& 220 T^{16} \gamma \hbar^2 + 170 T^{17} \gamma \hbar^2 - 74 T^{18} \gamma \hbar^2 + 18 T^{19} \gamma \hbar^2 - 2 T^{20} \gamma \hbar^2) x_{nn[4]} y_{nn[4]} / \\
& (1 - 12 T + 74 T^2 - 312 T^3 + 1015 T^4 - 2716 T^5 + 6198 T^6 - 12324 T^7 + 21655 T^8 - \\
& 33948 T^9 + 47762 T^{10} - 60488 T^{11} + 69024 T^{12} - 70896 T^{13} + 65318 T^{14} - 53656 T^{15} + \\
& 38959 T^{16} - 24684 T^{17} + 13388 T^{18} - 6052 T^{19} + 2202 T^{20} - 616 T^{21} + 124 T^{22} - 16 T^{23} + T^{24}) + \\
& ((-2 T^3 \hbar^2 + 10 T^4 \hbar^2 - 28 T^5 \hbar^2 + 56 T^6 \hbar^2 - 92 T^7 \hbar^2 + 126 T^8 \hbar^2 - 136 T^9 \hbar^2 + \\
& 126 T^{10} \hbar^2 - 92 T^{11} \hbar^2 + 46 T^{12} \hbar^2 - 14 T^{13} \hbar^2 + 2 T^{14} \hbar^2) a_{14} x_{nn[4]} y_{nn[4]} / \\
& (1 - 9 T + 42 T^2 - 135 T^3 + 339 T^4 - 705 T^5 + 1247 T^6 - 1902 T^7 + 2529 T^8 - 2943 T^9 + \\
& 2988 T^{10} - 2628 T^{11} + 1984 T^{12} - 1257 T^{13} + 642 T^{14} - 250 T^{15} + 69 T^{16} - 12 T^{17} + T^{18}) + \\
& ((2 T^8 \hbar^2 - 2 T^9 \hbar^2 + 2 T^{10} \hbar^2 - 2 T^{11} \hbar^2) a_{nn[0]} x_{nn[4]} y_{nn[4]} / \\
& (1 - 9 T + 42 T^2 - 135 T^3 + 339 T^4 - 705 T^5 + 1247 T^6 - 1902 T^7 + 2529 T^8 - 2943 T^9 + \\
& 2988 T^{10} - 2628 T^{11} + 1984 T^{12} - 1257 T^{13} + 642 T^{14} - 250 T^{15} + 69 T^{16} - 12 T^{17} + T^{18}) + \\
& ((2 T^3 \hbar^2 - 12 T^4 \hbar^2 + 32 T^5 \hbar^2 - 64 T^6 \hbar^2 + 108 T^7 \hbar^2 - 140 T^8 \hbar^2 + 142 T^9 \hbar^2 - \\
& 120 T^{10} \hbar^2 + 78 T^{11} \hbar^2 - 32 T^{12} \hbar^2 + 6 T^{13} \hbar^2) a_{nn[4]} x_{nn[4]} y_{nn[4]} / \\
& (1 - 9 T + 42 T^2 - 135 T^3 + 339 T^4 - 705 T^5 + 1247 T^6 - 1902 T^7 + 2529 T^8 - 2943 T^9 + \\
& 2988 T^{10} - 2628 T^{11} + 1984 T^{12} - 1257 T^{13} + 642 T^{14} - 250 T^{15} + 69 T^{16} - 12 T^{17} + T^{18}) + \\
& ((T^4 \gamma \hbar^3 - 10 T^5 \gamma \hbar^3 + 54 T^6 \gamma \hbar^3 - 199 T^7 \gamma \hbar^3 + 555 T^8 \gamma \hbar^3 - 1245 T^9 \gamma \hbar^3 + \\
& 2335 T^{10} \gamma \hbar^3 - 3770 T^{11} \gamma \hbar^3 + 5384 T^{12} \gamma \hbar^3 - 6935 T^{13} \gamma \hbar^3 + 8080 T^{14} \gamma \hbar^3 - \\
& 8421 T^{15} \gamma \hbar^3 + 7777 T^{16} \gamma \hbar^3 - 6295 T^{17} \gamma \hbar^3 + 4391 T^{18} \gamma \hbar^3 - 2580 T^{19} \gamma \hbar^3 + \\
& 1241 T^{20} \gamma \hbar^3 - 468 T^{21} \gamma \hbar^3 + 129 T^{22} \gamma \hbar^3 - 23 T^{23} \gamma \hbar^3 + 2 T^{24} \gamma \hbar^3) x_{14}^2 y_{14} y_{nn[4]} / \\
& (1 - 15 T + 115 T^2 - 600 T^3 + 2400 T^4 - 7853 T^5 + 21860 T^6 - 53080 T^7 + 114340 T^8 - \\
& 221105 T^9 + 387090 T^{10} - 617220 T^{11} + 900065 T^{12} - 1203560 T^{13} + \\
& 1477835 T^{14} - 1666646 T^{15} + 1724775 T^{16} - 1634605 T^{17} + 1414005 T^{18} - \\
& 1111150 T^{19} + 788057 T^{20} - 500090 T^{21} + 280705 T^{22} - 137280 T^{23} + \\
& 57375 T^{24} - 19999 T^{25} + 5635 T^{26} - 1230 T^{27} + 195 T^{28} - 20 T^{29} + T^{30}) + \\
& ((2 T^6 \gamma \hbar^3 - 18 T^7 \gamma \hbar^3 + 74 T^8 \gamma \hbar^3 - 204 T^9 \gamma \hbar^3 + 420 T^{10} \gamma \hbar^3 - 648 T^{11} \gamma \hbar^3 + \\
& 720 T^{12} \gamma \hbar^3 - 520 T^{13} \gamma \hbar^3 + 178 T^{14} \gamma \hbar^3 + 118 T^{15} \gamma \hbar^3 - 262 T^{16} \gamma \hbar^3 + 256 T^{17} \gamma \hbar^3 - \\
& 162 T^{18} \gamma \hbar^3 + 66 T^{19} \gamma \hbar^3 - 16 T^{20} \gamma \hbar^3 + 2 T^{21} \gamma \hbar^3) x_{14} x_{nn[0]} y_{14} y_{nn[4]} / \\
& (1 - 15 T + 115 T^2 - 600 T^3 + 2400 T^4 - 7853 T^5 + 21860 T^6 - 53080 T^7 + 114340 T^8 - \\
& 221105 T^9 + 387090 T^{10} - 617220 T^{11} + 900065 T^{12} - 1203560 T^{13} + \\
& 1477835 T^{14} - 1666646 T^{15} + 1724775 T^{16} - 1634605 T^{17} + 1414005 T^{18} - \\
& 1111150 T^{19} + 788057 T^{20} - 500090 T^{21} + 280705 T^{22} - 137280 T^{23} + \\
& 57375 T^{24} - 19999 T^{25} + 5635 T^{26} - 1230 T^{27} + 195 T^{28} - 20 T^{29} + T^{30}) + \\
& ((-T^5 \gamma \hbar^3 + 6 T^6 \gamma \hbar^3 - 20 T^7 \gamma \hbar^3 + 49 T^8 \gamma \hbar^3 - 101 T^9 \gamma \hbar^3 + 183 T^{10} \gamma \hbar^3 - \\
& 288 T^{11} \gamma \hbar^3 + 397 T^{12} \gamma \hbar^3 - 444 T^{13} \gamma \hbar^3 + 381 T^{14} \gamma \hbar^3 - 246 T^{15} \gamma \hbar^3 + \\
& 119 T^{16} \gamma \hbar^3 - 40 T^{17} \gamma \hbar^3 + 6 T^{18} \gamma \hbar^3 + 2 T^{19} \gamma \hbar^3 - T^{20} \gamma \hbar^3) x_{nn[0]}^2 y_{14} y_{nn[4]} / \\
& (1 - 15 T + 115 T^2 - 600 T^3 + 2400 T^4 - 7853 T^5 + 21860 T^6 - 53080 T^7 + 114340 T^8 - \\
& 221105 T^9 + 387090 T^{10} - 617220 T^{11} + 900065 T^{12} - 1203560 T^{13} + \\
& 1477835 T^{14} - 1666646 T^{15} + 1724775 T^{16} - 1634605 T^{17} + 1414005 T^{18} - \\
& 1111150 T^{19} + 788057 T^{20} - 500090 T^{21} + 280705 T^{22} - 137280 T^{23} + \\
& 57375 T^{24} - 19999 T^{25} + 5635 T^{26} - 1230 T^{27} + 195 T^{28} - 20 T^{29} + T^{30}) + \\
& ((-2 T^4 \gamma \hbar^3 + 11 T^5 \gamma \hbar^3 - 10 T^6 \gamma \hbar^3 - 129 T^7 \gamma \hbar^3 + 776 T^8 \gamma \hbar^3 - 2588 T^9 \gamma \hbar^3 + 6353 T^{10} \gamma \hbar^3 - \\
& 12591 T^{11} \gamma \hbar^3 + 20981 T^{12} \gamma \hbar^3 - 29994 T^{13} \gamma \hbar^3 + 37185 T^{14} \gamma \hbar^3 - 40214 T^{15} \gamma \hbar^3 + \\
& 37870 T^{16} \gamma \hbar^3 - 30894 T^{17} \gamma \hbar^3 + 21697 T^{18} \gamma \hbar^3 - 12984 T^{19} \gamma \hbar^3 + 6496 T^{20} \gamma \hbar^3 -
\end{aligned}$$

