Diagrams and algebraic expressions at order 3 in BMBPT

RDL, JR, PA, MD, AT, TD, JPE

August 1, 2018

Valid diagrams: 396
2N valid diagrams: 59
2N canonical diagrams for the energy: 10
2N canonical diagrams for a generic operator only: 6
2N non-canonical diagrams: 43
3N valid diagrams: 167
3N canonical diagrams for the energy: 167
3N canonical diagrams for a generic operator only: 40
3N non-canonical diagrams: 130

Contents

1 Time-structure diagrams **1**
1.1 Tree diagrams . . . 1
1.2 Non-tree diagrams . . . 4

2 Two-body diagrams **5**
2.1 Two-body energy canonical diagrams . . . 5
2.2 Two-body canonical diagrams for a generic operator only . . . 12
2.3 Two-body non-canonical diagrams . . . 16

3 Three-body diagrams **45**
3.1 Three-body energy canonical diagrams 45
3.2 Three-body canonical diagrams for a generic operator only 157
3.3 Three-body non-canonical diagrams 184

1 Time-structure diagrams

1.1 Tree diagrams

Time-structure diagram T1:

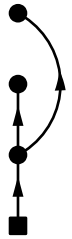
$$\mathrm{T1} = \frac{1}{(a_1 + a_2 + a_3)(a_2 + a_3)a_3} \tag{1}$$

Resummation power: 1

Number of related Feynman diagrams: 267.

Related Feynman diagrams: 396, 395, 394, 393, 392, 390, 389, 388, 387, 386, 384, 383, 381, 380, 378, 377, 376, 374, 373, 371, 365, 364, 361, 357, 354, 353, 352, 350, 348, 346, 343, 342, 340, 339, 335, 334, 331, 326, 324, 323, 322, 319, 317, 316, 315, 312, 311, 309, 307, 305, 304, 301, 300, 298, 296, 294, 293, 290, 289, 288, 286, 284, 282, 280, 279, 277, 273, 272, 270, 269, 268, 266, 265, 264, 263, 262, 261, 260, 259, 258, 257, 256, 255, 253, 252, 251, 250, 249, 248, 247, 246, 245, 244, 243, 242, 240, 239, 237, 236, 235, 234, 233, 232, 230, 229, 228, 227, 226, 225, 224, 223, 222, 221, 220, 219, 218, 217, 216, 215, 214, 213, 210, 209, 208, 207, 206, 205, 204, 203, 202, 201, 200, 199, 198, 197, 196, 195, 194, 193, 192, 191, 190, 189, 188, 187, 184, 183, 182, 178, 177, 175, 174, 173, 172, 170, 169, 168, 167, 165, 164, 162, 161, 160, 159, 158, 157, 156, 155, 154, 153, 152, 150, 149, 148, 147, 146, 145, 144, 143, 140, 139, 137, 136, 135, 133, 132, 131, 127, 126, 124, 122, 121, 120, 119, 118, 117, 114, 112, 110, 109, 108, 106, 105, 104, 103, 102, 100, 99, 98, 96, 95, 94, 92, 91, 90, 87, 85, 84, 83, 79, 77, 76, 74, 73, 71, 68, 67, 65, 64, 63, 61, 60, 59, 58, 57, 56, 53, 52, 51, 49, 45, 42, 41, 37, 36, 34, 33, 32, 30, 28, 26, 24, 22, 18, 17, 16, 15, 14, 13, 12, 11, 10, 8, 7, 5, 4, 3.

Time-structure diagram T2:



$$\mathrm{T2} = \frac{1}{(a_1 + a_2 + a_3)a_2 a_3} \tag{2}$$

Resummation power: 2

Number of related Feynman diagrams: 53.

Related Feynman diagrams: 391, 382, 379, 375, 363, 362, 360, 359, 355, 351, 332, 327, 320, 318, 314, 313, 303, 285, 283, 278, 274, 271, 238, 231, 176, 163, 128, 125, 123, 113, 107, 101, 97, 88, 86, 81, 78, 75, 72, 70, 69, 66, 62, 55, 46, 38, 35, 25, 23, 21, 19, 2, 1.

Time-structure diagram T3:

$$\mathrm{T3} = \frac{1}{a_1(a_2 + a_3)a_3} \tag{3}$$

Resummation power: 3

Number of related Feynman diagrams: 22.

Related Feynman diagrams: 372, 370, 369, 368, 367, 358, 356, 338, 336, 330, 328, 297, 295, 292, 151, 115, 111, 80, 54, 47, 44, 29.

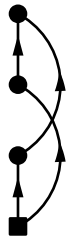
Time-structure diagram T4:

$$\mathrm{T4} = \frac{1}{a_1 a_2 a_3} \tag{4}$$

Resummation power: 6
Number of related Feynman diagrams: 1.
Related Feynman diagrams: 366.

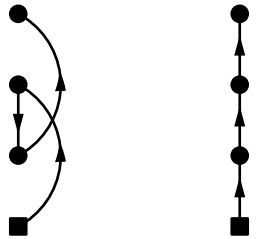
1.2 Non-tree diagrams

Time-structure diagram T5:



$$\mathrm{T5} = \frac{1}{(a_1 + a_3)(a_2 + a_1 + a_3)a_3} + \frac{1}{(a_1 + a_2 + a_3)(a_2 + a_3)a_3} \tag{5}$$

Equivalent tree diagrams: T1, T1.



Number of related Feynman diagrams: 53.

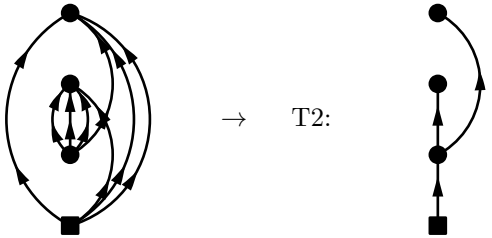
Related Feynman diagrams: 6, 9, 20, 27, 31, 39, 40, 43, 48, 50, 82, 89, 93, 116, 129, 130, 134, 138, 141, 142, 166, 171, 179, 180, 181, 185, 186, 211, 212, 241, 254, 267, 275, 276, 281, 287, 291, 299, 302, 306, 308, 310, 321, 325, 329, 333, 337, 341, 344, 345, 347, 349, 385.

2 Two-body diagrams

2.1 Two-body energy canonical diagrams

Diagram 1:

$$\begin{aligned}\mathrm{PO3.1} &= \lim_{\tau\to\infty} \frac{-(-1)^3}{(3!)^2} \sum_{k_i} O^{40}_{k_1k_2k_3k_4}\Omega^{40}_{k_5k_6k_7k_8}\Omega^{04}_{k_5k_6k_7k_1}\Omega^{04}_{k_8k_2k_3k_4} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)e^{-\tau_1\epsilon^{k_5k_6k_7k_8}}\, e^{-\tau_2\epsilon_{k_1k_5k_6k_7}}\, e^{-\tau_3\epsilon_{k_2k_3k_4k_8}} \\ &= \frac{-(-1)^3}{(3!)^2} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4}\Omega^{40}_{k_5k_6k_7k_8}\Omega^{04}_{k_5k_6k_7k_1}\Omega^{04}_{k_8k_2k_3k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_1k_5k_6k_7}\ \epsilon_{k_2k_3k_4k_8}} \end{aligned} \tag{6}$$

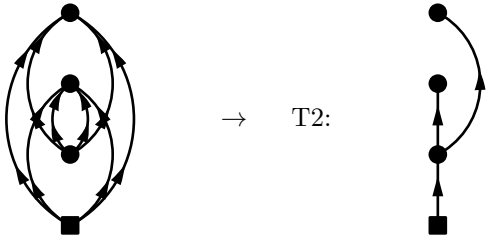


$$\mathrm{T2} = \frac{1}{(a_1+a_2+a_3)a_2a_3} \tag{7}$$

$$\begin{aligned} a_1 &= \epsilon^{k_5k_6k_7k_8} \\ a_2 &= \epsilon_{k_1k_5k_6k_7} \\ a_3 &= \epsilon_{k_2k_3k_4k_8} \end{aligned}$$

Diagram 2:

$$\begin{aligned}\mathrm{PO3.2} &= \lim_{\tau\to\infty}\frac{(-1)^3}{2(2!)^4}\sum_{k_i}O^{40}_{k_1k_2k_3k_4}\Omega^{40}_{k_5k_6k_7k_8}\Omega^{04}_{k_5k_6k_1k_2}\Omega^{04}_{k_7k_8k_3k_4}\int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)e^{-\tau_1\epsilon^{k_5k_6k_7k_8}}e^{-\tau_2\epsilon_{k_1k_2k_5k_6}}e^{-\tau_3\epsilon_{k_3k_4k_7k_8}}\\ &= \frac{(-1)^3}{2(2!)^4}\sum_{k_i}\frac{O^{40}_{k_1k_2k_3k_4}\Omega^{40}_{k_5k_6k_7k_8}\Omega^{04}_{k_5k_6k_1k_2}\Omega^{04}_{k_7k_8k_3k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_1k_2k_5k_6}\ \epsilon_{k_3k_4k_7k_8}}\end{aligned} \tag{8}$$

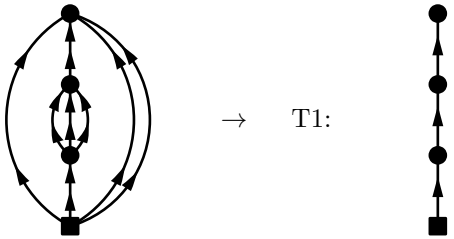


$$\mathrm{T2} = \frac{1}{(a_1+a_2+a_3)a_2a_3} \tag{9}$$

$$\begin{aligned}a_1 &= \epsilon^{k_5k_6k_7k_8}\\ a_2 &= \epsilon_{k_1k_2k_5k_6}\\ a_3 &= \epsilon_{k_3k_4k_7k_8}\end{aligned}$$

Diagram 3:

$$\begin{aligned}\mathrm{PO3.3} &= \lim_{\tau\to\infty}\frac{(-1)^3}{(3!)^2}\sum_{k_i}O^{40}_{k_1k_2k_3k_4}\Omega^{31}_{k_5k_6k_7k_1}\Omega^{13}_{k_8k_5k_6k_7}\Omega^{04}_{k_8k_2k_3k_4}\int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2)e^{-\tau_1\epsilon^{k_5k_6k_7}_{k_1}}e^{-\tau_2\epsilon^{k_8}_{k_5k_6k_7}}e^{-\tau_3\epsilon_{k_2k_3k_4k_8}}\\ &= \frac{(-1)^3}{(3!)^2}\sum_{k_i}\frac{O^{40}_{k_1k_2k_3k_4}\Omega^{31}_{k_5k_6k_7k_1}\Omega^{13}_{k_8k_5k_6k_7}\Omega^{04}_{k_8k_2k_3k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_5k_6k_7k_2k_3k_4}\ \epsilon_{k_2k_3k_4k_8}}\end{aligned} \tag{10}$$

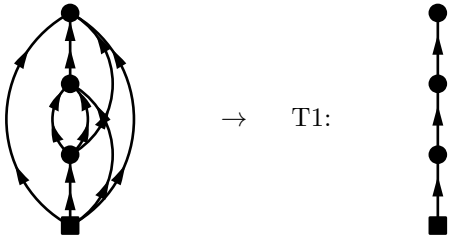


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{11}$$

$$\begin{aligned} a_1 &= \epsilon^{k_5k_6k_7}_{k_1} \\ a_2 &= \epsilon^{k_8}_{k_5k_6k_7} \\ a_3 &= \epsilon_{k_2k_3k_4k_8} \end{aligned}$$

Diagram 4:

$$\begin{aligned} \text{PO3.4} &= \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)^2} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{31}_{k_5k_6k_7k_1} \Omega^{13}_{k_8k_5k_6k_2} \Omega^{04}_{k_8k_7k_3k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5k_6k_7}_{k_1}} e^{-\tau_2 \epsilon^{k_8}_{k_2k_5k_6}} e^{-\tau_3 \epsilon_{k_3k_4k_7k_8}} \\ &= \frac{-(-1)^3}{(2!)^2} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{31}_{k_5k_6k_7k_1} \Omega^{13}_{k_8k_5k_6k_2} \Omega^{04}_{k_8k_7k_3k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_2k_5k_6k_3k_4k_7}\ \epsilon_{k_3k_4k_7k_8}} \end{aligned} \tag{12}$$

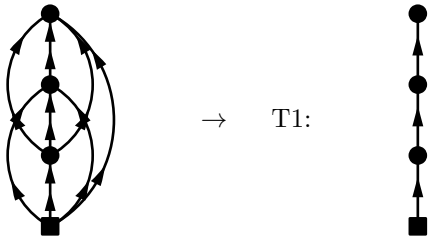


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{13}$$

$$a_1 = \epsilon^{k_5 k_6 k_7}_{k_1}$$
$$a_2 = \epsilon^{k_8}_{k_2 k_5 k_6}$$
$$a_3 = \epsilon_{k_3 k_4 k_7 k_8}$$

Diagram 5:

$$\text{PO3.5} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{31}_{k_5 k_6 k_7 k_1} \Omega^{13}_{k_8 k_5 k_2 k_3} \Omega^{04}_{k_8 k_6 k_7 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5 k_6 k_7}_{k_1}} e^{-\tau_2 \epsilon^{k_8}_{k_2 k_3 k_5}} e^{-\tau_3 \epsilon_{k_4 k_6 k_7 k_8}}$$
$$= \frac{(-1)^3}{(2!)^2} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{31}_{k_5 k_6 k_7 k_1} \Omega^{13}_{k_8 k_5 k_2 k_3} \Omega^{04}_{k_8 k_6 k_7 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_2 k_3 k_5 k_4 k_6 k_7}\ \epsilon_{k_4 k_6 k_7 k_8}} \tag{14}$$

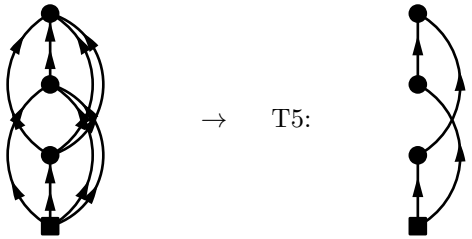


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{15}$$

$$a_1 = \epsilon^{k_5 k_6 k_7}_{k_1}$$
$$a_2 = \epsilon^{k_8}_{k_2 k_3 k_5}$$
$$a_3 = \epsilon_{k_4 k_6 k_7 k_8}$$

Diagram 6:

$$\text{PO3.6} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(3!)^2} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{31}_{k_5 k_6 k_7 k_1} \Omega^{13}_{k_8 k_2 k_3 k_4} \Omega^{04}_{k_8 k_5 k_6 k_7} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5 k_6 k_7}_{k_1}} e^{-\tau_2 \epsilon^{k_8}_{k_2 k_3 k_4}} e^{-\tau_3 \epsilon_{k_5 k_6 k_7 k_8}}$$
$$= \frac{-(-1)^3}{(3!)^2} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{31}_{k_5 k_6 k_7 k_1} \Omega^{13}_{k_8 k_2 k_3 k_4} \Omega^{04}_{k_8 k_5 k_6 k_7} \left[\frac{1}{\epsilon_{k_1 k_8}\ \epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_5 k_6 k_7 k_8}} + \frac{1}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_2 k_3 k_4 k_5 k_6 k_7}\ \epsilon_{k_5 k_6 k_7 k_8}} \right] \tag{16}$$

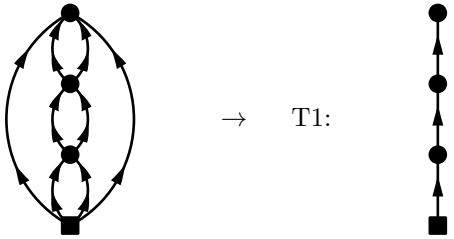


$$\text{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{17}$$

$$\begin{aligned} a_1 &= \epsilon^{k_5k_6k_7}_{k_1} \\ a_2 &= \epsilon^{k_8}_{k_2k_3k_4} \\ a_3 &= \epsilon_{k_5k_6k_7k_8} \end{aligned}$$

Diagram 7:

$$\begin{aligned} \text{PO3.7} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^4} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{22}_{k_5k_6k_1k_2} \Omega^{22}_{k_7k_8k_5k_6} \Omega^{04}_{k_7k_8k_3k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5k_6}_{k_1k_2}} e^{-\tau_2 \epsilon^{k_7k_8}_{k_5k_6}} e^{-\tau_3 \epsilon_{k_3k_4k_7k_8}} \\ &= \frac{(-1)^3}{(2!)^4} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{22}_{k_5k_6k_1k_2} \Omega^{22}_{k_7k_8k_5k_6} \Omega^{04}_{k_7k_8k_3k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_5k_6k_3k_4}\ \epsilon_{k_3k_4k_7k_8}} \end{aligned} \tag{18}$$

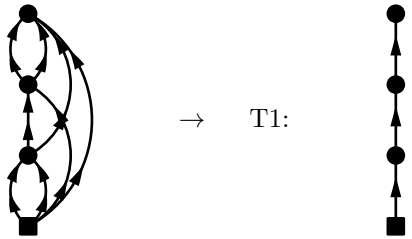


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{19}$$

$$
\begin{aligned}
a_1 &= \epsilon^{k_5 k_6}_{k_1 k_2} \\
a_2 &= \epsilon^{k_7 k_8}_{k_5 k_6} \\
a_3 &= \epsilon_{k_3 k_4 k_7 k_8}
\end{aligned}
$$

Diagram 8:

$$
\begin{aligned}
\text{PO3.8} &= \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)^2} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{22}_{k_5 k_6 k_1 k_2} \Omega^{22}_{k_7 k_8 k_5 k_3} \Omega^{04}_{k_7 k_8 k_6 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5 k_6}_{k_1 k_2}} e^{-\tau_2 \epsilon^{k_7 k_8}_{k_3 k_5}} e^{-\tau_3 \epsilon_{k_4 k_6 k_7 k_8}} \\
&= \frac{-(-1)^3}{(2!)^2} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{22}_{k_5 k_6 k_1 k_2} \Omega^{22}_{k_7 k_8 k_5 k_3} \Omega^{04}_{k_7 k_8 k_6 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_3 k_5 k_4 k_6}\ \epsilon_{k_4 k_6 k_7 k_8}}
\end{aligned} \tag{20}
$$

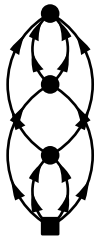


$$
\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{21}
$$

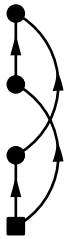
$$
\begin{aligned}
a_1 &= \epsilon^{k_5 k_6}_{k_1 k_2} \\
a_2 &= \epsilon^{k_7 k_8}_{k_3 k_5} \\
a_3 &= \epsilon_{k_4 k_6 k_7 k_8}
\end{aligned}
$$

Diagram 9:

$$
\begin{aligned}
\text{PO3.9} &= \lim_{\tau\to\infty} \frac{(-1)^3}{2(2!)^4} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{22}_{k_5 k_6 k_1 k_2} \Omega^{22}_{k_7 k_8 k_3 k_4} \Omega^{04}_{k_7 k_8 k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5 k_6}_{k_1 k_2}} e^{-\tau_2 \epsilon^{k_7 k_8}_{k_3 k_4}} e^{-\tau_3 \epsilon_{k_5 k_6 k_7 k_8}} \\
&= \frac{(-1)^3}{2(2!)^4} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{22}_{k_5 k_6 k_1 k_2} \Omega^{22}_{k_7 k_8 k_3 k_4} \Omega^{04}_{k_7 k_8 k_5 k_6} \left[\frac{1}{\epsilon_{k_1 k_2 k_7 k_8}\ \epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_5 k_6 k_7 k_8}} + \frac{1}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_3 k_4 k_5 k_6}\ \epsilon_{k_5 k_6 k_7 k_8}} \right]
\end{aligned} \tag{22}
$$



$\rightarrow$ T5:

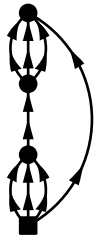


$$\mathrm{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{23}$$

$$\begin{aligned} a_1 &= \epsilon^{k_5 k_6}_{k_1 k_2} \\ a_2 &= \epsilon^{k_7 k_8}_{k_3 k_4} \\ a_3 &= \epsilon_{k_5 k_6 k_7 k_8} \end{aligned}$$

Diagram 10:

$$\begin{aligned} \mathrm{PO3.10} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(3!)^2} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{13}_{k_5 k_1 k_2 k_3} \Omega^{31}_{k_6 k_7 k_8 k_5} \Omega^{04}_{k_6 k_7 k_8 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5}_{k_1 k_2 k_3}} e^{-\tau_2 \epsilon^{k_6 k_7 k_8}_{k_5}} e^{-\tau_3 \epsilon_{k_4 k_6 k_7 k_8}} \\ &= \frac{(-1)^3}{(3!)^2} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{13}_{k_5 k_1 k_2 k_3} \Omega^{31}_{k_6 k_7 k_8 k_5} \Omega^{04}_{k_6 k_7 k_8 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_5 k_4}\ \epsilon_{k_4 k_6 k_7 k_8}} \end{aligned} \tag{24}$$



$\rightarrow$ T1:

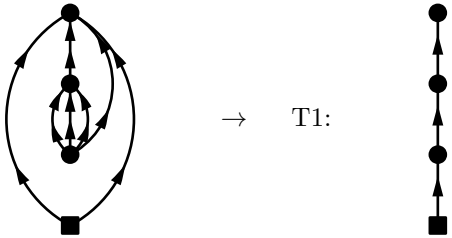
$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{25}$$

$$a_1 = \epsilon^{k_5}_{k_1 k_2 k_3}$$
$$a_2 = \epsilon^{k_6 k_7 k_8}_{k_5}$$
$$a_3 = \epsilon_{k_4 k_6 k_7 k_8}$$

2.2 Two-body canonical diagrams for a generic operator only

Diagram 11:

$$\text{PO3.11} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{40}_{k_3 k_4 k_5 k_6} \Omega^{13}_{k_7 k_3 k_4 k_5} \Omega^{04}_{k_7 k_6 k_1 k_2} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_3 k_4 k_5 k_6}} e^{-\tau_2 \epsilon^{k_7}_{k_3 k_4 k_5}} e^{-\tau_3 \epsilon_{k_1 k_2 k_6 k_7}}$$
$$= \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} \frac{O^{20}_{k_1 k_2} \Omega^{40}_{k_3 k_4 k_5 k_6} \Omega^{13}_{k_7 k_3 k_4 k_5} \Omega^{04}_{k_7 k_6 k_1 k_2}}{\epsilon_{k_1 k_2}\ \epsilon_{k_3 k_4 k_5 k_1 k_2 k_6}\ \epsilon_{k_1 k_2 k_6 k_7}} \tag{26}$$

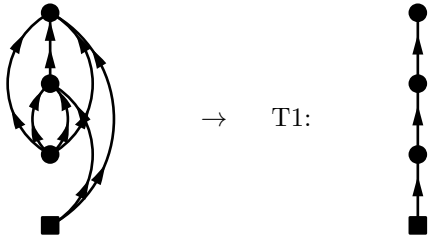


$$\text{T1} = \frac{1}{(a_1 + a_2 + a_3)(a_2 + a_3)a_3} \tag{27}$$

$$a_1 = \epsilon^{k_3 k_4 k_5 k_6}$$
$$a_2 = \epsilon^{k_7}_{k_3 k_4 k_5}$$
$$a_3 = \epsilon_{k_1 k_2 k_6 k_7}$$

Diagram 12:

$$\begin{aligned}\text{PO3.12} &= \lim_{\tau\to\infty}\frac{(-1)^3}{(2!)^2}\sum_{k_i} O^{20}_{k_1k_2}\Omega^{40}_{k_3k_4k_5k_6}\Omega^{13}_{k_7k_3k_4k_1}\Omega^{04}_{k_7k_5k_6k_2}\int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2)e^{-\tau_1\epsilon^{k_3k_4k_5k_6}}e^{-\tau_2\epsilon^{k_7}_{k_1k_3k_4}}e^{-\tau_3\epsilon_{k_2k_5k_6k_7}}\\ &= \frac{(-1)^3}{(2!)^2}\sum_{k_i}\frac{O^{20}_{k_1k_2}\Omega^{40}_{k_3k_4k_5k_6}\Omega^{13}_{k_7k_3k_4k_1}\Omega^{04}_{k_7k_5k_6k_2}}{\epsilon_{k_1k_2}\ \epsilon_{k_1k_3k_4k_2k_5k_6}\ \epsilon_{k_2k_5k_6k_7}}\end{aligned} \tag{28}$$



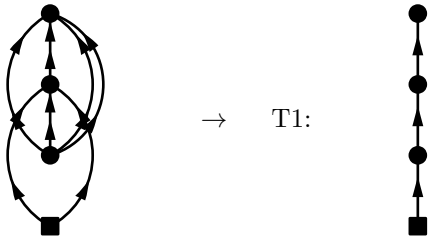
$\rightarrow$ T1:

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{29}$$

$$\begin{aligned}a_1 &= \epsilon^{k_3k_4k_5k_6}\\ a_2 &= \epsilon^{k_7}_{k_1k_3k_4}\\ a_3 &= \epsilon_{k_2k_5k_6k_7}\end{aligned}$$

Diagram 13:

$$\begin{aligned}\text{PO3.13} &= \lim_{\tau\to\infty}\frac{(-1)^3}{(2!)(3!)}\sum_{k_i} O^{20}_{k_1k_2}\Omega^{40}_{k_3k_4k_5k_6}\Omega^{13}_{k_7k_3k_1k_2}\Omega^{04}_{k_7k_4k_5k_6}\int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2)e^{-\tau_1\epsilon^{k_3k_4k_5k_6}}e^{-\tau_2\epsilon^{k_7}_{k_1k_2k_3}}e^{-\tau_3\epsilon_{k_4k_5k_6k_7}}\\ &= \frac{(-1)^3}{(2!)(3!)}\sum_{k_i}\frac{O^{20}_{k_1k_2}\Omega^{40}_{k_3k_4k_5k_6}\Omega^{13}_{k_7k_3k_1k_2}\Omega^{04}_{k_7k_4k_5k_6}}{\epsilon_{k_1k_2}\ \epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_4k_5k_6k_7}}\end{aligned} \tag{30}$$

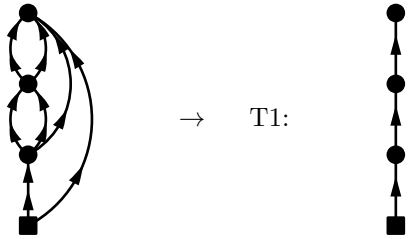


$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{31}$$

$$\begin{aligned} a_1 &= \epsilon^{k_3k_4k_5k_6} \\ a_2 &= \epsilon^{k_7}_{k_1k_2k_3} \\ a_3 &= \epsilon_{k_4k_5k_6k_7} \end{aligned}$$

Diagram 14:

$$\begin{aligned} \mathrm{PO3.14} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2} \sum_{k_i} O^{20}_{k_1k_2} \Omega^{31}_{k_3k_4k_5k_1} \Omega^{22}_{k_6k_7k_3k_4} \Omega^{04}_{k_6k_7k_5k_2} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_3k_4k_5}_{k_1}} e^{-\tau_2\epsilon^{k_6k_7}_{k_3k_4}} e^{-\tau_3\epsilon_{k_2k_5k_6k_7}} \\ &= \frac{(-1)^3}{(2!)^2} \sum_{k_i} \frac{O^{20}_{k_1k_2} \Omega^{31}_{k_3k_4k_5k_1} \Omega^{22}_{k_6k_7k_3k_4} \Omega^{04}_{k_6k_7k_5k_2}}{\epsilon_{k_1k_2}\ \epsilon_{k_3k_4k_2k_5}\ \epsilon_{k_2k_5k_6k_7}} \end{aligned} \tag{32}$$

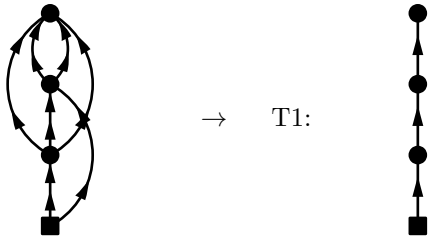


$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{33}$$

$$a_1 = \epsilon^{k_3k_4k_5}_{k_1}$$
$$a_2 = \epsilon^{k_6k_7}_{k_3k_4}$$
$$a_3 = \epsilon_{k_2k_5k_6k_7}$$

Diagram 15:

$$\text{PO3.15} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2} \sum_{k_i} O^{20}_{k_1k_2} \Omega^{31}_{k_3k_4k_5k_1} \Omega^{22}_{k_6k_7k_3k_2} \Omega^{04}_{k_6k_7k_4k_5} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_3k_4k_5}_{k_1}} e^{-\tau_2\epsilon^{k_6k_7}_{k_2k_3}} e^{-\tau_3\epsilon_{k_4k_5k_6k_7}}$$
$$= \frac{(-1)^3}{(2!)^2} \sum_{k_i} \frac{O^{20}_{k_1k_2} \Omega^{31}_{k_3k_4k_5k_1} \Omega^{22}_{k_6k_7k_3k_2} \Omega^{04}_{k_6k_7k_4k_5}}{\epsilon_{k_1k_2}\ \epsilon_{k_2k_3k_4k_5}\ \epsilon_{k_4k_5k_6k_7}} \tag{34}$$



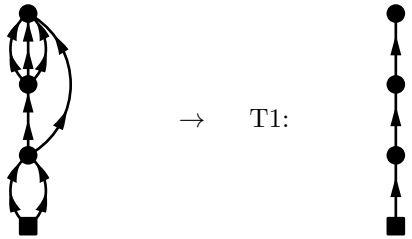
$\rightarrow$ T1:

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{35}$$

$$a_1 = \epsilon^{k_3k_4k_5}_{k_1}$$
$$a_2 = \epsilon^{k_6k_7}_{k_2k_3}$$
$$a_3 = \epsilon_{k_4k_5k_6k_7}$$

Diagram 16:

$$\text{PO3.16} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} O^{20}_{k_1k_2} \Omega^{22}_{k_3k_4k_1k_2} \Omega^{31}_{k_5k_6k_7k_3} \Omega^{04}_{k_5k_6k_7k_4} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_3k_4}_{k_1k_2}} e^{-\tau_2\epsilon^{k_5k_6k_7}_{k_3}} e^{-\tau_3\epsilon_{k_4k_5k_6k_7}}$$
$$= \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} \frac{O^{20}_{k_1k_2} \Omega^{22}_{k_3k_4k_1k_2} \Omega^{31}_{k_5k_6k_7k_3} \Omega^{04}_{k_5k_6k_7k_4}}{\epsilon_{k_1k_2}\ \epsilon_{k_3k_4}\ \epsilon_{k_4k_5k_6k_7}} \tag{36}$$



$$\rightarrow \quad \text{T1:}$$

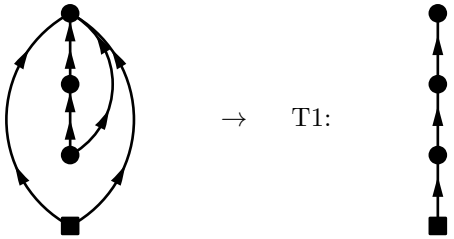
$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{37}$$

$$\begin{aligned} a_1 &= \epsilon^{k_3k_4}_{k_1k_2} \\ a_2 &= \epsilon^{k_5k_6k_7}_{k_3} \\ a_3 &= \epsilon_{k_4k_5k_6k_7} \end{aligned}$$

2.3 Two-body non-canonical diagrams

Diagram 17:

$$\begin{aligned} \text{PO3.17} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)} \sum_{k_i} O^{20}_{k_1k_2}\Omega^{20}_{k_3k_4}\Omega^{11}_{k_5k_3}\Omega^{04}_{k_5k_4k_1k_2} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2)e^{-\tau_1\epsilon^{k_3k_4}}e^{-\tau_2\epsilon^{k_5}_{k_3}}e^{-\tau_3\epsilon_{k_1k_2k_4k_5}} \\ &= \frac{(-1)^3}{(2!)} \sum_{k_i} \frac{O^{20}_{k_1k_2}\Omega^{20}_{k_3k_4}\Omega^{11}_{k_5k_3}\Omega^{04}_{k_5k_4k_1k_2}}{\epsilon_{k_1k_2}\ \epsilon_{k_3k_1k_2k_4}\ \epsilon_{k_1k_2k_4k_5}} \end{aligned} \tag{38}$$



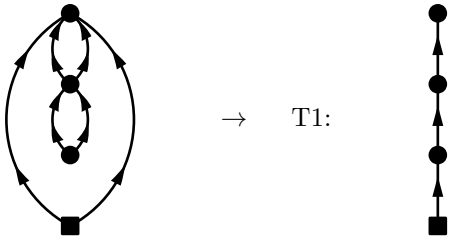
$$\rightarrow \quad \text{T1:}$$

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{39}$$

$$a_1 = \epsilon^{k_3 k_4}$$
$$a_2 = \epsilon^{k_5}_{k_3}$$
$$a_3 = \epsilon_{k_1 k_2 k_4 k_5}$$

Diagram 18:

$$\begin{aligned}\text{PO3.18} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^3} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{20}_{k_3 k_4} \Omega^{22}_{k_5 k_6 k_3 k_4} \Omega^{04}_{k_5 k_6 k_1 k_2} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_3 k_4}} e^{-\tau_2 \epsilon^{k_5 k_6}_{k_3 k_4}} e^{-\tau_3 \epsilon_{k_1 k_2 k_5 k_6}} \\ &= \frac{(-1)^3}{(2!)^3} \sum_{k_i} \frac{O^{20}_{k_1 k_2} \Omega^{20}_{k_3 k_4} \Omega^{22}_{k_5 k_6 k_3 k_4} \Omega^{04}_{k_5 k_6 k_1 k_2}}{\epsilon_{k_1 k_2}\ \epsilon_{k_3 k_4 k_1 k_2}\ \epsilon_{k_1 k_2 k_5 k_6}} \end{aligned} \tag{40}$$

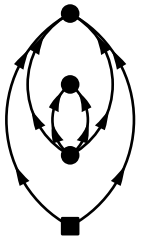


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{41}$$

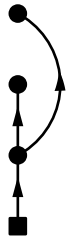
$$a_1 = \epsilon^{k_3 k_4}$$
$$a_2 = \epsilon^{k_5 k_6}_{k_3 k_4}$$
$$a_3 = \epsilon_{k_1 k_2 k_5 k_6}$$

Diagram 19:

$$\begin{aligned}\text{PO3.19} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^3} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{40}_{k_3 k_4 k_5 k_6} \Omega^{02}_{k_3 k_4} \Omega^{04}_{k_5 k_6 k_1 k_2} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1) e^{-\tau_1 \epsilon^{k_3 k_4 k_5 k_6}} e^{-\tau_2 \epsilon_{k_3 k_4}} e^{-\tau_3 \epsilon_{k_1 k_2 k_5 k_6}} \\ &= \frac{(-1)^3}{(2!)^3} \sum_{k_i} \frac{O^{20}_{k_1 k_2} \Omega^{40}_{k_3 k_4 k_5 k_6} \Omega^{02}_{k_3 k_4} \Omega^{04}_{k_5 k_6 k_1 k_2}}{\epsilon_{k_1 k_2}\ \epsilon_{k_3 k_4}\ \epsilon_{k_1 k_2 k_5 k_6}} \end{aligned} \tag{42}$$



$\rightarrow$ T2:

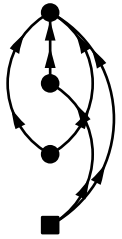


$$\mathrm{T2} = \frac{1}{(a_1+a_2+a_3)a_2a_3} \tag{43}$$

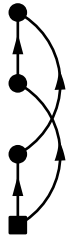
$$\begin{aligned} a_1 &= \epsilon^{k_3k_4k_5k_6} \\ a_2 &= \epsilon_{k_3k_4} \\ a_3 &= \epsilon_{k_1k_2k_5k_6} \end{aligned}$$

Diagram 20:

$$\begin{aligned} \mathrm{PO3.20} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)} \sum_{k_i} O^{20}_{k_1k_2}\Omega^{20}_{k_3k_4}\Omega^{11}_{k_5k_1}\Omega^{04}_{k_5k_3k_4k_2} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2)e^{-\tau_1\epsilon^{k_3k_4}}e^{-\tau_2\epsilon^{k_5}_{k_1}}e^{-\tau_3\epsilon_{k_2k_3k_4k_5}} \\ &= \frac{(-1)^3}{(2!)} \sum_{k_i} O^{20}_{k_1k_2}\Omega^{20}_{k_3k_4}\Omega^{11}_{k_5k_1}\Omega^{04}_{k_5k_3k_4k_2} \left[\frac{1}{\epsilon_{k_2k_5}\ \epsilon_{k_1k_2}\ \epsilon_{k_2k_3k_4k_5}} + \frac{1}{\epsilon_{k_1k_2}\ \epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_2k_3k_4k_5}} \right] \end{aligned} \tag{44}$$



$\rightarrow$ T5:

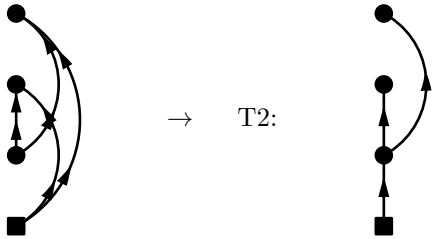


$$\mathrm{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{45}$$

$$a_1 = \epsilon^{k_3 k_4}$$
$$a_2 = \epsilon^{k_5}_{k_1}$$
$$a_3 = \epsilon_{k_2 k_3 k_4 k_5}$$

Diagram 21:

$$\text{PO3.21} = \lim_{\tau\to\infty} \frac{-(-1)^3}{2} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{20}_{k_3 k_4} \Omega^{02}_{k_3 k_1} \Omega^{02}_{k_4 k_2} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_1) e^{-\tau_1 \epsilon^{k_3 k_4}} e^{-\tau_2 \epsilon_{k_1 k_3}} e^{-\tau_3 \epsilon_{k_2 k_4}}$$
$$= \frac{-(-1)^3}{2} \sum_{k_i} \frac{O^{20}_{k_1 k_2} \Omega^{20}_{k_3 k_4} \Omega^{02}_{k_3 k_1} \Omega^{02}_{k_4 k_2}}{\epsilon_{k_1 k_2}\ \epsilon_{k_1 k_3}\ \epsilon_{k_2 k_4}} \tag{46}$$

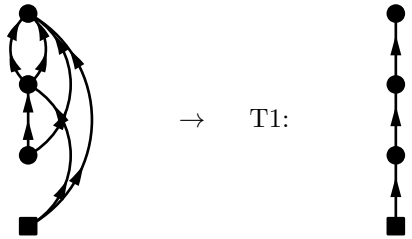


$$\text{T2} = \frac{1}{(a_1 + a_2 + a_3) a_2 a_3} \tag{47}$$

$$a_1 = \epsilon^{k_3 k_4}$$
$$a_2 = \epsilon_{k_1 k_3}$$
$$a_3 = \epsilon_{k_2 k_4}$$

Diagram 22:

$$\text{PO3.22} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{20}_{k_3 k_4} \Omega^{22}_{k_5 k_6 k_3 k_1} \Omega^{04}_{k_5 k_6 k_4 k_2} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_3 k_4}} e^{-\tau_2 \epsilon^{k_5 k_6}_{k_1 k_3}} e^{-\tau_3 \epsilon_{k_2 k_4 k_5 k_6}}$$
$$= \frac{-(-1)^3}{(2!)} \sum_{k_i} \frac{O^{20}_{k_1 k_2} \Omega^{20}_{k_3 k_4} \Omega^{22}_{k_5 k_6 k_3 k_1} \Omega^{04}_{k_5 k_6 k_4 k_2}}{\epsilon_{k_1 k_2}\ \epsilon_{k_1 k_3 k_2 k_4}\ \epsilon_{k_2 k_4 k_5 k_6}} \tag{48}$$



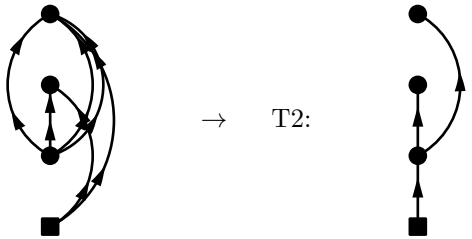
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{49}$$

$$\begin{aligned} a_1 &= \epsilon^{k_3k_4} \\ a_2 &= \epsilon^{k_5k_6}_{k_1k_3} \\ a_3 &= \epsilon_{k_2k_4k_5k_6} \end{aligned}$$

Diagram 23:

$$\begin{aligned} \mathrm{PO3.23} &= \lim_{\tau\to\infty} \frac{-(-1)^3}{(3!)} \sum_{k_i} O^{20}_{k_1k_2}\Omega^{40}_{k_3k_4k_5k_6}\Omega^{02}_{k_3k_1}\Omega^{04}_{k_4k_5k_6k_2} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)e^{-\tau_1\epsilon^{k_3k_4k_5k_6}}e^{-\tau_2\epsilon_{k_1k_3}}e^{-\tau_3\epsilon_{k_2k_4k_5k_6}} \\ &= \frac{-(-1)^3}{(3!)} \sum_{k_i} \frac{O^{20}_{k_1k_2}\Omega^{40}_{k_3k_4k_5k_6}\Omega^{02}_{k_3k_1}\Omega^{04}_{k_4k_5k_6k_2}}{\epsilon_{k_1k_2}\ \epsilon_{k_1k_3}\ \epsilon_{k_2k_4k_5k_6}} \end{aligned} \tag{50}$$



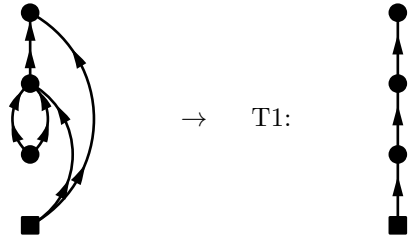
$\rightarrow$ T2:

$$\mathrm{T2} = \frac{1}{(a_1+a_2+a_3)a_2a_3} \tag{51}$$

$$a_1 = \epsilon^{k_3 k_4 k_5 k_6}$$
$$a_2 = \epsilon_{k_1 k_3}$$
$$a_3 = \epsilon_{k_2 k_4 k_5 k_6}$$

Diagram 24:

$$\begin{aligned}\text{PO3.24} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{20}_{k_3 k_4} \Omega^{13}_{k_5 k_3 k_4 k_1} \Omega^{02}_{k_5 k_2} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_3 k_4}} e^{-\tau_2 \epsilon^{k_5}_{k_1 k_3 k_4}} e^{-\tau_3 \epsilon_{k_2 k_5}} \\ &= \frac{(-1)^3}{(2!)} \sum_{k_i} \frac{O^{20}_{k_1 k_2} \Omega^{20}_{k_3 k_4} \Omega^{13}_{k_5 k_3 k_4 k_1} \Omega^{02}_{k_5 k_2}}{\epsilon_{k_1 k_2}\ \epsilon_{k_1 k_3 k_4 k_2}\ \epsilon_{k_2 k_5}} \end{aligned} \tag{52}$$



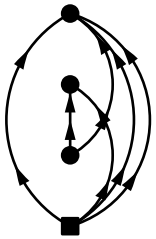
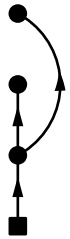
$\rightarrow$ T1:

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{53}$$

$$a_1 = \epsilon^{k_3 k_4}$$
$$a_2 = \epsilon^{k_5}_{k_1 k_3 k_4}$$
$$a_3 = \epsilon_{k_2 k_5}$$

Diagram 25:

$$\begin{aligned}\text{PO3.25} &= \lim_{\tau\to\infty} \frac{-(-1)^3}{(3!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{20}_{k_5 k_6} \Omega^{02}_{k_5 k_1} \Omega^{04}_{k_6 k_2 k_3 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1) e^{-\tau_1 \epsilon^{k_5 k_6}} e^{-\tau_2 \epsilon_{k_1 k_5}} e^{-\tau_3 \epsilon_{k_2 k_3 k_4 k_6}} \\ &= \frac{-(-1)^3}{(3!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{20}_{k_5 k_6} \Omega^{02}_{k_5 k_1} \Omega^{04}_{k_6 k_2 k_3 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_1 k_5}\ \epsilon_{k_2 k_3 k_4 k_6}} \end{aligned} \tag{54}$$

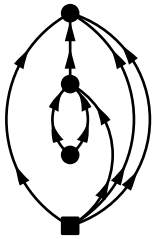
$$\rightarrow \quad \text{T2:}$$

$$\text{T2} = \frac{1}{(a_1+a_2+a_3)a_2a_3} \tag{55}$$

$$\begin{aligned} a_1 &= \epsilon^{k_5k_6} \\ a_2 &= \epsilon_{k_1k_5} \\ a_3 &= \epsilon_{k_2k_3k_4k_6} \end{aligned}$$

Diagram 26:

$$\begin{aligned} \text{PO3.26} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4}\Omega^{20}_{k_5k_6}\Omega^{13}_{k_7k_5k_6k_1}\Omega^{04}_{k_7k_2k_3k_4} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2)e^{-\tau_1\epsilon^{k_5k_6}}e^{-\tau_2\epsilon^{k_7}_{k_1k_5k_6}}e^{-\tau_3\epsilon_{k_2k_3k_4k_7}} \\ &= \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4}\Omega^{20}_{k_5k_6}\Omega^{13}_{k_7k_5k_6k_1}\Omega^{04}_{k_7k_2k_3k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_1k_5k_6k_2k_3k_4}\ \epsilon_{k_2k_3k_4k_7}} \end{aligned} \tag{56}$$



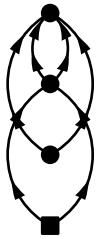

$$\rightarrow \quad \text{T1:}$$

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{57}$$

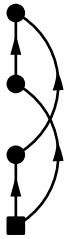
$$a_1 = \epsilon^{k_5 k_6}$$
$$a_2 = \epsilon^{k_7}_{k_1 k_5 k_6}$$
$$a_3 = \epsilon_{k_2 k_3 k_4 k_7}$$

Diagram 27:

$$\text{PO3.27} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^3} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{20}_{k_3 k_4} \Omega^{22}_{k_5 k_6 k_1 k_2} \Omega^{04}_{k_5 k_6 k_3 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_3 k_4}} e^{-\tau_2 \epsilon^{k_5 k_6}_{k_1 k_2}} e^{-\tau_3 \epsilon_{k_3 k_4 k_5 k_6}}$$
$$= \frac{(-1)^3}{(2!)^3} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{20}_{k_3 k_4} \Omega^{22}_{k_5 k_6 k_1 k_2} \Omega^{04}_{k_5 k_6 k_3 k_4} \left[\frac{1}{\epsilon_{k_5 k_6}\ \epsilon_{k_1 k_2}\ \epsilon_{k_3 k_4 k_5 k_6}} + \frac{1}{\epsilon_{k_1 k_2}\ \epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_3 k_4 k_5 k_6}} \right] \tag{58}$$



$\rightarrow$ T5:

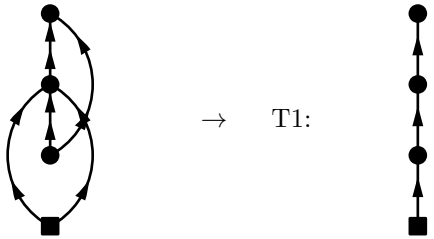


$$\text{T5} = \frac{1}{(a_1 + a_3)(a_2 + a_1 + a_3)a_3} + \frac{1}{(a_1 + a_2 + a_3)(a_2 + a_3)a_3} \tag{59}$$

$$a_1 = \epsilon^{k_3 k_4}$$
$$a_2 = \epsilon^{k_5 k_6}_{k_1 k_2}$$
$$a_3 = \epsilon_{k_3 k_4 k_5 k_6}$$

Diagram 28:

$$\text{PO3.28} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{20}_{k_3 k_4} \Omega^{13}_{k_5 k_3 k_1 k_2} \Omega^{02}_{k_5 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_3 k_4}} e^{-\tau_2 \epsilon^{k_5}_{k_1 k_2 k_3}} e^{-\tau_3 \epsilon_{k_4 k_5}}$$
$$= \frac{(-1)^3}{(2!)} \sum_{k_i} \frac{O^{20}_{k_1 k_2} \Omega^{20}_{k_3 k_4} \Omega^{13}_{k_5 k_3 k_1 k_2} \Omega^{02}_{k_5 k_4}}{\epsilon_{k_1 k_2}\ \epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_4 k_5}} \tag{60}$$

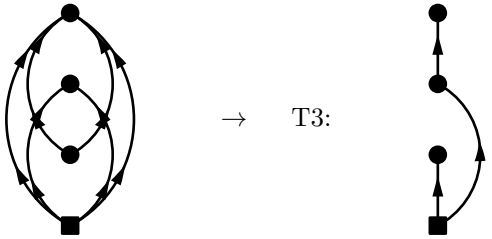


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{61}$$

$$\begin{aligned} a_1 &= \epsilon^{k_3k_4} \\ a_2 &= \epsilon^{k_5}_{k_1k_2k_3} \\ a_3 &= \epsilon_{k_4k_5} \end{aligned}$$

Diagram 29:

$$\begin{aligned} \text{PO3.29} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^3} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{20}_{k_5k_6} \Omega^{02}_{k_1k_2} \Omega^{04}_{k_5k_6k_3k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3-\tau_1) e^{-\tau_1 \epsilon^{k_5k_6}} e^{-\tau_2 \epsilon_{k_1k_2}} e^{-\tau_3 \epsilon_{k_3k_4k_5k_6}} \\ &= \frac{(-1)^3}{(2!)^3} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{20}_{k_5k_6} \Omega^{02}_{k_1k_2} \Omega^{04}_{k_5k_6k_3k_4}}{\epsilon^{k_5k_6}\ \epsilon_{k_1k_2}\ \epsilon_{k_1k_2k_3k_4k_5k_6}} \end{aligned} \tag{62}$$

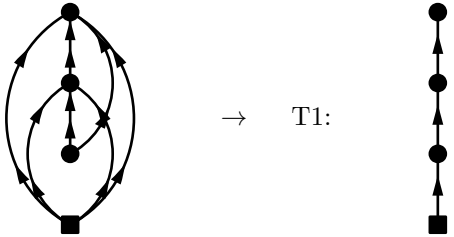


$$\text{T3} = \frac{1}{a_1(a_2+a_3)a_3} \tag{63}$$

$$a_1 = \epsilon^{k_5 k_6}$$
$$a_2 = \epsilon_{k_3 k_4 k_5 k_6}$$
$$a_3 = \epsilon_{k_1 k_2}$$

Diagram 30:

$$\text{PO3.30} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{20}_{k_5 k_6} \Omega^{13}_{k_7 k_5 k_1 k_2} \Omega^{04}_{k_7 k_6 k_3 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5 k_6}} e^{-\tau_2 \epsilon^{k_7}_{k_1 k_2 k_5}} e^{-\tau_3 \epsilon_{k_3 k_4 k_6 k_7}}$$
$$= \frac{(-1)^3}{(2!)^2} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{20}_{k_5 k_6} \Omega^{13}_{k_7 k_5 k_1 k_2} \Omega^{04}_{k_7 k_6 k_3 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_1 k_2 k_5 k_3 k_4 k_6}\ \epsilon_{k_3 k_4 k_6 k_7}} \tag{64}$$



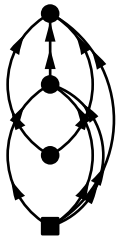
$\to$ T1:

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{65}$$

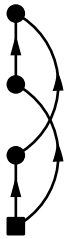
$$a_1 = \epsilon^{k_5 k_6}$$
$$a_2 = \epsilon^{k_7}_{k_1 k_2 k_5}$$
$$a_3 = \epsilon_{k_3 k_4 k_6 k_7}$$

Diagram 31:

$$\text{PO3.31} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{20}_{k_5 k_6} \Omega^{13}_{k_7 k_1 k_2 k_3} \Omega^{04}_{k_7 k_5 k_6 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5 k_6}} e^{-\tau_2 \epsilon^{k_7}_{k_1 k_2 k_3}} e^{-\tau_3 \epsilon_{k_4 k_5 k_6 k_7}}$$
$$= \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{20}_{k_5 k_6} \Omega^{13}_{k_7 k_1 k_2 k_3} \Omega^{04}_{k_7 k_5 k_6 k_4} \left[\frac{1}{\epsilon_{k_4 k_7}\ \epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_4 k_5 k_6 k_7}} + \frac{1}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_4 k_5 k_6 k_7}} \right] \tag{66}$$



$\rightarrow$ T5:

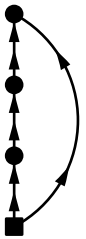


$$\mathrm{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{67}$$

$$\begin{aligned} a_1 &= \epsilon^{k_5 k_6} \\ a_2 &= \epsilon^{k_7}_{k_1 k_2 k_3} \\ a_3 &= \epsilon_{k_4 k_5 k_6 k_7} \end{aligned}$$

Diagram 32:

$$\begin{aligned} \mathrm{PO3.32} &= \lim_{\tau\to\infty} (-1)^3 \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{11}_{k_3 k_1} \Omega^{11}_{k_4 k_3} \Omega^{02}_{k_4 k_2} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_3}_{k_1}} e^{-\tau_2 \epsilon^{k_4}_{k_3}} e^{-\tau_3 \epsilon_{k_2 k_4}} \\ &= (-1)^3 \sum_{k_i} \frac{O^{20}_{k_1 k_2} \Omega^{11}_{k_3 k_1} \Omega^{11}_{k_4 k_3} \Omega^{02}_{k_4 k_2}}{\epsilon_{k_1 k_2}\ \epsilon_{k_3 k_2}\ \epsilon_{k_2 k_4}} \end{aligned} \tag{68}$$



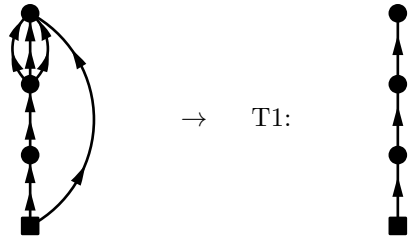
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{69}$$

$$a_1 = \epsilon_{k_1}^{k_3}$$
$$a_2 = \epsilon_{k_3}^{k_4}$$
$$a_3 = \epsilon_{k_2 k_4}$$

Diagram 33:

$$\text{PO3.33} = \lim_{\tau\to\infty} \frac{(-1)^3}{(3!)} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{11}_{k_3 k_1} \Omega^{31}_{k_4 k_5 k_6 k_3} \Omega^{04}_{k_4 k_5 k_6 k_2} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_3}_{k_1}} e^{-\tau_2 \epsilon^{k_4 k_5 k_6}_{k_3}} e^{-\tau_3 \epsilon_{k_2 k_4 k_5 k_6}}$$
$$= \frac{(-1)^3}{(3!)} \sum_{k_i} \frac{O^{20}_{k_1 k_2} \Omega^{11}_{k_3 k_1} \Omega^{31}_{k_4 k_5 k_6 k_3} \Omega^{04}_{k_4 k_5 k_6 k_2}}{\epsilon_{k_1 k_2}\ \epsilon_{k_3 k_2}\ \epsilon_{k_2 k_4 k_5 k_6}} \tag{70}$$

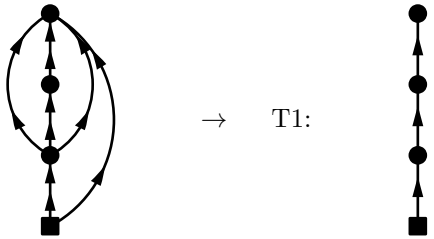


$$\text{T1} = \frac{1}{(a_1 + a_2 + a_3)(a_2 + a_3)a_3} \tag{71}$$

$$a_1 = \epsilon_{k_1}^{k_3}$$
$$a_2 = \epsilon_{k_3}^{k_4 k_5 k_6}$$
$$a_3 = \epsilon_{k_2 k_4 k_5 k_6}$$

Diagram 34:

$$\text{PO3.34} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{31}_{k_3 k_4 k_5 k_1} \Omega^{11}_{k_6 k_3} \Omega^{04}_{k_6 k_4 k_5 k_2} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_3 k_4 k_5}_{k_1}} e^{-\tau_2 \epsilon^{k_6}_{k_3}} e^{-\tau_3 \epsilon_{k_2 k_4 k_5 k_6}}$$
$$= \frac{(-1)^3}{(2!)} \sum_{k_i} \frac{O^{20}_{k_1 k_2} \Omega^{31}_{k_3 k_4 k_5 k_1} \Omega^{11}_{k_6 k_3} \Omega^{04}_{k_6 k_4 k_5 k_2}}{\epsilon_{k_1 k_2}\ \epsilon_{k_3 k_2 k_4 k_5}\ \epsilon_{k_2 k_4 k_5 k_6}} \tag{72}$$



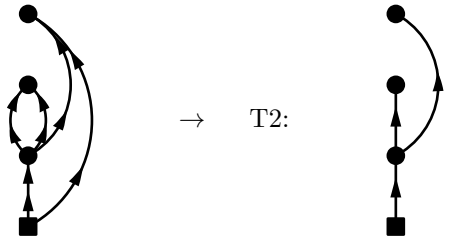
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{73}$$

$$\begin{aligned} a_1 &= \epsilon_{k_1}^{k_3k_4k_5} \\ a_2 &= \epsilon_{k_3}^{k_6} \\ a_3 &= \epsilon_{k_2k_4k_5k_6} \end{aligned}$$

Diagram 35:

$$\begin{aligned} \mathrm{PO3.35} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)} \sum_{k_i} O^{20}_{k_1k_2} \Omega^{31}_{k_3k_4k_5k_1} \Omega^{02}_{k_3k_4} \Omega^{02}_{k_5k_2} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1) e^{-\tau_1 \epsilon_{k_1}^{k_3k_4k_5}} e^{-\tau_2\epsilon_{k_3k_4}} e^{-\tau_3\epsilon_{k_2k_5}} \\ &= \frac{(-1)^3}{(2!)} \sum_{k_i} \frac{O^{20}_{k_1k_2} \Omega^{31}_{k_3k_4k_5k_1} \Omega^{02}_{k_3k_4} \Omega^{02}_{k_5k_2}}{\epsilon_{k_1k_2}\ \epsilon_{k_3k_4}\ \epsilon_{k_2k_5}} \end{aligned} \tag{74}$$



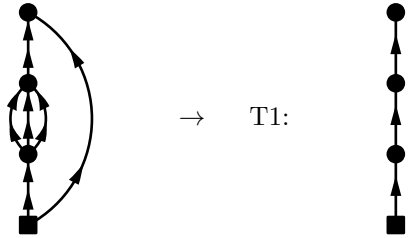
$\rightarrow$ T2:

$$\mathrm{T2} = \frac{1}{(a_1+a_2+a_3)a_2a_3} \tag{75}$$

$$a_1 = \epsilon^{k_3k_4k_5}_{k_1}$$
$$a_2 = \epsilon_{k_3k_4}$$
$$a_3 = \epsilon_{k_2k_5}$$

Diagram 36:

$$\begin{aligned}\text{PO3.36} &= \lim_{\tau\to\infty}\frac{(-1)^3}{(3!)}\sum_{k_i} O^{20}_{k_1k_2}\Omega^{31}_{k_3k_4k_5k_1}\Omega^{13}_{k_6k_3k_4k_5}\Omega^{02}_{k_6k_2}\int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2)e^{-\tau_1\epsilon^{k_3k_4k_5}_{k_1}}e^{-\tau_2\epsilon^{k_6}_{k_3k_4k_5}}e^{-\tau_3\epsilon_{k_2k_6}}\\ &= \frac{(-1)^3}{(3!)}\sum_{k_i}\frac{O^{20}_{k_1k_2}\Omega^{31}_{k_3k_4k_5k_1}\Omega^{13}_{k_6k_3k_4k_5}\Omega^{02}_{k_6k_2}}{\epsilon_{k_1k_2}\ \epsilon_{k_3k_4k_5k_2}\ \epsilon_{k_2k_6}}\end{aligned} \tag{76}$$

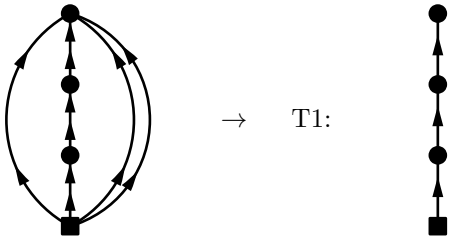


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{77}$$

$$a_1 = \epsilon^{k_3k_4k_5}_{k_1}$$
$$a_2 = \epsilon^{k_6}_{k_3k_4k_5}$$
$$a_3 = \epsilon_{k_2k_6}$$

Diagram 37:

$$\begin{aligned}\text{PO3.37} &= \lim_{\tau\to\infty}\frac{(-1)^3}{(3!)}\sum_{k_i} O^{40}_{k_1k_2k_3k_4}\Omega^{11}_{k_5k_1}\Omega^{11}_{k_6k_5}\Omega^{04}_{k_6k_2k_3k_4}\int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2)e^{-\tau_1\epsilon^{k_5}_{k_1}}e^{-\tau_2\epsilon^{k_6}_{k_5}}e^{-\tau_3\epsilon_{k_2k_3k_4k_6}}\\ &= \frac{(-1)^3}{(3!)}\sum_{k_i}\frac{O^{40}_{k_1k_2k_3k_4}\Omega^{11}_{k_5k_1}\Omega^{11}_{k_6k_5}\Omega^{04}_{k_6k_2k_3k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_5k_2k_3k_4}\ \epsilon_{k_2k_3k_4k_6}}\end{aligned} \tag{78}$$



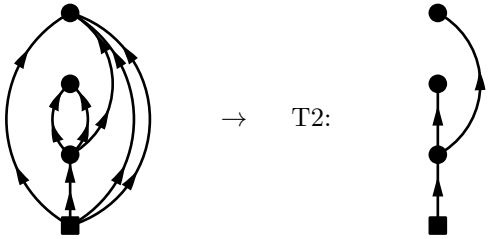
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1 + a_2 + a_3)(a_2 + a_3)a_3} \tag{79}$$

$$\begin{aligned} a_1 &= \epsilon_{k_1}^{k_5} \\ a_2 &= \epsilon_{k_5}^{k_6} \\ a_3 &= \epsilon_{k_2 k_3 k_4 k_6} \end{aligned}$$

Diagram 38:

$$\begin{aligned} \mathrm{PO3.38} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{31}_{k_5 k_6 k_7 k_1} \Omega^{02}_{k_5 k_6} \Omega^{04}_{k_7 k_2 k_3 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_1) e^{-\tau_1 \epsilon_{k_1}^{k_5 k_6 k_7}} e^{-\tau_2 \epsilon_{k_5 k_6}} e^{-\tau_3 \epsilon_{k_2 k_3 k_4 k_7}} \\ &= \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{31}_{k_5 k_6 k_7 k_1} \Omega^{02}_{k_5 k_6} \Omega^{04}_{k_7 k_2 k_3 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_5 k_6}\ \epsilon_{k_2 k_3 k_4 k_7}} \end{aligned} \tag{80}$$



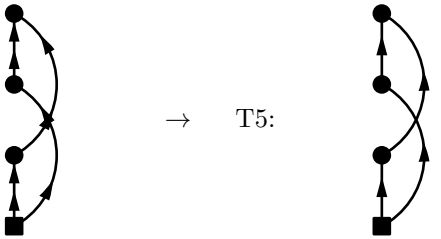
$\rightarrow$ T2:

$$\mathrm{T2} = \frac{1}{(a_1 + a_2 + a_3)a_2 a_3} \tag{81}$$

$$a_1 = \epsilon_{k_1}^{k_5 k_6 k_7}$$
$$a_2 = \epsilon_{k_5 k_6}$$
$$a_3 = \epsilon_{k_2 k_3 k_4 k_7}$$

Diagram 39:

$$\text{PO3.39} = \lim_{\tau\to\infty} \frac{-(-1)^3}{2} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{11}_{k_3 k_1} \Omega^{11}_{k_4 k_2} \Omega^{02}_{k_4 k_3} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon_{k_1}^{k_3}} e^{-\tau_2 \epsilon_{k_2}^{k_4}} e^{-\tau_3 \epsilon_{k_3 k_4}}$$
$$= \frac{-(-1)^3}{2} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{11}_{k_3 k_1} \Omega^{11}_{k_4 k_2} \Omega^{02}_{k_4 k_3} \left[\frac{1}{\epsilon_{k_1 k_4}\ \epsilon_{k_1 k_2}\ \epsilon_{k_3 k_4}} + \frac{1}{\epsilon_{k_1 k_2}\ \epsilon_{k_2 k_3}\ \epsilon_{k_3 k_4}} \right] \tag{82}$$



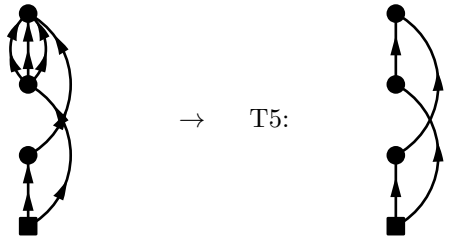
$\rightarrow$ T5:

$$\text{T5} = \frac{1}{(a_1 + a_3)(a_2 + a_1 + a_3)a_3} + \frac{1}{(a_1 + a_2 + a_3)(a_2 + a_3)a_3} \tag{83}$$

$$a_1 = \epsilon_{k_1}^{k_3}$$
$$a_2 = \epsilon_{k_2}^{k_4}$$
$$a_3 = \epsilon_{k_3 k_4}$$

Diagram 40:

$$\text{PO3.40} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(3!)} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{11}_{k_3 k_1} \Omega^{31}_{k_4 k_5 k_6 k_2} \Omega^{04}_{k_4 k_5 k_6 k_3} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon_{k_1}^{k_3}} e^{-\tau_2 \epsilon_{k_2}^{k_4 k_5 k_6}} e^{-\tau_3 \epsilon_{k_3 k_4 k_5 k_6}}$$
$$= \frac{-(-1)^3}{(3!)} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{11}_{k_3 k_1} \Omega^{31}_{k_4 k_5 k_6 k_2} \Omega^{04}_{k_4 k_5 k_6 k_3} \left[\frac{1}{\epsilon_{k_1 k_4 k_5 k_6}\ \epsilon_{k_1 k_2}\ \epsilon_{k_3 k_4 k_5 k_6}} + \frac{1}{\epsilon_{k_1 k_2}\ \epsilon_{k_2 k_3}\ \epsilon_{k_3 k_4 k_5 k_6}} \right] \tag{84}$$