$$\begin{aligned}
& (2637 T^{21} \gamma \hbar^3 + 831 T^{22} \gamma \hbar^3 - 190 T^{23} \gamma \hbar^3 + 28 T^{24} \gamma \hbar^3 - 2 T^{25} \gamma \hbar^3) X_{14} X_{nn[4]} Y_{14} Y_{nn[4]} / \\
& (1 - 15 T + 115 T^2 - 600 T^3 + 2400 T^4 - 7853 T^5 + 21860 T^6 - 53080 T^7 + 114340 T^8 - \\
& 221105 T^9 + 387090 T^{10} - 617220 T^{11} + 900065 T^{12} - 1203560 T^{13} + \\
& 1477835 T^{14} - 1666646 T^{15} + 1724775 T^{16} - 1634605 T^{17} + 1414005 T^{18} - \\
& 1111150 T^{19} + 788057 T^{20} - 500090 T^{21} + 280705 T^{22} - 137280 T^{23} + \\
& 57375 T^{24} - 19999 T^{25} + 5635 T^{26} - 1230 T^{27} + 195 T^{28} - 20 T^{29} + T^{30}) + \\
& ((-2 T^4 \gamma \hbar^3 + 22 T^5 \gamma \hbar^3 - 118 T^6 \gamma \hbar^3 + 424 T^7 \gamma \hbar^3 - 1138 T^8 \gamma \hbar^3 + 2430 T^9 \gamma \hbar^3 - \\
& 4288 T^{10} \gamma \hbar^3 + 6388 T^{11} \gamma \hbar^3 - 8114 T^{12} \gamma \hbar^3 + 8750 T^{13} \gamma \hbar^3 - 7936 T^{14} \gamma \hbar^3 + \\
& 5890 T^{15} \gamma \hbar^3 - 3334 T^{16} \gamma \hbar^3 + 1182 T^{17} \gamma \hbar^3 + 14 T^{18} \gamma \hbar^3 - 338 T^{19} \gamma \hbar^3 + \\
& 240 T^{20} \gamma \hbar^3 - 92 T^{21} \gamma \hbar^3 + 20 T^{22} \gamma \hbar^3 - 2 T^{23} \gamma \hbar^3) X_{nn[0]} X_{nn[4]} Y_{14} Y_{nn[4]}) / \\
& (1 - 15 T + 115 T^2 - 600 T^3 + 2400 T^4 - 7853 T^5 + 21860 T^6 - 53080 T^7 + 114340 T^8 - \\
& 221105 T^9 + 387090 T^{10} - 617220 T^{11} + 900065 T^{12} - 1203560 T^{13} + \\
& 1477835 T^{14} - 1666646 T^{15} + 1724775 T^{16} - 1634605 T^{17} + 1414005 T^{18} - \\
& 1111150 T^{19} + 788057 T^{20} - 500090 T^{21} + 280705 T^{22} - 137280 T^{23} + \\
& 57375 T^{24} - 19999 T^{25} + 5635 T^{26} - 1230 T^{27} + 195 T^{28} - 20 T^{29} + T^{30}) + \\
& ((T^3 \gamma \hbar^3 - 8 T^4 \gamma \hbar^3 + 35 T^5 \gamma \hbar^3 - 109 T^6 \gamma \hbar^3 + 256 T^7 \gamma \hbar^3 - 460 T^8 \gamma \hbar^3 + 618 T^9 \gamma \hbar^3 - \\
& 542 T^{10} \gamma \hbar^3 + 10 T^{11} \gamma \hbar^3 + 1097 T^{12} \gamma \hbar^3 - 2612 T^{13} \gamma \hbar^3 + 4105 T^{14} \gamma \hbar^3 - \\
& 5050 T^{15} \gamma \hbar^3 + 5069 T^{16} \gamma \hbar^3 - 4186 T^{17} \gamma \hbar^3 + 2826 T^{18} \gamma \hbar^3 - 1524 T^{19} \gamma \hbar^3 + \\
& 628 T^{20} \gamma \hbar^3 - 184 T^{21} \gamma \hbar^3 + 34 T^{22} \gamma \hbar^3 - 3 T^{23} \gamma \hbar^3) X_{nn[4]}^2 Y_{14} Y_{nn[4]}) / \\
& (1 - 15 T + 115 T^2 - 600 T^3 + 2400 T^4 - 7853 T^5 + 21860 T^6 - 53080 T^7 + 114340 T^8 - \\
& 221105 T^9 + 387090 T^{10} - 617220 T^{11} + 900065 T^{12} - 1203560 T^{13} + \\
& 1477835 T^{14} - 1666646 T^{15} + 1724775 T^{16} - 1634605 T^{17} + 1414005 T^{18} - \\
& 1111150 T^{19} + 788057 T^{20} - 500090 T^{21} + 280705 T^{22} - 137280 T^{23} + \\
& 57375 T^{24} - 19999 T^{25} + 5635 T^{26} - 1230 T^{27} + 195 T^{28} - 20 T^{29} + T^{30}) + \\
& ((-T^4 \gamma \hbar^3 + 11 T^5 \gamma \hbar^3 - 63 T^6 \gamma \hbar^3 + 244 T^7 \gamma \hbar^3 - 711 T^8 \gamma \hbar^3 + 1654 T^9 \gamma \hbar^3 - \\
& 3192 T^{10} \gamma \hbar^3 + 5252 T^{11} \gamma \hbar^3 - 7524 T^{12} \gamma \hbar^3 + 9517 T^{13} \gamma \hbar^3 - 10687 T^{14} \gamma \hbar^3 + \\
& 10610 T^{15} \gamma \hbar^3 - 9240 T^{16} \gamma \hbar^3 + 6987 T^{17} \gamma \hbar^3 - 4529 T^{18} \gamma \hbar^3 + 2462 T^{19} \gamma \hbar^3 - \\
& 1088 T^{20} \gamma \hbar^3 + 372 T^{21} \gamma \hbar^3 - 91 T^{22} \gamma \hbar^3 + 14 T^{23} \gamma \hbar^3 - T^{24} \gamma \hbar^3) X_{14}^2 Y_{nn[0]} Y_{nn[4]}) / \\
& (1 - 15 T + 115 T^2 - 600 T^3 + 2400 T^4 - 7853 T^5 + 21860 T^6 - 53080 T^7 + 114340 T^8 - \\
& 221105 T^9 + 387090 T^{10} - 617220 T^{11} + 900065 T^{12} - 1203560 T^{13} + \\
& 1477835 T^{14} - 1666646 T^{15} + 1724775 T^{16} - 1634605 T^{17} + 1414005 T^{18} - \\
& 1111150 T^{19} + 788057 T^{20} - 500090 T^{21} + 280705 T^{22} - 137280 T^{23} + \\
& 57375 T^{24} - 19999 T^{25} + 5635 T^{26} - 1230 T^{27} + 195 T^{28} - 20 T^{29} + T^{30}) + \\
& ((2 T^5 \gamma \hbar^3 - 16 T^6 \gamma \hbar^3 + 70 T^7 \gamma \hbar^3 - 218 T^8 \gamma \hbar^3 + 540 T^9 \gamma \hbar^3 - 1098 T^{10} \gamma \hbar^3 + \\
& 1842 T^{11} \gamma \hbar^3 - 2572 T^{12} \gamma \hbar^3 + 3040 T^{13} \gamma \hbar^3 - 3126 T^{14} \gamma \hbar^3 + 2860 T^{15} \gamma \hbar^3 - \\
& 2340 T^{16} \gamma \hbar^3 + 1688 T^{17} \gamma \hbar^3 - 1044 T^{18} \gamma \hbar^3 + 552 T^{19} \gamma \hbar^3 - 240 T^{20} \gamma \hbar^3 + \\
& 80 T^{21} \gamma \hbar^3 - 18 T^{22} \gamma \hbar^3 + 2 T^{23} \gamma \hbar^3) X_{14} X_{nn[0]} Y_{nn[0]} Y_{nn[4]}) / \\
& (1 - 15 T + 115 T^2 - 600 T^3 + 2400 T^4 - 7853 T^5 + 21860 T^6 - 53080 T^7 + 114340 T^8 - \\
& 221105 T^9 + 387090 T^{10} - 617220 T^{11} + 900065 T^{12} - 1203560 T^{13} + \\
& 1477835 T^{14} - 1666646 T^{15} + 1724775 T^{16} - 1634605 T^{17} + 1414005 T^{18} - \\
& 1111150 T^{19} + 788057 T^{20} - 500090 T^{21} + 280705 T^{22} - 137280 T^{23} + \\
& 57375 T^{24} - 19999 T^{25} + 5635 T^{26} - 1230 T^{27} + 195 T^{28} - 20 T^{29} + T^{30}) + \\
& ((T^4 \gamma \hbar^3 - 7 T^5 \gamma \hbar^3 + 26 T^6 \gamma \hbar^3 - 68 T^7 \gamma \hbar^3 + 142 T^8 \gamma \hbar^3 - 244 T^9 \gamma \hbar^3 + 342 T^{10} \gamma \hbar^3 - \\
& 387 T^{11} \gamma \hbar^3 + 339 T^{12} \gamma \hbar^3 - 204 T^{13} \gamma \hbar^3 + 35 T^{14} \gamma \hbar^3 + 125 T^{15} \gamma \hbar^3 - \\
& 259 T^{16} \gamma \hbar^3 + 346 T^{17} \gamma \hbar^3 - 353 T^{18} \gamma \hbar^3 + 287 T^{19} \gamma \hbar^3 - 192 T^{20} \gamma \hbar^3 + \\
& 101 T^{21} \gamma \hbar^3 - 38 T^{22} \gamma \hbar^3 + 9 T^{23} \gamma \hbar^3 - T^{24} \gamma \hbar^3) X_{nn[0]}^2 Y_{nn[0]} Y_{nn[4]}) / \\
& (1 - 15 T + 115 T^2 - 600 T^3 + 2400 T^4 - 7853 T^5 + 21860 T^6 - 53080 T^7 + 114340 T^8 - \\
& 221105 T^9 + 387090 T^{10} - 617220 T^{11} + 900065 T^{12} - 1203560 T^{13} + \\
& 1477835 T^{14} - 1666646 T^{15} + 1724775 T^{16} - 1634605 T^{17} + 1414005 T^{18} -
\end{aligned}$$