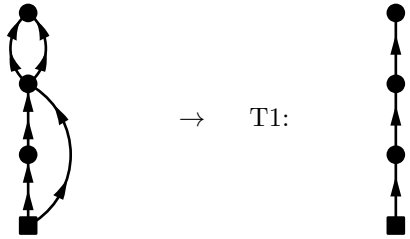
$\rightarrow$ T5:

$$\text{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{85}$$

$$\begin{aligned} a_1 &= \epsilon_{k_1}^{k_3} \\ a_2 &= \epsilon_{k_2}^{k_4 k_5 k_6} \\ a_3 &= \epsilon_{k_3 k_4 k_5 k_6} \end{aligned}$$

Diagram 41:

$$\begin{aligned} \text{PO3.41} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{11}_{k_3 k_1} \Omega^{22}_{k_4 k_5 k_3 k_2} \Omega^{02}_{k_4 k_5} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_3}_{k_1}} e^{-\tau_2 \epsilon^{k_4 k_5}_{k_2 k_3}} e^{-\tau_3 \epsilon_{k_4 k_5}} \\ &= \frac{(-1)^3}{(2!)} \sum_{k_i} \frac{O^{20}_{k_1 k_2} \Omega^{11}_{k_3 k_1} \Omega^{22}_{k_4 k_5 k_3 k_2} \Omega^{02}_{k_4 k_5}}{\epsilon_{k_1 k_2}\ \epsilon_{k_2 k_3}\ \epsilon_{k_4 k_5}} \end{aligned} \tag{86}$$



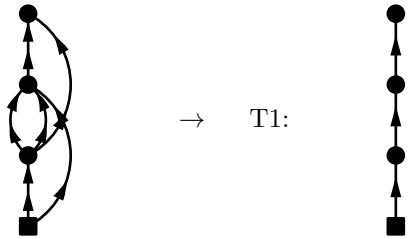
$\rightarrow$ T1:

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{87}$$

$$a_1 = \epsilon_{k_1}^{k_3}$$
$$a_2 = \epsilon_{k_2 k_3}^{k_4 k_5}$$
$$a_3 = \epsilon_{k_4 k_5}$$

Diagram 42:

$$\text{PO3.42} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{31}_{k_3 k_4 k_5 k_1} \Omega^{13}_{k_6 k_3 k_4 k_2} \Omega^{02}_{k_6 k_5} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon_{k_1}^{k_3 k_4 k_5}} e^{-\tau_2 \epsilon_{k_2 k_3 k_4}^{k_6}} e^{-\tau_3 \epsilon_{k_5 k_6}}$$
$$= \frac{-(-1)^3}{(2!)} \sum_{k_i} \frac{O^{20}_{k_1 k_2} \Omega^{31}_{k_3 k_4 k_5 k_1} \Omega^{13}_{k_6 k_3 k_4 k_2} \Omega^{02}_{k_6 k_5}}{\epsilon_{k_1 k_2}\ \epsilon_{k_2 k_3 k_4 k_5}\ \epsilon_{k_5 k_6}} \tag{88}$$



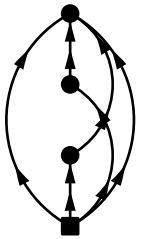
$\rightarrow$ T1:

$$\text{T1} = \frac{1}{(a_1 + a_2 + a_3)(a_2 + a_3)a_3} \tag{89}$$

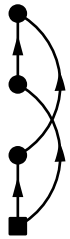
$$a_1 = \epsilon_{k_1}^{k_3 k_4 k_5}$$
$$a_2 = \epsilon_{k_2 k_3 k_4}^{k_6}$$
$$a_3 = \epsilon_{k_5 k_6}$$

Diagram 43:

$$\text{PO3.43} = \lim_{\tau\to\infty} \frac{-(-1)^3}{2(2!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{11}_{k_5 k_1} \Omega^{11}_{k_6 k_2} \Omega^{04}_{k_6 k_5 k_3 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon_{k_1}^{k_5}} e^{-\tau_2 \epsilon_{k_2}^{k_6}} e^{-\tau_3 \epsilon_{k_3 k_4 k_5 k_6}}$$
$$= \frac{-(-1)^3}{2(2!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{11}_{k_5 k_1} \Omega^{11}_{k_6 k_2} \Omega^{04}_{k_6 k_5 k_3 k_4} \left[\frac{1}{\epsilon_{k_1 k_3 k_4 k_6}\ \epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_3 k_4 k_5 k_6}} + \frac{1}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_2 k_3 k_4 k_5}\ \epsilon_{k_3 k_4 k_5 k_6}} \right] \tag{90}$$



$\rightarrow$ T5:

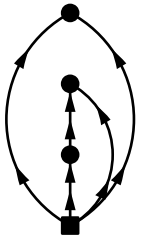


$$\mathrm{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{91}$$

$$\begin{aligned} a_1 &= \epsilon_{k_1}^{k_5} \\ a_2 &= \epsilon_{k_2}^{k_6} \\ a_3 &= \epsilon_{k_3k_4k_5k_6} \end{aligned}$$

Diagram 44:

$$\begin{aligned} \mathrm{PO3.44} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{11}_{k_5k_1} \Omega^{02}_{k_5k_2} \Omega^{02}_{k_3k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1) e^{-\tau_1 \epsilon^{k_5}_{k_1}} e^{-\tau_2 \epsilon_{k_2k_5}} e^{-\tau_3 \epsilon_{k_3k_4}} \\ &= \frac{(-1)^3}{(2!)} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{11}_{k_5k_1} \Omega^{02}_{k_5k_2} \Omega^{02}_{k_3k_4}}{\epsilon^{k_5}_{k_1}\ \epsilon_{k_2k_5k_3k_4}\ \epsilon_{k_3k_4}} \end{aligned} \tag{92}$$



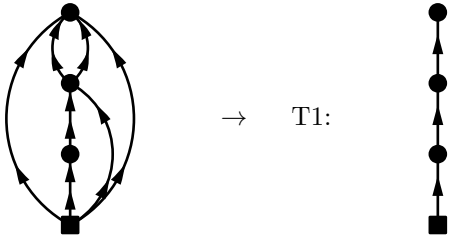
$\rightarrow$ T3:

$$\mathrm{T3} = \frac{1}{a_1(a_2+a_3)a_3} \tag{93}$$

$$a_1 = \epsilon^{k_5}_{k_1}$$
$$a_2 = \epsilon_{k_2 k_5}$$
$$a_3 = \epsilon_{k_3 k_4}$$

Diagram 45:

$$\text{PO3.45} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{11}_{k_5 k_1} \Omega^{22}_{k_6 k_7 k_5 k_2} \Omega^{04}_{k_6 k_7 k_3 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_5}_{k_1}} e^{-\tau_2 \epsilon^{k_6 k_7}_{k_2 k_5}} e^{-\tau_3 \epsilon_{k_3 k_4 k_6 k_7}}$$
$$= \frac{(-1)^3}{(2!)^2} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{11}_{k_5 k_1} \Omega^{22}_{k_6 k_7 k_5 k_2} \Omega^{04}_{k_6 k_7 k_3 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_2 k_5 k_3 k_4}\ \epsilon_{k_3 k_4 k_6 k_7}} \tag{94}$$

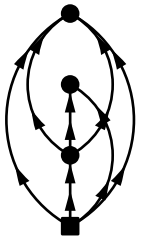


$$\text{T1} = \frac{1}{(a_1 + a_2 + a_3)(a_2 + a_3)a_3} \tag{95}$$

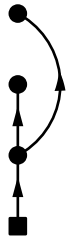
$$a_1 = \epsilon^{k_5}_{k_1}$$
$$a_2 = \epsilon^{k_6 k_7}_{k_2 k_5}$$
$$a_3 = \epsilon_{k_3 k_4 k_6 k_7}$$

Diagram 46:

$$\text{PO3.46} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{31}_{k_5 k_6 k_7 k_1} \Omega^{02}_{k_5 k_2} \Omega^{04}_{k_6 k_7 k_3 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_1) e^{-\tau_1 \epsilon^{k_5 k_6 k_7}_{k_1}} e^{-\tau_2 \epsilon_{k_2 k_5}} e^{-\tau_3 \epsilon_{k_3 k_4 k_6 k_7}}$$
$$= \frac{(-1)^3}{(2!)^2} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{31}_{k_5 k_6 k_7 k_1} \Omega^{02}_{k_5 k_2} \Omega^{04}_{k_6 k_7 k_3 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_2 k_5}\ \epsilon_{k_3 k_4 k_6 k_7}} \tag{96}$$



$\rightarrow$ T2:

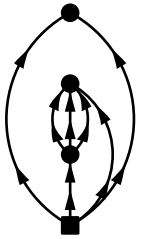


$$\mathrm{T2} = \frac{1}{(a_1 + a_2 + a_3)a_2 a_3} \tag{97}$$

$$\begin{aligned} a_1 &= \epsilon_{k_1}^{k_5 k_6 k_7} \\ a_2 &= \epsilon_{k_2 k_5} \\ a_3 &= \epsilon_{k_3 k_4 k_6 k_7} \end{aligned}$$

Diagram 47:

$$\begin{aligned} \mathrm{PO3.47} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{31}_{k_5 k_6 k_7 k_1} \Omega^{04}_{k_5 k_6 k_7 k_2} \Omega^{02}_{k_3 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1) e^{-\tau_1 \epsilon_{k_1}^{k_5 k_6 k_7}} e^{-\tau_2 \epsilon_{k_2 k_5 k_6 k_7}} e^{-\tau_3 \epsilon_{k_3 k_4}} \\ &= \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{31}_{k_5 k_6 k_7 k_1} \Omega^{04}_{k_5 k_6 k_7 k_2} \Omega^{02}_{k_3 k_4}}{\epsilon_{k_1}^{k_5 k_6 k_7}\ \epsilon_{k_2 k_5 k_6 k_7 k_3 k_4}\ \epsilon_{k_3 k_4}} \end{aligned} \tag{98}$$



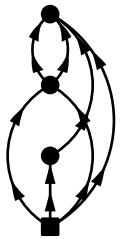
$\rightarrow$ T3:

$$\mathrm{T3} = \frac{1}{a_1(a_2 + a_3)a_3} \tag{99}$$

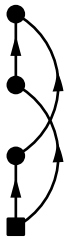
$$a_1 = \epsilon_{k_1}^{k_5 k_6 k_7}$$
$$a_2 = \epsilon_{k_2 k_5 k_6 k_7}$$
$$a_3 = \epsilon_{k_3 k_4}$$

Diagram 48:

$$\text{PO3.48} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{11}_{k_5k_1} \Omega^{22}_{k_6k_7k_2k_3} \Omega^{04}_{k_6k_7k_5k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5}_{k_1}} e^{-\tau_2 \epsilon^{k_6 k_7}_{k_2 k_3}} e^{-\tau_3 \epsilon_{k_4 k_5 k_6 k_7}}$$
$$= \frac{(-1)^3}{(2!)^2} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{11}_{k_5k_1} \Omega^{22}_{k_6k_7k_2k_3} \Omega^{04}_{k_6k_7k_5k_4} \left[\frac{1}{\epsilon_{k_1k_4k_6k_7}\ \epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_4k_5k_6k_7}} + \frac{1}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_2k_3k_4k_5}\ \epsilon_{k_4k_5k_6k_7}} \right] \tag{100}$$



$\rightarrow$ T5:

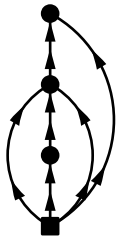


$$\text{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{101}$$

$$a_1 = \epsilon_{k_1}^{k_5}$$
$$a_2 = \epsilon_{k_2 k_3}^{k_6 k_7}$$
$$a_3 = \epsilon_{k_4 k_5 k_6 k_7}$$

Diagram 49:

$$\text{PO3.49} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{11}_{k_5k_1} \Omega^{13}_{k_6k_5k_2k_3} \Omega^{02}_{k_6k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5}_{k_1}} e^{-\tau_2 \epsilon^{k_6}_{k_2 k_3 k_5}} e^{-\tau_3 \epsilon_{k_4 k_6}}$$
$$= \frac{(-1)^3}{(2!)} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{11}_{k_5k_1} \Omega^{13}_{k_6k_5k_2k_3} \Omega^{02}_{k_6k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_2k_3k_5k_4}\ \epsilon_{k_4k_6}} \tag{102}$$

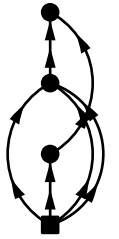



$$\text{T1} = \frac{1}{(a_1 + a_2 + a_3)(a_2 + a_3)a_3} \tag{103}$$

$$\begin{aligned} a_1 &= \epsilon^{k_5}_{k_1} \\ a_2 &= \epsilon^{k_6}_{k_2 k_3 k_5} \\ a_3 &= \epsilon_{k_4 k_6} \end{aligned}$$

Diagram 50:

$$\begin{aligned} \text{PO3.50} &= \lim_{\tau\to\infty} \frac{-(-1)^3}{(3!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{11}_{k_5 k_1} \Omega^{13}_{k_6 k_2 k_3 k_4} \Omega^{02}_{k_6 k_5} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_5}_{k_1}} e^{-\tau_2 \epsilon^{k_6}_{k_2 k_3 k_4}} e^{-\tau_3 \epsilon_{k_5 k_6}} \\ &= \frac{-(-1)^3}{(3!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{11}_{k_5 k_1} \Omega^{13}_{k_6 k_2 k_3 k_4} \Omega^{02}_{k_6 k_5} \left[\frac{1}{\epsilon_{k_1 k_6}\ \epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_5 k_6}} + \frac{1}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_2 k_3 k_4 k_5}\ \epsilon_{k_5 k_6}} \right] \end{aligned} \tag{104}$$

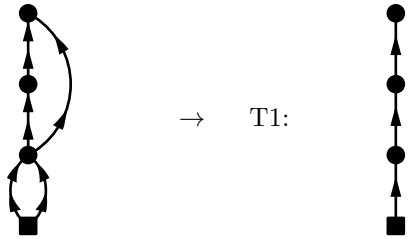



$$\text{T5} = \frac{1}{(a_1 + a_3)(a_2 + a_1 + a_3)a_3} + \frac{1}{(a_1 + a_2 + a_3)(a_2 + a_3)a_3} \tag{105}$$

$$a_1 = \epsilon^{k_5}_{k_1}$$
$$a_2 = \epsilon^{k_6}_{k_2 k_3 k_4}$$
$$a_3 = \epsilon_{k_5 k_6}$$

Diagram 51:

$$\text{PO3.51} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{22}_{k_3 k_4 k_1 k_2} \Omega^{11}_{k_5 k_3} \Omega^{02}_{k_5 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_3 k_4}_{k_1 k_2}} e^{-\tau_2 \epsilon^{k_5}_{k_3}} e^{-\tau_3 \epsilon_{k_4 k_5}}$$
$$= \frac{(-1)^3}{(2!)} \sum_{k_i} \frac{O^{20}_{k_1 k_2} \Omega^{22}_{k_3 k_4 k_1 k_2} \Omega^{11}_{k_5 k_3} \Omega^{02}_{k_5 k_4}}{\epsilon_{k_1 k_2}\ \epsilon_{k_3 k_4}\ \epsilon_{k_4 k_5}} \tag{106}$$

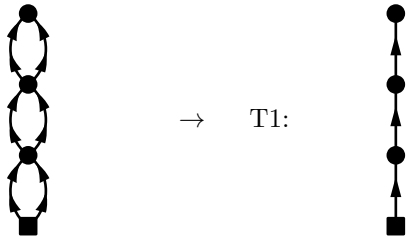


$$\text{T1} = \frac{1}{(a_1 + a_2 + a_3)(a_2 + a_3)a_3} \tag{107}$$

$$a_1 = \epsilon^{k_3 k_4}_{k_1 k_2}$$
$$a_2 = \epsilon^{k_5}_{k_3}$$
$$a_3 = \epsilon_{k_4 k_5}$$

Diagram 52:

$$\text{PO3.52} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^3} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{22}_{k_3 k_4 k_1 k_2} \Omega^{22}_{k_5 k_6 k_3 k_4} \Omega^{02}_{k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_3 k_4}_{k_1 k_2}} e^{-\tau_2 \epsilon^{k_5 k_6}_{k_3 k_4}} e^{-\tau_3 \epsilon_{k_5 k_6}}$$
$$= \frac{(-1)^3}{(2!)^3} \sum_{k_i} \frac{O^{20}_{k_1 k_2} \Omega^{22}_{k_3 k_4 k_1 k_2} \Omega^{22}_{k_5 k_6 k_3 k_4} \Omega^{02}_{k_5 k_6}}{\epsilon_{k_1 k_2}\ \epsilon_{k_3 k_4}\ \epsilon_{k_5 k_6}} \tag{108}$$



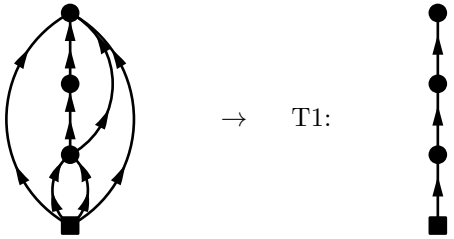
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{109}$$

$$\begin{aligned} a_1 &= \epsilon^{k_3k_4}_{k_1k_2} \\ a_2 &= \epsilon^{k_5k_6}_{k_3k_4} \\ a_3 &= \epsilon_{k_5k_6} \end{aligned}$$

Diagram 53:

$$\begin{aligned} \mathrm{PO3.53} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{22}_{k_5k_6k_1k_2} \Omega^{11}_{k_7k_5} \Omega^{04}_{k_7k_6k_3k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5k_6}_{k_1k_2}} e^{-\tau_2 \epsilon^{k_7}_{k_5}} e^{-\tau_3 \epsilon_{k_3k_4k_6k_7}} \\ &= \frac{(-1)^3}{(2!)^2} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{22}_{k_5k_6k_1k_2} \Omega^{11}_{k_7k_5} \Omega^{04}_{k_7k_6k_3k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_5k_3k_4k_6}\ \epsilon_{k_3k_4k_6k_7}} \end{aligned} \tag{110}$$



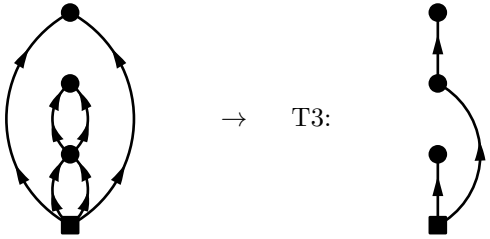
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{111}$$

$$a_1 = \epsilon^{k_5 k_6}_{k_1 k_2}$$
$$a_2 = \epsilon^{k_7}_{k_5}$$
$$a_3 = \epsilon_{k_3 k_4 k_6 k_7}$$

Diagram 54:

$$\text{PO3.54} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^3} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{22}_{k_5 k_6 k_1 k_2} \Omega^{02}_{k_5 k_6} \Omega^{02}_{k_3 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1) e^{-\tau_1 \epsilon^{k_5 k_6}_{k_1 k_2}} e^{-\tau_2 \epsilon_{k_5 k_6}} e^{-\tau_3 \epsilon_{k_3 k_4}}$$
$$= \frac{(-1)^3}{(2!)^3} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{22}_{k_5 k_6 k_1 k_2} \Omega^{02}_{k_5 k_6} \Omega^{02}_{k_3 k_4}}{\epsilon^{k_5 k_6}_{k_1 k_2}\ \epsilon_{k_5 k_6 k_3 k_4}\ \epsilon_{k_3 k_4}} \tag{112}$$

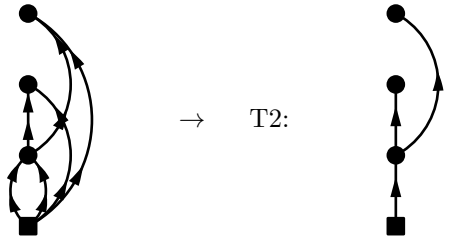


$$\text{T3} = \frac{1}{a_1(a_2 + a_3)a_3} \tag{113}$$

$$a_1 = \epsilon^{k_5 k_6}_{k_1 k_2}$$
$$a_2 = \epsilon_{k_5 k_6}$$
$$a_3 = \epsilon_{k_3 k_4}$$

Diagram 55:

$$\text{PO3.55} = \lim_{\tau\to\infty} \frac{-(-1)^3}{2(2!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{22}_{k_5 k_6 k_1 k_2} \Omega^{02}_{k_5 k_3} \Omega^{02}_{k_6 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_1) e^{-\tau_1 \epsilon^{k_5 k_6}_{k_1 k_2}} e^{-\tau_2 \epsilon_{k_3 k_5}} e^{-\tau_3 \epsilon_{k_4 k_6}}$$
$$= \frac{-(-1)^3}{2(2!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{22}_{k_5 k_6 k_1 k_2} \Omega^{02}_{k_5 k_3} \Omega^{02}_{k_6 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_3 k_5}\ \epsilon_{k_4 k_6}} \tag{114}$$

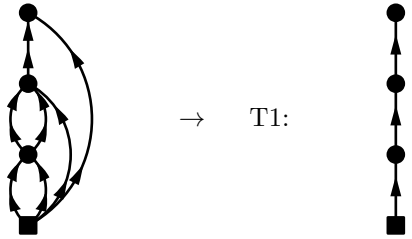


$$\text{T2} = \frac{1}{(a_1+a_2+a_3)a_2a_3} \tag{115}$$

$$\begin{aligned} a_1 &= \epsilon^{k_5k_6}_{k_1k_2} \\ a_2 &= \epsilon_{k_3k_5} \\ a_3 &= \epsilon_{k_4k_6} \end{aligned}$$

Diagram 56:

$$\begin{aligned} \text{PO3.56} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{22}_{k_5k_6k_1k_2} \Omega^{13}_{k_7k_5k_6k_3} \Omega^{02}_{k_7k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5k_6}_{k_1k_2}} e^{-\tau_2 \epsilon^{k_7}_{k_3k_5k_6}} e^{-\tau_3 \epsilon_{k_4k_7}} \\ &= \frac{(-1)^3}{(2!)^2} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{22}_{k_5k_6k_1k_2} \Omega^{13}_{k_7k_5k_6k_3} \Omega^{02}_{k_7k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_3k_5k_6k_4}\ \epsilon_{k_4k_7}} \end{aligned} \tag{116}$$

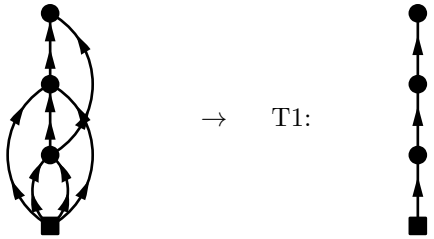


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{117}$$

$$a_1 = \epsilon^{k_5 k_6}_{k_1 k_2}$$
$$a_2 = \epsilon^{k_7}_{k_3 k_5 k_6}$$
$$a_3 = \epsilon_{k_4 k_7}$$

Diagram 57:

$$\text{PO3.57} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{22}_{k_5 k_6 k_1 k_2} \Omega^{13}_{k_7 k_5 k_3 k_4} \Omega^{02}_{k_7 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5 k_6}_{k_1 k_2}} e^{-\tau_2 \epsilon^{k_7}_{k_3 k_4 k_5}} e^{-\tau_3 \epsilon_{k_6 k_7}}$$
$$= \frac{(-1)^3}{(2!)^2} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{22}_{k_5 k_6 k_1 k_2} \Omega^{13}_{k_7 k_5 k_3 k_4} \Omega^{02}_{k_7 k_6}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_3 k_4 k_5 k_6}\ \epsilon_{k_6 k_7}} \tag{118}$$



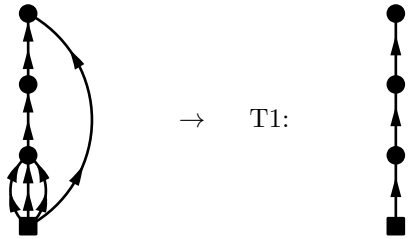
$\rightarrow$ T1:

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{119}$$

$$a_1 = \epsilon^{k_5 k_6}_{k_1 k_2}$$
$$a_2 = \epsilon^{k_7}_{k_3 k_4 k_5}$$
$$a_3 = \epsilon_{k_6 k_7}$$

Diagram 58:

$$\text{PO3.58} = \lim_{\tau\to\infty} \frac{(-1)^3}{(3!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{13}_{k_5 k_1 k_2 k_3} \Omega^{11}_{k_6 k_5} \Omega^{02}_{k_6 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5}_{k_1 k_2 k_3}} e^{-\tau_2 \epsilon^{k_6}_{k_5}} e^{-\tau_3 \epsilon_{k_4 k_6}}$$
$$= \frac{(-1)^3}{(3!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{13}_{k_5 k_1 k_2 k_3} \Omega^{11}_{k_6 k_5} \Omega^{02}_{k_6 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_5 k_4}\ \epsilon_{k_4 k_6}} \tag{120}$$



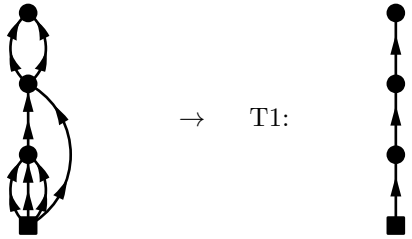
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{121}$$

$$\begin{aligned} a_1 &= \epsilon^{k_5}_{k_1k_2k_3} \\ a_2 &= \epsilon^{k_6}_{k_5} \\ a_3 &= \epsilon_{k_4k_6} \end{aligned}$$

Diagram 59:

$$\begin{aligned} \mathrm{PO3.59} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{13}_{k_5k_1k_2k_3} \Omega^{22}_{k_6k_7k_5k_4} \Omega^{02}_{k_6k_7} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5}_{k_1k_2k_3}} e^{-\tau_2 \epsilon^{k_6k_7}_{k_4k_5}} e^{-\tau_3 \epsilon_{k_6k_7}} \\ &= \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{13}_{k_5k_1k_2k_3} \Omega^{22}_{k_6k_7k_5k_4} \Omega^{02}_{k_6k_7}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_4k_5}\ \epsilon_{k_6k_7}} \end{aligned} \tag{122}$$



$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{123}$$

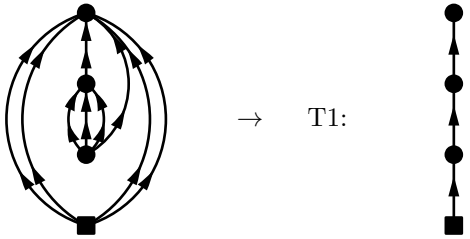
$$a_1 = \epsilon^{k_5}_{k_1 k_2 k_3}$$
$$a_2 = \epsilon^{k_6 k_7}_{k_4 k_5}$$
$$a_3 = \epsilon_{k_6 k_7}$$

3 Three-body diagrams

3.1 Three-body energy canonical diagrams

Diagram 60:

$$\text{PO3.60} = \lim_{\tau\to\infty} \frac{(-1)^3}{(3!)(4!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{40}_{k_5 k_6 k_7 k_8} \Omega^{13}_{k_9 k_5 k_6 k_7} \Omega^{06}_{k_9 k_8 k_1 k_2 k_3 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5 k_6 k_7 k_8}} e^{-\tau_2 \epsilon^{k_9}_{k_5 k_6 k_7}} e^{-\tau_3 \epsilon_{k_1 k_2 k_3 k_4 k_8 k_9}}$$
$$= \frac{(-1)^3}{(3!)(4!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{40}_{k_5 k_6 k_7 k_8} \Omega^{13}_{k_9 k_5 k_6 k_7} \Omega^{06}_{k_9 k_8 k_1 k_2 k_3 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_5 k_6 k_7 k_1 k_2 k_3 k_4 k_8}\ \epsilon_{k_1 k_2 k_3 k_4 k_8 k_9}} \tag{124}$$



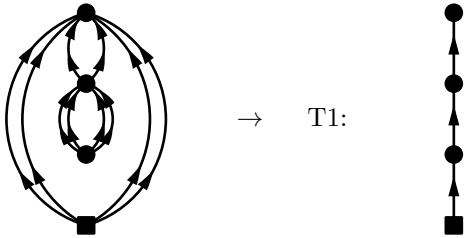
$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{125}$$

$$a_1 = \epsilon^{k_5 k_6 k_7 k_8}$$
$$a_2 = \epsilon^{k_9}_{k_5 k_6 k_7}$$
$$a_3 = \epsilon_{k_1 k_2 k_3 k_4 k_8 k_9}$$

Diagram 61:

$$\mathrm{PO3.61} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(4!)^2} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{40}_{k_5k_6k_7k_8} \Omega^{24}_{k_9k_{10}k_5k_6k_7k_8} \Omega^{06}_{k_9k_{10}k_1k_2k_3k_4} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_5k_6k_7k_8}} e^{-\tau_2\epsilon^{k_9k_{10}}_{k_5k_6k_7k_8}} e^{-\tau_3\epsilon_{k_1k_2k_3k_4k_9k_{10}}}$$

$$= \frac{(-1)^3}{(2!)(4!)^2} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{40}_{k_5k_6k_7k_8} \Omega^{24}_{k_9k_{10}k_5k_6k_7k_8} \Omega^{06}_{k_9k_{10}k_1k_2k_3k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_5k_6k_7k_8k_1k_2k_3k_4}\ \epsilon_{k_1k_2k_3k_4k_9k_{10}}} \tag{126}$$



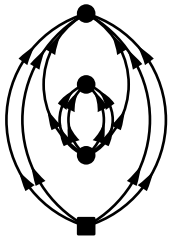
$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{127}$$

$$a_1 = \epsilon^{k_5k_6k_7k_8}$$
$$a_2 = \epsilon^{k_9k_{10}}_{k_5k_6k_7k_8}$$
$$a_3 = \epsilon_{k_1k_2k_3k_4k_9k_{10}}$$

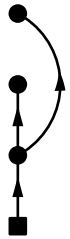
Diagram 62:

$$\mathrm{PO3.62} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(4!)^2} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{60}_{k_5k_6k_7k_8k_9k_{10}} \Omega^{04}_{k_5k_6k_7k_8} \Omega^{06}_{k_9k_{10}k_1k_2k_3k_4} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1) e^{-\tau_1\epsilon^{k_5k_6k_7k_8k_9k_{10}}} e^{-\tau_2\epsilon_{k_5k_6k_7k_8}} e^{-\tau_3\epsilon_{k_1k_2k_3k_4k_9k_{10}}}$$

$$= \frac{(-1)^3}{(2!)(4!)^2} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{60}_{k_5k_6k_7k_8k_9k_{10}} \Omega^{04}_{k_5k_6k_7k_8} \Omega^{06}_{k_9k_{10}k_1k_2k_3k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_5k_6k_7k_8}\ \epsilon_{k_1k_2k_3k_4k_9k_{10}}} \tag{128}$$



$\rightarrow$ T2:

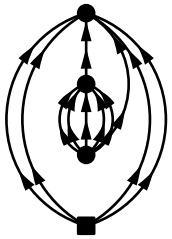


$$\mathrm{T2} = \frac{1}{(a_1+a_2+a_3)a_2a_3} \tag{129}$$

$$\begin{aligned} a_1 &= \epsilon^{k_5k_6k_7k_8k_9k_{10}} \\ a_2 &= \epsilon_{k_5k_6k_7k_8} \\ a_3 &= \epsilon_{k_1k_2k_3k_4k_9k_{10}} \end{aligned}$$

Diagram 63:

$$\begin{aligned} \mathrm{PO3.63} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(4!)(5!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{60}_{k_5k_6k_7k_8k_9k_{10}} \Omega^{15}_{k_{11}k_5k_6k_7k_8k_9} \Omega^{06}_{k_{11}k_{10}k_1k_2k_3k_4} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_5k_6k_7k_8k_9k_{10}}} e^{-\tau_2\epsilon^{k_{11}}_{k_5k_6k_7k_8k_9}} e^{-\tau_3\epsilon_{k_1k_2k_3k_4}} \\ &= \frac{(-1)^3}{(4!)(5!)} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{60}_{k_5k_6k_7k_8k_9k_{10}} \Omega^{15}_{k_{11}k_5k_6k_7k_8k_9} \Omega^{06}_{k_{11}k_{10}k_1k_2k_3k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_5k_6k_7k_8k_9k_1k_2k_3k_4k_{10}}\ \epsilon_{k_1k_2k_3k_4k_{10}k_{11}}} \end{aligned} \tag{130}$$



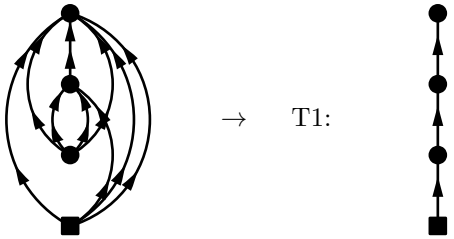
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{131}$$

$$a_1 = \epsilon^{k_5 k_6 k_7 k_8 k_9 k_{10}}$$
$$a_2 = \epsilon^{k_{11}}_{k_5 k_6 k_7 k_8 k_9}$$
$$a_3 = \epsilon_{k_1 k_2 k_3 k_4 k_{10} k_{11}}$$

Diagram 64:

$$\text{PO3.64} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{40}_{k_5k_6k_7k_8} \Omega^{13}_{k_9k_5k_6k_1} \Omega^{06}_{k_9k_7k_8k_2k_3k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5k_6k_7k_8}} e^{-\tau_2 \epsilon^{k_9}_{k_1k_5k_6}} e^{-\tau_3 \epsilon_{k_2k_3k_4k_7k_8k_9}}$$
$$= \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{40}_{k_5k_6k_7k_8} \Omega^{13}_{k_9k_5k_6k_1} \Omega^{06}_{k_9k_7k_8k_2k_3k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_1k_5k_6k_2k_3k_4k_7k_8}\ \epsilon_{k_2k_3k_4k_7k_8k_9}} \tag{132}$$



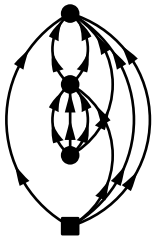
$\rightarrow$ T1:

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{133}$$

$$a_1 = \epsilon^{k_5 k_6 k_7 k_8}$$
$$a_2 = \epsilon^{k_9}_{k_1 k_5 k_6}$$
$$a_3 = \epsilon_{k_2 k_3 k_4 k_7 k_8 k_9}$$

Diagram 65:

$$\text{PO3.65} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{40}_{k_5k_6k_7k_8} \Omega^{24}_{k_9k_{10}k_5k_6k_7k_1} \Omega^{06}_{k_9k_{10}k_8k_2k_3k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5k_6k_7k_8}} e^{-\tau_2 \epsilon^{k_9k_{10}}_{k_1k_5k_6k_7}} e^{-\tau_3 \epsilon_{k_2k_3k_4k_8k_9k_{10}}}$$
$$= \frac{-(-1)^3}{(2!)(3!)^2} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{40}_{k_5k_6k_7k_8} \Omega^{24}_{k_9k_{10}k_5k_6k_7k_1} \Omega^{06}_{k_9k_{10}k_8k_2k_3k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_1k_5k_6k_7k_2k_3k_4k_8}\ \epsilon_{k_2k_3k_4k_8k_9k_{10}}} \tag{134}$$



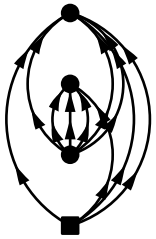
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{135}$$

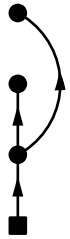
$$\begin{aligned} a_1 &= \epsilon^{k_5k_6k_7k_8} \\ a_2 &= \epsilon^{k_9k_{10}}_{k_1k_5k_6k_7} \\ a_3 &= \epsilon_{k_2k_3k_4k_8k_9k_{10}} \end{aligned}$$

Diagram 66:

$$\begin{aligned} \mathrm{PO3.66} &= \lim_{\tau\to\infty} \frac{-(-1)^3}{(3!)^3} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{60}_{k_5k_6k_7k_8k_9k_{10}} \Omega^{04}_{k_5k_6k_7k_1} \Omega^{06}_{k_8k_9k_{10}k_2k_3k_4} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1) e^{-\tau_1\epsilon^{k_5k_6k_7k_8k_9k_{10}}} e^{-\tau_2\epsilon_{k_1k_5k_6k_7}} e^{-\tau_3\epsilon_{k_2k_3k_4k_8k_9k_{10}}} \\ &= \frac{-(-1)^3}{(3!)^3} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{60}_{k_5k_6k_7k_8k_9k_{10}} \Omega^{04}_{k_5k_6k_7k_1} \Omega^{06}_{k_8k_9k_{10}k_2k_3k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_1k_5k_6k_7}\ \epsilon_{k_2k_3k_4k_8k_9k_{10}}} \end{aligned} \tag{136}$$



$\rightarrow$ T2:

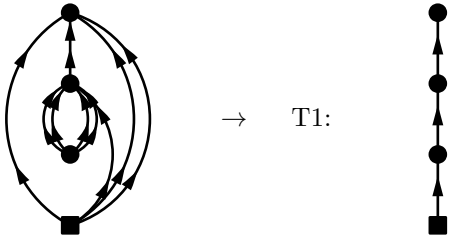


$$\mathrm{T2} = \frac{1}{(a_1+a_2+a_3)a_2a_3} \tag{137}$$

$$a_1 = \epsilon^{k_5 k_6 k_7 k_8 k_9 k_{10}}$$
$$a_2 = \epsilon_{k_1 k_5 k_6 k_7}$$
$$a_3 = \epsilon_{k_2 k_3 k_4 k_8 k_9 k_{10}}$$

Diagram 67:

$$\text{PO3.67} = \lim_{\tau\to\infty} \frac{(-1)^3}{(3!)(4!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{40}_{k_5 k_6 k_7 k_8} \Omega^{15}_{k_9 k_5 k_6 k_7 k_8 k_1} \Omega^{04}_{k_9 k_2 k_3 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_5 k_6 k_7 k_8}} e^{-\tau_2 \epsilon^{k_9}_{k_1 k_5 k_6 k_7 k_8}} e^{-\tau_3 \epsilon_{k_2 k_3 k_4 k_9}}$$
$$= \frac{(-1)^3}{(3!)(4!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{40}_{k_5 k_6 k_7 k_8} \Omega^{15}_{k_9 k_5 k_6 k_7 k_8 k_1} \Omega^{04}_{k_9 k_2 k_3 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_1 k_5 k_6 k_7 k_8 k_2 k_3 k_4}\ \epsilon_{k_2 k_3 k_4 k_9}} \tag{138}$$

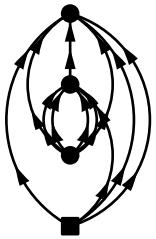


$$\text{T1} = \frac{1}{(a_1 + a_2 + a_3)(a_2 + a_3)a_3} \tag{139}$$

$$a_1 = \epsilon^{k_5 k_6 k_7 k_8}$$
$$a_2 = \epsilon^{k_9}_{k_1 k_5 k_6 k_7 k_8}$$
$$a_3 = \epsilon_{k_2 k_3 k_4 k_9}$$

Diagram 68:

$$\text{PO3.68} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)(4!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{60}_{k_5 k_6 k_7 k_8 k_9 k_{10}} \Omega^{15}_{k_{11} k_5 k_6 k_7 k_8 k_1} \Omega^{06}_{k_{11} k_9 k_{10} k_2 k_3 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_5 k_6 k_7 k_8 k_9 k_{10}}} e^{-\tau_2 \epsilon^{k_{11}}_{k_1 k_5 k_6 k_7 k_8}} e^{-\tau_3 \epsilon_{k_2 k_3}}$$
$$= \frac{(-1)^3}{(2!)(3!)(4!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{60}_{k_5 k_6 k_7 k_8 k_9 k_{10}} \Omega^{15}_{k_{11} k_5 k_6 k_7 k_8 k_1} \Omega^{06}_{k_{11} k_9 k_{10} k_2 k_3 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_1 k_5 k_6 k_7 k_8 k_2 k_3 k_4 k_9 k_{10}}\ \epsilon_{k_2 k_3 k_4 k_9 k_{10} k_{11}}} \tag{140}$$



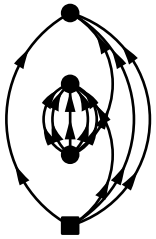
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{141}$$

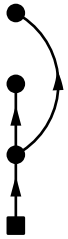
$$\begin{aligned} a_1 &= \epsilon^{k_5k_6k_7k_8k_9k_{10}} \\ a_2 &= \epsilon^{k_{11}}_{k_1k_5k_6k_7k_8} \\ a_3 &= \epsilon_{k_2k_3k_4k_9k_{10}k_{11}} \end{aligned}$$

Diagram 69:

$$\begin{aligned} \mathrm{PO3.69} &= \lim_{\tau\to\infty} \frac{-(-1)^3}{(3!)(5!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{60}_{k_5k_6k_7k_8k_9k_{10}} \Omega^{06}_{k_5k_6k_7k_8k_9k_1} \Omega^{04}_{k_{10}k_2k_3k_4} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1) e^{-\tau_1\epsilon^{k_5k_6k_7k_8k_9k_{10}}} e^{-\tau_2\epsilon_{k_1k_5k_6k_7k_8k_9}} e^{-\tau_3\epsilon_{k_2k_3k_4k_{10}}} \\ &= \frac{-(-1)^3}{(3!)(5!)} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{60}_{k_5k_6k_7k_8k_9k_{10}} \Omega^{06}_{k_5k_6k_7k_8k_9k_1} \Omega^{04}_{k_{10}k_2k_3k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_1k_5k_6k_7k_8k_9}\ \epsilon_{k_2k_3k_4k_{10}}} \end{aligned} \tag{142}$$



$\rightarrow$ T2:

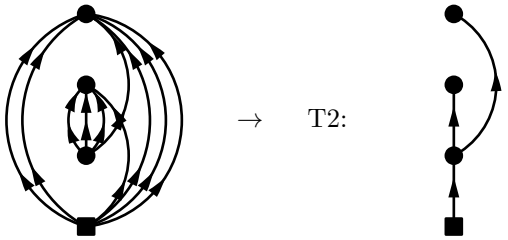


$$\mathrm{T2} = \frac{1}{(a_1+a_2+a_3)a_2a_3} \tag{143}$$

$$a_1 = \epsilon^{k_5 k_6 k_7 k_8 k_9 k_{10}}$$
$$a_2 = \epsilon_{k_1 k_5 k_6 k_7 k_8 k_9}$$
$$a_3 = \epsilon_{k_2 k_3 k_4 k_{10}}$$

Diagram 70:

$$\text{PO3.70} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(3!)(5!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{40}_{k_7k_8k_9k_{10}} \Omega^{04}_{k_7k_8k_9k_1} \Omega^{06}_{k_{10}k_2k_3k_4k_5k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1) e^{-\tau_1 \epsilon^{k_7k_8k_9k_{10}}} e^{-\tau_2 \epsilon_{k_1k_7k_8k_9}} e^{-\tau_3 \epsilon_{k_2k_3k_4k_5k_6k_{10}}}$$
$$= \frac{-(-1)^3}{(3!)(5!)} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{40}_{k_7k_8k_9k_{10}} \Omega^{04}_{k_7k_8k_9k_1} \Omega^{06}_{k_{10}k_2k_3k_4k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_1k_7k_8k_9}\ \epsilon_{k_2k_3k_4k_5k_6k_{10}}} \tag{144}$$

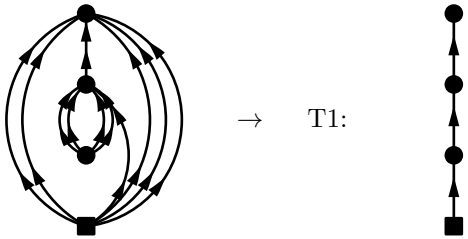


$$\text{T2} = \frac{1}{(a_1+a_2+a_3)a_2a_3} \tag{145}$$

$$a_1 = \epsilon^{k_7 k_8 k_9 k_{10}}$$
$$a_2 = \epsilon_{k_1 k_7 k_8 k_9}$$
$$a_3 = \epsilon_{k_2 k_3 k_4 k_5 k_6 k_{10}}$$

Diagram 71:

$$\text{PO3.71} = \lim_{\tau\to\infty} \frac{(-1)^3}{(4!)(5!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{40}_{k_7k_8k_9k_{10}} \Omega^{15}_{k_{11}k_7k_8k_9k_{10}k_1} \Omega^{06}_{k_{11}k_2k_3k_4k_5k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7k_8k_9k_{10}}} e^{-\tau_2 \epsilon^{k_{11}}_{k_1k_7k_8k_9k_{10}}} e^{-\tau_3 \epsilon_{k_2k_3k_4k_5k_6k_{11}}}$$
$$= \frac{(-1)^3}{(4!)(5!)} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{40}_{k_7k_8k_9k_{10}} \Omega^{15}_{k_{11}k_7k_8k_9k_{10}k_1} \Omega^{06}_{k_{11}k_2k_3k_4k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_1k_7k_8k_9k_{10}k_2k_3k_4k_5k_6}\ \epsilon_{k_2k_3k_4k_5k_6k_{11}}} \tag{146}$$

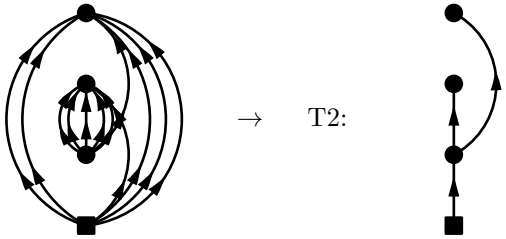


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{147}$$

$$\begin{aligned} a_1 &= \epsilon^{k_7k_8k_9k_{10}} \\ a_2 &= \epsilon^{k_{11}}_{k_1k_7k_8k_9k_{10}} \\ a_3 &= \epsilon_{k_2k_3k_4k_5k_6k_{11}} \end{aligned}$$

Diagram 72:

$$\begin{aligned} \text{PO3.72} &= \lim_{\tau\to\infty} \frac{-(-1)^3}{(5!)^2} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{60}_{k_7k_8k_9k_{10}k_{11}k_{12}} \Omega^{06}_{k_7k_8k_9k_{10}k_{11}k_1} \Omega^{06}_{k_{12}k_2k_3k_4k_5k_6} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1) e^{-\tau_1\epsilon^{k_7k_8k_9k_{10}k_{11}k_{12}}} e^{-\tau_2\epsilon_{k_1k_7k_8k_9k_{10}k_{11}}} e^{-\tau_3\epsilon_{k_2k_3k_4k} \\ &= \frac{-(-1)^3}{(5!)^2} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{60}_{k_7k_8k_9k_{10}k_{11}k_{12}} \Omega^{06}_{k_7k_8k_9k_{10}k_{11}k_1} \Omega^{06}_{k_{12}k_2k_3k_4k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_1k_7k_8k_9k_{10}k_{11}}\ \epsilon_{k_2k_3k_4k_5k_6k_{12}}} \end{aligned} \tag{148}$$

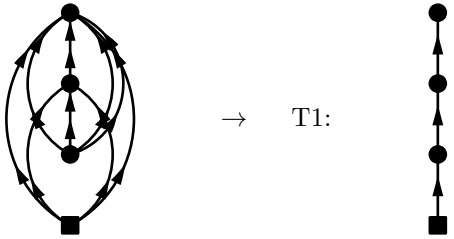


$$\text{T2} = \frac{1}{(a_1+a_2+a_3)a_2a_3} \tag{149}$$

$$a_1 = \epsilon^{k_7 k_8 k_9 k_{10} k_{11} k_{12}}$$
$$a_2 = \epsilon_{k_1 k_7 k_8 k_9 k_{10} k_{11}}$$
$$a_3 = \epsilon_{k_2 k_3 k_4 k_5 k_6 k_{12}}$$

Diagram 73:

$$\text{PO3.73} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{40}_{k_5 k_6 k_7 k_8} \Omega^{13}_{k_9 k_5 k_1 k_2} \Omega^{06}_{k_9 k_6 k_7 k_8 k_3 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5 k_6 k_7 k_8}} e^{-\tau_2 \epsilon^{k_9}_{k_1 k_2 k_5}} e^{-\tau_3 \epsilon_{k_3 k_4 k_6 k_7 k_8 k_9}}$$
$$= \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{40}_{k_5 k_6 k_7 k_8} \Omega^{13}_{k_9 k_5 k_1 k_2} \Omega^{06}_{k_9 k_6 k_7 k_8 k_3 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_1 k_2 k_5 k_3 k_4 k_6 k_7 k_8}\ \epsilon_{k_3 k_4 k_6 k_7 k_8 k_9}} \tag{150}$$

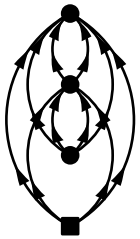


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{151}$$

$$a_1 = \epsilon^{k_5 k_6 k_7 k_8}$$
$$a_2 = \epsilon^{k_9}_{k_1 k_2 k_5}$$
$$a_3 = \epsilon_{k_3 k_4 k_6 k_7 k_8 k_9}$$

Diagram 74:

$$\text{PO3.74} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^5} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{40}_{k_5 k_6 k_7 k_8} \Omega^{24}_{k_9 k_{10} k_5 k_6 k_1 k_2} \Omega^{06}_{k_9 k_{10} k_7 k_8 k_3 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5 k_6 k_7 k_8}} e^{-\tau_2 \epsilon^{k_9 k_{10}}_{k_1 k_2 k_5 k_6}} e^{-\tau_3 \epsilon_{k_3 k_4 k_7 k_8 k_9 k_{10}}}$$
$$= \frac{(-1)^3}{(2!)^5} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{40}_{k_5 k_6 k_7 k_8} \Omega^{24}_{k_9 k_{10} k_5 k_6 k_1 k_2} \Omega^{06}_{k_9 k_{10} k_7 k_8 k_3 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_1 k_2 k_5 k_6 k_3 k_4 k_7 k_8}\ \epsilon_{k_3 k_4 k_7 k_8 k_9 k_{10}}} \tag{152}$$



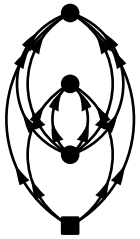
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{153}$$

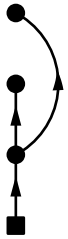
$$\begin{aligned} a_1 &= \epsilon^{k_5k_6k_7k_8} \\ a_2 &= \epsilon^{k_9k_{10}}_{k_1k_2k_5k_6} \\ a_3 &= \epsilon_{k_3k_4k_7k_8k_9k_{10}} \end{aligned}$$

Diagram 75:

$$\begin{aligned} \mathrm{PO3.75} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^3(4!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{60}_{k_5k_6k_7k_8k_9k_{10}} \Omega^{04}_{k_5k_6k_1k_2} \Omega^{06}_{k_7k_8k_9k_{10}k_3k_4} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1) e^{-\tau_1\epsilon^{k_5k_6k_7k_8k_9k_{10}}} e^{-\tau_2\epsilon_{k_1k_2k_5k_6}} e^{-\tau_3\epsilon_{k_3k_4k_7k_8k_9k_{10}}} \\ &= \frac{(-1)^3}{(2!)^3(4!)} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{60}_{k_5k_6k_7k_8k_9k_{10}} \Omega^{04}_{k_5k_6k_1k_2} \Omega^{06}_{k_7k_8k_9k_{10}k_3k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_1k_2k_5k_6}\ \epsilon_{k_3k_4k_7k_8k_9k_{10}}} \end{aligned} \tag{154}$$



$\rightarrow$ T2:

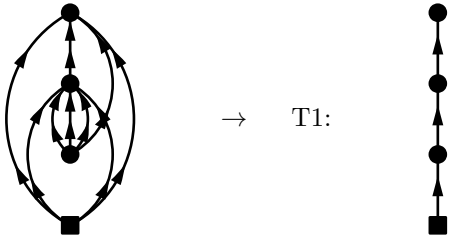


$$\mathrm{T2} = \frac{1}{(a_1+a_2+a_3)a_2a_3} \tag{155}$$

$$a_1 = \epsilon^{k_5 k_6 k_7 k_8 k_9 k_{10}}$$
$$a_2 = \epsilon_{k_1 k_2 k_5 k_6}$$
$$a_3 = \epsilon_{k_3 k_4 k_7 k_8 k_9 k_{10}}$$

Diagram 76:

$$\text{PO3.76} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{40}_{k_5 k_6 k_7 k_8} \Omega^{15}_{k_9 k_5 k_6 k_7 k_1 k_2} \Omega^{04}_{k_9 k_8 k_3 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5 k_6 k_7 k_8}} e^{-\tau_2 \epsilon^{k_9}_{k_1 k_2 k_5 k_6 k_7}} e^{-\tau_3 \epsilon_{k_3 k_4 k_8 k_9}}$$
$$= \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{40}_{k_5 k_6 k_7 k_8} \Omega^{15}_{k_9 k_5 k_6 k_7 k_1 k_2} \Omega^{04}_{k_9 k_8 k_3 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_1 k_2 k_5 k_6 k_7 k_3 k_4 k_8}\ \epsilon_{k_3 k_4 k_8 k_9}} \tag{156}$$

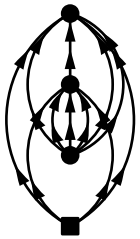


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{157}$$

$$a_1 = \epsilon^{k_5 k_6 k_7 k_8}$$
$$a_2 = \epsilon^{k_9}_{k_1 k_2 k_5 k_6 k_7}$$
$$a_3 = \epsilon_{k_3 k_4 k_8 k_9}$$

Diagram 77:

$$\text{PO3.77} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)^2} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{60}_{k_5 k_6 k_7 k_8 k_9 k_{10}} \Omega^{15}_{k_{11} k_5 k_6 k_7 k_1 k_2} \Omega^{06}_{k_{11} k_8 k_9 k_{10} k_3 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5 k_6 k_7 k_8 k_9 k_{10}}} e^{-\tau_2 \epsilon^{k_{11}}_{k_1 k_2 k_5 k_6 k_7}} e^{-\tau_3 \epsilon_{k_3 k_4 k_8}}$$
$$= \frac{(-1)^3}{(2!)^2(3!)^2} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{60}_{k_5 k_6 k_7 k_8 k_9 k_{10}} \Omega^{15}_{k_{11} k_5 k_6 k_7 k_1 k_2} \Omega^{06}_{k_{11} k_8 k_9 k_{10} k_3 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_1 k_2 k_5 k_6 k_7 k_3 k_4 k_8 k_9 k_{10}}\ \epsilon_{k_3 k_4 k_8 k_9 k_{10} k_{11}}} \tag{158}$$



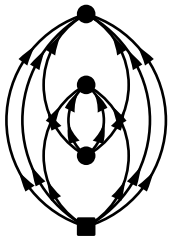
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{159}$$

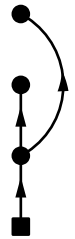
$$\begin{aligned} a_1 &= \epsilon^{k_5k_6k_7k_8k_9k_{10}} \\ a_2 &= \epsilon^{k_{11}}_{k_1k_2k_5k_6k_7} \\ a_3 &= \epsilon_{k_3k_4k_8k_9k_{10}k_{11}} \end{aligned}$$

Diagram 78:

$$\begin{aligned} \mathrm{PO3.78} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^3(4!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{40}_{k_7k_8k_9k_{10}} \Omega^{04}_{k_7k_8k_1k_2} \Omega^{06}_{k_9k_{10}k_3k_4k_5k_6} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1) e^{-\tau_1\epsilon^{k_7k_8k_9k_{10}}} e^{-\tau_2\epsilon_{k_1k_2k_7k_8}} e^{-\tau_3\epsilon_{k_3k_4k_5k_6k_9k_{10}}} \\ &= \frac{(-1)^3}{(2!)^3(4!)} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{40}_{k_7k_8k_9k_{10}} \Omega^{04}_{k_7k_8k_1k_2} \Omega^{06}_{k_9k_{10}k_3k_4k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_1k_2k_7k_8}\ \epsilon_{k_3k_4k_5k_6k_9k_{10}}} \end{aligned} \tag{160}$$



$\rightarrow$ T2:

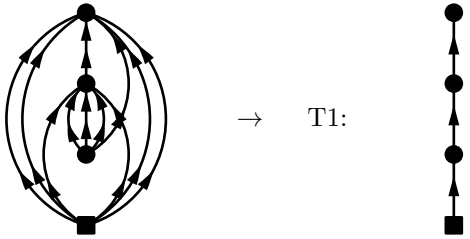


$$\mathrm{T2} = \frac{1}{(a_1+a_2+a_3)a_2a_3} \tag{161}$$

$$a_1 = \epsilon^{k_7 k_8 k_9 k_{10}}$$
$$a_2 = \epsilon_{k_1 k_2 k_7 k_8}$$
$$a_3 = \epsilon_{k_3 k_4 k_5 k_6 k_9 k_{10}}$$

Diagram 79:

$$\text{PO3.79} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)(4!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{40}_{k_7 k_8 k_9 k_{10}} \Omega^{15}_{k_{11} k_7 k_8 k_9 k_1 k_2} \Omega^{06}_{k_{11} k_{10} k_3 k_4 k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_7 k_8 k_9 k_{10}}} e^{-\tau_2 \epsilon^{k_{11}}_{k_1 k_2 k_7 k_8 k_9}} e^{-\tau_3 \epsilon_{k_3 k_4 k_5 k_6}}$$
$$= \frac{(-1)^3}{(2!)(3!)(4!)} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{40}_{k_7 k_8 k_9 k_{10}} \Omega^{15}_{k_{11} k_7 k_8 k_9 k_1 k_2} \Omega^{06}_{k_{11} k_{10} k_3 k_4 k_5 k_6}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_1 k_2 k_7 k_8 k_9 k_3 k_4 k_5 k_6 k_{10}}\ \epsilon_{k_3 k_4 k_5 k_6 k_{10} k_{11}}} \tag{162}$$

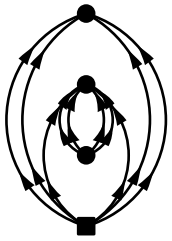


$$\text{T1} = \frac{1}{(a_1 + a_2 + a_3)(a_2 + a_3)a_3} \tag{163}$$

$$a_1 = \epsilon^{k_7 k_8 k_9 k_{10}}$$
$$a_2 = \epsilon^{k_{11}}_{k_1 k_2 k_7 k_8 k_9}$$
$$a_3 = \epsilon_{k_3 k_4 k_5 k_6 k_{10} k_{11}}$$

Diagram 80:

$$\text{PO3.80} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(4!)^2} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{40}_{k_7 k_8 k_9 k_{10}} \Omega^{06}_{k_7 k_8 k_9 k_{10} k_1 k_2} \Omega^{04}_{k_3 k_4 k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1) e^{-\tau_1 \epsilon^{k_7 k_8 k_9 k_{10}}} e^{-\tau_2 \epsilon_{k_1 k_2 k_7 k_8 k_9 k_{10}}} e^{-\tau_3 \epsilon_{k_3 k_4 k_5 k_6}}$$
$$= \frac{(-1)^3}{(2!)(4!)^2} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{40}_{k_7 k_8 k_9 k_{10}} \Omega^{06}_{k_7 k_8 k_9 k_{10} k_1 k_2} \Omega^{04}_{k_3 k_4 k_5 k_6}}{\epsilon^{k_7 k_8 k_9 k_{10}}\ \epsilon_{k_1 k_2 k_7 k_8 k_9 k_{10} k_3 k_4 k_5 k_6}\ \epsilon_{k_3 k_4 k_5 k_6}} \tag{164}$$



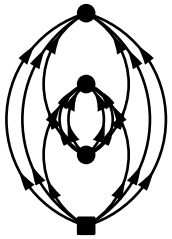
$\rightarrow$ T3:

$$\mathrm{T3} = \frac{1}{a_1(a_2+a_3)a_3} \tag{165}$$

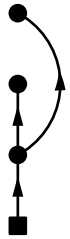
$$\begin{aligned} a_1 &= \epsilon^{k_7k_8k_9k_{10}} \\ a_2 &= \epsilon_{k_1k_2k_7k_8k_9k_{10}} \\ a_3 &= \epsilon_{k_3k_4k_5k_6} \end{aligned}$$

Diagram 81:

$$\begin{aligned} \mathrm{PO3.81} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(4!)^2} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{60}_{k_7k_8k_9k_{10}k_{11}k_{12}} \Omega^{06}_{k_7k_8k_9k_{10}k_1k_2} \Omega^{06}_{k_{11}k_{12}k_3k_4k_5k_6} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1) e^{-\tau_1\epsilon^{k_7k_8k_9k_{10}k_{11}k_{12}}} e^{-\tau_2\epsilon_{k_1k_2k_7k_8k_9k_{10}}} e^{-\tau_3\epsilon_{k_3k_4k_5} \\ &= \frac{(-1)^3}{(2!)^2(4!)^2} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{60}_{k_7k_8k_9k_{10}k_{11}k_{12}} \Omega^{06}_{k_7k_8k_9k_{10}k_1k_2} \Omega^{06}_{k_{11}k_{12}k_3k_4k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_1k_2k_7k_8k_9k_{10}}\ \epsilon_{k_3k_4k_5k_6k_{11}k_{12}}} \end{aligned} \tag{166}$$



$\rightarrow$ T2:

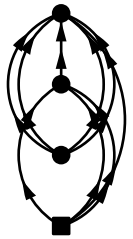


$$\mathrm{T2} = \frac{1}{(a_1+a_2+a_3)a_2a_3} \tag{167}$$

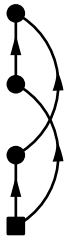
$$a_1 = \epsilon^{k_7 k_8 k_9 k_{10} k_{11} k_{12}}$$
$$a_2 = \epsilon_{k_1 k_2 k_7 k_8 k_9 k_{10}}$$
$$a_3 = \epsilon_{k_3 k_4 k_5 k_6 k_{11} k_{12}}$$

Diagram 82:

$$\text{PO3.82} = \lim_{\tau\to\infty} \frac{(-1)^3}{(3!)(4!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{40}_{k_5 k_6 k_7 k_8} \Omega^{13}_{k_9 k_1 k_2 k_3} \Omega^{06}_{k_9 k_5 k_6 k_7 k_8 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5 k_6 k_7 k_8}} e^{-\tau_2 \epsilon^{k_9}_{k_1 k_2 k_3}} e^{-\tau_3 \epsilon_{k_4 k_5 k_6 k_7 k_8 k_9}}$$
$$= \frac{(-1)^3}{(3!)(4!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{40}_{k_5 k_6 k_7 k_8} \Omega^{13}_{k_9 k_1 k_2 k_3} \Omega^{06}_{k_9 k_5 k_6 k_7 k_8 k_4} \left[\frac{1}{\epsilon_{k_4 k_9}\ \epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_4 k_5 k_6 k_7 k_8 k_9}} + \frac{1}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_1 k_2 k_3 k_4 k_5 k_6 k_7 k_8}\ \epsilon_{k_4 k_5 k_6 k_7 k_8 k_9}} \right] \tag{168}$$



$\rightarrow$ T5:

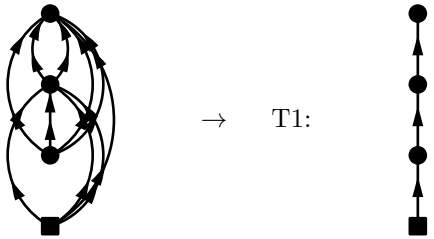


$$\text{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{169}$$

$$a_1 = \epsilon^{k_5 k_6 k_7 k_8}$$
$$a_2 = \epsilon^{k_9}_{k_1 k_2 k_3}$$
$$a_3 = \epsilon_{k_4 k_5 k_6 k_7 k_8 k_9}$$

Diagram 83:

$$\text{PO3.83} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{40}_{k_5 k_6 k_7 k_8} \Omega^{24}_{k_9 k_{10} k_5 k_1 k_2 k_3} \Omega^{06}_{k_9 k_{10} k_6 k_7 k_8 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5 k_6 k_7 k_8}} e^{-\tau_2 \epsilon^{k_9 k_{10}}_{k_1 k_2 k_3 k_5}} e^{-\tau_3 \epsilon_{k_4 k_6 k_7 k_8 k_9 k_{10}}}$$
$$= \frac{-(-1)^3}{(2!)(3!)^2} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{40}_{k_5 k_6 k_7 k_8} \Omega^{24}_{k_9 k_{10} k_5 k_1 k_2 k_3} \Omega^{06}_{k_9 k_{10} k_6 k_7 k_8 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_1 k_2 k_3 k_5 k_4 k_6 k_7 k_8}\ \epsilon_{k_4 k_6 k_7 k_8 k_9 k_{10}}} \tag{170}$$



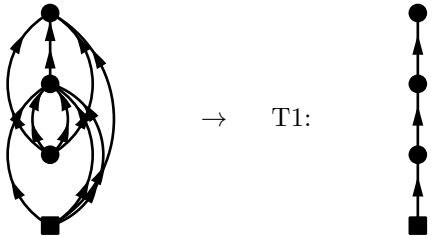
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{171}$$

$$\begin{aligned} a_1 &= \epsilon^{k_5k_6k_7k_8} \\ a_2 &= \epsilon^{k_9k_{10}}_{k_1k_2k_3k_5} \\ a_3 &= \epsilon_{k_4k_6k_7k_8k_9k_{10}} \end{aligned}$$

Diagram 84:

$$\begin{aligned} \mathrm{PO3.84} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{40}_{k_5k_6k_7k_8} \Omega^{15}_{k_9k_5k_6k_1k_2k_3} \Omega^{04}_{k_9k_7k_8k_4} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_5k_6k_7k_8}} e^{-\tau_2\epsilon^{k_9}_{k_1k_2k_3k_5k_6}} e^{-\tau_3\epsilon_{k_4k_7k_8k_9}} \\ &= \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{40}_{k_5k_6k_7k_8} \Omega^{15}_{k_9k_5k_6k_1k_2k_3} \Omega^{04}_{k_9k_7k_8k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_1k_2k_3k_5k_6k_4k_7k_8}\ \epsilon_{k_4k_7k_8k_9}} \end{aligned} \tag{172}$$



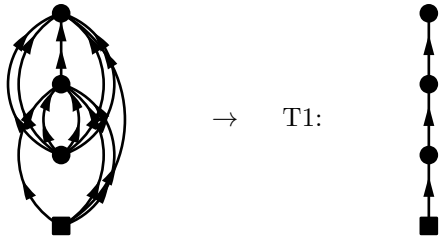
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{173}$$

$$a_1 = \epsilon^{k_5 k_6 k_7 k_8}$$
$$a_2 = \epsilon^{k_9}_{k_1 k_2 k_3 k_5 k_6}$$
$$a_3 = \epsilon_{k_4 k_7 k_8 k_9}$$

Diagram 85:

$$\mathrm{PO3.85} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)(4!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{60}_{k_5 k_6 k_7 k_8 k_9 k_{10}} \Omega^{15}_{k_{11} k_5 k_6 k_1 k_2 k_3} \Omega^{06}_{k_{11} k_7 k_8 k_9 k_{10} k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5 k_6 k_7 k_8 k_9 k_{10}}} e^{-\tau_2 \epsilon^{k_{11}}_{k_1 k_2 k_3 k_5 k_6}} e^{-\tau_3 \epsilon_{k_4 k_7}}$$
$$= \frac{(-1)^3}{(2!)(3!)(4!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{60}_{k_5 k_6 k_7 k_8 k_9 k_{10}} \Omega^{15}_{k_{11} k_5 k_6 k_1 k_2 k_3} \Omega^{06}_{k_{11} k_7 k_8 k_9 k_{10} k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_1 k_2 k_3 k_5 k_6 k_4 k_7 k_8 k_9 k_{10}}\ \epsilon_{k_4 k_7 k_8 k_9 k_{10} k_{11}}} \tag{174}$$