$$\begin{aligned}
 & 1111150 T^{19} + 788057 T^{20} - 500090 T^{21} + 280705 T^{22} - 137280 T^{23} + \\
 & 57375 T^{24} - 19999 T^{25} + 5635 T^{26} - 1230 T^{27} + 195 T^{28} - 20 T^{29} + T^{30} \Big) + \\
 & \left((-2 T^3 \gamma \hbar^3 + 22 T^4 \gamma \hbar^3 - 119 T^5 \gamma \hbar^3 + 421 T^6 \gamma \hbar^3 - 1101 T^7 \gamma \hbar^3 + 2275 T^8 \gamma \hbar^3 - \right. \\
 & \quad 3859 T^9 \gamma \hbar^3 + 5467 T^{10} \gamma \hbar^3 - 6469 T^{11} \gamma \hbar^3 + 6283 T^{12} \gamma \hbar^3 - 4744 T^{13} \gamma \hbar^3 + \\
 & \quad 2310 T^{14} \gamma \hbar^3 + 139 T^{15} \gamma \hbar^3 - 1729 T^{16} \gamma \hbar^3 + 2117 T^{17} \gamma \hbar^3 - 1635 T^{18} \gamma \hbar^3 + 921 T^{19} \gamma \hbar^3 - \\
 & \quad \left. 399 T^{20} \gamma \hbar^3 + 142 T^{21} \gamma \hbar^3 - 42 T^{22} \gamma \hbar^3 + 9 T^{23} \gamma \hbar^3 - T^{24} \gamma \hbar^3 \right) X_{14} X_{nn[4]} Y_{nn[0]} Y_{nn[4]} \Big) / \\
 & \left(1 - 15 T + 115 T^2 - 600 T^3 + 2400 T^4 - 7853 T^5 + 21860 T^6 - 53080 T^7 + 114340 T^8 - \right. \\
 & \quad 221105 T^9 + 387090 T^{10} - 617220 T^{11} + 900065 T^{12} - 1203560 T^{13} + \\
 & \quad 1477835 T^{14} - 1666646 T^{15} + 1724775 T^{16} - 1634605 T^{17} + 1414005 T^{18} - \\
 & \quad 1111150 T^{19} + 788057 T^{20} - 500090 T^{21} + 280705 T^{22} - 137280 T^{23} + \\
 & \quad \left. 57375 T^{24} - 19999 T^{25} + 5635 T^{26} - 1230 T^{27} + 195 T^{28} - 20 T^{29} + T^{30} \right) + \\
 & \left((2 T^4 \gamma \hbar^3 - 22 T^5 \gamma \hbar^3 + 120 T^6 \gamma \hbar^3 - 440 T^7 \gamma \hbar^3 + 1218 T^8 \gamma \hbar^3 - 2708 T^9 \gamma \hbar^3 + 5020 T^{10} \gamma \hbar^3 - \right. \\
 & \quad 7938 T^{11} \gamma \hbar^3 + 10860 T^{12} \gamma \hbar^3 - 12918 T^{13} \gamma \hbar^3 + 13382 T^{14} \gamma \hbar^3 - 12064 T^{15} \gamma \hbar^3 + \\
 & \quad 9410 T^{16} \gamma \hbar^3 - 6318 T^{17} \gamma \hbar^3 + 3676 T^{18} \gamma \hbar^3 - 1886 T^{19} \gamma \hbar^3 + 856 T^{20} \gamma \hbar^3 - \\
 & \quad \left. 332 T^{21} \gamma \hbar^3 + 100 T^{22} \gamma \hbar^3 - 20 T^{23} \gamma \hbar^3 + 2 T^{24} \gamma \hbar^3 \right) X_{nn[0]} X_{nn[4]} Y_{nn[0]} Y_{nn[4]} \Big) / \\
 & \left(1 - 15 T + 115 T^2 - 600 T^3 + 2400 T^4 - 7853 T^5 + 21860 T^6 - 53080 T^7 + 114340 T^8 - \right. \\
 & \quad 221105 T^9 + 387090 T^{10} - 617220 T^{11} + 900065 T^{12} - 1203560 T^{13} + \\
 & \quad 1477835 T^{14} - 1666646 T^{15} + 1724775 T^{16} - 1634605 T^{17} + 1414005 T^{18} - \\
 & \quad 1111150 T^{19} + 788057 T^{20} - 500090 T^{21} + 280705 T^{22} - 137280 T^{23} + \\
 & \quad \left. 57375 T^{24} - 19999 T^{25} + 5635 T^{26} - 1230 T^{27} + 195 T^{28} - 20 T^{29} + T^{30} \right) + \\
 & \left((-T^3 \gamma \hbar^3 + 9 T^4 \gamma \hbar^3 - 43 T^5 \gamma \hbar^3 + 144 T^6 \gamma \hbar^3 - 370 T^7 \gamma \hbar^3 + 760 T^8 \gamma \hbar^3 - 1275 T^9 \gamma \hbar^3 + \right. \\
 & \quad 1760 T^{10} \gamma \hbar^3 - 1957 T^{11} \gamma \hbar^3 + 1605 T^{12} \gamma \hbar^3 - 632 T^{13} \gamma \hbar^3 - 747 T^{14} \gamma \hbar^3 + 2100 T^{15} \gamma \hbar^3 - \\
 & \quad 2953 T^{16} \gamma \hbar^3 + 3057 T^{17} \gamma \hbar^3 - 2525 T^{18} \gamma \hbar^3 + 1708 T^{19} \gamma \hbar^3 - 955 T^{20} \gamma \hbar^3 + \\
 & \quad \left. 443 T^{21} \gamma \hbar^3 - 169 T^{22} \gamma \hbar^3 + 50 T^{23} \gamma \hbar^3 - 10 T^{24} \gamma \hbar^3 + T^{25} \gamma \hbar^3 \right) X_{nn[4]}^2 Y_{nn[0]} Y_{nn[4]} \Big) / \\
 & \left(1 - 15 T + 115 T^2 - 600 T^3 + 2400 T^4 - 7853 T^5 + 21860 T^6 - 53080 T^7 + 114340 T^8 - \right. \\
 & \quad 221105 T^9 + 387090 T^{10} - 617220 T^{11} + 900065 T^{12} - 1203560 T^{13} + \\
 & \quad 1477835 T^{14} - 1666646 T^{15} + 1724775 T^{16} - 1634605 T^{17} + 1414005 T^{18} - \\
 & \quad 1111150 T^{19} + 788057 T^{20} - 500090 T^{21} + 280705 T^{22} - 137280 T^{23} + \\
 & \quad \left. 57375 T^{24} - 19999 T^{25} + 5635 T^{26} - 1230 T^{27} + 195 T^{28} - 20 T^{29} + T^{30} \right) + \\
 & \left((-3 T^7 \gamma \hbar^3 + 28 T^8 \gamma \hbar^3 - 124 T^9 \gamma \hbar^3 + 368 T^{10} \gamma \hbar^3 - 815 T^{11} \gamma \hbar^3 + 1432 T^{12} \gamma \hbar^3 - \right. \\
 & \quad 2074 T^{13} \gamma \hbar^3 + 2568 T^{14} \gamma \hbar^3 - 2774 T^{15} \gamma \hbar^3 + 2608 T^{16} \gamma \hbar^3 - 2121 T^{17} \gamma \hbar^3 + 1472 T^{18} \\
 & \quad \left. \gamma \hbar^3 - 844 T^{19} \gamma \hbar^3 + 384 T^{20} \gamma \hbar^3 - 129 T^{21} \gamma \hbar^3 + 28 T^{22} \gamma \hbar^3 - 3 T^{23} \gamma \hbar^3 \right) X_{14}^2 Y_{nn[4]}^2 \Big) / \\
 & \left(4 - 60 T + 460 T^2 - 2400 T^3 + 9600 T^4 - 31412 T^5 + 87440 T^6 - 212320 T^7 + \right. \\
 & \quad 457360 T^8 - 884420 T^9 + 1548360 T^{10} - 2468880 T^{11} + 3600260 T^{12} - 4814240 T^{13} + \\
 & \quad 5911340 T^{14} - 6666584 T^{15} + 6899100 T^{16} - 6538420 T^{17} + 5656020 T^{18} - \\
 & \quad 4444600 T^{19} + 3152228 T^{20} - 2000360 T^{21} + 1122820 T^{22} - 549120 T^{23} + \\
 & \quad \left. 229500 T^{24} - 79996 T^{25} + 22540 T^{26} - 4920 T^{27} + 780 T^{28} - 80 T^{29} + 4 T^{30} \right) + \\
 & \left((T^7 \gamma \hbar^3 - 5 T^8 \gamma \hbar^3 + 14 T^9 \gamma \hbar^3 - 25 T^{10} \gamma \hbar^3 + 27 T^{11} \gamma \hbar^3 - 7 T^{12} \gamma \hbar^3 - 33 T^{13} \gamma \hbar^3 + \right. \\
 & \quad 64 T^{14} \gamma \hbar^3 - 76 T^{15} \gamma \hbar^3 + 67 T^{16} \gamma \hbar^3 - 48 T^{17} \gamma \hbar^3 + 25 T^{18} \gamma \hbar^3 - 10 T^{19} \gamma \hbar^3 + 2 T^{20} \gamma \hbar^3 \Big) \\
 & \quad X_{14} X_{nn[0]} Y_{nn[4]}^2 \Big) / \left(1 - 15 T + 115 T^2 - 600 T^3 + 2400 T^4 - 7853 T^5 + 21860 T^6 - \right. \\
 & \quad 53080 T^7 + 114340 T^8 - 221105 T^9 + 387090 T^{10} - 617220 T^{11} + 900065 T^{12} - \\
 & \quad 1203560 T^{13} + 1477835 T^{14} - 1666646 T^{15} + 1724775 T^{16} - 1634605 T^{17} + \\
 & \quad 1414005 T^{18} - 1111150 T^{19} + 788057 T^{20} - 500090 T^{21} + 280705 T^{22} - \\
 & \quad \left. 137280 T^{23} + 57375 T^{24} - 19999 T^{25} + 5635 T^{26} - 1230 T^{27} + 195 T^{28} - 20 T^{29} + T^{30} \right) + \\
 & \left((T^5 \gamma \hbar^3 - 4 T^6 \gamma \hbar^3 + 8 T^7 \gamma \hbar^3 - 8 T^8 \gamma \hbar^3 - 3 T^9 \gamma \hbar^3 + 40 T^{10} \gamma \hbar^3 - 119 T^{11} \gamma \hbar^3 + 240 T^{12} \gamma \hbar^3 - \right. \\
 & \quad 411 T^{13} \gamma \hbar^3 + 588 T^{14} \gamma \hbar^3 - 686 T^{15} \gamma \hbar^3 + 668 T^{16} \gamma \hbar^3 - 550 T^{17} \gamma \hbar^3 + 380 T^{18} \gamma \hbar^3 - \\
 & \quad \left. 216 T^{19} \gamma \hbar^3 + 100 T^{20} \gamma \hbar^3 - 35 T^{21} \gamma \hbar^3 + 8 T^{22} \gamma \hbar^3 - T^{23} \gamma \hbar^3 \right) X_{nn[0]}^2 Y_{nn[4]}^2 \Big) / \\
 & \left(4 - 60 T + 460 T^2 - 2400 T^3 + 9600 T^4 - 31412 T^5 + 87440 T^6 - 212320 T^7 + \right. \\
 & \quad \left. 457360 T^8 - 884420 T^9 + 1548360 T^{10} - 2468880 T^{11} + 3600260 T^{12} - 4814240 T^{13} + \right.
 \end{aligned}$$