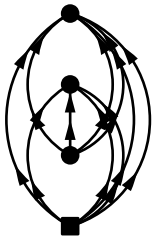


$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{175}$$

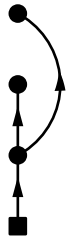
$$a_1 = \epsilon^{k_5 k_6 k_7 k_8 k_9 k_{10}}$$
$$a_2 = \epsilon^{k_{11}}_{k_1 k_2 k_3 k_5 k_6}$$
$$a_3 = \epsilon_{k_4 k_7 k_8 k_9 k_{10} k_{11}}$$

Diagram 86:

$$\mathrm{PO3.86} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(3!)^3} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{40}_{k_7 k_8 k_9 k_{10}} \Omega^{04}_{k_7 k_1 k_2 k_3} \Omega^{06}_{k_8 k_9 k_{10} k_4 k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1) e^{-\tau_1 \epsilon^{k_7 k_8 k_9 k_{10}}} e^{-\tau_2 \epsilon_{k_1 k_2 k_3 k_7}} e^{-\tau_3 \epsilon_{k_4 k_5 k_6 k_8 k_9 k_{10}}}$$
$$= \frac{-(-1)^3}{(3!)^3} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{40}_{k_7 k_8 k_9 k_{10}} \Omega^{04}_{k_7 k_1 k_2 k_3} \Omega^{06}_{k_8 k_9 k_{10} k_4 k_5 k_6}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_1 k_2 k_3 k_7}\ \epsilon_{k_4 k_5 k_6 k_8 k_9 k_{10}}} \tag{176}$$



$\rightarrow$ T2:

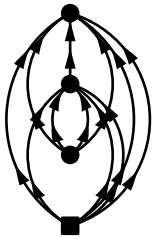


$$\mathrm{T2} = \frac{1}{(a_1+a_2+a_3)a_2a_3} \tag{177}$$

$$\begin{aligned} a_1 &= \epsilon^{k_7k_8k_9k_{10}} \\ a_2 &= \epsilon_{k_1k_2k_3k_7} \\ a_3 &= \epsilon_{k_4k_5k_6k_8k_9k_{10}} \end{aligned}$$

Diagram 87:

$$\begin{aligned} \mathrm{PO3.87} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)^2} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{40}_{k_7k_8k_9k_{10}} \Omega^{15}_{k_{11}k_7k_8k_1k_2k_3} \Omega^{06}_{k_{11}k_9k_{10}k_4k_5k_6} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_7k_8k_9k_{10}}} e^{-\tau_2\epsilon^{k_{11}}_{k_1k_2k_3k_7k_8}} e^{-\tau_3\epsilon_{k_4k_5k_6k_9k_{1}} \\ &= \frac{(-1)^3}{(2!)^2(3!)^2} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{40}_{k_7k_8k_9k_{10}} \Omega^{15}_{k_{11}k_7k_8k_1k_2k_3} \Omega^{06}_{k_{11}k_9k_{10}k_4k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_1k_2k_3k_7k_8k_4k_5k_6k_9k_{10}}\ \epsilon_{k_4k_5k_6k_9k_{10}k_{11}}} \end{aligned} \tag{178}$$



$\rightarrow$ T1:

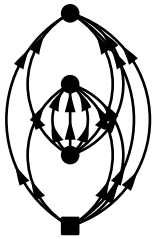
$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{179}$$

$$a_1 = \epsilon^{k_7 k_8 k_9 k_{10}}$$
$$a_2 = \epsilon^{k_{11}}_{k_1 k_2 k_3 k_7 k_8}$$
$$a_3 = \epsilon_{k_4 k_5 k_6 k_9 k_{10} k_{11}}$$

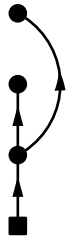
Diagram 88:

$$\text{PO3.88} = \lim_{\tau\to\infty} \frac{-(-1)^3}{2(3!)^4} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{60}_{k_7 k_8 k_9 k_{10} k_{11} k_{12}} \Omega^{06}_{k_7 k_8 k_9 k_1 k_2 k_3} \Omega^{06}_{k_{10} k_{11} k_{12} k_4 k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_1) e^{-\tau_1 \epsilon^{k_7 k_8 k_9 k_{10} k_{11} k_{12}}} e^{-\tau_2 \epsilon_{k_1 k_2 k_3 k_7 k_8 k_9}} e^{-\tau_3 \epsilon_{k_4 k_5 k_6 k_{10}}}$$

$$= \frac{-(-1)^3}{2(3!)^4} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{60}_{k_7 k_8 k_9 k_{10} k_{11} k_{12}} \Omega^{06}_{k_7 k_8 k_9 k_1 k_2 k_3} \Omega^{06}_{k_{10} k_{11} k_{12} k_4 k_5 k_6}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_1 k_2 k_3 k_7 k_8 k_9}\ \epsilon_{k_4 k_5 k_6 k_{10} k_{11} k_{12}}} \tag{180}$$



$\rightarrow$ T2:



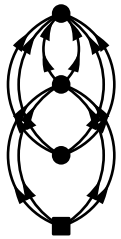
$$\text{T2} = \frac{1}{(a_1 + a_2 + a_3) a_2 a_3} \tag{181}$$

$$a_1 = \epsilon^{k_7 k_8 k_9 k_{10} k_{11} k_{12}}$$
$$a_2 = \epsilon_{k_1 k_2 k_3 k_7 k_8 k_9}$$
$$a_3 = \epsilon_{k_4 k_5 k_6 k_{10} k_{11} k_{12}}$$

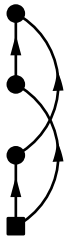
Diagram 89:

$$\text{PO3.89} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(4!)^2} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{40}_{k_5 k_6 k_7 k_8} \Omega^{24}_{k_9 k_{10} k_1 k_2 k_3 k_4} \Omega^{06}_{k_9 k_{10} k_5 k_6 k_7 k_8} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_5 k_6 k_7 k_8}} e^{-\tau_2 \epsilon^{k_9 k_{10}}_{k_1 k_2 k_3 k_4}} e^{-\tau_3 \epsilon_{k_5 k_6 k_7 k_8 k_9 k_{10}}}$$

$$= \frac{(-1)^3}{(2!)(4!)^2} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{40}_{k_5 k_6 k_7 k_8} \Omega^{24}_{k_9 k_{10} k_1 k_2 k_3 k_4} \Omega^{06}_{k_9 k_{10} k_5 k_6 k_7 k_8} \left[\frac{1}{\epsilon_{k_9 k_{10}}\ \epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_5 k_6 k_7 k_8 k_9 k_{10}}} + \frac{1}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_1 k_2 k_3 k_4 k_5 k_6 k_7 k_8}\ \epsilon_{k_5 k_6 k_7 k_8 k_9 k_{10}}} \right] \tag{182}$$



$\rightarrow$ T5:

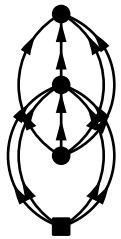


$$\mathrm{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{183}$$

$$\begin{aligned} a_1 &= \epsilon^{k_5k_6k_7k_8} \\ a_2 &= \epsilon^{k_9k_{10}}_{k_1k_2k_3k_4} \\ a_3 &= \epsilon_{k_5k_6k_7k_8k_9k_{10}} \end{aligned}$$

Diagram 90:

$$\begin{aligned} \mathrm{PO3.90} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(3!)(4!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{40}_{k_5k_6k_7k_8} \Omega^{15}_{k_9k_5k_1k_2k_3k_4} \Omega^{04}_{k_9k_6k_7k_8} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_5k_6k_7k_8}} e^{-\tau_2\epsilon^{k_9}_{k_1k_2k_3k_4k_5}} e^{-\tau_3\epsilon_{k_6k_7k_8k_9}} \\ &= \frac{(-1)^3}{(3!)(4!)} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{40}_{k_5k_6k_7k_8} \Omega^{15}_{k_9k_5k_1k_2k_3k_4} \Omega^{04}_{k_9k_6k_7k_8}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_1k_2k_3k_4k_5k_6k_7k_8}\ \epsilon_{k_6k_7k_8k_9}} \end{aligned} \tag{184}$$



$\rightarrow$ T1:

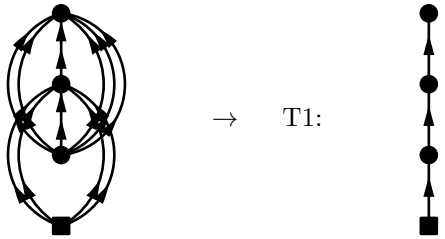
$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{185}$$

$$a_1 = \epsilon^{k_5 k_6 k_7 k_8}$$
$$a_2 = \epsilon^{k_9}_{k_1 k_2 k_3 k_4 k_5}$$
$$a_3 = \epsilon_{k_6 k_7 k_8 k_9}$$

Diagram 91:

$$\text{PO3.91} = \lim_{\tau\to\infty} \frac{(-1)^3}{(4!)(5!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{60}_{k_5 k_6 k_7 k_8 k_9 k_{10}} \Omega^{15}_{k_{11} k_5 k_1 k_2 k_3 k_4} \Omega^{06}_{k_{11} k_6 k_7 k_8 k_9 k_{10}} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5 k_6 k_7 k_8 k_9 k_{10}}} e^{-\tau_2 \epsilon^{k_{11}}_{k_1 k_2 k_3 k_4 k_5}} e^{-\tau_3 \epsilon_{k_6 k_7 k_8 k_9}}$$

$$= \frac{(-1)^3}{(4!)(5!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{60}_{k_5 k_6 k_7 k_8 k_9 k_{10}} \Omega^{15}_{k_{11} k_5 k_1 k_2 k_3 k_4} \Omega^{06}_{k_{11} k_6 k_7 k_8 k_9 k_{10}}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_1 k_2 k_3 k_4 k_5 k_6 k_7 k_8 k_9 k_{10}}\ \epsilon_{k_6 k_7 k_8 k_9 k_{10} k_{11}}} \tag{186}$$



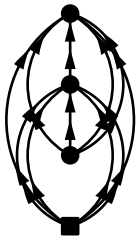
$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{187}$$

$$a_1 = \epsilon^{k_5 k_6 k_7 k_8 k_9 k_{10}}$$
$$a_2 = \epsilon^{k_{11}}_{k_1 k_2 k_3 k_4 k_5}$$
$$a_3 = \epsilon_{k_6 k_7 k_8 k_9 k_{10} k_{11}}$$

Diagram 92:

$$\text{PO3.92} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)(4!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{40}_{k_7 k_8 k_9 k_{10}} \Omega^{15}_{k_{11} k_7 k_1 k_2 k_3 k_4} \Omega^{06}_{k_{11} k_8 k_9 k_{10} k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7 k_8 k_9 k_{10}}} e^{-\tau_2 \epsilon^{k_{11}}_{k_1 k_2 k_3 k_4 k_7}} e^{-\tau_3 \epsilon_{k_5 k_6 k_8 k_9}}$$

$$= \frac{(-1)^3}{(2!)(3!)(4!)} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{40}_{k_7 k_8 k_9 k_{10}} \Omega^{15}_{k_{11} k_7 k_1 k_2 k_3 k_4} \Omega^{06}_{k_{11} k_8 k_9 k_{10} k_5 k_6}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_1 k_2 k_3 k_4 k_7 k_5 k_6 k_8 k_9 k_{10}}\ \epsilon_{k_5 k_6 k_8 k_9 k_{10} k_{11}}} \tag{188}$$



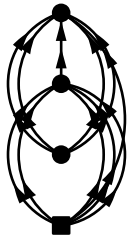
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{189}$$

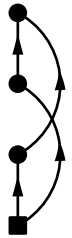
$$\begin{aligned} a_1 &= \epsilon^{k_7k_8k_9k_{10}} \\ a_2 &= \epsilon^{k_{11}}_{k_1k_2k_3k_4k_7} \\ a_3 &= \epsilon_{k_5k_6k_8k_9k_{10}k_{11}} \end{aligned}$$

Diagram 93:

$$\begin{aligned} \mathrm{PO3.93} &= \lim_{\tau\to\infty}\frac{(-1)^3}{(4!)(5!)}\sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6}\Omega^{40}_{k_7k_8k_9k_{10}}\Omega^{15}_{k_{11}k_1k_2k_3k_4k_5}\Omega^{06}_{k_{11}k_7k_8k_9k_{10}k_6}\int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2)e^{-\tau_1\epsilon^{k_7k_8k_9k_{10}}}e^{-\tau_2\epsilon^{k_{11}}_{k_1k_2k_3k_4k_5}}e^{-\tau_3\epsilon_{k_6k_7k_8k_9k_{10}k_{11}}} \\ &= \frac{(-1)^3}{(4!)(5!)}\sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6}\Omega^{40}_{k_7k_8k_9k_{10}}\Omega^{15}_{k_{11}k_1k_2k_3k_4k_5}\Omega^{06}_{k_{11}k_7k_8k_9k_{10}k_6}\left[\frac{1}{\epsilon_{k_6k_{11}}\ \epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_6k_7k_8k_9k_{10}k_{11}}}+\frac{1}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_1k_2k_3k_4k_5k_6k_7k_8k_9k_{10}}\ \epsilon_{k_6k_7k_8k_9k_{10}k_{11}}}\right] \end{aligned} \tag{190}$$



$\rightarrow$ T5:

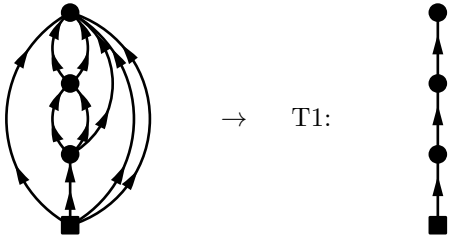


$$\mathrm{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3}+\frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{191}$$

$$a_1 = \epsilon^{k_7 k_8 k_9 k_{10}}$$
$$a_2 = \epsilon^{k_{11}}_{k_1 k_2 k_3 k_4 k_5}$$
$$a_3 = \epsilon_{k_6 k_7 k_8 k_9 k_{10} k_{11}}$$

Diagram 94:

$$\text{PO3.94} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{31}_{k_5k_6k_7k_1} \Omega^{22}_{k_8k_9k_5k_6} \Omega^{06}_{k_8k_9k_7k_2k_3k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5k_6k_7}_{k_1}} e^{-\tau_2 \epsilon^{k_8k_9}_{k_5k_6}} e^{-\tau_3 \epsilon_{k_2k_3k_4k_7k_8k_9}}$$
$$= \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{31}_{k_5k_6k_7k_1} \Omega^{22}_{k_8k_9k_5k_6} \Omega^{06}_{k_8k_9k_7k_2k_3k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_5k_6k_2k_3k_4k_7}\ \epsilon_{k_2k_3k_4k_7k_8k_9}} \tag{192}$$

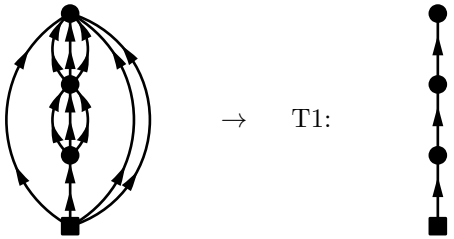


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{193}$$

$$a_1 = \epsilon^{k_5k_6k_7}_{k_1}$$
$$a_2 = \epsilon^{k_8k_9}_{k_5k_6}$$
$$a_3 = \epsilon_{k_2k_3k_4k_7k_8k_9}$$

Diagram 95:

$$\text{PO3.95} = \lim_{\tau\to\infty} \frac{(-1)^3}{(3!)^3} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{31}_{k_5k_6k_7k_1} \Omega^{33}_{k_8k_9k_{10}k_5k_6k_7} \Omega^{06}_{k_8k_9k_{10}k_2k_3k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5k_6k_7}_{k_1}} e^{-\tau_2 \epsilon^{k_8k_9k_{10}}_{k_5k_6k_7}} e^{-\tau_3 \epsilon_{k_2k_3k_4k_8k_9k_{10}}}$$
$$= \frac{(-1)^3}{(3!)^3} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{31}_{k_5k_6k_7k_1} \Omega^{33}_{k_8k_9k_{10}k_5k_6k_7} \Omega^{06}_{k_8k_9k_{10}k_2k_3k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_5k_6k_7k_2k_3k_4}\ \epsilon_{k_2k_3k_4k_8k_9k_{10}}} \tag{194}$$

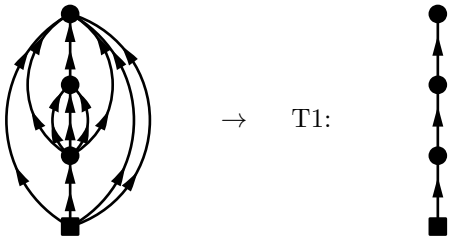


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{195}$$

$$\begin{aligned} a_1 &= \epsilon_{k_1}^{k_5k_6k_7} \\ a_2 &= \epsilon_{k_5k_6k_7}^{k_8k_9k_{10}} \\ a_3 &= \epsilon_{k_2k_3k_4k_8k_9k_{10}} \end{aligned}$$

Diagram 96:

$$\begin{aligned} \text{PO3.96} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{51}_{k_5k_6k_7k_8k_9k_1} \Omega^{13}_{k_{10}k_5k_6k_7} \Omega^{06}_{k_{10}k_8k_9k_2k_3k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon_{k_1}^{k_5k_6k_7k_8k_9}} e^{-\tau_2 \epsilon_{k_5k_6k_7}^{k_{10}}} e^{-\tau_3 \epsilon_{k_2k_3k_4k_8k_9k_{10}}} \\ &= \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{51}_{k_5k_6k_7k_8k_9k_1} \Omega^{13}_{k_{10}k_5k_6k_7} \Omega^{06}_{k_{10}k_8k_9k_2k_3k_4}}{\epsilon_{k_1k_2k_3k_4} \ \epsilon_{k_5k_6k_7k_2k_3k_4k_8k_9} \ \epsilon_{k_2k_3k_4k_8k_9k_{10}}} \end{aligned} \tag{196}$$

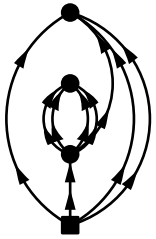


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{197}$$

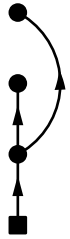
$$a_1 = \epsilon_{k_1}^{k_5 k_6 k_7 k_8 k_9}$$
$$a_2 = \epsilon_{k_5 k_6 k_7}^{k_{10}}$$
$$a_3 = \epsilon_{k_2 k_3 k_4 k_8 k_9 k_{10}}$$

Diagram 97:

$$\text{PO3.97} = \lim_{\tau\to\infty} \frac{(-1)^3}{(3!)(4!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{51}_{k_5 k_6 k_7 k_8 k_9 k_1} \Omega^{04}_{k_5 k_6 k_7 k_8} \Omega^{04}_{k_9 k_2 k_3 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1) e^{-\tau_1 \epsilon_{k_1}^{k_5 k_6 k_7 k_8 k_9}} e^{-\tau_2 \epsilon_{k_5 k_6 k_7 k_8}} e^{-\tau_3 \epsilon_{k_2 k_3 k_4 k_9}}$$
$$= \frac{(-1)^3}{(3!)(4!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{51}_{k_5 k_6 k_7 k_8 k_9 k_1} \Omega^{04}_{k_5 k_6 k_7 k_8} \Omega^{04}_{k_9 k_2 k_3 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_5 k_6 k_7 k_8}\ \epsilon_{k_2 k_3 k_4 k_9}} \tag{198}$$



$\rightarrow$ T2:

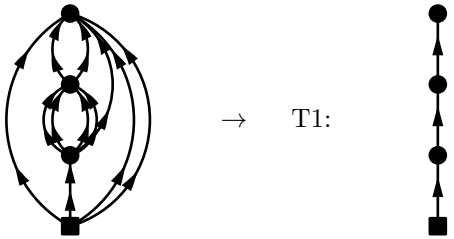


$$\text{T2} = \frac{1}{(a_1+a_2+a_3)a_2 a_3} \tag{199}$$

$$a_1 = \epsilon_{k_1}^{k_5 k_6 k_7 k_8 k_9}$$
$$a_2 = \epsilon_{k_5 k_6 k_7 k_8}$$
$$a_3 = \epsilon_{k_2 k_3 k_4 k_9}$$

Diagram 98:

$$\text{PO3.98} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)(4!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{51}_{k_5 k_6 k_7 k_8 k_9 k_1} \Omega^{24}_{k_{10} k_{11} k_5 k_6 k_7 k_8} \Omega^{06}_{k_{10} k_{11} k_9 k_2 k_3 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon_{k_1}^{k_5 k_6 k_7 k_8 k_9}} e^{-\tau_2 \epsilon_{k_5 k_6 k_7 k_8}^{k_{10} k_{11}}} e^{-\tau_3 \epsilon_{k_2 k_3 k_4 k_9 k}}$$
$$= \frac{(-1)^3}{(2!)(3!)(4!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{51}_{k_5 k_6 k_7 k_8 k_9 k_1} \Omega^{24}_{k_{10} k_{11} k_5 k_6 k_7 k_8} \Omega^{06}_{k_{10} k_{11} k_9 k_2 k_3 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_5 k_6 k_7 k_8 k_2 k_3 k_4 k_9}\ \epsilon_{k_2 k_3 k_4 k_9 k_{10} k_{11}}} \tag{200}$$

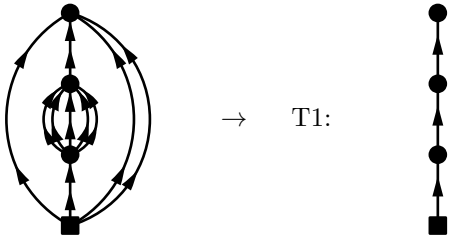


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{201}$$

$$\begin{aligned} a_1 &= \epsilon^{k_5k_6k_7k_8k_9}_{k_1} \\ a_2 &= \epsilon^{k_{10}k_{11}}_{k_5k_6k_7k_8} \\ a_3 &= \epsilon_{k_2k_3k_4k_9k_{10}k_{11}} \end{aligned}$$

Diagram 99:

$$\begin{aligned} \text{PO3.99} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(3!)(5!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{51}_{k_5k_6k_7k_8k_9k_1} \Omega^{15}_{k_{10}k_5k_6k_7k_8k_9} \Omega^{04}_{k_{10}k_2k_3k_4} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_5k_6k_7k_8k_9}_{k_1}} e^{-\tau_2\epsilon^{k_{10}}_{k_5k_6k_7k_8k_9}} e^{-\tau_3\epsilon_{k_2k_3k_4k_{10}}} \\ &= \frac{(-1)^3}{(3!)(5!)} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{51}_{k_5k_6k_7k_8k_9k_1} \Omega^{15}_{k_{10}k_5k_6k_7k_8k_9} \Omega^{04}_{k_{10}k_2k_3k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_5k_6k_7k_8k_9k_2k_3k_4}\ \epsilon_{k_2k_3k_4k_{10}}} \end{aligned} \tag{202}$$

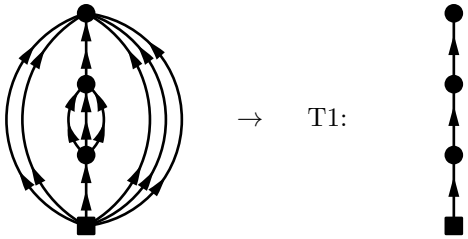


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{203}$$

$$a_1 = \epsilon^{k_5 k_6 k_7 k_8 k_9}_{k_1}$$
$$a_2 = \epsilon^{k_{10}}_{k_5 k_6 k_7 k_8 k_9}$$
$$a_3 = \epsilon_{k_2 k_3 k_4 k_{10}}$$

Diagram 100:

$$\text{PO3.100} = \lim_{\tau\to\infty} \frac{(-1)^3}{(3!)(5!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{31}_{k_7 k_8 k_9 k_1} \Omega^{13}_{k_{10} k_7 k_8 k_9} \Omega^{06}_{k_{10} k_2 k_3 k_4 k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_7 k_8 k_9}_{k_1}} e^{-\tau_2 \epsilon^{k_{10}}_{k_7 k_8 k_9}} e^{-\tau_3 \epsilon_{k_2 k_3 k_4 k_5 k_6 k_{10}}}$$
$$= \frac{(-1)^3}{(3!)(5!)} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{31}_{k_7 k_8 k_9 k_1} \Omega^{13}_{k_{10} k_7 k_8 k_9} \Omega^{06}_{k_{10} k_2 k_3 k_4 k_5 k_6}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_7 k_8 k_9 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_2 k_3 k_4 k_5 k_6 k_{10}}} \tag{204}$$



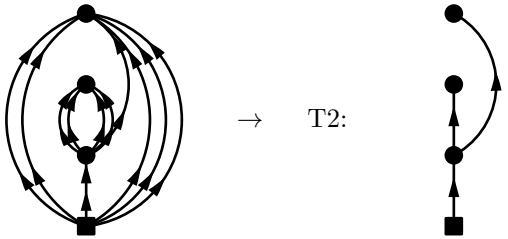
$\rightarrow$ T1:

$$\text{T1} = \frac{1}{(a_1 + a_2 + a_3)(a_2 + a_3)a_3} \tag{205}$$

$$a_1 = \epsilon^{k_7 k_8 k_9}_{k_1}$$
$$a_2 = \epsilon^{k_{10}}_{k_7 k_8 k_9}$$
$$a_3 = \epsilon_{k_2 k_3 k_4 k_5 k_6 k_{10}}$$

Diagram 101:

$$\text{PO3.101} = \lim_{\tau\to\infty} \frac{(-1)^3}{(4!)(5!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{51}_{k_7 k_8 k_9 k_{10} k_{11} k_1} \Omega^{04}_{k_7 k_8 k_9 k_{10}} \Omega^{06}_{k_{11} k_2 k_3 k_4 k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_1) e^{-\tau_1 \epsilon^{k_7 k_8 k_9 k_{10} k_{11}}_{k_1}} e^{-\tau_2 \epsilon_{k_7 k_8 k_9 k_{10}}} e^{-\tau_3 \epsilon_{k_2 k_3 k_4 k_5 k_6 k_{11}}}$$
$$= \frac{(-1)^3}{(4!)(5!)} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{51}_{k_7 k_8 k_9 k_{10} k_{11} k_1} \Omega^{04}_{k_7 k_8 k_9 k_{10}} \Omega^{06}_{k_{11} k_2 k_3 k_4 k_5 k_6}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_7 k_8 k_9 k_{10}}\ \epsilon_{k_2 k_3 k_4 k_5 k_6 k_{11}}} \tag{206}$$

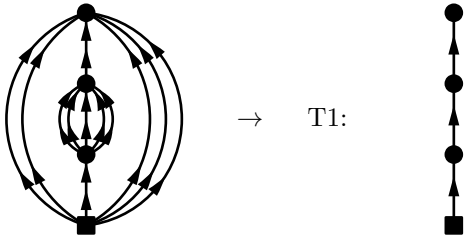


$$\text{T2} = \frac{1}{(a_1+a_2+a_3)a_2a_3} \tag{207}$$

$$\begin{aligned} a_1 &= \epsilon_{k_1}^{k_7k_8k_9k_{10}k_{11}} \\ a_2 &= \epsilon_{k_7k_8k_9k_{10}} \\ a_3 &= \epsilon_{k_2k_3k_4k_5k_6k_{11}} \end{aligned}$$

Diagram 102:

$$\begin{aligned} \text{PO3.102} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(5!)^2} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{51}_{k_7k_8k_9k_{10}k_{11}k_1} \Omega^{15}_{k_{12}k_7k_8k_9k_{10}k_{11}} \Omega^{06}_{k_{12}k_2k_3k_4k_5k_6} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon_{k_1}^{k_7k_8k_9k_{10}k_{11}}} e^{-\tau_2\epsilon_{k_7k_8k_9k_{10}k_{11}}^{k_{12}}} e^{-\tau_3\epsilon_{k_2k_3k_4k_5k_6k_{12}}} \\ &= \frac{(-1)^3}{(5!)^2} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{51}_{k_7k_8k_9k_{10}k_{11}k_1} \Omega^{15}_{k_{12}k_7k_8k_9k_{10}k_{11}} \Omega^{06}_{k_{12}k_2k_3k_4k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_7k_8k_9k_{10}k_{11}k_2k_3k_4k_5k_6}\ \epsilon_{k_2k_3k_4k_5k_6k_{12}}} \end{aligned} \tag{208}$$

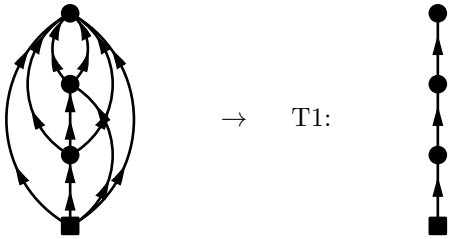


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{209}$$

$$a_1 = \epsilon_{k_1}^{k_7 k_8 k_9 k_{10} k_{11}}$$
$$a_2 = \epsilon_{k_7 k_8 k_9 k_{10} k_{11}}^{k_{12}}$$
$$a_3 = \epsilon_{k_2 k_3 k_4 k_5 k_6 k_{12}}$$

Diagram 103:

$$\text{PO3.103} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^3} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{31}_{k_5 k_6 k_7 k_1} \Omega^{22}_{k_8 k_9 k_5 k_2} \Omega^{06}_{k_8 k_9 k_6 k_7 k_3 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon_{k_1}^{k_5 k_6 k_7}} e^{-\tau_2 \epsilon_{k_2 k_5}^{k_8 k_9}} e^{-\tau_3 \epsilon_{k_3 k_4 k_6 k_7 k_8 k_9}}$$
$$= \frac{(-1)^3}{(2!)^3} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{31}_{k_5 k_6 k_7 k_1} \Omega^{22}_{k_8 k_9 k_5 k_2} \Omega^{06}_{k_8 k_9 k_6 k_7 k_3 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_2 k_5 k_3 k_4 k_6 k_7}\ \epsilon_{k_3 k_4 k_6 k_7 k_8 k_9}} \tag{210}$$

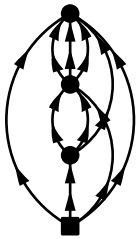


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{211}$$

$$a_1 = \epsilon_{k_1}^{k_5 k_6 k_7}$$
$$a_2 = \epsilon_{k_2 k_5}^{k_8 k_9}$$
$$a_3 = \epsilon_{k_3 k_4 k_6 k_7 k_8 k_9}$$

Diagram 104:

$$\text{PO3.104} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{31}_{k_5 k_6 k_7 k_1} \Omega^{33}_{k_8 k_9 k_{10} k_5 k_6 k_2} \Omega^{06}_{k_8 k_9 k_{10} k_7 k_3 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon_{k_1}^{k_5 k_6 k_7}} e^{-\tau_2 \epsilon_{k_2 k_5 k_6}^{k_8 k_9 k_{10}}} e^{-\tau_3 \epsilon_{k_3 k_4 k_7 k_8 k_9 k_{10}}}$$
$$= \frac{-(-1)^3}{(2!)^2(3!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{31}_{k_5 k_6 k_7 k_1} \Omega^{33}_{k_8 k_9 k_{10} k_5 k_6 k_2} \Omega^{06}_{k_8 k_9 k_{10} k_7 k_3 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_2 k_5 k_6 k_3 k_4 k_7}\ \epsilon_{k_3 k_4 k_7 k_8 k_9 k_{10}}} \tag{212}$$



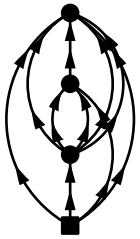
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{213}$$

$$\begin{aligned} a_1 &= \epsilon^{k_5k_6k_7}_{k_1} \\ a_2 &= \epsilon^{k_8k_9k_{10}}_{k_2k_5k_6} \\ a_3 &= \epsilon_{k_3k_4k_7k_8k_9k_{10}} \end{aligned}$$

Diagram 105:

$$\begin{aligned} \mathrm{PO3.105} &= \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{51}_{k_5k_6k_7k_8k_9k_1} \Omega^{13}_{k_{10}k_5k_6k_2} \Omega^{06}_{k_{10}k_7k_8k_9k_3k_4} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_5k_6k_7k_8k_9}_{k_1}} e^{-\tau_2\epsilon^{k_{10}}_{k_2k_5k_6}} e^{-\tau_3\epsilon_{k_3k_4k_7k_8k_9k_{10}}} \\ &= \frac{-(-1)^3}{(2!)^2(3!)} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{51}_{k_5k_6k_7k_8k_9k_1} \Omega^{13}_{k_{10}k_5k_6k_2} \Omega^{06}_{k_{10}k_7k_8k_9k_3k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_2k_5k_6k_3k_4k_7k_8k_9}\ \epsilon_{k_3k_4k_7k_8k_9k_{10}}} \end{aligned} \tag{214}$$