$$\begin{aligned}
 & 5\,911\,340\,T^{14} - 6\,666\,584\,T^{15} + 6\,899\,100\,T^{16} - 6\,538\,420\,T^{17} + 5\,656\,020\,T^{18} - \\
 & 4\,444\,600\,T^{19} + 3\,152\,228\,T^{20} - 2\,000\,360\,T^{21} + 1\,122\,820\,T^{22} - 549\,120\,T^{23} + \\
 & 229\,500\,T^{24} - 79\,996\,T^{25} + 22\,540\,T^{26} - 4920\,T^{27} + 780\,T^{28} - 80\,T^{29} + 4\,T^{30} \Big) + \\
 & \left(\left(3\,T^5\,\gamma\,\hbar^3 - 28\,T^6\,\gamma\,\hbar^3 + 134\,T^7\,\gamma\,\hbar^3 - 437\,T^8\,\gamma\,\hbar^3 + 1089\,T^9\,\gamma\,\hbar^3 - 2207\,T^{10}\,\gamma\,\hbar^3 + \right. \right. \\
 & \quad 3761\,T^{11}\,\gamma\,\hbar^3 - 5483\,T^{12}\,\gamma\,\hbar^3 + 6893\,T^{13}\,\gamma\,\hbar^3 - 7493\,T^{14}\,\gamma\,\hbar^3 + 7030\,T^{15}\,\gamma\,\hbar^3 - \\
 & \quad 5626\,T^{16}\,\gamma\,\hbar^3 + 3770\,T^{17}\,\gamma\,\hbar^3 - 2060\,T^{18}\,\gamma\,\hbar^3 + 870\,T^{19}\,\gamma\,\hbar^3 - 246\,T^{20}\,\gamma\,\hbar^3 + \\
 & \quad \left. \left. 21\,T^{21}\,\gamma\,\hbar^3 + 16\,T^{22}\,\gamma\,\hbar^3 - 7\,T^{23}\,\gamma\,\hbar^3 + T^{24}\,\gamma\,\hbar^3 \right) X_{14}\,X_{nn[4]}\,Y_{nn[4]}^2 \right) / \\
 & \left(1 - 15\,T + 115\,T^2 - 600\,T^3 + 2400\,T^4 - 7853\,T^5 + 21\,860\,T^6 - 53\,080\,T^7 + 114\,340\,T^8 - \right. \\
 & \quad 221\,105\,T^9 + 387\,090\,T^{10} - 617\,220\,T^{11} + 900\,065\,T^{12} - 1\,203\,560\,T^{13} + \\
 & \quad 1\,477\,835\,T^{14} - 1\,666\,646\,T^{15} + 1\,724\,775\,T^{16} - 1\,634\,605\,T^{17} + 1\,414\,005\,T^{18} - \\
 & \quad 1\,111\,150\,T^{19} + 788\,057\,T^{20} - 500\,090\,T^{21} + 280\,705\,T^{22} - 137\,280\,T^{23} + \\
 & \quad \left. 57\,375\,T^{24} - 19\,999\,T^{25} + 5635\,T^{26} - 1230\,T^{27} + 195\,T^{28} - 20\,T^{29} + T^{30} \right) + \\
 & \left(\left(T^4\,\gamma\,\hbar^3 - 8\,T^5\,\gamma\,\hbar^3 + 32\,T^6\,\gamma\,\hbar^3 - 86\,T^7\,\gamma\,\hbar^3 + 166\,T^8\,\gamma\,\hbar^3 - 220\,T^9\,\gamma\,\hbar^3 + 129\,T^{10}\,\gamma\,\hbar^3 + \right. \right. \\
 & \quad 260\,T^{11}\,\gamma\,\hbar^3 - 1059\,T^{12}\,\gamma\,\hbar^3 + 2239\,T^{13}\,\gamma\,\hbar^3 - 3535\,T^{14}\,\gamma\,\hbar^3 + 4543\,T^{15}\,\gamma\,\hbar^3 - \\
 & \quad 4914\,T^{16}\,\gamma\,\hbar^3 + 4497\,T^{17}\,\gamma\,\hbar^3 - 3469\,T^{18}\,\gamma\,\hbar^3 + 2244\,T^{19}\,\gamma\,\hbar^3 - 1197\,T^{20}\,\gamma\,\hbar^3 + \\
 & \quad \left. \left. 505\,T^{21}\,\gamma\,\hbar^3 - 156\,T^{22}\,\gamma\,\hbar^3 + 31\,T^{23}\,\gamma\,\hbar^3 - 3\,T^{24}\,\gamma\,\hbar^3 \right) X_{nn[0]}\,X_{nn[4]}\,Y_{nn[4]}^2 \right) / \\
 & \left(1 - 15\,T + 115\,T^2 - 600\,T^3 + 2400\,T^4 - 7853\,T^5 + 21\,860\,T^6 - 53\,080\,T^7 + 114\,340\,T^8 - \right. \\
 & \quad 221\,105\,T^9 + 387\,090\,T^{10} - 617\,220\,T^{11} + 900\,065\,T^{12} - 1\,203\,560\,T^{13} + \\
 & \quad 1\,477\,835\,T^{14} - 1\,666\,646\,T^{15} + 1\,724\,775\,T^{16} - 1\,634\,605\,T^{17} + 1\,414\,005\,T^{18} - \\
 & \quad 1\,111\,150\,T^{19} + 788\,057\,T^{20} - 500\,090\,T^{21} + 280\,705\,T^{22} - 137\,280\,T^{23} + \\
 & \quad \left. 57\,375\,T^{24} - 19\,999\,T^{25} + 5635\,T^{26} - 1230\,T^{27} + 195\,T^{28} - 20\,T^{29} + T^{30} \right) + \\
 & \left(\left(4\,T^3\,\gamma\,\hbar^3 - 48\,T^4\,\gamma\,\hbar^3 + 275\,T^5\,\gamma\,\hbar^3 - 1060\,T^6\,\gamma\,\hbar^3 + 3168\,T^7\,\gamma\,\hbar^3 - 7832\,T^8\,\gamma\,\hbar^3 + \right. \right. \\
 & \quad 16\,502\,T^9\,\gamma\,\hbar^3 - 30\,176\,T^{10}\,\gamma\,\hbar^3 + 48\,555\,T^{11}\,\gamma\,\hbar^3 - 69\,280\,T^{12}\,\gamma\,\hbar^3 + \\
 & \quad 87\,902\,T^{13}\,\gamma\,\hbar^3 - 99\,304\,T^{14}\,\gamma\,\hbar^3 + 99\,764\,T^{15}\,\gamma\,\hbar^3 - 88\,620\,T^{16}\,\gamma\,\hbar^3 + \\
 & \quad 68\,976\,T^{17}\,\gamma\,\hbar^3 - 46\,460\,T^{18}\,\gamma\,\hbar^3 + 26\,517\,T^{19}\,\gamma\,\hbar^3 - 12\,364\,T^{20}\,\gamma\,\hbar^3 + \\
 & \quad \left. \left. 4447\,T^{21}\,\gamma\,\hbar^3 - 1128\,T^{22}\,\gamma\,\hbar^3 + 170\,T^{23}\,\gamma\,\hbar^3 - 8\,T^{24}\,\gamma\,\hbar^3 - T^{25}\,\gamma\,\hbar^3 \right) X_{nn[4]}^2\,Y_{nn[4]}^2 \right) / \\
 & \left(4 - 60\,T + 460\,T^2 - 2400\,T^3 + 9600\,T^4 - 31\,412\,T^5 + 87\,440\,T^6 - 212\,320\,T^7 + \right. \\
 & \quad 457\,360\,T^8 - 884\,420\,T^9 + 1\,548\,360\,T^{10} - 2\,468\,880\,T^{11} + 3\,600\,260\,T^{12} - 4\,814\,240\,T^{13} + \\
 & \quad 5\,911\,340\,T^{14} - 6\,666\,584\,T^{15} + 6\,899\,100\,T^{16} - 6\,538\,420\,T^{17} + 5\,656\,020\,T^{18} - \\
 & \quad 4\,444\,600\,T^{19} + 3\,152\,228\,T^{20} - 2\,000\,360\,T^{21} + 1\,122\,820\,T^{22} - 549\,120\,T^{23} + \\
 & \quad \left. 229\,500\,T^{24} - 79\,996\,T^{25} + 22\,540\,T^{26} - 4920\,T^{27} + 780\,T^{28} - 80\,T^{29} + 4\,T^{30} \right) + \\
 & \left(T^3 \left(2\,T\,a_\theta\,\eta_{nn[4]}\,\xi_{nn[0]} + \frac{\gamma\,\hbar\,x_\theta\,y_\theta\,\eta_{nn[4]}\,\xi_{nn[0]}}{\mathcal{A}_{nn[0]}\,\mathcal{A}_{nn[4]}} + \frac{(\gamma - 3\,T\,\gamma)\,y_\theta\,\eta_{nn[4]}^2\,\xi_{nn[0]}}{2\,\mathcal{A}_{nn[0]}} + \right. \right. \\
 & \quad \left. \left. \frac{(\gamma - 3\,T\,\gamma)\,x_\theta\,\eta_{nn[4]}\,\xi_{nn[0]}^2}{2\,\mathcal{A}_{nn[4]}} + \frac{(\gamma - 4\,T\,\gamma + 3\,T^2\,\gamma)\,\eta_{nn[4]}^2\,\xi_{nn[0]}^2}{4\,\hbar} \right) \right) / \\
 & \left. \left. \left(1 - 3\,T + 5\,T^2 - 6\,T^3 + 7\,T^4 - 4\,T^5 + T^6 \right) \right) \right) + \mathbf{0}[\epsilon]^2 \};
 \end{aligned}$$

In[*]:= ξ_s

Out[*]:= $\{\beta_{nn[0]}, \tau_{nn[0]}, a_{nn[0]}, \beta_{nn[4]}, \tau_{nn[4]}, a_{nn[4]}\}$

In[*]:= L

Out[*]:= $a_\theta\,\alpha_{nn[0]} + a_\theta\,\alpha_{nn[4]} + t\,\tau_{nn[0]} + t\,\tau_{nn[4]}$

In[*]:= **Q**

$$\begin{aligned}
 \text{Out[*]} = & \left((\hbar - 4 T \hbar + 8 T^2 \hbar - 8 T^3 \hbar + 7 T^4 \hbar - 4 T^5 \hbar + T^6 \hbar) x_{14} y_{14} \right) / (T - 3 T^2 + 5 T^3 - 6 T^4 + 7 T^5 - 4 T^6 + T^7) + \\
 & \frac{(\hbar - T^2 \hbar + T^3 \hbar) x_{nn[0]} y_{14}}{1 - 3 T + 5 T^2 - 6 T^3 + 7 T^4 - 4 T^5 + T^6} + \frac{(-\hbar + T \hbar - 2 T^2 \hbar + T^3 \hbar) x_{nn[4]} y_{14}}{1 - 3 T + 5 T^2 - 6 T^3 + 7 T^4 - 4 T^5 + T^6} + \\
 & \left((-\hbar + 4 T \hbar - 8 T^2 \hbar + 9 T^3 \hbar - 8 T^4 \hbar + 5 T^5 \hbar - T^6 \hbar) x_{14} y_{nn[0]} \right) / (T - 3 T^2 + 5 T^3 - 6 T^4 + 7 T^5 - 4 T^6 + T^7) + \\
 & \frac{(-\hbar + T \hbar - T^4 \hbar) x_{nn[0]} y_{nn[0]}}{1 - 3 T + 5 T^2 - 6 T^3 + 7 T^4 - 4 T^5 + T^6} + \\
 & \left((\hbar - 2 T \hbar + 3 T^2 \hbar - 3 T^3 \hbar + 2 T^4 \hbar - T^5 \hbar) x_{nn[4]} y_{nn[0]} \right) / (1 - 3 T + 5 T^2 - 6 T^3 + 7 T^4 - 4 T^5 + T^6) + \\
 & \frac{(-T^2 \hbar + T^3 \hbar - T^4 \hbar) x_{14} y_{nn[4]}}{1 - 3 T + 5 T^2 - 6 T^3 + 7 T^4 - 4 T^5 + T^6} + \frac{(-T \hbar + T^2 \hbar - T^3 \hbar + T^4 \hbar) x_{nn[0]} y_{nn[4]}}{1 - 3 T + 5 T^2 - 6 T^3 + 7 T^4 - 4 T^5 + T^6} + \\
 & \frac{(T \hbar - T^2 \hbar + 2 T^3 \hbar - 2 T^4 \hbar + T^5 \hbar) x_{nn[4]} y_{nn[4]}}{1 - 3 T + 5 T^2 - 6 T^3 + 7 T^4 - 4 T^5 + T^6} + y_0 \eta_{nn[0]} + \\
 & \frac{y_0 \eta_{nn[4]}}{A_{nn[0]}} + \frac{x_0 \xi_{nn[0]}}{A_{nn[4]}} + \frac{(1 - T) \eta_{nn[4]} \xi_{nn[0]}}{\hbar} + x_0 \xi_{nn[4]}
 \end{aligned}$$

In[*]:= **{LeafCount[P], LeafCount[CF[P]]}**

Out[*]:= **{20958, 21189}**

In[*]:= **P**

$$\begin{aligned}
 \text{Out[*]} = & \frac{T^3}{1 - 3 T + 5 T^2 - 6 T^3 + 7 T^4 - 4 T^5 + T^6} + \\
 & \left((-4 T^3 \gamma \hbar + 21 T^4 \gamma \hbar - 55 T^5 \gamma \hbar + 95 T^6 \gamma \hbar - 117 T^7 \gamma \hbar + 101 T^8 \gamma \hbar - 51 T^9 \gamma \hbar - \right. \\
 & \quad \left. 5 T^{10} \gamma \hbar + 40 T^{11} \gamma \hbar - 46 T^{12} \gamma \hbar + 31 T^{13} \gamma \hbar - 12 T^{14} \gamma \hbar + 2 T^{15} \gamma \hbar) / \right. \\
 & \quad \left(1 - 9 T + 42 T^2 - 135 T^3 + 339 T^4 - 705 T^5 + 1247 T^6 - 1902 T^7 + 2529 T^8 - 2943 T^9 + \right. \\
 & \quad \left. 2988 T^{10} - 2628 T^{11} + 1984 T^{12} - 1257 T^{13} + 642 T^{14} - 250 T^{15} + 69 T^{16} - 12 T^{17} + T^{18} \right) + \\
 & \frac{\left(\dots 1 \dots \right) a_{14}}{1 - 6 T + \dots 15 \dots + T^{12}} + \dots 80 \dots + \frac{\dots 1 \dots}{\dots 1 \dots} + \frac{T^3 \left(\dots 1 \dots \right)}{1 - 3 T + 5 T^2 - 6 T^3 + 7 T^4 - 4 T^5 + T^6} \epsilon + O[\epsilon]^2
 \end{aligned}$$

In[*]:= **zs = Table[ξ*, {ξ, ξs}]**

Out[*]:= **{b_{nn[0]}, t_{nn[0]}, α_{nn[0]}, b_{nn[4]}, t_{nn[4]}, α_{nn[4]}}**

In[*]:= **c = L /. Alternatives @@ (ξs ∪ zs) → 0**

Out[*]:= **0**

In[*]:= **ys = Table[∂_ξ (L /. Alternatives @@ zs → 0), {ξ, ξs}]**

Out[*]:= **{0, t, 0, 0, t, 0}**

In[*]:= **ηs = Table[∂_z (L /. Alternatives @@ ξs → 0), {z, zs}]**

Out[*]:= **{0, 0, a₀, 0, 0, a₀}**

In[*]:= **lt = Inverse@Table**[$K\delta_{z,\zeta} - \partial_{z,\zeta}L$, { ζ , ζS }, { z , zS }]

Out[*]:= {{ $\{1, 0, 0, 0, 0, 0\}$, $\{0, 1, 0, 0, 0, 0\}$, $\{0, 0, 1, 0, 0, 0\}$,
 $\{0, 0, 0, 1, 0, 0\}$, $\{0, 0, 0, 0, 1, 0\}$, $\{0, 0, 0, 0, 0, 1\}$ }

In[*]:= **Det**[lt]

Out[*]:= 1

In[*]:= **zrule = Thread**[zs \rightarrow lt. (zs + ys)]

Out[*]:= { $b_{nn[0]} \rightarrow b_{nn[0]}$, $t_{nn[0]} \rightarrow t + t_{nn[0]}$, $\alpha_{nn[0]} \rightarrow \alpha_{nn[0]}$, $b_{nn[4]} \rightarrow b_{nn[4]}$, $t_{nn[4]} \rightarrow t + t_{nn[4]}$, $\alpha_{nn[4]} \rightarrow \alpha_{nn[4]}$ }

In[*]:= **L2 = (L1 = c + $\eta S.zs$ /. zrule) /. Alternatives@@zs \rightarrow 0**