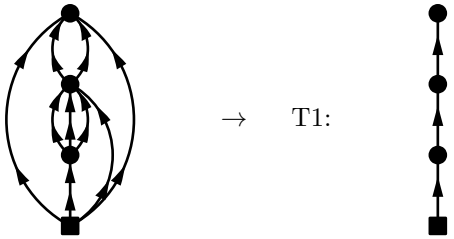
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{215}$$

$$a_1 = \epsilon^{k_5 k_6 k_7 k_8 k_9}_{k_1}$$
$$a_2 = \epsilon^{k_{10}}_{k_2 k_5 k_6}$$
$$a_3 = \epsilon_{k_3 k_4 k_7 k_8 k_9 k_{10}}$$

Diagram 106:

$$\text{PO3.106} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{31}_{k_5 k_6 k_7 k_1} \Omega^{24}_{k_8 k_9 k_5 k_6 k_7 k_2} \Omega^{04}_{k_8 k_9 k_3 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5 k_6 k_7}_{k_1}} e^{-\tau_2 \epsilon^{k_8 k_9}_{k_2 k_5 k_6 k_7}} e^{-\tau_3 \epsilon_{k_3 k_4 k_8 k_9}}$$
$$= \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{31}_{k_5 k_6 k_7 k_1} \Omega^{24}_{k_8 k_9 k_5 k_6 k_7 k_2} \Omega^{04}_{k_8 k_9 k_3 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_2 k_5 k_6 k_7 k_3 k_4}\ \epsilon_{k_3 k_4 k_8 k_9}} \tag{216}$$

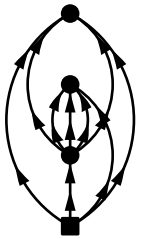


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{217}$$

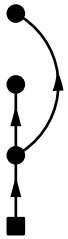
$$a_1 = \epsilon^{k_5 k_6 k_7}_{k_1}$$
$$a_2 = \epsilon^{k_8 k_9}_{k_2 k_5 k_6 k_7}$$
$$a_3 = \epsilon_{k_3 k_4 k_8 k_9}$$

Diagram 107:

$$\text{PO3.107} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{51}_{k_5 k_6 k_7 k_8 k_9 k_1} \Omega^{04}_{k_5 k_6 k_7 k_2} \Omega^{04}_{k_8 k_9 k_3 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1) e^{-\tau_1 \epsilon^{k_5 k_6 k_7 k_8 k_9}_{k_1}} e^{-\tau_2 \epsilon_{k_2 k_5 k_6 k_7}} e^{-\tau_3 \epsilon_{k_3 k_4 k_8 k_9}}$$
$$= \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{51}_{k_5 k_6 k_7 k_8 k_9 k_1} \Omega^{04}_{k_5 k_6 k_7 k_2} \Omega^{04}_{k_8 k_9 k_3 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_2 k_5 k_6 k_7}\ \epsilon_{k_3 k_4 k_8 k_9}} \tag{218}$$



$\rightarrow$ T2:

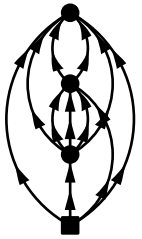


$$\mathrm{T2} = \frac{1}{(a_1+a_2+a_3)a_2a_3} \tag{219}$$

$$\begin{aligned} a_1 &= \epsilon_{k_1}^{k_5k_6k_7k_8k_9} \\ a_2 &= \epsilon_{k_2k_5k_6k_7} \\ a_3 &= \epsilon_{k_3k_4k_8k_9} \end{aligned}$$

Diagram 108:

$$\begin{aligned} \mathrm{PO3.108} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^3(3!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{51}_{k_5k_6k_7k_8k_9k_1} \Omega^{24}_{k_{10}k_{11}k_5k_6k_7k_2} \Omega^{06}_{k_{10}k_{11}k_8k_9k_3k_4} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon_{k_1}^{k_5k_6k_7k_8k_9}} e^{-\tau_2\epsilon^{k_{10}k_{11}}_{k_2k_5k_6k_7}} e^{-\tau_3\epsilon_{k_3k_4k_8k_9k_1} \\ &= \frac{(-1)^3}{(2!)^3(3!)} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{51}_{k_5k_6k_7k_8k_9k_1} \Omega^{24}_{k_{10}k_{11}k_5k_6k_7k_2} \Omega^{06}_{k_{10}k_{11}k_8k_9k_3k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_2k_5k_6k_7k_3k_4k_8k_9}\ \epsilon_{k_3k_4k_8k_9k_{10}k_{11}}} \end{aligned} \tag{220}$$



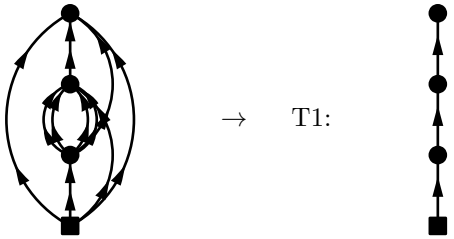
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{221}$$

$$a_1 = \epsilon_{k_1}^{k_5 k_6 k_7 k_8 k_9}$$
$$a_2 = \epsilon_{k_2 k_5 k_6 k_7}^{k_{10} k_{11}}$$
$$a_3 = \epsilon_{k_3 k_4 k_8 k_9 k_{10} k_{11}}$$

Diagram 109:

$$\text{PO3.109} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)(4!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{51}_{k_5 k_6 k_7 k_8 k_9 k_1} \Omega^{15}_{k_{10} k_5 k_6 k_7 k_8 k_2} \Omega^{04}_{k_{10} k_9 k_3 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon_{k_1}^{k_5 k_6 k_7 k_8 k_9}} e^{-\tau_2 \epsilon_{k_2 k_5 k_6 k_7 k_8}^{k_{10}}} e^{-\tau_3 \epsilon_{k_3 k_4 k_9 k_{10}}}$$
$$= \frac{-(-1)^3}{(2!)(4!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{51}_{k_5 k_6 k_7 k_8 k_9 k_1} \Omega^{15}_{k_{10} k_5 k_6 k_7 k_8 k_2} \Omega^{04}_{k_{10} k_9 k_3 k_4}}{\epsilon_{k_1 k_2 k_3 k_4} \ \epsilon_{k_2 k_5 k_6 k_7 k_8 k_3 k_4 k_9} \ \epsilon_{k_3 k_4 k_9 k_{10}}} \tag{222}$$

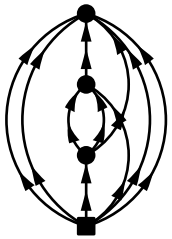


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{223}$$

$$a_1 = \epsilon_{k_1}^{k_5 k_6 k_7 k_8 k_9}$$
$$a_2 = \epsilon_{k_2 k_5 k_6 k_7 k_8}^{k_{10}}$$
$$a_3 = \epsilon_{k_3 k_4 k_9 k_{10}}$$

Diagram 110:

$$\text{PO3.110} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)(4!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{31}_{k_7 k_8 k_9 k_1} \Omega^{13}_{k_{10} k_7 k_8 k_2} \Omega^{06}_{k_{10} k_9 k_3 k_4 k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon_{k_1}^{k_7 k_8 k_9}} e^{-\tau_2 \epsilon_{k_2 k_7 k_8}^{k_{10}}} e^{-\tau_3 \epsilon_{k_3 k_4 k_5 k_6 k_9 k_{10}}}$$
$$= \frac{-(-1)^3}{(2!)(4!)} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{31}_{k_7 k_8 k_9 k_1} \Omega^{13}_{k_{10} k_7 k_8 k_2} \Omega^{06}_{k_{10} k_9 k_3 k_4 k_5 k_6}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6} \ \epsilon_{k_2 k_7 k_8 k_3 k_4 k_5 k_6 k_9} \ \epsilon_{k_3 k_4 k_5 k_6 k_9 k_{10}}} \tag{224}$$



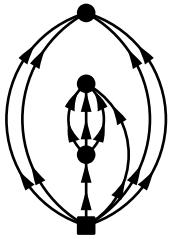
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{225}$$

$$\begin{aligned} a_1 &= \epsilon_{k_1}^{k_7k_8k_9} \\ a_2 &= \epsilon_{k_2k_7k_8}^{k_{10}} \\ a_3 &= \epsilon_{k_3k_4k_5k_6k_9k_{10}} \end{aligned}$$

Diagram 111:

$$\begin{aligned} \mathrm{PO3.111} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(3!)(4!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{31}_{k_7k_8k_9k_1} \Omega^{04}_{k_7k_8k_9k_2} \Omega^{04}_{k_3k_4k_5k_6} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1) e^{-\tau_1\epsilon_{k_1}^{k_7k_8k_9}} e^{-\tau_2\epsilon_{k_2k_7k_8k_9}} e^{-\tau_3\epsilon_{k_3k_4k_5k_6}} \\ &= \frac{(-1)^3}{(3!)(4!)} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{31}_{k_7k_8k_9k_1} \Omega^{04}_{k_7k_8k_9k_2} \Omega^{04}_{k_3k_4k_5k_6}}{\epsilon_{k_1}^{k_7k_8k_9}\ \epsilon_{k_2k_7k_8k_9k_3k_4k_5k_6}\ \epsilon_{k_3k_4k_5k_6}} \end{aligned} \tag{226}$$



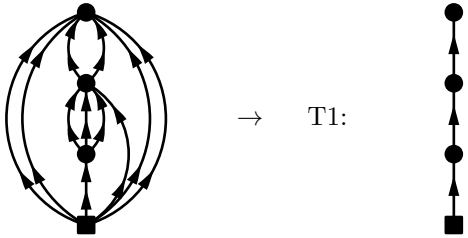
$\rightarrow$ T3:

$$\mathrm{T3} = \frac{1}{a_1(a_2+a_3)a_3} \tag{227}$$

$$a_1 = \epsilon^{k_7 k_8 k_9}_{k_1}$$
$$a_2 = \epsilon_{k_2 k_7 k_8 k_9}$$
$$a_3 = \epsilon_{k_3 k_4 k_5 k_6}$$

Diagram 112:

$$\text{PO3.112} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)(4!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{31}_{k_7 k_8 k_9 k_1} \Omega^{24}_{k_{10} k_{11} k_7 k_8 k_9 k_2} \Omega^{06}_{k_{10} k_{11} k_3 k_4 k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_7 k_8 k_9}_{k_1}} e^{-\tau_2 \epsilon^{k_{10} k_{11}}_{k_2 k_7 k_8 k_9}} e^{-\tau_3 \epsilon_{k_3 k_4 k_5 k_6 k_{10} k_{11}}}$$
$$= \frac{(-1)^3}{(2!)(3!)(4!)} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{31}_{k_7 k_8 k_9 k_1} \Omega^{24}_{k_{10} k_{11} k_7 k_8 k_9 k_2} \Omega^{06}_{k_{10} k_{11} k_3 k_4 k_5 k_6}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_2 k_7 k_8 k_9 k_3 k_4 k_5 k_6}\ \epsilon_{k_3 k_4 k_5 k_6 k_{10} k_{11}}} \tag{228}$$

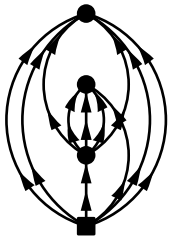


$$\text{T1} = \frac{1}{(a_1 + a_2 + a_3)(a_2 + a_3)a_3} \tag{229}$$

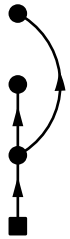
$$a_1 = \epsilon^{k_7 k_8 k_9}_{k_1}$$
$$a_2 = \epsilon^{k_{10} k_{11}}_{k_2 k_7 k_8 k_9}$$
$$a_3 = \epsilon_{k_3 k_4 k_5 k_6 k_{10} k_{11}}$$

Diagram 113:

$$\text{PO3.113} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)(4!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{51}_{k_7 k_8 k_9 k_{10} k_{11} k_1} \Omega^{04}_{k_7 k_8 k_9 k_2} \Omega^{06}_{k_{10} k_{11} k_3 k_4 k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_1) e^{-\tau_1 \epsilon^{k_7 k_8 k_9 k_{10} k_{11}}_{k_1}} e^{-\tau_2 \epsilon_{k_2 k_7 k_8 k_9}} e^{-\tau_3 \epsilon_{k_3 k_4 k_5 k_6 k_{10} k_{11}}}$$
$$= \frac{(-1)^3}{(2!)(3!)(4!)} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{51}_{k_7 k_8 k_9 k_{10} k_{11} k_1} \Omega^{04}_{k_7 k_8 k_9 k_2} \Omega^{06}_{k_{10} k_{11} k_3 k_4 k_5 k_6}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_2 k_7 k_8 k_9}\ \epsilon_{k_3 k_4 k_5 k_6 k_{10} k_{11}}} \tag{230}$$



$\rightarrow$ T2:

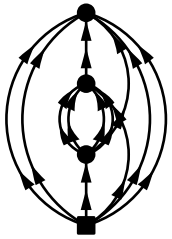


$$\mathrm{T2} = \frac{1}{(a_1+a_2+a_3)a_2a_3} \tag{231}$$

$$\begin{aligned} a_1 &= \epsilon_{k_1}^{k_7k_8k_9k_{10}k_{11}} \\ a_2 &= \epsilon_{k_2k_7k_8k_9} \\ a_3 &= \epsilon_{k_3k_4k_5k_6k_{10}k_{11}} \end{aligned}$$

Diagram 114:

$$\begin{aligned} \mathrm{PO3.114} &= \lim_{\tau\to\infty} \frac{-(-1)^3}{(4!)^2} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{51}_{k_7k_8k_9k_{10}k_{11}k_1} \Omega^{15}_{k_{12}k_7k_8k_9k_{10}k_2} \Omega^{06}_{k_{12}k_{11}k_3k_4k_5k_6} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon_{k_1}^{k_7k_8k_9k_{10}k_{11}}} e^{-\tau_2\epsilon^{k_{12}}_{k_2k_7k_8k_9k_{10}}} e^{-\tau_3\epsilon_{} \\ &= \frac{-(-1)^3}{(4!)^2} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{51}_{k_7k_8k_9k_{10}k_{11}k_1} \Omega^{15}_{k_{12}k_7k_8k_9k_{10}k_2} \Omega^{06}_{k_{12}k_{11}k_3k_4k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_2k_7k_8k_9k_{10}k_3k_4k_5k_6k_{11}}\ \epsilon_{k_3k_4k_5k_6k_{11}k_{12}}} \end{aligned} \tag{232}$$



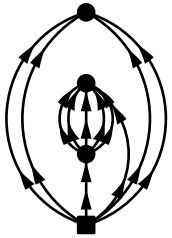
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{233}$$

$$a_1 = \epsilon_{k_1}^{k_7 k_8 k_9 k_{10} k_{11}}$$
$$a_2 = \epsilon_{k_2 k_7 k_8 k_9 k_{10}}^{k_{12}}$$
$$a_3 = \epsilon_{k_3 k_4 k_5 k_6 k_{11} k_{12}}$$

Diagram 115:

$$\text{PO3.115} = \lim_{\tau\to\infty} \frac{(-1)^3}{(4!)(5!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{51}_{k_7 k_8 k_9 k_{10} k_{11} k_1} \Omega^{06}_{k_7 k_8 k_9 k_{10} k_{11} k_2} \Omega^{04}_{k_3 k_4 k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1) e^{-\tau_1 \epsilon_{k_1}^{k_7 k_8 k_9 k_{10} k_{11}}} e^{-\tau_2 \epsilon_{k_2 k_7 k_8 k_9 k_{10} k_{11}}} e^{-\tau_3 \epsilon_{k_3 k_4 k_5 k_6}}$$
$$= \frac{(-1)^3}{(4!)(5!)} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{51}_{k_7 k_8 k_9 k_{10} k_{11} k_1} \Omega^{06}_{k_7 k_8 k_9 k_{10} k_{11} k_2} \Omega^{04}_{k_3 k_4 k_5 k_6}}{\epsilon_{k_1}^{k_7 k_8 k_9 k_{10} k_{11}}\ \epsilon_{k_2 k_7 k_8 k_9 k_{10} k_{11} k_3 k_4 k_5 k_6}\ \epsilon_{k_3 k_4 k_5 k_6}} \tag{234}$$



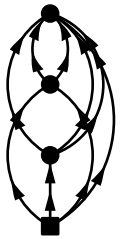
$\rightarrow$ T3:

$$\text{T3} = \frac{1}{a_1(a_2 + a_3)a_3} \tag{235}$$

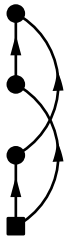
$$a_1 = \epsilon_{k_1}^{k_7 k_8 k_9 k_{10} k_{11}}$$
$$a_2 = \epsilon_{k_2 k_7 k_8 k_9 k_{10} k_{11}}$$
$$a_3 = \epsilon_{k_3 k_4 k_5 k_6}$$

Diagram 116:

$$\text{PO3.116} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{31}_{k_5 k_6 k_7 k_1} \Omega^{22}_{k_8 k_9 k_2 k_3} \Omega^{06}_{k_8 k_9 k_5 k_6 k_7 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon_{k_1}^{k_5 k_6 k_7}} e^{-\tau_2 \epsilon_{k_2 k_3}^{k_8 k_9}} e^{-\tau_3 \epsilon_{k_4 k_5 k_6 k_7 k_8 k_9}}$$
$$= \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{31}_{k_5 k_6 k_7 k_1} \Omega^{22}_{k_8 k_9 k_2 k_3} \Omega^{06}_{k_8 k_9 k_5 k_6 k_7 k_4} \left[\frac{1}{\epsilon_{k_1 k_4 k_8 k_9}\ \epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_4 k_5 k_6 k_7 k_8 k_9}} + \frac{1}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_2 k_3 k_4 k_5 k_6 k_7}\ \epsilon_{k_4 k_5 k_6 k_7 k_8 k_9}} \right] \tag{236}$$



$\rightarrow$ T5:

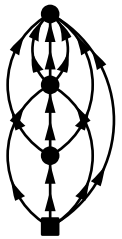


$$\mathrm{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{237}$$

$$\begin{aligned} a_1 &= \epsilon_{k_1}^{k_5k_6k_7} \\ a_2 &= \epsilon_{k_2k_3}^{k_8k_9} \\ a_3 &= \epsilon_{k_4k_5k_6k_7k_8k_9} \end{aligned}$$

Diagram 117:

$$\begin{aligned} \mathrm{PO3.117} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{31}_{k_5k_6k_7k_1} \Omega^{33}_{k_8k_9k_{10}k_5k_2k_3} \Omega^{06}_{k_8k_9k_{10}k_6k_7k_4} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon_{k_1}^{k_5k_6k_7}} e^{-\tau_2\epsilon_{k_2k_3k_5}^{k_8k_9k_{10}}} e^{-\tau_3\epsilon_{k_4k_6k_7k_8k_9k_{10}}} \\ &= \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{31}_{k_5k_6k_7k_1} \Omega^{33}_{k_8k_9k_{10}k_5k_2k_3} \Omega^{06}_{k_8k_9k_{10}k_6k_7k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_2k_3k_5k_4k_6k_7}\ \epsilon_{k_4k_6k_7k_8k_9k_{10}}} \end{aligned} \tag{238}$$



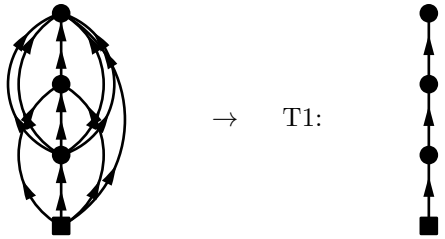
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{239}$$

$$a_1 = \epsilon^{k_5 k_6 k_7}_{k_1}$$
$$a_2 = \epsilon^{k_8 k_9 k_{10}}_{k_2 k_3 k_5}$$
$$a_3 = \epsilon_{k_4 k_6 k_7 k_8 k_9 k_{10}}$$

Diagram 118:

$$\text{PO3.118} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(4!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{51}_{k_5 k_6 k_7 k_8 k_9 k_1} \Omega^{13}_{k_{10} k_5 k_2 k_3} \Omega^{06}_{k_{10} k_6 k_7 k_8 k_9 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5 k_6 k_7 k_8 k_9}_{k_1}} e^{-\tau_2 \epsilon^{k_{10}}_{k_2 k_3 k_5}} e^{-\tau_3 \epsilon_{k_4 k_6 k_7 k_8 k_9 k_{10}}}$$
$$= \frac{(-1)^3}{(2!)(4!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{51}_{k_5 k_6 k_7 k_8 k_9 k_1} \Omega^{13}_{k_{10} k_5 k_2 k_3} \Omega^{06}_{k_{10} k_6 k_7 k_8 k_9 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_2 k_3 k_5 k_4 k_6 k_7 k_8 k_9}\ \epsilon_{k_4 k_6 k_7 k_8 k_9 k_{10}}} \tag{240}$$

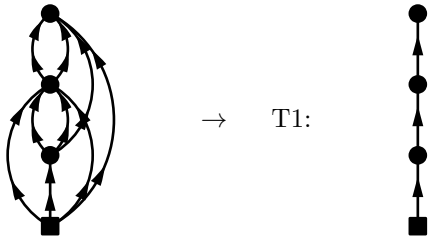


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{241}$$

$$a_1 = \epsilon^{k_5 k_6 k_7 k_8 k_9}_{k_1}$$
$$a_2 = \epsilon^{k_{10}}_{k_2 k_3 k_5}$$
$$a_3 = \epsilon_{k_4 k_6 k_7 k_8 k_9 k_{10}}$$

Diagram 119:

$$\text{PO3.119} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^3} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{31}_{k_5 k_6 k_7 k_1} \Omega^{24}_{k_8 k_9 k_5 k_6 k_2 k_3} \Omega^{04}_{k_8 k_9 k_7 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5 k_6 k_7}_{k_1}} e^{-\tau_2 \epsilon^{k_8 k_9}_{k_2 k_3 k_5 k_6}} e^{-\tau_3 \epsilon_{k_4 k_7 k_8 k_9}}$$
$$= \frac{(-1)^3}{(2!)^3} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{31}_{k_5 k_6 k_7 k_1} \Omega^{24}_{k_8 k_9 k_5 k_6 k_2 k_3} \Omega^{04}_{k_8 k_9 k_7 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_2 k_3 k_5 k_6 k_4 k_7}\ \epsilon_{k_4 k_7 k_8 k_9}} \tag{242}$$

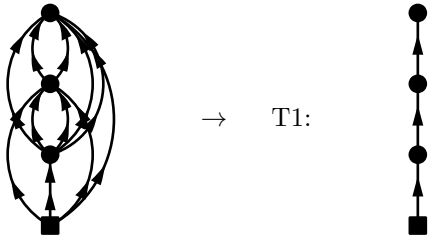


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{243}$$

$$\begin{aligned} a_1 &= \epsilon_{k_1}^{k_5k_6k_7} \\ a_2 &= \epsilon_{k_2k_3k_5k_6}^{k_8k_9} \\ a_3 &= \epsilon_{k_4k_7k_8k_9} \end{aligned}$$

Diagram 120:

$$\begin{aligned} \text{PO3.120} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^3(3!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{51}_{k_5k_6k_7k_8k_9k_1} \Omega^{24}_{k_{10}k_{11}k_5k_6k_2k_3} \Omega^{06}_{k_{10}k_{11}k_7k_8k_9k_4} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon_{k_1}^{k_5k_6k_7k_8k_9}} e^{-\tau_2\epsilon_{k_2k_3k_5k_6}^{k_{10}k_{11}}} e^{-\tau_3\epsilon_{k_4k_7k_8k_9k_{10}} \\ &= \frac{(-1)^3}{(2!)^3(3!)} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{51}_{k_5k_6k_7k_8k_9k_1} \Omega^{24}_{k_{10}k_{11}k_5k_6k_2k_3} \Omega^{06}_{k_{10}k_{11}k_7k_8k_9k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_2k_3k_5k_6k_4k_7k_8k_9}\ \epsilon_{k_4k_7k_8k_9k_{10}k_{11}}} \end{aligned} \tag{244}$$

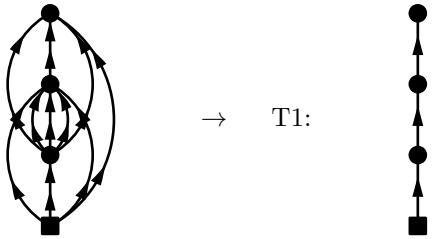


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{245}$$

$$a_1 = \epsilon_{k_1}^{k_5 k_6 k_7 k_8 k_9}$$
$$a_2 = \epsilon_{k_2 k_3 k_5 k_6}^{k_{10} k_{11}}$$
$$a_3 = \epsilon_{k_4 k_7 k_8 k_9 k_{10} k_{11}}$$

Diagram 121:

$$\text{PO3.121} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{51}_{k_5 k_6 k_7 k_8 k_9 k_1} \Omega^{15}_{k_{10} k_5 k_6 k_7 k_2 k_3} \Omega^{04}_{k_{10} k_8 k_9 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon_{k_1}^{k_5 k_6 k_7 k_8 k_9}} e^{-\tau_2 \epsilon_{k_2 k_3 k_5 k_6 k_7}^{k_{10}}} e^{-\tau_3 \epsilon_{k_4 k_8 k_9 k_{10}}}$$
$$= \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{51}_{k_5 k_6 k_7 k_8 k_9 k_1} \Omega^{15}_{k_{10} k_5 k_6 k_7 k_2 k_3} \Omega^{04}_{k_{10} k_8 k_9 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_2 k_3 k_5 k_6 k_7 k_4 k_8 k_9}\ \epsilon_{k_4 k_8 k_9 k_{10}}} \tag{246}$$



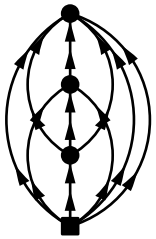
$\to$ T1:

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{247}$$

$$a_1 = \epsilon_{k_1}^{k_5 k_6 k_7 k_8 k_9}$$
$$a_2 = \epsilon_{k_2 k_3 k_5 k_6 k_7}^{k_{10}}$$
$$a_3 = \epsilon_{k_4 k_8 k_9 k_{10}}$$

Diagram 122:

$$\text{PO3.122} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{31}_{k_7 k_8 k_9 k_1} \Omega^{13}_{k_{10} k_7 k_2 k_3} \Omega^{06}_{k_{10} k_8 k_9 k_4 k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon_{k_1}^{k_7 k_8 k_9}} e^{-\tau_2 \epsilon_{k_2 k_3 k_7}^{k_{10}}} e^{-\tau_3 \epsilon_{k_4 k_5 k_6 k_8 k_9 k_{10}}}$$
$$= \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{31}_{k_7 k_8 k_9 k_1} \Omega^{13}_{k_{10} k_7 k_2 k_3} \Omega^{06}_{k_{10} k_8 k_9 k_4 k_5 k_6}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_2 k_3 k_7 k_4 k_5 k_6 k_8 k_9}\ \epsilon_{k_4 k_5 k_6 k_8 k_9 k_{10}}} \tag{248}$$



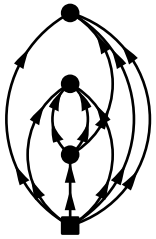
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{249}$$

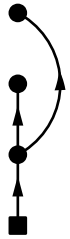
$$\begin{aligned} a_1 &= \epsilon^{k_7k_8k_9}_{k_1} \\ a_2 &= \epsilon^{k_{10}}_{k_2k_3k_7} \\ a_3 &= \epsilon_{k_4k_5k_6k_8k_9k_{10}} \end{aligned}$$

Diagram 123:

$$\begin{aligned} \mathrm{PO3.123} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{31}_{k_7k_8k_9k_1} \Omega^{04}_{k_7k_8k_2k_3} \Omega^{04}_{k_9k_4k_5k_6} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1) e^{-\tau_1\epsilon^{k_7k_8k_9}_{k_1}} e^{-\tau_2\epsilon_{k_2k_3k_7k_8}} e^{-\tau_3\epsilon_{k_4k_5k_6k_9}} \\ &= \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{31}_{k_7k_8k_9k_1} \Omega^{04}_{k_7k_8k_2k_3} \Omega^{04}_{k_9k_4k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_2k_3k_7k_8}\ \epsilon_{k_4k_5k_6k_9}} \end{aligned} \tag{250}$$



$\rightarrow$ T2:

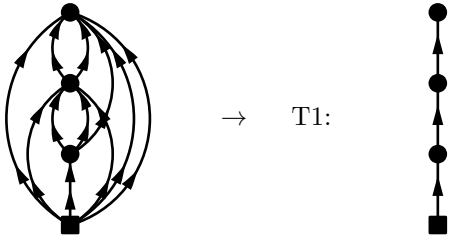


$$\mathrm{T2} = \frac{1}{(a_1+a_2+a_3)a_2a_3} \tag{251}$$

$$a_1 = \epsilon^{k_7 k_8 k_9}_{k_1}$$
$$a_2 = \epsilon_{k_2 k_3 k_7 k_8}$$
$$a_3 = \epsilon_{k_4 k_5 k_6 k_9}$$

Diagram 124:

$$\text{PO3.124} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^3(3!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{31}_{k_7k_8k_9k_1} \Omega^{24}_{k_{10}k_{11}k_7k_8k_2k_3} \Omega^{06}_{k_{10}k_{11}k_9k_4k_5k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7k_8k_9}_{k_1}} e^{-\tau_2 \epsilon^{k_{10}k_{11}}_{k_2k_3k_7k_8}} e^{-\tau_3 \epsilon_{k_4k_5k_6k_9k_{10}k_{11}}}$$
$$= \frac{(-1)^3}{(2!)^3(3!)} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{31}_{k_7k_8k_9k_1} \Omega^{24}_{k_{10}k_{11}k_7k_8k_2k_3} \Omega^{06}_{k_{10}k_{11}k_9k_4k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_2k_3k_7k_8k_4k_5k_6k_9}\ \epsilon_{k_4k_5k_6k_9k_{10}k_{11}}} \tag{252}$$

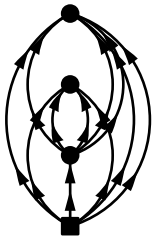
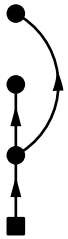


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{253}$$

$$a_1 = \epsilon^{k_7k_8k_9}_{k_1}$$
$$a_2 = \epsilon^{k_{10}k_{11}}_{k_2k_3k_7k_8}$$
$$a_3 = \epsilon_{k_4k_5k_6k_9k_{10}k_{11}}$$

Diagram 125:

$$\text{PO3.125} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)^2} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{51}_{k_7k_8k_9k_{10}k_{11}k_1} \Omega^{04}_{k_7k_8k_2k_3} \Omega^{06}_{k_9k_{10}k_{11}k_4k_5k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1) e^{-\tau_1 \epsilon^{k_7k_8k_9k_{10}k_{11}}_{k_1}} e^{-\tau_2 \epsilon_{k_2k_3k_7k_8}} e^{-\tau_3 \epsilon_{k_4k_5k_6k_9k_{10}k_{11}}}$$
$$= \frac{(-1)^3}{(2!)^2(3!)^2} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{51}_{k_7k_8k_9k_{10}k_{11}k_1} \Omega^{04}_{k_7k_8k_2k_3} \Omega^{06}_{k_9k_{10}k_{11}k_4k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_2k_3k_7k_8}\ \epsilon_{k_4k_5k_6k_9k_{10}k_{11}}} \tag{254}$$

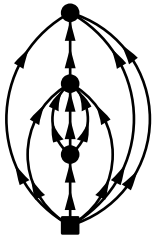
$\rightarrow$ T2:

$$\mathrm{T2} = \frac{1}{(a_1+a_2+a_3)a_2a_3} \tag{255}$$

$$\begin{aligned} a_1 &= \epsilon_{k_1}^{k_7k_8k_9k_{10}k_{11}} \\ a_2 &= \epsilon_{k_2k_3k_7k_8} \\ a_3 &= \epsilon_{k_4k_5k_6k_9k_{10}k_{11}} \end{aligned}$$

Diagram 126:

$$\begin{aligned} \mathrm{PO3.126} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{31}_{k_7k_8k_9k_1} \Omega^{15}_{k_{10}k_7k_8k_9k_2k_3} \Omega^{04}_{k_{10}k_4k_5k_6} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon_{k_1}^{k_7k_8k_9}} e^{-\tau_2\epsilon_{k_2k_3k_7k_8k_9}^{k_{10}}} e^{-\tau_3\epsilon_{k_4k_5k_6k_{10}}} \\ &= \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{31}_{k_7k_8k_9k_1} \Omega^{15}_{k_{10}k_7k_8k_9k_2k_3} \Omega^{04}_{k_{10}k_4k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_2k_3k_7k_8k_9k_4k_5k_6}\ \epsilon_{k_4k_5k_6k_{10}}} \end{aligned} \tag{256}$$




$\rightarrow$ T1:

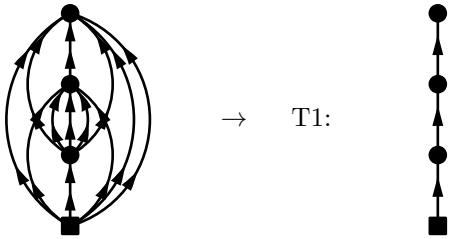
$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{257}$$

$$a_1 = \epsilon_{k_1}^{k_7 k_8 k_9}$$
$$a_2 = \epsilon_{k_2 k_3 k_7 k_8 k_9}^{k_{10}}$$
$$a_3 = \epsilon_{k_4 k_5 k_6 k_{10}}$$