Out[*]:= 0

In[*]:= **L1**

Out[*]:= $a_0 \alpha_{nn[0]} + a_0 \alpha_{nn[4]}$

In[*]:= **Q2 = (Q1 = Q /. U21 /. zrule) /. Alternatives@@zs \rightarrow 0**

Out[*]:=
$$\left((\hbar - 4 e^{t\hbar} \hbar + 8 e^{2t\hbar} \hbar - 8 e^{3t\hbar} \hbar + 7 e^{4t\hbar} \hbar - 4 e^{5t\hbar} \hbar + e^{6t\hbar} \hbar) X_{14} Y_{14} \right) /$$

$$\left(e^{t\hbar} - 3 e^{2t\hbar} + 5 e^{3t\hbar} - 6 e^{4t\hbar} + 7 e^{5t\hbar} - 4 e^{6t\hbar} + e^{7t\hbar} \right) +$$

$$\left((\hbar - e^{2t\hbar} \hbar + e^{3t\hbar} \hbar) X_{nn[0]} Y_{14} \right) / \left(1 - 3 e^{t\hbar} + 5 e^{2t\hbar} - 6 e^{3t\hbar} + 7 e^{4t\hbar} - 4 e^{5t\hbar} + e^{6t\hbar} \right) +$$

$$\left((-\hbar + e^{t\hbar} \hbar - 2 e^{2t\hbar} \hbar + e^{3t\hbar} \hbar) X_{nn[4]} Y_{14} \right) / \left(1 - 3 e^{t\hbar} + 5 e^{2t\hbar} - 6 e^{3t\hbar} + 7 e^{4t\hbar} - 4 e^{5t\hbar} + e^{6t\hbar} \right) +$$

$$\left((-\hbar + 4 e^{t\hbar} \hbar - 8 e^{2t\hbar} \hbar + 9 e^{3t\hbar} \hbar - 8 e^{4t\hbar} \hbar + 5 e^{5t\hbar} \hbar - e^{6t\hbar} \hbar) X_{14} Y_{nn[0]} \right) /$$

$$\left(e^{t\hbar} - 3 e^{2t\hbar} + 5 e^{3t\hbar} - 6 e^{4t\hbar} + 7 e^{5t\hbar} - 4 e^{6t\hbar} + e^{7t\hbar} \right) +$$

$$\left((-\hbar + e^{t\hbar} \hbar - e^{4t\hbar} \hbar) X_{nn[0]} Y_{nn[0]} \right) / \left(1 - 3 e^{t\hbar} + 5 e^{2t\hbar} - 6 e^{3t\hbar} + 7 e^{4t\hbar} - 4 e^{5t\hbar} + e^{6t\hbar} \right) +$$

$$\left((\hbar - 2 e^{t\hbar} \hbar + 3 e^{2t\hbar} \hbar - 3 e^{3t\hbar} \hbar + 2 e^{4t\hbar} \hbar - e^{5t\hbar} \hbar) X_{nn[4]} Y_{nn[0]} \right) /$$

$$\left(1 - 3 e^{t\hbar} + 5 e^{2t\hbar} - 6 e^{3t\hbar} + 7 e^{4t\hbar} - 4 e^{5t\hbar} + e^{6t\hbar} \right) +$$

$$\left((-e^{2t\hbar} \hbar + e^{3t\hbar} \hbar - e^{4t\hbar} \hbar) X_{14} Y_{nn[4]} \right) / \left(1 - 3 e^{t\hbar} + 5 e^{2t\hbar} - 6 e^{3t\hbar} + 7 e^{4t\hbar} - 4 e^{5t\hbar} + e^{6t\hbar} \right) +$$

$$\left(-e^{t\hbar} \hbar + e^{2t\hbar} \hbar - e^{3t\hbar} \hbar + e^{4t\hbar} \hbar \right) X_{nn[0]} Y_{nn[4]} /$$

$$\left(1 - 3 e^{t\hbar} + 5 e^{2t\hbar} - 6 e^{3t\hbar} + 7 e^{4t\hbar} - 4 e^{5t\hbar} + e^{6t\hbar} \right) +$$

$$\left((e^{t\hbar} \hbar - e^{2t\hbar} \hbar + 2 e^{3t\hbar} \hbar - 2 e^{4t\hbar} \hbar + e^{5t\hbar} \hbar) X_{nn[4]} Y_{nn[4]} \right) /$$

$$\left(1 - 3 e^{t\hbar} + 5 e^{2t\hbar} - 6 e^{3t\hbar} + 7 e^{4t\hbar} - 4 e^{5t\hbar} + e^{6t\hbar} \right) +$$

$$Y_0 \eta_{nn[0]} + Y_0 \eta_{nn[4]} + X_0 \xi_{nn[0]} + \frac{(1 - e^{t\hbar}) \eta_{nn[4]} \xi_{nn[0]}}{\hbar} + X_0 \xi_{nn[4]}$$

In[*]:= **(Q2 // . 12U) - (Q /. { $a_{nn[0|4]} \rightarrow a_0$, $\mathcal{A}_{nn[0|4]} \rightarrow 1$ })**

Out[*]:= 0

In[]:= Q

$$\begin{aligned}
 \text{Out[]} = & \left((\hbar - 4 T \hbar + 8 T^2 \hbar - 8 T^3 \hbar + 7 T^4 \hbar - 4 T^5 \hbar + T^6 \hbar) x_{14} y_{14} \right) / (T - 3 T^2 + 5 T^3 - 6 T^4 + 7 T^5 - 4 T^6 + T^7) + \\
 & \frac{(\hbar - T^2 \hbar + T^3 \hbar) x_{nn[0]} y_{14}}{1 - 3 T + 5 T^2 - 6 T^3 + 7 T^4 - 4 T^5 + T^6} + \frac{(-\hbar + T \hbar - 2 T^2 \hbar + T^3 \hbar) x_{nn[4]} y_{14}}{1 - 3 T + 5 T^2 - 6 T^3 + 7 T^4 - 4 T^5 + T^6} + \\
 & \frac{(-\hbar + 4 T \hbar - 8 T^2 \hbar + 9 T^3 \hbar - 8 T^4 \hbar + 5 T^5 \hbar - T^6 \hbar) x_{14} y_{nn[0]}}{(T - 3 T^2 + 5 T^3 - 6 T^4 + 7 T^5 - 4 T^6 + T^7) +} \\
 & \frac{(-\hbar + T \hbar - T^4 \hbar) x_{nn[0]} y_{nn[0]}}{1 - 3 T + 5 T^2 - 6 T^3 + 7 T^4 - 4 T^5 + T^6} + \\
 & \frac{((\hbar - 2 T \hbar + 3 T^2 \hbar - 3 T^3 \hbar + 2 T^4 \hbar - T^5 \hbar) x_{nn[4]} y_{nn[0]})}{(-T^2 \hbar + T^3 \hbar - T^4 \hbar) x_{14} y_{nn[4]}} / (1 - 3 T + 5 T^2 - 6 T^3 + 7 T^4 - 4 T^5 + T^6) + \\
 & \frac{(-T^2 \hbar + T^3 \hbar - T^4 \hbar) x_{14} y_{nn[4]}}{1 - 3 T + 5 T^2 - 6 T^3 + 7 T^4 - 4 T^5 + T^6} + \frac{(-T \hbar + T^2 \hbar - T^3 \hbar + T^4 \hbar) x_{nn[0]} y_{nn[4]}}{1 - 3 T + 5 T^2 - 6 T^3 + 7 T^4 - 4 T^5 + T^6} + \\
 & \frac{(T \hbar - T^2 \hbar + 2 T^3 \hbar - 2 T^4 \hbar + T^5 \hbar) x_{nn[4]} y_{nn[4]}}{1 - 3 T + 5 T^2 - 6 T^3 + 7 T^4 - 4 T^5 + T^6} + y_0 \eta_{nn[0]} + \\
 & \frac{y_0 \eta_{nn[4]}}{A_{nn[0]}} + \frac{x_0 \xi_{nn[0]}}{A_{nn[4]}} + \frac{(1 - T) \eta_{nn[4]} \xi_{nn[0]}}{\hbar} + x_0 \xi_{nn[4]}
 \end{aligned}$$

In[]:= Q1

$$\begin{aligned}
 \text{Out[]} = & \left((\hbar - 4 e^{t\hbar} \hbar + 8 e^{2t\hbar} \hbar - 8 e^{3t\hbar} \hbar + 7 e^{4t\hbar} \hbar - 4 e^{5t\hbar} \hbar + e^{6t\hbar} \hbar) x_{14} y_{14} \right) / \\
 & (e^{t\hbar} - 3 e^{2t\hbar} + 5 e^{3t\hbar} - 6 e^{4t\hbar} + 7 e^{5t\hbar} - 4 e^{6t\hbar} + e^{7t\hbar}) + \\
 & \left((\hbar - e^{2t\hbar} \hbar + e^{3t\hbar} \hbar) x_{nn[0]} y_{14} \right) / (1 - 3 e^{t\hbar} + 5 e^{2t\hbar} - 6 e^{3t\hbar} + 7 e^{4t\hbar} - 4 e^{5t\hbar} + e^{6t\hbar}) + \\
 & \left((-\hbar + e^{t\hbar} \hbar - 2 e^{2t\hbar} \hbar + e^{3t\hbar} \hbar) x_{nn[4]} y_{14} \right) / (1 - 3 e^{t\hbar} + 5 e^{2t\hbar} - 6 e^{3t\hbar} + 7 e^{4t\hbar} - 4 e^{5t\hbar} + e^{6t\hbar}) + \\
 & \left((-\hbar + 4 e^{t\hbar} \hbar - 8 e^{2t\hbar} \hbar + 9 e^{3t\hbar} \hbar - 8 e^{4t\hbar} \hbar + 5 e^{5t\hbar} \hbar - e^{6t\hbar} \hbar) x_{14} y_{nn[0]} \right) / \\
 & (e^{t\hbar} - 3 e^{2t\hbar} + 5 e^{3t\hbar} - 6 e^{4t\hbar} + 7 e^{5t\hbar} - 4 e^{6t\hbar} + e^{7t\hbar}) + \\
 & \left((-\hbar + e^{t\hbar} \hbar - e^{4t\hbar} \hbar) x_{nn[0]} y_{nn[0]} \right) / (1 - 3 e^{t\hbar} + 5 e^{2t\hbar} - 6 e^{3t\hbar} + 7 e^{4t\hbar} - 4 e^{5t\hbar} + e^{6t\hbar}) + \\
 & \left((\hbar - 2 e^{t\hbar} \hbar + 3 e^{2t\hbar} \hbar - 3 e^{3t\hbar} \hbar + 2 e^{4t\hbar} \hbar - e^{5t\hbar} \hbar) x_{nn[4]} y_{nn[0]} \right) / \\
 & (1 - 3 e^{t\hbar} + 5 e^{2t\hbar} - 6 e^{3t\hbar} + 7 e^{4t\hbar} - 4 e^{5t\hbar} + e^{6t\hbar}) + \\
 & \left((-e^{2t\hbar} \hbar + e^{3t\hbar} \hbar - e^{4t\hbar} \hbar) x_{14} y_{nn[4]} \right) / (1 - 3 e^{t\hbar} + 5 e^{2t\hbar} - 6 e^{3t\hbar} + 7 e^{4t\hbar} - 4 e^{5t\hbar} + e^{6t\hbar}) + \\
 & \left((-e^{t\hbar} \hbar + e^{2t\hbar} \hbar - e^{3t\hbar} \hbar + e^{4t\hbar} \hbar) x_{nn[0]} y_{nn[4]} \right) / \\
 & (1 - 3 e^{t\hbar} + 5 e^{2t\hbar} - 6 e^{3t\hbar} + 7 e^{4t\hbar} - 4 e^{5t\hbar} + e^{6t\hbar}) + \\
 & \left((e^{t\hbar} \hbar - e^{2t\hbar} \hbar + 2 e^{3t\hbar} \hbar - 2 e^{4t\hbar} \hbar + e^{5t\hbar} \hbar) x_{nn[4]} y_{nn[4]} \right) / \\
 & (1 - 3 e^{t\hbar} + 5 e^{2t\hbar} - 6 e^{3t\hbar} + 7 e^{4t\hbar} - 4 e^{5t\hbar} + e^{6t\hbar}) + y_0 \eta_{nn[0]} + \\
 & e^{-\gamma \alpha_{nn[0]}} y_0 \eta_{nn[4]} + e^{-\gamma \alpha_{nn[4]}} x_0 \xi_{nn[0]} + \frac{(1 - e^{t\hbar}) \eta_{nn[4]} \xi_{nn[0]}}{\hbar} + x_0 \xi_{nn[4]}
 \end{aligned}$$

In[]:= P / . U21 / . zrule

$$\begin{aligned}
 \text{Out[]} = & \frac{e^{3t\hbar}}{1 - 3 e^{t\hbar} + 5 e^{2t\hbar} - 6 e^{3t\hbar} + 7 e^{4t\hbar} - 4 e^{5t\hbar} + e^{6t\hbar}} + \\
 & \left((-4 e^{3t\hbar} \gamma \hbar + 21 e^{4t\hbar} \gamma \hbar - 55 e^{5t\hbar} \gamma \hbar + 95 e^{6t\hbar} \gamma \hbar - 117 e^{7t\hbar} \gamma \hbar + \dots 8 \dots + 31 e^{13t\hbar} \gamma \hbar - \right. \\
 & \left. 12 e^{14t\hbar} \gamma \hbar + 2 e^{15t\hbar} \gamma \hbar) / (1 - 9 e^{t\hbar} + 42 e^{2t\hbar} - 135 e^{3t\hbar} + 339 e^{4t\hbar} - \right. \\
 & \left. 705 e^{5t\hbar} + \dots 12 \dots + 642 e^{14t\hbar} - 250 e^{15t\hbar} + 69 e^{16t\hbar} - 12 e^{17t\hbar} + e^{18t\hbar}) + \right. \\
 & \left. \frac{(\dots 1 \dots) a_{14}}{\dots 18 \dots + e^{\dots 1 \dots}} + \dots 80 \dots + \frac{\dots 1 \dots}{\dots 1 \dots} + \frac{e^{3t\hbar} (\dots 1 \dots)}{1 - 3 e^{\dots 1 \dots} + \dots 6 \dots + e^{6t\hbar}} \right) \in + O[\epsilon]^2
 \end{aligned}$$

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In[]:= **Timing**[out = CF /@ (CF /@E[L2, Q2, Det[l1] e^{-L2-Q2} Zip_{CS}[e^{L1+Q1} (P /. U21 /. zrule)]]] /. 12U)]

Out[]:=

$$\left\{ 25.5313, E\left[0, \dots 1 \dots, \frac{T^3}{1-3T+5T^2-6T^3+7T^4-4T^5+T^6} + \left((-4T^3\gamma\hbar + 21T^4\gamma\hbar - 55T^5\gamma\hbar + 95T^6\gamma\hbar - 117T^7\gamma\hbar + 101T^8\gamma\hbar - 51T^9\gamma\hbar - 5T^{10}\gamma\hbar + 40T^{11}\gamma\hbar - 46T^{12}\gamma\hbar + 31T^{13}\gamma\hbar - 12T^{14}\gamma\hbar + 2T^{15}\gamma\hbar) / (1-9T+42T^2-135T^3+339T^4-705T^5+1247T^6-1902T^7+2529T^8-2943T^9+2988T^{10}-2628T^{11}+1984T^{12}-1257T^{13}+642T^{14}-250T^{15}+69T^{16}-12T^{17}+T^{18}) + \dots 102 \dots + \frac{(T^3\gamma-4T^4\gamma+3T^5\gamma)\dots 1 \dots \dots 1 \dots \dots 1 \dots}{4\hbar-12T\hbar+\dots 6 \dots +4T^6\hbar} \right) \epsilon + O[\epsilon]^2 \right\}$$

large output **show less** **show more** **show all** **set size limit...**

In[]:= **Timing**[tt1 = Det[l1] e^{-L2-Q2} Zip_{CS}[e^{L1+Q1} (P /. U21 /. zrule)]]

Out[]:=

$$\left\{ 0.265625, \frac{e^{3t\hbar}}{1-3e^{t\hbar}+5e^{2t\hbar}-6e^{3t\hbar}+7e^{4t\hbar}-4e^{5t\hbar}+e^{6t\hbar}} + e^{\dots 1 \dots} \left(\left(e^{\dots 1 \dots} + \dots 12 \dots + x_0 \xi^{\dots 1 \dots} (-4e^{3t\hbar}\gamma\hbar + \dots 17 \dots + 2e^{15t\hbar}\gamma\hbar) \right) / (1-9e^{t\hbar}+42e^{2t\hbar}-135e^{3t\hbar}+339e^{4t\hbar}-705e^{5t\hbar}+\dots 12 \dots + 642e^{14t\hbar}-250e^{15t\hbar}+69e^{16t\hbar}-12e^{17t\hbar}+e^{18t\hbar}) + \dots 70 \dots + \frac{\hbar(e^{\dots 1 \dots} \dots 2 \dots \xi^{\dots 1 \dots} + \dots 1 \dots)}{\gamma-3e^{t\hbar}\gamma+\dots 6 \dots +e^{6t\hbar}\gamma} \right) \right) \epsilon + O[\epsilon]^2 \right\}$$

large output **show less** **show more** **show all** **set size limit...**

In[]:= **Timing**[tt2 = CF [tt1]]

Out[]:=

$$\left\{ 13.4531, \frac{e^{3t\hbar}}{1-3e^{t\hbar}+5e^{2t\hbar}-6e^{3t\hbar}+7e^{4t\hbar}-4e^{5t\hbar}+e^{6t\hbar}} + \left((-16e^{3t\hbar}\gamma^2\hbar^2 + 180e^{4t\hbar}\gamma^2\hbar^2 - 1028e^{5t\hbar}\gamma^2\hbar^2 + \dots 3399 \dots + 3e^{29t\hbar}\gamma^2\eta_{nn[4]}^2 \xi_{nn[0]}^2) \epsilon \right) / (4\gamma\hbar - 60e^{t\hbar}\gamma\hbar + 460e^{2t\hbar}\gamma\hbar - 2400e^{3t\hbar}\gamma\hbar + \dots 36 \dots + 780e^{28t\hbar}\gamma\hbar - 80e^{29t\hbar}\gamma\hbar + 4e^{30t\hbar}\gamma\hbar) + O[\epsilon]^2 \right\}$$

large output **show less** **show more** **show all** **set size limit...**

In[]:= **Timing**[tt3 = tt2 /. 12U]

Out[]:=

$$\left\{ 0.078125, \frac{T^3}{1-3T+5T^2-6T^3+7T^4-4T^5+T^6} + \left((-16T^3\gamma^2\hbar^2 + 180T^4\gamma^2\hbar^2 - 1028T^5\gamma^2\hbar^2 + \dots 3396 \dots + 437T^{27}\gamma^2\eta_{nn[4]}^2 \xi_{nn[0]}^2 - 52T^{28}\gamma^2\eta_{nn[4]}^2 \xi_{nn[0]}^2 + 3T^{29}\gamma^2\eta_{nn[4]}^2 \xi_{nn[0]}^2) \epsilon \right) / (4\gamma\hbar - 60T\gamma\hbar + 460T^2\gamma\hbar - 2400T^3\gamma\hbar + 9600T^4\gamma\hbar - 31412T^5\gamma\hbar + \dots 27 \dots + 229500T^{24}\gamma\hbar - 79996T^{25}\gamma\hbar + 22540T^{26}\gamma\hbar - 4920T^{27}\gamma\hbar + 780T^{28}\gamma\hbar - 80T^{29}\gamma\hbar + 4T^{30}\gamma\hbar) + O[\epsilon]^2 \right\}$$

large output **show less** **show more** **show all** **set size limit...**

In[*]:= **Timing**[CF[tt3]]

Out[*]=
$$\left\{ 3.17188, \frac{T^3}{1-3T+5T^2-6T^3+7T^4-4T^5+T^6} + \left((-4T^3\gamma\hbar + 21T^4\gamma\hbar - 55T^5\gamma\hbar + 95T^6\gamma\hbar - 117T^7\gamma\hbar + 101T^8\gamma\hbar - 51T^9\gamma\hbar - 5T^{10}\gamma\hbar + 40T^{11}\gamma\hbar - 46T^{12}\gamma\hbar + 31T^{13}\gamma\hbar - 12T^{14}\gamma\hbar + 2T^{15}\gamma\hbar) / (1-9T+42T^2-135T^3+339T^4-705T^5+1247T^6-1902T^7+2529T^8-2943T^9+2988T^{10}-2628T^{11}+1984T^{12}-1257T^{13}+642T^{14}-250T^{15}+69T^{16}-12T^{17}+T^{18}) + \dots 102 \dots + \frac{(T^3\gamma-4T^4\gamma+3T^5\gamma)\eta^2 \xi^2}{4\hbar-12T\hbar+\dots 6\dots+4T^6\hbar} \right) \in + O[\epsilon]^2 \right\}$$

large output **show less** **show more** **show all** **set size limit...**

In[*]:= **CF**[(P /. {a_{nn}[0] → a₀ - γ y₀ η_{nn}[4], a_{nn}[4] → a₀ - γ x₀ ξ_{nn}[0], A_{nn}[0|4] → 1}) - out[[3]]]