Diagram 127:

$$\text{PO3.127} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)^2} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{51}_{k_7k_8k_9k_{10}k_{11}k_1} \Omega^{15}_{k_{12}k_7k_8k_9k_2k_3} \Omega^{06}_{k_{12}k_{10}k_{11}k_4k_5k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon_{k_1}^{k_7k_8k_9k_{10}k_{11}}} e^{-\tau_2 \epsilon_{k_2k_3k_7k_8k_9}^{k_{12}}} e^{-\tau_3}$$

$$= \frac{(-1)^3}{(2!)^2(3!)^2} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{51}_{k_7k_8k_9k_{10}k_{11}k_1} \Omega^{15}_{k_{12}k_7k_8k_9k_2k_3} \Omega^{06}_{k_{12}k_{10}k_{11}k_4k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_2k_3k_7k_8k_9k_4k_5k_6k_{10}k_{11}}\ \epsilon_{k_4k_5k_6k_{10}k_{11}k_{12}}} \tag{258}$$



$\rightarrow$ T1:

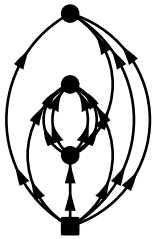
$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{259}$$

$$a_1 = \epsilon_{k_1}^{k_7k_8k_9k_{10}k_{11}}$$
$$a_2 = \epsilon_{k_2k_3k_7k_8k_9}^{k_{12}}$$
$$a_3 = \epsilon_{k_4k_5k_6k_{10}k_{11}k_{12}}$$

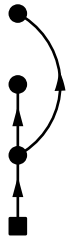
Diagram 128:

$$\text{PO3.128} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)(4!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{51}_{k_7k_8k_9k_{10}k_{11}k_1} \Omega^{06}_{k_7k_8k_9k_{10}k_2k_3} \Omega^{04}_{k_{11}k_4k_5k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1) e^{-\tau_1 \epsilon_{k_1}^{k_7k_8k_9k_{10}k_{11}}} e^{-\tau_2 \epsilon_{k_2k_3k_7k_8k_9k_{10}}} e^{-\tau_3 \epsilon_{k_4k_5k_6k_{11}}}$$

$$= \frac{(-1)^3}{(2!)(3!)(4!)} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{51}_{k_7k_8k_9k_{10}k_{11}k_1} \Omega^{06}_{k_7k_8k_9k_{10}k_2k_3} \Omega^{04}_{k_{11}k_4k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_2k_3k_7k_8k_9k_{10}}\ \epsilon_{k_4k_5k_6k_{11}}} \tag{260}$$



$\rightarrow$ T2:

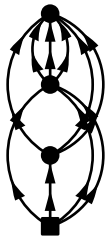


$$\mathrm{T2} = \frac{1}{(a_1+a_2+a_3)a_2a_3} \tag{261}$$

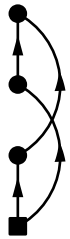
$$\begin{aligned} a_1 &= \epsilon_{k_1}^{k_7k_8k_9k_{10}k_{11}} \\ a_2 &= \epsilon_{k_2k_3k_7k_8k_9k_{10}} \\ a_3 &= \epsilon_{k_4k_5k_6k_{11}} \end{aligned}$$

Diagram 129:

$$\begin{aligned} \mathrm{PO3.129} &= \lim_{\tau\to\infty} \frac{-(-1)^3}{(3!)^3} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{31}_{k_5k_6k_7k_1} \Omega^{33}_{k_8k_9k_{10}k_2k_3k_4} \Omega^{06}_{k_8k_9k_{10}k_5k_6k_7} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon_{k_1}^{k_5k_6k_7}} e^{-\tau_2\epsilon_{k_2k_3k_4}^{k_8k_9k_{10}}} e^{-\tau_3\epsilon_{k_5k_6k_7k_8k_9k_{10}}} \\ &= \frac{-(-1)^3}{(3!)^3} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{31}_{k_5k_6k_7k_1} \Omega^{33}_{k_8k_9k_{10}k_2k_3k_4} \Omega^{06}_{k_8k_9k_{10}k_5k_6k_7} \left[\frac{1}{\epsilon_{k_1k_8k_9k_{10}}\ \epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_5k_6k_7k_8k_9k_{10}}} + \frac{1}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_2k_3k_4k_5k_6k_7}\ \epsilon_{k_5k_6k_7k_8k_9k_{10}}} \right] \end{aligned} \tag{262}$$



$\rightarrow$ T5:

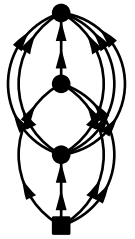


$$\mathrm{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{263}$$

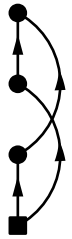
$$a_1 = \epsilon_{k_1}^{k_5 k_6 k_7}$$
$$a_2 = \epsilon_{k_2 k_3 k_4}^{k_8 k_9 k_{10}}$$
$$a_3 = \epsilon_{k_5 k_6 k_7 k_8 k_9 k_{10}}$$

Diagram 130:

$$\text{PO3.130} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(3!)(5!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{51}_{k_5 k_6 k_7 k_8 k_9 k_1} \Omega^{13}_{k_{10} k_2 k_3 k_4} \Omega^{06}_{k_{10} k_5 k_6 k_7 k_8 k_9} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon_{k_1}^{k_5 k_6 k_7 k_8 k_9}} e^{-\tau_2 \epsilon_{k_2 k_3 k_4}^{k_{10}}} e^{-\tau_3 \epsilon_{k_5 k_6 k_7 k_8 k_9 k_{10}}}$$
$$= \frac{-(-1)^3}{(3!)(5!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{51}_{k_5 k_6 k_7 k_8 k_9 k_1} \Omega^{13}_{k_{10} k_2 k_3 k_4} \Omega^{06}_{k_{10} k_5 k_6 k_7 k_8 k_9} \left[\frac{1}{\epsilon_{k_1 k_{10}}\ \epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_5 k_6 k_7 k_8 k_9 k_{10}}} + \frac{1}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_2 k_3 k_4 k_5 k_6 k_7 k_8 k_9}\ \epsilon_{k_5 k_6 k_7 k_8 k_9 k_{10}}} \right] \tag{264}$$



$\rightarrow$ T5:

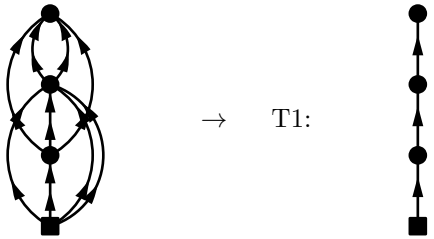


$$\text{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{265}$$

$$a_1 = \epsilon_{k_1}^{k_5 k_6 k_7 k_8 k_9}$$
$$a_2 = \epsilon_{k_2 k_3 k_4}^{k_{10}}$$
$$a_3 = \epsilon_{k_5 k_6 k_7 k_8 k_9 k_{10}}$$

Diagram 131:

$$\text{PO3.131} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{31}_{k_5 k_6 k_7 k_1} \Omega^{24}_{k_8 k_9 k_5 k_2 k_3 k_4} \Omega^{04}_{k_8 k_9 k_6 k_7} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon_{k_1}^{k_5 k_6 k_7}} e^{-\tau_2 \epsilon_{k_2 k_3 k_4 k_5}^{k_8 k_9}} e^{-\tau_3 \epsilon_{k_6 k_7 k_8 k_9}}$$
$$= \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{31}_{k_5 k_6 k_7 k_1} \Omega^{24}_{k_8 k_9 k_5 k_2 k_3 k_4} \Omega^{04}_{k_8 k_9 k_6 k_7}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_2 k_3 k_4 k_5 k_6 k_7}\ \epsilon_{k_6 k_7 k_8 k_9}} \tag{266}$$



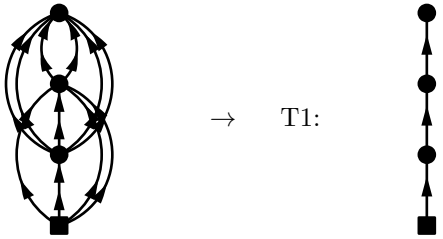
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{267}$$

$$\begin{aligned} a_1 &= \epsilon_{k_1}^{k_5k_6k_7} \\ a_2 &= \epsilon_{k_2k_3k_4k_5}^{k_8k_9} \\ a_3 &= \epsilon_{k_6k_7k_8k_9} \end{aligned}$$

Diagram 132:

$$\begin{aligned} \mathrm{PO3.132} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)(4!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{51}_{k_5k_6k_7k_8k_9k_1} \Omega^{24}_{k_{10}k_{11}k_5k_2k_3k_4} \Omega^{06}_{k_{10}k_{11}k_6k_7k_8k_9} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon_{k_1}^{k_5k_6k_7k_8k_9}} e^{-\tau_2\epsilon_{k_2k_3k_4k_5}^{k_{10}k_{11}}} e^{-\tau_3\epsilon_{k_6k_7k_8k_9}} \\ &= \frac{(-1)^3}{(2!)(3!)(4!)} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{51}_{k_5k_6k_7k_8k_9k_1} \Omega^{24}_{k_{10}k_{11}k_5k_2k_3k_4} \Omega^{06}_{k_{10}k_{11}k_6k_7k_8k_9}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_2k_3k_4k_5k_6k_7k_8k_9}\ \epsilon_{k_6k_7k_8k_9k_{10}k_{11}}} \end{aligned} \tag{268}$$



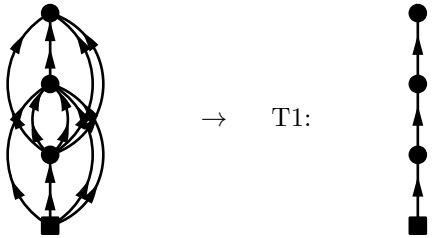
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{269}$$

$$a_1 = \epsilon_{k_1}^{k_5 k_6 k_7 k_8 k_9}$$
$$a_2 = \epsilon_{k_2 k_3 k_4 k_5}^{k_{10} k_{11}}$$
$$a_3 = \epsilon_{k_6 k_7 k_8 k_9 k_{10} k_{11}}$$

Diagram 133:

$$\text{PO3.133} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{51}_{k_5 k_6 k_7 k_8 k_9 k_1} \Omega^{15}_{k_{10} k_5 k_6 k_2 k_3 k_4} \Omega^{04}_{k_{10} k_7 k_8 k_9} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon_{k_1}^{k_5 k_6 k_7 k_8 k_9}} e^{-\tau_2 \epsilon_{k_2 k_3 k_4 k_5 k_6}^{k_{10}}} e^{-\tau_3 \epsilon_{k_7 k_8 k_9 k_{10}}}$$
$$= \frac{-(-1)^3}{(2!)(3!)^2} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{51}_{k_5 k_6 k_7 k_8 k_9 k_1} \Omega^{15}_{k_{10} k_5 k_6 k_2 k_3 k_4} \Omega^{04}_{k_{10} k_7 k_8 k_9}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_2 k_3 k_4 k_5 k_6 k_7 k_8 k_9}\ \epsilon_{k_7 k_8 k_9 k_{10}}} \tag{270}$$

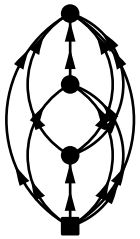


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{271}$$

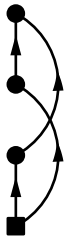
$$a_1 = \epsilon_{k_1}^{k_5 k_6 k_7 k_8 k_9}$$
$$a_2 = \epsilon_{k_2 k_3 k_4 k_5 k_6}^{k_{10}}$$
$$a_3 = \epsilon_{k_7 k_8 k_9 k_{10}}$$

Diagram 134:

$$\text{PO3.134} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{31}_{k_7 k_8 k_9 k_1} \Omega^{13}_{k_{10} k_2 k_3 k_4} \Omega^{06}_{k_{10} k_7 k_8 k_9 k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon_{k_1}^{k_7 k_8 k_9}} e^{-\tau_2 \epsilon_{k_2 k_3 k_4}^{k_{10}}} e^{-\tau_3 \epsilon_{k_5 k_6 k_7 k_8 k_9 k_{10}}}$$
$$= \frac{-(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{31}_{k_7 k_8 k_9 k_1} \Omega^{13}_{k_{10} k_2 k_3 k_4} \Omega^{06}_{k_{10} k_7 k_8 k_9 k_5 k_6} \left[\frac{1}{\epsilon_{k_1 k_5 k_6 k_{10}}\ \epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_5 k_6 k_7 k_8 k_9 k_{10}}} + \frac{1}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_2 k_3 k_4 k_5 k_6 k_7 k_8 k_9}\ \epsilon_{k_5 k_6 k_7 k_8 k_9 k_{10}}} \right] \tag{272}$$



$\rightarrow$ T5:

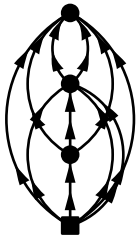


$$\mathrm{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{273}$$

$$\begin{aligned} a_1 &= \epsilon_{k_1}^{k_7k_8k_9} \\ a_2 &= \epsilon_{k_2k_3k_4}^{k_{10}} \\ a_3 &= \epsilon_{k_5k_6k_7k_8k_9k_{10}} \end{aligned}$$

Diagram 135:

$$\begin{aligned} \mathrm{PO3.135} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^3(3!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{31}_{k_7k_8k_9k_1} \Omega^{24}_{k_{10}k_{11}k_7k_2k_3k_4} \Omega^{06}_{k_{10}k_{11}k_8k_9k_5k_6} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon_{k_1}^{k_7k_8k_9}} e^{-\tau_2\epsilon_{k_2k_3k_4}^{k_{10}k_{11}}} e^{-\tau_3\epsilon_{k_5k_6k_8k_9k_{10}k_{11}}} \\ &= \frac{(-1)^3}{(2!)^3(3!)} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{31}_{k_7k_8k_9k_1} \Omega^{24}_{k_{10}k_{11}k_7k_2k_3k_4} \Omega^{06}_{k_{10}k_{11}k_8k_9k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_2k_3k_4k_7k_5k_6k_8k_9}\ \epsilon_{k_5k_6k_8k_9k_{10}k_{11}}} \end{aligned} \tag{274}$$



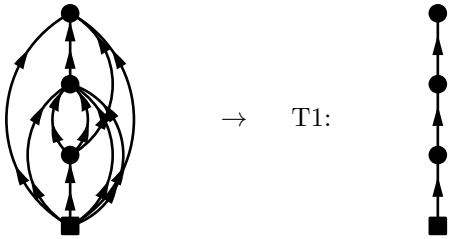
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{275}$$

$$a_1 = \epsilon_{k_1}^{k_7 k_8 k_9}$$
$$a_2 = \epsilon_{k_2 k_3 k_4 k_7}^{k_{10} k_{11}}$$
$$a_3 = \epsilon_{k_5 k_6 k_8 k_9 k_{10} k_{11}}$$

Diagram 136:

$$\text{PO3.136} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{31}_{k_7k_8k_9k_1} \Omega^{15}_{k_{10}k_7k_8k_2k_3k_4} \Omega^{04}_{k_{10}k_9k_5k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon_{k_1}^{k_7k_8k_9}} e^{-\tau_2 \epsilon_{k_2k_3k_4k_7k_8}^{k_{10}}} e^{-\tau_3 \epsilon_{k_5k_6k_9k_{10}}}$$
$$= \frac{-(-1)^3}{(2!)^2(3!)} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{31}_{k_7k_8k_9k_1} \Omega^{15}_{k_{10}k_7k_8k_2k_3k_4} \Omega^{04}_{k_{10}k_9k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_2k_3k_4k_7k_8k_5k_6k_9}\ \epsilon_{k_5k_6k_9k_{10}}} \tag{276}$$

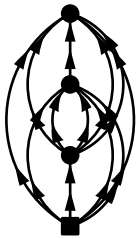


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{277}$$

$$a_1 = \epsilon_{k_1}^{k_7 k_8 k_9}$$
$$a_2 = \epsilon_{k_2 k_3 k_4 k_7 k_8}^{k_{10}}$$
$$a_3 = \epsilon_{k_5 k_6 k_9 k_{10}}$$

Diagram 137:

$$\text{PO3.137} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)^2(3!)^2} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{51}_{k_7k_8k_9k_{10}k_{11}k_1} \Omega^{15}_{k_{12}k_7k_8k_2k_3k_4} \Omega^{06}_{k_{12}k_9k_{10}k_{11}k_5k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon_{k_1}^{k_7k_8k_9k_{10}k_{11}}} e^{-\tau_2 \epsilon_{k_2k_3k_4k_7k_8}^{k_{12}}} e^{-\tau_3}$$
$$= \frac{-(-1)^3}{(2!)^2(3!)^2} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{51}_{k_7k_8k_9k_{10}k_{11}k_1} \Omega^{15}_{k_{12}k_7k_8k_2k_3k_4} \Omega^{06}_{k_{12}k_9k_{10}k_{11}k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_2k_3k_4k_7k_8k_5k_6k_9k_{10}k_{11}}\ \epsilon_{k_5k_6k_9k_{10}k_{11}k_{12}}} \tag{278}$$



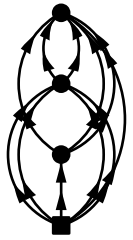
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{279}$$

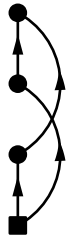
$$\begin{aligned} a_1 &= \epsilon^{k_7k_8k_9k_{10}k_{11}}_{k_1} \\ a_2 &= \epsilon^{k_{12}}_{k_2k_3k_4k_7k_8} \\ a_3 &= \epsilon_{k_5k_6k_9k_{10}k_{11}k_{12}} \end{aligned}$$

Diagram 138:

$$\begin{aligned} \mathrm{PO3.138} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)(4!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{31}_{k_7k_8k_9k_1} \Omega^{24}_{k_{10}k_{11}k_2k_3k_4k_5} \Omega^{06}_{k_{10}k_{11}k_7k_8k_9k_6} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_7k_8k_9}_{k_1}} e^{-\tau_2\epsilon^{k_{10}k_{11}}_{k_2k_3k_4k_5}} e^{-\tau_3\epsilon_{k_6k_7k_8k_9k_{10}k_{11}}} \\ &= \frac{(-1)^3}{(2!)(3!)(4!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{31}_{k_7k_8k_9k_1} \Omega^{24}_{k_{10}k_{11}k_2k_3k_4k_5} \Omega^{06}_{k_{10}k_{11}k_7k_8k_9k_6} \left[\frac{1}{\epsilon_{k_1k_6k_{10}k_{11}}\ \epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_6k_7k_8k_9k_{10}k_{11}}} + \frac{1}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_2k_3k_4k_5k_6k_7k_8k_9}\ \epsilon_{k_6k_7k_8k_9k_{10}k_1}} \right. \end{aligned} \tag{280}$$



$\rightarrow$ T5:

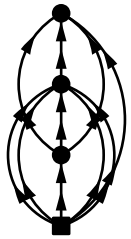


$$\mathrm{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{281}$$

$$a_1 = \epsilon^{k_7 k_8 k_9}_{k_1}$$
$$a_2 = \epsilon^{k_{10} k_{11}}_{k_2 k_3 k_4 k_5}$$
$$a_3 = \epsilon_{k_6 k_7 k_8 k_9 k_{10} k_{11}}$$

Diagram 139:

$$\text{PO3.139} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(4!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{31}_{k_7 k_8 k_9 k_1} \Omega^{15}_{k_{10} k_7 k_2 k_3 k_4 k_5} \Omega^{04}_{k_{10} k_8 k_9 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7 k_8 k_9}_{k_1}} e^{-\tau_2 \epsilon^{k_{10}}_{k_2 k_3 k_4 k_5 k_7}} e^{-\tau_3 \epsilon_{k_6 k_8 k_9 k_{10}}}$$
$$= \frac{(-1)^3}{(2!)(4!)} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{31}_{k_7 k_8 k_9 k_1} \Omega^{15}_{k_{10} k_7 k_2 k_3 k_4 k_5} \Omega^{04}_{k_{10} k_8 k_9 k_6}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_2 k_3 k_4 k_5 k_7 k_6 k_8 k_9}\ \epsilon_{k_6 k_8 k_9 k_{10}}} \tag{282}$$



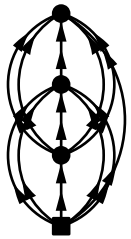
$\rightarrow$ T1:

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{283}$$

$$a_1 = \epsilon^{k_7 k_8 k_9}_{k_1}$$
$$a_2 = \epsilon^{k_{10}}_{k_2 k_3 k_4 k_5 k_7}$$
$$a_3 = \epsilon_{k_6 k_8 k_9 k_{10}}$$

Diagram 140:

$$\text{PO3.140} = \lim_{\tau\to\infty} \frac{(-1)^3}{(4!)^2} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{51}_{k_7 k_8 k_9 k_{10} k_{11} k_1} \Omega^{15}_{k_{12} k_7 k_2 k_3 k_4 k_5} \Omega^{06}_{k_{12} k_8 k_9 k_{10} k_{11} k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7 k_8 k_9 k_{10} k_{11}}_{k_1}} e^{-\tau_2 \epsilon^{k_{12}}_{k_2 k_3 k_4 k_5 k_7}} e^{-\tau_3 \epsilon_{k_6 k_}}$$
$$= \frac{(-1)^3}{(4!)^2} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{51}_{k_7 k_8 k_9 k_{10} k_{11} k_1} \Omega^{15}_{k_{12} k_7 k_2 k_3 k_4 k_5} \Omega^{06}_{k_{12} k_8 k_9 k_{10} k_{11} k_6}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_2 k_3 k_4 k_5 k_7 k_6 k_8 k_9 k_{10} k_{11}}\ \epsilon_{k_6 k_8 k_9 k_{10} k_{11} k_{12}}} \tag{284}$$



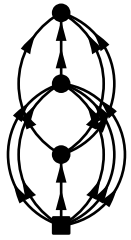
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{285}$$

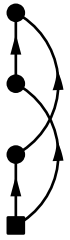
$$\begin{aligned} a_1 &= \epsilon^{k_7k_8k_9k_{10}k_{11}}_{k_1} \\ a_2 &= \epsilon^{k_{12}}_{k_2k_3k_4k_5k_7} \\ a_3 &= \epsilon_{k_6k_8k_9k_{10}k_{11}k_{12}} \end{aligned}$$

Diagram 141:

$$\begin{aligned} \mathrm{PO3.141} &= \lim_{\tau\to\infty} \frac{-(-1)^3}{(3!)(5!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{31}_{k_7k_8k_9k_1} \Omega^{15}_{k_{10}k_2k_3k_4k_5k_6} \Omega^{04}_{k_{10}k_7k_8k_9} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_7k_8k_9}_{k_1}} e^{-\tau_2\epsilon^{k_{10}}_{k_2k_3k_4k_5k_6}} e^{-\tau_3\epsilon_{k_7k_8k_9k_{10}}} \\ &= \frac{-(-1)^3}{(3!)(5!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{31}_{k_7k_8k_9k_1} \Omega^{15}_{k_{10}k_2k_3k_4k_5k_6} \Omega^{04}_{k_{10}k_7k_8k_9} \left[\frac{1}{\epsilon_{k_1k_{10}}\ \epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_7k_8k_9k_{10}}} + \frac{1}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_2k_3k_4k_5k_6k_7k_8k_9}\ \epsilon_{k_7k_8k_9k_{10}}} \right] \end{aligned} \tag{286}$$



$\rightarrow$ T5:

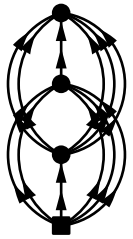


$$\mathrm{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{287}$$

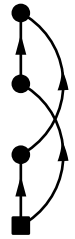
$$a_1 = \epsilon_{k_1}^{k_7 k_8 k_9}$$
$$a_2 = \epsilon_{k_2 k_3 k_4 k_5 k_6}^{k_{10}}$$
$$a_3 = \epsilon_{k_7 k_8 k_9 k_{10}}$$

Diagram 142:

$$\text{PO3.142} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(5!)^2} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{51}_{k_7k_8k_9k_{10}k_{11}k_1} \Omega^{15}_{k_{12}k_2k_3k_4k_5k_6} \Omega^{06}_{k_{12}k_7k_8k_9k_{10}k_{11}} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon_{k_1}^{k_7k_8k_9k_{10}k_{11}}} e^{-\tau_2 \epsilon^{k_{12}}_{k_2k_3k_4k_5k_6}} e^{-\tau_3 \epsilon_{k_7k_8k_9k_{10}k_{11}k}}$$
$$= \frac{-(-1)^3}{(5!)^2} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{51}_{k_7k_8k_9k_{10}k_{11}k_1} \Omega^{15}_{k_{12}k_2k_3k_4k_5k_6} \Omega^{06}_{k_{12}k_7k_8k_9k_{10}k_{11}} \left[\frac{1}{\epsilon_{k_1k_{12}}\ \epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_7k_8k_9k_{10}k_{11}k_{12}}} + \frac{1}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_2k_3k_4k_5k_6k_7k_8k_9k_{10}k_{11}}\ \epsilon_{k_7k_8k_9k_{10}}} \right. \tag{288}$$



$\rightarrow$ T5:

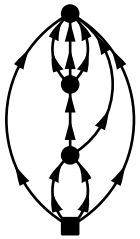


$$\text{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{289}$$

$$a_1 = \epsilon_{k_1}^{k_7k_8k_9k_{10}k_{11}}$$
$$a_2 = \epsilon_{k_2k_3k_4k_5k_6}^{k_{12}}$$
$$a_3 = \epsilon_{k_7k_8k_9k_{10}k_{11}k_{12}}$$

Diagram 143:

$$\text{PO3.143} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{22}_{k_5k_6k_1k_2} \Omega^{31}_{k_7k_8k_9k_5} \Omega^{06}_{k_7k_8k_9k_6k_3k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon_{k_1k_2}^{k_5k_6}} e^{-\tau_2 \epsilon_{k_5}^{k_7k_8k_9}} e^{-\tau_3 \epsilon_{k_3k_4k_6k_7k_8k_9}}$$
$$= \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{22}_{k_5k_6k_1k_2} \Omega^{31}_{k_7k_8k_9k_5} \Omega^{06}_{k_7k_8k_9k_6k_3k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_5k_3k_4k_6}\ \epsilon_{k_3k_4k_6k_7k_8k_9}} \tag{290}$$



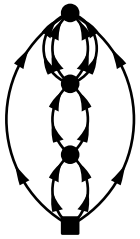
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{291}$$

$$\begin{aligned} a_1 &= \epsilon^{k_5k_6}_{k_1k_2} \\ a_2 &= \epsilon^{k_7k_8k_9}_{k_5} \\ a_3 &= \epsilon_{k_3k_4k_6k_7k_8k_9} \end{aligned}$$

Diagram 144:

$$\begin{aligned} \mathrm{PO3.144} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^3(4!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{22}_{k_5k_6k_1k_2} \Omega^{42}_{k_7k_8k_9k_{10}k_5k_6} \Omega^{06}_{k_7k_8k_9k_{10}k_3k_4} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_5k_6}_{k_1k_2}} e^{-\tau_2\epsilon^{k_7k_8k_9k_{10}}_{k_5k_6}} e^{-\tau_3\epsilon_{k_3k_4k_7k_8k_9k_{10}}} \\ &= \frac{(-1)^3}{(2!)^3(4!)} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{22}_{k_5k_6k_1k_2} \Omega^{42}_{k_7k_8k_9k_{10}k_5k_6} \Omega^{06}_{k_7k_8k_9k_{10}k_3k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_5k_6k_3k_4}\ \epsilon_{k_3k_4k_7k_8k_9k_{10}}} \end{aligned} \tag{292}$$



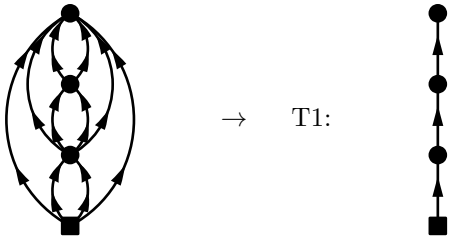
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{293}$$

$$
\begin{aligned}
a_1 &= \epsilon^{k_5 k_6}_{k_1 k_2} \\
a_2 &= \epsilon^{k_7 k_8 k_9 k_{10}}_{k_5 k_6} \\
a_3 &= \epsilon_{k_3 k_4 k_7 k_8 k_9 k_{10}}
\end{aligned}
$$

Diagram 145:

$$
\begin{aligned}
\text{PO3.145} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^5} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{42}_{k_5 k_6 k_7 k_8 k_1 k_2} \Omega^{22}_{k_9 k_{10} k_5 k_6} \Omega^{06}_{k_9 k_{10} k_7 k_8 k_3 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5 k_6 k_7 k_8}_{k_1 k_2}} e^{-\tau_2 \epsilon^{k_9 k_{10}}_{k_5 k_6}} e^{-\tau_3 \epsilon_{k_3 k_4 k_7 k_8 k_9 k_{10}}} \\
&= \frac{(-1)^3}{(2!)^5} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{42}_{k_5 k_6 k_7 k_8 k_1 k_2} \Omega^{22}_{k_9 k_{10} k_5 k_6} \Omega^{06}_{k_9 k_{10} k_7 k_8 k_3 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_5 k_6 k_3 k_4 k_7 k_8}\ \epsilon_{k_3 k_4 k_7 k_8 k_9 k_{10}}}
\end{aligned} \tag{294}
$$

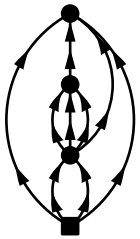


$$
\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{295}
$$

$$
\begin{aligned}
a_1 &= \epsilon^{k_5 k_6 k_7 k_8}_{k_1 k_2} \\
a_2 &= \epsilon^{k_9 k_{10}}_{k_5 k_6} \\
a_3 &= \epsilon_{k_3 k_4 k_7 k_8 k_9 k_{10}}
\end{aligned}
$$

Diagram 146:

$$
\begin{aligned}
\text{PO3.146} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{42}_{k_5 k_6 k_7 k_8 k_1 k_2} \Omega^{13}_{k_9 k_5 k_6 k_7} \Omega^{04}_{k_9 k_8 k_3 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5 k_6 k_7 k_8}_{k_1 k_2}} e^{-\tau_2 \epsilon^{k_9}_{k_5 k_6 k_7}} e^{-\tau_3 \epsilon_{k_3 k_4 k_8 k_9}} \\
&= \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{42}_{k_5 k_6 k_7 k_8 k_1 k_2} \Omega^{13}_{k_9 k_5 k_6 k_7} \Omega^{04}_{k_9 k_8 k_3 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_5 k_6 k_7 k_3 k_4 k_8}\ \epsilon_{k_3 k_4 k_8 k_9}}
\end{aligned} \tag{296}
$$



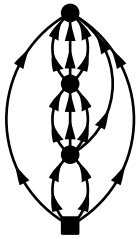
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{297}$$

$$\begin{aligned} a_1 &= \epsilon^{k_5k_6k_7k_8}_{k_1k_2} \\ a_2 &= \epsilon^{k_9}_{k_5k_6k_7} \\ a_3 &= \epsilon_{k_3k_4k_8k_9} \end{aligned}$$

Diagram 147:

$$\begin{aligned} \mathrm{PO3.147} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)^2} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{42}_{k_5k_6k_7k_8k_1k_2} \Omega^{33}_{k_9k_{10}k_{11}k_5k_6k_7} \Omega^{06}_{k_9k_{10}k_{11}k_8k_3k_4} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_5k_6k_7k_8}_{k_1k_2}} e^{-\tau_2\epsilon^{k_9k_{10}k_{11}}_{k_5k_6k_7}} e^{-\tau_3\epsilon_{k_3k_4k_8k_9k_{10}} \\ &= \frac{(-1)^3}{(2!)^2(3!)^2} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{42}_{k_5k_6k_7k_8k_1k_2} \Omega^{33}_{k_9k_{10}k_{11}k_5k_6k_7} \Omega^{06}_{k_9k_{10}k_{11}k_8k_3k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_5k_6k_7k_3k_4k_8}\ \epsilon_{k_3k_4k_8k_9k_{10}k_{11}}} \end{aligned} \tag{298}$$



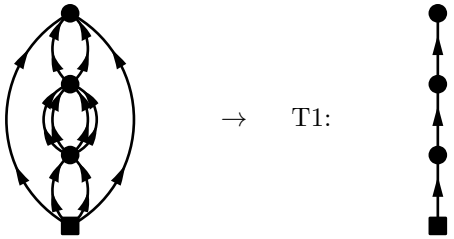
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{299}$$

$$a_1 = \epsilon^{k_5k_6k_7k_8}_{k_1k_2}$$
$$a_2 = \epsilon^{k_9k_{10}k_{11}}_{k_5k_6k_7}$$
$$a_3 = \epsilon_{k_3k_4k_8k_9k_{10}k_{11}}$$

Diagram 148:

$$\text{PO3.148} = \lim_{\tau\to\infty}\frac{(-1)^3}{(2!)^3(4!)}\sum_{k_i} O^{40}_{k_1k_2k_3k_4}\Omega^{42}_{k_5k_6k_7k_8k_1k_2}\Omega^{24}_{k_9k_{10}k_5k_6k_7k_8}\Omega^{04}_{k_9k_{10}k_3k_4}\int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2)e^{-\tau_1\epsilon^{k_5k_6k_7k_8}_{k_1k_2}}e^{-\tau_2\epsilon^{k_9k_{10}}_{k_5k_6k_7k_8}}e^{-\tau_3\epsilon_{k_3k_4k_9k_{10}}}$$
$$= \frac{(-1)^3}{(2!)^3(4!)}\sum_{k_i}\frac{O^{40}_{k_1k_2k_3k_4}\Omega^{42}_{k_5k_6k_7k_8k_1k_2}\Omega^{24}_{k_9k_{10}k_5k_6k_7k_8}\Omega^{04}_{k_9k_{10}k_3k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_5k_6k_7k_8k_3k_4}\ \epsilon_{k_3k_4k_9k_{10}}} \tag{300}$$