Out[*]=
$$\left(\frac{T^3 \text{zubi} \gamma \hbar y_0 \eta_{nn}[4]}{1-3T+5T^2-6T^3+7T^4-4T^5+T^6} - \frac{T^3 \gamma \hbar x_0 \xi_{nn}[0]}{1-3T+5T^2-6T^3+7T^4-4T^5+T^6} \right) \in + O[\epsilon]^2$$

In[*]:= **L**

Out[*]= a₀ α_{nn}[0] + a₀ α_{nn}[4] + t τ_{nn}[0] + t τ_{nn}[4]

In[*]:= **ξs**

Out[*]= {β_{nn}[0], τ_{nn}[0], a_{nn}[0], β_{nn}[4], τ_{nn}[4], a_{nn}[4]}

In[*]:= **Q**

Out[*]=
$$\left(\frac{(\hbar - 4T\hbar + 8T^2\hbar - 8T^3\hbar + 7T^4\hbar - 4T^5\hbar + T^6\hbar) x_{14} y_{14}}{1-3T+5T^2-6T^3+7T^4-4T^5+T^6} + \frac{(-\hbar + T\hbar - 2T^2\hbar + T^3\hbar) x_{nn}[4] y_{14}}{1-3T+5T^2-6T^3+7T^4-4T^5+T^6} + \frac{((-\hbar + 4T\hbar - 8T^2\hbar + 9T^3\hbar - 8T^4\hbar + 5T^5\hbar - T^6\hbar) x_{14} y_{nn}[0])}{1-3T+5T^2-6T^3+7T^4-4T^5+T^6} + \frac{(-\hbar + T\hbar - T^4\hbar) x_{nn}[0] y_{nn}[0]}{1-3T+5T^2-6T^3+7T^4-4T^5+T^6} + \frac{((\hbar - 2T\hbar + 3T^2\hbar - 3T^3\hbar + 2T^4\hbar - T^5\hbar) x_{nn}[4] y_{nn}[0])}{1-3T+5T^2-6T^3+7T^4-4T^5+T^6} + \frac{(-T^2\hbar + T^3\hbar - T^4\hbar) x_{14} y_{nn}[4]}{1-3T+5T^2-6T^3+7T^4-4T^5+T^6} + \frac{(-T\hbar + T^2\hbar - T^3\hbar + T^4\hbar) x_{nn}[0] y_{nn}[4]}{1-3T+5T^2-6T^3+7T^4-4T^5+T^6} + \frac{(T\hbar - T^2\hbar + 2T^3\hbar - 2T^4\hbar + T^5\hbar) x_{nn}[4] y_{nn}[4]}{1-3T+5T^2-6T^3+7T^4-4T^5+T^6} + y_0 \eta_{nn}[0] + \frac{y_0 \eta_{nn}[4]}{A_{nn}[0]} + \frac{x_0 \xi_{nn}[0]}{A_{nn}[4]} + \frac{(1-T) \eta_{nn}[4] \xi_{nn}[0]}{\hbar} + x_0 \xi_{nn}[4] \right)$$

In[*]:= **Q1**

$$\begin{aligned} \text{Out[*]} = & \left((\hbar - 4 e^{t\hbar} \hbar + 8 e^{2t\hbar} \hbar - 8 e^{3t\hbar} \hbar + 7 e^{4t\hbar} \hbar - 4 e^{5t\hbar} \hbar + e^{6t\hbar} \hbar) x_{14} y_{14} \right) / \\ & (e^{t\hbar} - 3 e^{2t\hbar} + 5 e^{3t\hbar} - 6 e^{4t\hbar} + 7 e^{5t\hbar} - 4 e^{6t\hbar} + e^{7t\hbar}) + \\ & \left((\hbar - e^{2t\hbar} \hbar + e^{3t\hbar} \hbar) x_{nn[0]} y_{14} \right) / (1 - 3 e^{t\hbar} + 5 e^{2t\hbar} - 6 e^{3t\hbar} + 7 e^{4t\hbar} - 4 e^{5t\hbar} + e^{6t\hbar}) + \\ & \left((-\hbar + e^{t\hbar} \hbar - 2 e^{2t\hbar} \hbar + e^{3t\hbar} \hbar) x_{nn[4]} y_{14} \right) / (1 - 3 e^{t\hbar} + 5 e^{2t\hbar} - 6 e^{3t\hbar} + 7 e^{4t\hbar} - 4 e^{5t\hbar} + e^{6t\hbar}) + \\ & \left((-\hbar + 4 e^{t\hbar} \hbar - 8 e^{2t\hbar} \hbar + 9 e^{3t\hbar} \hbar - 8 e^{4t\hbar} \hbar + 5 e^{5t\hbar} \hbar - e^{6t\hbar} \hbar) x_{14} y_{nn[0]} \right) / \\ & (e^{t\hbar} - 3 e^{2t\hbar} + 5 e^{3t\hbar} - 6 e^{4t\hbar} + 7 e^{5t\hbar} - 4 e^{6t\hbar} + e^{7t\hbar}) + \\ & \left((-\hbar + e^{t\hbar} \hbar - e^{4t\hbar} \hbar) x_{nn[0]} y_{nn[0]} \right) / (1 - 3 e^{t\hbar} + 5 e^{2t\hbar} - 6 e^{3t\hbar} + 7 e^{4t\hbar} - 4 e^{5t\hbar} + e^{6t\hbar}) + \\ & \left((\hbar - 2 e^{t\hbar} \hbar + 3 e^{2t\hbar} \hbar - 3 e^{3t\hbar} \hbar + 2 e^{4t\hbar} \hbar - e^{5t\hbar} \hbar) x_{nn[4]} y_{nn[0]} \right) / \\ & (1 - 3 e^{t\hbar} + 5 e^{2t\hbar} - 6 e^{3t\hbar} + 7 e^{4t\hbar} - 4 e^{5t\hbar} + e^{6t\hbar}) + \\ & \left((-e^{2t\hbar} \hbar + e^{3t\hbar} \hbar - e^{4t\hbar} \hbar) x_{14} y_{nn[4]} \right) / (1 - 3 e^{t\hbar} + 5 e^{2t\hbar} - 6 e^{3t\hbar} + 7 e^{4t\hbar} - 4 e^{5t\hbar} + e^{6t\hbar}) + \\ & \left((-e^{t\hbar} \hbar + e^{2t\hbar} \hbar - e^{3t\hbar} \hbar + e^{4t\hbar} \hbar) x_{nn[0]} y_{nn[4]} \right) / \\ & (1 - 3 e^{t\hbar} + 5 e^{2t\hbar} - 6 e^{3t\hbar} + 7 e^{4t\hbar} - 4 e^{5t\hbar} + e^{6t\hbar}) + \\ & \left((e^{t\hbar} \hbar - e^{2t\hbar} \hbar + 2 e^{3t\hbar} \hbar - 2 e^{4t\hbar} \hbar + e^{5t\hbar} \hbar) x_{nn[4]} y_{nn[4]} \right) / \\ & (1 - 3 e^{t\hbar} + 5 e^{2t\hbar} - 6 e^{3t\hbar} + 7 e^{4t\hbar} - 4 e^{5t\hbar} + e^{6t\hbar}) + y_0 \eta_{nn[0]} + \\ & e^{-\gamma \alpha_{nn[0]}} y_0 \eta_{nn[4]} + e^{-\gamma \alpha_{nn[4]}} x_0 \xi_{nn[0]} + \frac{(1 - e^{t\hbar}) \eta_{nn[4]} \xi_{nn[0]}}{\hbar} + x_0 \xi_{nn[4]} \end{aligned}$$

In[*]:= **L1**

$$\text{Out[*]} = a_0 \alpha_{nn[0]} + a_0 \alpha_{nn[4]}$$

In[*]:= **P / . \epsilon \to \theta**

$$\text{Out[*]} = \frac{T^3}{1 - 3T + 5T^2 - 6T^3 + 7T^4 - 4T^5 + T^6}$$

In[*]:= **ttt1 = Simplify@**

Coefficient[Normal[(P /. {a_{nn[0]} → a₀ - \gamma y₀ \eta_{nn[4]}, a_{nn[4]} → a₀ - \gamma x₀ \xi_{nn[0]}, \alpha_{nn[0|4]} → 1})],
\epsilon y₀ \eta_{nn[4]}] / . {(\eta | \xi | a | x | y) → 0}

$$\text{Out[*]} = \frac{T^3 (1 - T - T^2 + 2T^3 - T^4 + 2T^5 - T^6) \gamma \hbar}{(1 - 3T + 5T^2 - 6T^3 + 7T^4 - 4T^5 + T^6)^2}$$

In[*]:= **ttt2 = Simplify@Coefficient[Normal[out[[3]]], \epsilon y₀ \eta_{nn[4]}] / . {(\eta | \xi | a | x | y) → 0}**

$$\text{Out[*]} = - \left((T^3 (-1 + T + \text{zubi} - 3T \text{zubi} + T^6 (1 + \text{zubi}) - 2T^5 (1 + 2 \text{zubi}) - 2T^3 (1 + 3 \text{zubi}) + \right. \\ \left. T^2 (1 + 5 \text{zubi}) + T^4 (1 + 7 \text{zubi})) \gamma \hbar \right) / (1 - 3T + 5T^2 - 6T^3 + 7T^4 - 4T^5 + T^6)^2$$

In[*]:= **Simplify[ttt1 - ttt2]**

$$\text{Out[*]} = \frac{T^3 \text{zubi} \gamma \hbar}{1 - 3T + 5T^2 - 6T^3 + 7T^4 - 4T^5 + T^6}$$