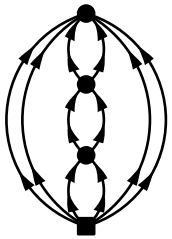
$\to$ T1:

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{301}$$

$$a_1 = \epsilon^{k_5k_6k_7k_8}_{k_1k_2}$$
$$a_2 = \epsilon^{k_9k_{10}}_{k_5k_6k_7k_8}$$
$$a_3 = \epsilon_{k_3k_4k_9k_{10}}$$

Diagram 149:

$$\text{PO3.149} = \lim_{\tau\to\infty}\frac{(-1)^3}{(2!)^3(4!)}\sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6}\Omega^{22}_{k_7k_8k_1k_2}\Omega^{22}_{k_9k_{10}k_7k_8}\Omega^{06}_{k_9k_{10}k_3k_4k_5k_6}\int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2)e^{-\tau_1\epsilon^{k_7k_8}_{k_1k_2}}e^{-\tau_2\epsilon^{k_9k_{10}}_{k_7k_8}}e^{-\tau_3\epsilon_{k_3k_4k_5k_6k_9k_{10}}}$$
$$= \frac{(-1)^3}{(2!)^3(4!)}\sum_{k_i}\frac{O^{60}_{k_1k_2k_3k_4k_5k_6}\Omega^{22}_{k_7k_8k_1k_2}\Omega^{22}_{k_9k_{10}k_7k_8}\Omega^{06}_{k_9k_{10}k_3k_4k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_7k_8k_3k_4k_5k_6}\ \epsilon_{k_3k_4k_5k_6k_9k_{10}}} \tag{302}$$



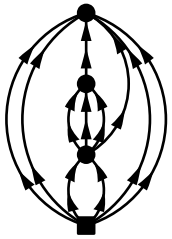
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{303}$$

$$\begin{aligned} a_1 &= \epsilon^{k_7 k_8}_{k_1 k_2} \\ a_2 &= \epsilon^{k_9 k_{10}}_{k_7 k_8} \\ a_3 &= \epsilon_{k_3 k_4 k_5 k_6 k_9 k_{10}} \end{aligned}$$

Diagram 150:

$$\begin{aligned} \mathrm{PO3.150} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)(4!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{42}_{k_7 k_8 k_9 k_{10} k_1 k_2} \Omega^{13}_{k_{11} k_7 k_8 k_9} \Omega^{06}_{k_{11} k_{10} k_3 k_4 k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7 k_8 k_9 k_{10}}_{k_1 k_2}} e^{-\tau_2 \epsilon^{k_{11}}_{k_7 k_8 k_9}} e^{-\tau_3 \epsilon_{k_3 k_4 k_5 k_6 k_1} \\ &= \frac{(-1)^3}{(2!)(3!)(4!)} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{42}_{k_7 k_8 k_9 k_{10} k_1 k_2} \Omega^{13}_{k_{11} k_7 k_8 k_9} \Omega^{06}_{k_{11} k_{10} k_3 k_4 k_5 k_6}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6} \ \epsilon_{k_7 k_8 k_9 k_3 k_4 k_5 k_6 k_{10}} \ \epsilon_{k_3 k_4 k_5 k_6 k_{10} k_{11}}} \end{aligned} \tag{304}$$



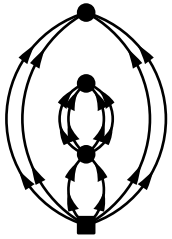
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{305}$$

$$a_1 = \epsilon_{k_1k_2}^{k_7k_8k_9k_{10}}$$
$$a_2 = \epsilon_{k_7k_8k_9}^{k_{11}}$$
$$a_3 = \epsilon_{k_3k_4k_5k_6k_{10}k_{11}}$$

Diagram 151:

$$\text{PO3.151} = \lim_{\tau\to\infty}\frac{(-1)^3}{(2!)(4!)^2}\sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6}\Omega^{42}_{k_7k_8k_9k_{10}k_1k_2}\Omega^{04}_{k_7k_8k_9k_{10}}\Omega^{04}_{k_3k_4k_5k_6}\int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)e^{-\tau_1\epsilon_{k_1k_2}^{k_7k_8k_9k_{10}}}e^{-\tau_2\epsilon_{k_7k_8k_9k_{10}}}e^{-\tau_3\epsilon_{k_3k_4k_5k_6}}$$
$$= \frac{(-1)^3}{(2!)(4!)^2}\sum_{k_i}\frac{O^{60}_{k_1k_2k_3k_4k_5k_6}\Omega^{42}_{k_7k_8k_9k_{10}k_1k_2}\Omega^{04}_{k_7k_8k_9k_{10}}\Omega^{04}_{k_3k_4k_5k_6}}{\epsilon_{k_1k_2}^{k_7k_8k_9k_{10}}\ \epsilon_{k_7k_8k_9k_{10}}\ \epsilon_{k_7k_8k_9k_{10}k_3k_4k_5k_6}} \tag{306}$$



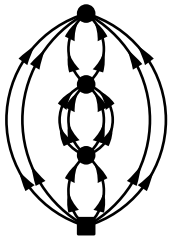
$\rightarrow$ T3:

$$\text{T3} = \frac{1}{a_1(a_2+a_3)a_3} \tag{307}$$

$$a_1 = \epsilon_{k_1k_2}^{k_7k_8k_9k_{10}}$$
$$a_2 = \epsilon_{k_3k_4k_5k_6}$$
$$a_3 = \epsilon_{k_7k_8k_9k_{10}}$$

Diagram 152:

$$\text{PO3.152} = \lim_{\tau\to\infty}\frac{(-1)^3}{(2!)^2(4!)^2}\sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6}\Omega^{42}_{k_7k_8k_9k_{10}k_1k_2}\Omega^{24}_{k_{11}k_{12}k_7k_8k_9k_{10}}\Omega^{06}_{k_{11}k_{12}k_3k_4k_5k_6}\int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2)e^{-\tau_1\epsilon_{k_1k_2}^{k_7k_8k_9k_{10}}}e^{-\tau_2\epsilon_{k_7k_8k_9k_{10}}^{k_{11}k_{12}}}e^{-\tau_3\epsilon_{k_3k_4k_5k_6k_{11}k_{12}}}$$
$$= \frac{(-1)^3}{(2!)^2(4!)^2}\sum_{k_i}\frac{O^{60}_{k_1k_2k_3k_4k_5k_6}\Omega^{42}_{k_7k_8k_9k_{10}k_1k_2}\Omega^{24}_{k_{11}k_{12}k_7k_8k_9k_{10}}\Omega^{06}_{k_{11}k_{12}k_3k_4k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_7k_8k_9k_{10}k_3k_4k_5k_6}\ \epsilon_{k_3k_4k_5k_6k_{11}k_{12}}} \tag{308}$$



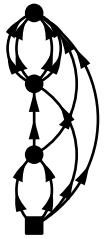

$$\rightarrow \quad \text{T1:}$$

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{309}$$

$$\begin{aligned} a_1 &= \epsilon^{k_7k_8k_9k_{10}}_{k_1k_2} \\ a_2 &= \epsilon^{k_{11}k_{12}}_{k_7k_8k_9k_{10}} \\ a_3 &= \epsilon_{k_3k_4k_5k_6k_{11}k_{12}} \end{aligned}$$

Diagram 153:

$$\begin{aligned} \text{PO3.153} &= \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)(4!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{22}_{k_5k_6k_1k_2} \Omega^{42}_{k_7k_8k_9k_{10}k_5k_3} \Omega^{06}_{k_7k_8k_9k_{10}k_6k_4} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_5k_6}_{k_1k_2}} e^{-\tau_2\epsilon^{k_7k_8k_9k_{10}}_{k_3k_5}} e^{-\tau_3\epsilon_{k_4k_6k_7k_8k_9k_{10}}} \\ &= \frac{-(-1)^3}{(2!)(4!)} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{22}_{k_5k_6k_1k_2} \Omega^{42}_{k_7k_8k_9k_{10}k_5k_3} \Omega^{06}_{k_7k_8k_9k_{10}k_6k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_3k_5k_4k_6}\ \epsilon_{k_4k_6k_7k_8k_9k_{10}}} \end{aligned} \tag{310}$$



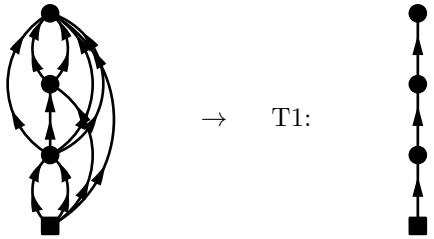

$$\rightarrow \quad \text{T1:}$$

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{311}$$

$$a_1 = \epsilon^{k_5 k_6}_{k_1 k_2}$$
$$a_2 = \epsilon^{k_7 k_8 k_9 k_{10}}_{k_3 k_5}$$
$$a_3 = \epsilon_{k_4 k_6 k_7 k_8 k_9 k_{10}}$$

Diagram 154:

$$\text{PO3.154} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{42}_{k_5k_6k_7k_8k_1k_2} \Omega^{22}_{k_9k_{10}k_5k_3} \Omega^{06}_{k_9k_{10}k_6k_7k_8k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5k_6k_7k_8}_{k_1k_2}} e^{-\tau_2 \epsilon^{k_9k_{10}}_{k_3k_5}} e^{-\tau_3 \epsilon_{k_4k_6k_7k_8k_9k_{10}}}$$
$$= \frac{-(-1)^3}{(2!)^2(3!)} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{42}_{k_5k_6k_7k_8k_1k_2} \Omega^{22}_{k_9k_{10}k_5k_3} \Omega^{06}_{k_9k_{10}k_6k_7k_8k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_3k_5k_4k_6k_7k_8}\ \epsilon_{k_4k_6k_7k_8k_9k_{10}}} \tag{312}$$

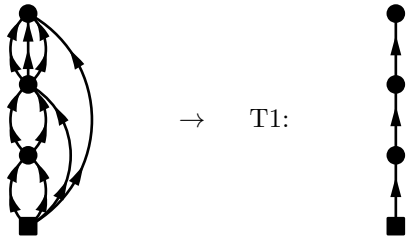


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{313}$$

$$a_1 = \epsilon^{k_5k_6k_7k_8}_{k_1k_2}$$
$$a_2 = \epsilon^{k_9k_{10}}_{k_3k_5}$$
$$a_3 = \epsilon_{k_4k_6k_7k_8k_9k_{10}}$$

Diagram 155:

$$\text{PO3.155} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{22}_{k_5k_6k_1k_2} \Omega^{33}_{k_7k_8k_9k_5k_6k_3} \Omega^{04}_{k_7k_8k_9k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5k_6}_{k_1k_2}} e^{-\tau_2 \epsilon^{k_7k_8k_9}_{k_3k_5k_6}} e^{-\tau_3 \epsilon_{k_4k_7k_8k_9}}$$
$$= \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{22}_{k_5k_6k_1k_2} \Omega^{33}_{k_7k_8k_9k_5k_6k_3} \Omega^{04}_{k_7k_8k_9k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_3k_5k_6k_4}\ \epsilon_{k_4k_7k_8k_9}} \tag{314}$$

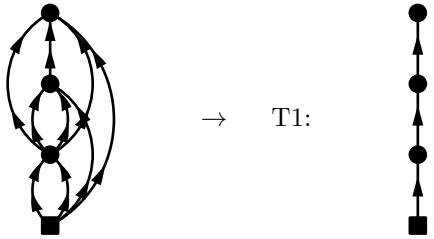


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{315}$$

$$\begin{aligned} a_1 &= \epsilon^{k_5k_6}_{k_1k_2} \\ a_2 &= \epsilon^{k_7k_8k_9}_{k_3k_5k_6} \\ a_3 &= \epsilon_{k_4k_7k_8k_9} \end{aligned}$$

Diagram 156:

$$\begin{aligned} \text{PO3.156} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^3} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{42}_{k_5k_6k_7k_8k_1k_2} \Omega^{13}_{k_9k_5k_6k_3} \Omega^{04}_{k_9k_7k_8k_4} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5k_6k_7k_8}_{k_1k_2}} e^{-\tau_2 \epsilon^{k_9}_{k_3k_5k_6}} e^{-\tau_3 \epsilon_{k_4k_7k_8k_9}} \\ &= \frac{(-1)^3}{(2!)^3} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{42}_{k_5k_6k_7k_8k_1k_2} \Omega^{13}_{k_9k_5k_6k_3} \Omega^{04}_{k_9k_7k_8k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_3k_5k_6k_4k_7k_8}\ \epsilon_{k_4k_7k_8k_9}} \end{aligned} \tag{316}$$



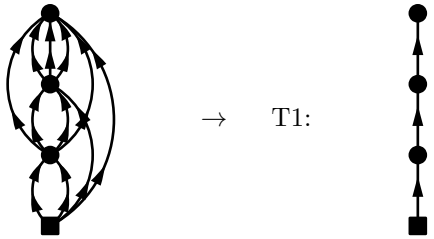
$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{317}$$

$$a_1 = \epsilon^{k_5 k_6 k_7 k_8}_{k_1 k_2}$$
$$a_2 = \epsilon^{k_9}_{k_3 k_5 k_6}$$
$$a_3 = \epsilon_{k_4 k_7 k_8 k_9}$$

Diagram 157:

$$\text{PO3.157} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^3(3!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{42}_{k_5k_6k_7k_8k_1k_2} \Omega^{33}_{k_9k_{10}k_{11}k_5k_6k_3} \Omega^{06}_{k_9k_{10}k_{11}k_7k_8k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5k_6k_7k_8}_{k_1k_2}} e^{-\tau_2 \epsilon^{k_9k_{10}k_{11}}_{k_3k_5k_6}} e^{-\tau_3 \epsilon_{k_4k_7k_8k_9k_{10}k_1}}$$

$$= \frac{(-1)^3}{(2!)^3(3!)} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{42}_{k_5k_6k_7k_8k_1k_2} \Omega^{33}_{k_9k_{10}k_{11}k_5k_6k_3} \Omega^{06}_{k_9k_{10}k_{11}k_7k_8k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_3k_5k_6k_4k_7k_8}\ \epsilon_{k_4k_7k_8k_9k_{10}k_{11}}} \tag{318}$$



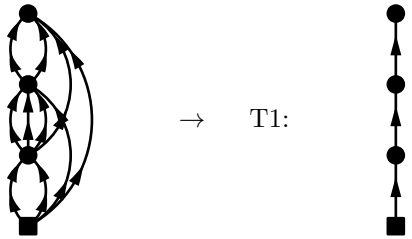
$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{319}$$

$$a_1 = \epsilon^{k_5k_6k_7k_8}_{k_1k_2}$$
$$a_2 = \epsilon^{k_9k_{10}k_{11}}_{k_3k_5k_6}$$
$$a_3 = \epsilon_{k_4k_7k_8k_9k_{10}k_{11}}$$

Diagram 158:

$$\text{PO3.158} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{42}_{k_5k_6k_7k_8k_1k_2} \Omega^{24}_{k_9k_{10}k_5k_6k_7k_3} \Omega^{04}_{k_9k_{10}k_8k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5k_6k_7k_8}_{k_1k_2}} e^{-\tau_2 \epsilon^{k_9k_{10}}_{k_3k_5k_6k_7}} e^{-\tau_3 \epsilon_{k_4k_8k_9k_{10}}}$$

$$= \frac{-(-1)^3}{(2!)^2(3!)} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{42}_{k_5k_6k_7k_8k_1k_2} \Omega^{24}_{k_9k_{10}k_5k_6k_7k_3} \Omega^{04}_{k_9k_{10}k_8k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_3k_5k_6k_7k_4k_8}\ \epsilon_{k_4k_8k_9k_{10}}} \tag{320}$$



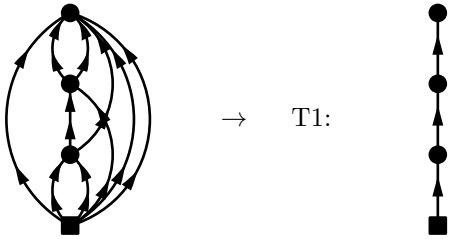
$\rightarrow$ T1:

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{321}$$

$$\begin{aligned} a_1 &= \epsilon^{k_5k_6k_7k_8}_{k_1k_2} \\ a_2 &= \epsilon^{k_9k_{10}}_{k_3k_5k_6k_7} \\ a_3 &= \epsilon_{k_4k_8k_9k_{10}} \end{aligned}$$

Diagram 159:

$$\begin{aligned} \text{PO3.159} &= \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{22}_{k_7k_8k_1k_2} \Omega^{22}_{k_9k_{10}k_7k_3} \Omega^{06}_{k_9k_{10}k_8k_4k_5k_6} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_7k_8}_{k_1k_2}} e^{-\tau_2\epsilon^{k_9k_{10}}_{k_3k_7}} e^{-\tau_3\epsilon_{k_4k_5k_6k_8k_9k_{10}}} \\ &= \frac{-(-1)^3}{(2!)^2(3!)} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{22}_{k_7k_8k_1k_2} \Omega^{22}_{k_9k_{10}k_7k_3} \Omega^{06}_{k_9k_{10}k_8k_4k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_3k_7k_4k_5k_6k_8}\ \epsilon_{k_4k_5k_6k_8k_9k_{10}}} \end{aligned} \tag{322}$$



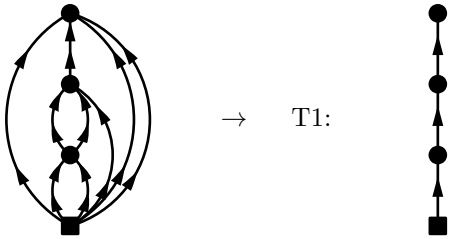
$\rightarrow$ T1:

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{323}$$

$$a_1 = \epsilon^{k_7 k_8}_{k_1 k_2}$$
$$a_2 = \epsilon^{k_9 k_{10}}_{k_3 k_7}$$
$$a_3 = \epsilon_{k_4 k_5 k_6 k_8 k_9 k_{10}}$$

Diagram 160:

$$\text{PO3.160} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{22}_{k_7k_8k_1k_2} \Omega^{13}_{k_9k_7k_8k_3} \Omega^{04}_{k_9k_4k_5k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7k_8}_{k_1k_2}} e^{-\tau_2 \epsilon^{k_9}_{k_3k_7k_8}} e^{-\tau_3 \epsilon_{k_4k_5k_6k_9}}$$
$$= \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{22}_{k_7k_8k_1k_2} \Omega^{13}_{k_9k_7k_8k_3} \Omega^{04}_{k_9k_4k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_3k_7k_8k_4k_5k_6}\ \epsilon_{k_4k_5k_6k_9}} \tag{324}$$

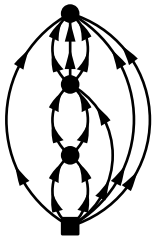


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{325}$$

$$a_1 = \epsilon^{k_7 k_8}_{k_1 k_2}$$
$$a_2 = \epsilon^{k_9}_{k_3 k_7 k_8}$$
$$a_3 = \epsilon_{k_4 k_5 k_6 k_9}$$

Diagram 161:

$$\text{PO3.161} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)^2} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{22}_{k_7k_8k_1k_2} \Omega^{33}_{k_9k_{10}k_{11}k_7k_8k_3} \Omega^{06}_{k_9k_{10}k_{11}k_4k_5k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7k_8}_{k_1k_2}} e^{-\tau_2 \epsilon^{k_9k_{10}k_{11}}_{k_3k_7k_8}} e^{-\tau_3 \epsilon_{k_4k_5k_6k_9k_{10}k_{11}}}$$
$$= \frac{(-1)^3}{(2!)^2(3!)^2} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{22}_{k_7k_8k_1k_2} \Omega^{33}_{k_9k_{10}k_{11}k_7k_8k_3} \Omega^{06}_{k_9k_{10}k_{11}k_4k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_3k_7k_8k_4k_5k_6}\ \epsilon_{k_4k_5k_6k_9k_{10}k_{11}}} \tag{326}$$

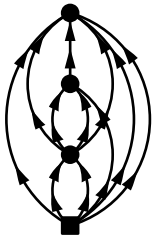



$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{327}$$

$$\begin{aligned} a_1 &= \epsilon^{k_7k_8}_{k_1k_2} \\ a_2 &= \epsilon^{k_9k_{10}k_{11}}_{k_3k_7k_8} \\ a_3 &= \epsilon_{k_4k_5k_6k_9k_{10}k_{11}} \end{aligned}$$

Diagram 162:

$$\begin{aligned} \text{PO3.162} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^3(3!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{42}_{k_7k_8k_9k_{10}k_1k_2} \Omega^{13}_{k_{11}k_7k_8k_3} \Omega^{06}_{k_{11}k_9k_{10}k_4k_5k_6} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_7k_8k_9k_{10}}_{k_1k_2}} e^{-\tau_2\epsilon^{k_{11}}_{k_3k_7k_8}} e^{-\tau_3\epsilon_{k_4k_5k_6k_9k_{10}k_{11}}} \\ &= \frac{(-1)^3}{(2!)^3(3!)} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{42}_{k_7k_8k_9k_{10}k_1k_2} \Omega^{13}_{k_{11}k_7k_8k_3} \Omega^{06}_{k_{11}k_9k_{10}k_4k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_3k_7k_8k_4k_5k_6k_9k_{10}}\ \epsilon_{k_4k_5k_6k_9k_{10}k_{11}}} \end{aligned} \tag{328}$$

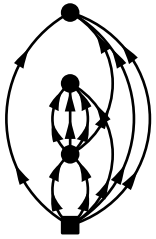



$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{329}$$

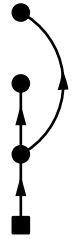
$$a_1 = \epsilon^{k_7 k_8 k_9 k_{10}}_{k_1 k_2}$$
$$a_2 = \epsilon^{k_{11}}_{k_3 k_7 k_8}$$
$$a_3 = \epsilon_{k_4 k_5 k_6 k_9 k_{10} k_{11}}$$

Diagram 163:

$$\text{PO3.163} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{42}_{k_7 k_8 k_9 k_{10} k_1 k_2} \Omega^{04}_{k_7 k_8 k_9 k_3} \Omega^{04}_{k_{10} k_4 k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_1) e^{-\tau_1 \epsilon^{k_7 k_8 k_9 k_{10}}_{k_1 k_2}} e^{-\tau_2 \epsilon_{k_3 k_7 k_8 k_9}} e^{-\tau_3 \epsilon_{k_4 k_5 k_6 k_{10}}}$$
$$= \frac{-(-1)^3}{(2!)(3!)^2} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{42}_{k_7 k_8 k_9 k_{10} k_1 k_2} \Omega^{04}_{k_7 k_8 k_9 k_3} \Omega^{04}_{k_{10} k_4 k_5 k_6}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_3 k_7 k_8 k_9}\ \epsilon_{k_4 k_5 k_6 k_{10}}} \tag{330}$$



$\rightarrow$ T2:

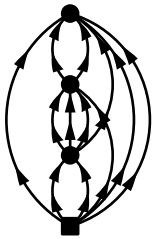


$$\text{T2} = \frac{1}{(a_1 + a_2 + a_3) a_2 a_3} \tag{331}$$

$$a_1 = \epsilon^{k_7 k_8 k_9 k_{10}}_{k_1 k_2}$$
$$a_2 = \epsilon_{k_3 k_7 k_8 k_9}$$
$$a_3 = \epsilon_{k_4 k_5 k_6 k_{10}}$$

Diagram 164:

$$\text{PO3.164} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)^2(3!)^2} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{42}_{k_7 k_8 k_9 k_{10} k_1 k_2} \Omega^{24}_{k_{11} k_{12} k_7 k_8 k_9 k_3} \Omega^{06}_{k_{11} k_{12} k_{10} k_4 k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_7 k_8 k_9 k_{10}}_{k_1 k_2}} e^{-\tau_2 \epsilon^{k_{11} k_{12}}_{k_3 k_7 k_8 k_9}} e^{-\tau_3 \epsilon_{k_4 k_5}}$$
$$= \frac{-(-1)^3}{(2!)^2(3!)^2} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{42}_{k_7 k_8 k_9 k_{10} k_1 k_2} \Omega^{24}_{k_{11} k_{12} k_7 k_8 k_9 k_3} \Omega^{06}_{k_{11} k_{12} k_{10} k_4 k_5 k_6}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_3 k_7 k_8 k_9 k_4 k_5 k_6 k_{10}}\ \epsilon_{k_4 k_5 k_6 k_{10} k_{11} k_{12}}} \tag{332}$$



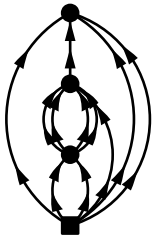
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{333}$$

$$\begin{aligned} a_1 &= \epsilon^{k_7k_8k_9k_{10}}_{k_1k_2} \\ a_2 &= \epsilon^{k_{11}k_{12}}_{k_3k_7k_8k_9} \\ a_3 &= \epsilon_{k_4k_5k_6k_{10}k_{11}k_{12}} \end{aligned}$$

Diagram 165:

$$\begin{aligned} \mathrm{PO3.165} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)(4!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{42}_{k_7k_8k_9k_{10}k_1k_2} \Omega^{15}_{k_{11}k_7k_8k_9k_{10}k_3} \Omega^{04}_{k_{11}k_4k_5k_6} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_7k_8k_9k_{10}}_{k_1k_2}} e^{-\tau_2\epsilon^{k_{11}}_{k_3k_7k_8k_9k_{10}}} e^{-\tau_3\epsilon_{k_4k_5k_6k_{11}}} \\ &= \frac{(-1)^3}{(2!)(3!)(4!)} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{42}_{k_7k_8k_9k_{10}k_1k_2} \Omega^{15}_{k_{11}k_7k_8k_9k_{10}k_3} \Omega^{04}_{k_{11}k_4k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_3k_7k_8k_9k_{10}k_4k_5k_6}\ \epsilon_{k_4k_5k_6k_{11}}} \end{aligned} \tag{334}$$



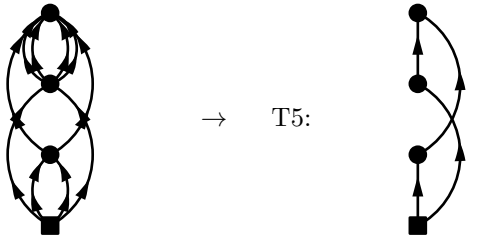
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{335}$$

$$a_1 = \epsilon^{k_7 k_8 k_9 k_{10}}_{k_1 k_2}$$
$$a_2 = \epsilon^{k_{11}}_{k_3 k_7 k_8 k_9 k_{10}}$$
$$a_3 = \epsilon_{k_4 k_5 k_6 k_{11}}$$

Diagram 166:

$$\text{PO3.166} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^3(4!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{22}_{k_5k_6k_1k_2} \Omega^{42}_{k_7k_8k_9k_{10}k_3k_4} \Omega^{06}_{k_7k_8k_9k_{10}k_5k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5k_6}_{k_1k_2}} e^{-\tau_2 \epsilon^{k_7k_8k_9k_{10}}_{k_3k_4}} e^{-\tau_3 \epsilon_{k_5k_6k_7k_8k_9k_{10}}}$$
$$= \frac{(-1)^3}{(2!)^3(4!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{22}_{k_5k_6k_1k_2} \Omega^{42}_{k_7k_8k_9k_{10}k_3k_4} \Omega^{06}_{k_7k_8k_9k_{10}k_5k_6} \left[\frac{1}{\epsilon_{k_1k_2k_7k_8k_9k_{10}}\ \epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_5k_6k_7k_8k_9k_{10}}} + \frac{1}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_3k_4k_5k_6}\ \epsilon_{k_5k_6k_7k_8k_9k_{10}}} \right] \tag{336}$$

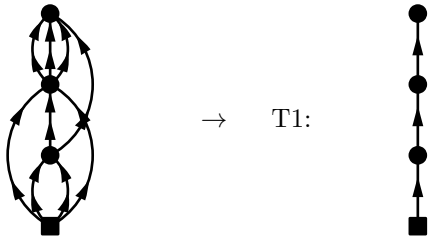


$$\text{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{337}$$

$$a_1 = \epsilon^{k_5k_6}_{k_1k_2}$$
$$a_2 = \epsilon^{k_7k_8k_9k_{10}}_{k_3k_4}$$
$$a_3 = \epsilon_{k_5k_6k_7k_8k_9k_{10}}$$

Diagram 167:

$$\text{PO3.167} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{22}_{k_5k_6k_1k_2} \Omega^{33}_{k_7k_8k_9k_5k_3k_4} \Omega^{04}_{k_7k_8k_9k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5k_6}_{k_1k_2}} e^{-\tau_2 \epsilon^{k_7k_8k_9}_{k_3k_4k_5}} e^{-\tau_3 \epsilon_{k_6k_7k_8k_9}}$$
$$= \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{22}_{k_5k_6k_1k_2} \Omega^{33}_{k_7k_8k_9k_5k_3k_4} \Omega^{04}_{k_7k_8k_9k_6}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_3k_4k_5k_6}\ \epsilon_{k_6k_7k_8k_9}} \tag{338}$$

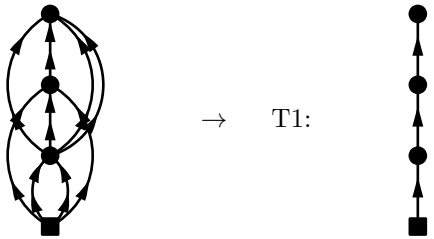


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{339}$$

$$\begin{aligned} a_1 &= \epsilon^{k_5 k_6}_{k_1 k_2} \\ a_2 &= \epsilon^{k_7 k_8 k_9}_{k_3 k_4 k_5} \\ a_3 &= \epsilon_{k_6 k_7 k_8 k_9} \end{aligned}$$

Diagram 168:

$$\begin{aligned} \text{PO3.168} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{42}_{k_5 k_6 k_7 k_8 k_1 k_2} \Omega^{13}_{k_9 k_5 k_3 k_4} \Omega^{04}_{k_9 k_6 k_7 k_8} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5 k_6 k_7 k_8}_{k_1 k_2}} e^{-\tau_2 \epsilon^{k_9}_{k_3 k_4 k_5}} e^{-\tau_3 \epsilon_{k_6 k_7 k_8 k_9}} \\ &= \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{42}_{k_5 k_6 k_7 k_8 k_1 k_2} \Omega^{13}_{k_9 k_5 k_3 k_4} \Omega^{04}_{k_9 k_6 k_7 k_8}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_3 k_4 k_5 k_6 k_7 k_8}\ \epsilon_{k_6 k_7 k_8 k_9}} \end{aligned} \tag{340}$$

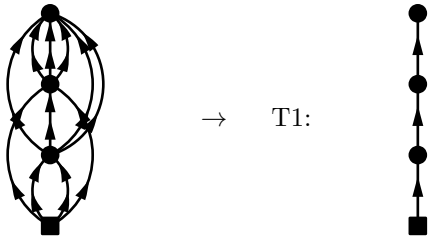


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{341}$$

$$a_1 = \epsilon^{k_5k_6k_7k_8}_{k_1k_2}$$
$$a_2 = \epsilon^{k_9}_{k_3k_4k_5}$$
$$a_3 = \epsilon_{k_6k_7k_8k_9}$$

Diagram 169:

$$\text{PO3.169} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)^2} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{42}_{k_5k_6k_7k_8k_1k_2} \Omega^{33}_{k_9k_{10}k_{11}k_5k_3k_4} \Omega^{06}_{k_9k_{10}k_{11}k_6k_7k_8} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_5k_6k_7k_8}_{k_1k_2}} e^{-\tau_2\epsilon^{k_9k_{10}k_{11}}_{k_3k_4k_5}} e^{-\tau_3\epsilon_{k_6k_7k_8k_9k_{10}}}$$
$$= \frac{(-1)^3}{(2!)^2(3!)^2} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{42}_{k_5k_6k_7k_8k_1k_2} \Omega^{33}_{k_9k_{10}k_{11}k_5k_3k_4} \Omega^{06}_{k_9k_{10}k_{11}k_6k_7k_8}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_3k_4k_5k_6k_7k_8}\ \epsilon_{k_6k_7k_8k_9k_{10}k_{11}}} \tag{342}$$



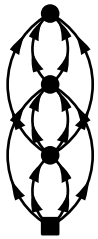
$\rightarrow$ T1:

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{343}$$

$$a_1 = \epsilon^{k_5k_6k_7k_8}_{k_1k_2}$$
$$a_2 = \epsilon^{k_9k_{10}k_{11}}_{k_3k_4k_5}$$
$$a_3 = \epsilon_{k_6k_7k_8k_9k_{10}k_{11}}$$

Diagram 170:

$$\text{PO3.170} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^5} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{42}_{k_5k_6k_7k_8k_1k_2} \Omega^{24}_{k_9k_{10}k_5k_6k_3k_4} \Omega^{04}_{k_9k_{10}k_7k_8} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_5k_6k_7k_8}_{k_1k_2}} e^{-\tau_2\epsilon^{k_9k_{10}}_{k_3k_4k_5k_6}} e^{-\tau_3\epsilon_{k_7k_8k_9k_{10}}}$$
$$= \frac{(-1)^3}{(2!)^5} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{42}_{k_5k_6k_7k_8k_1k_2} \Omega^{24}_{k_9k_{10}k_5k_6k_3k_4} \Omega^{04}_{k_9k_{10}k_7k_8}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_3k_4k_5k_6k_7k_8}\ \epsilon_{k_7k_8k_9k_{10}}} \tag{344}$$



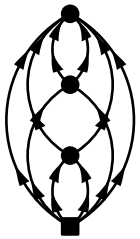
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{345}$$

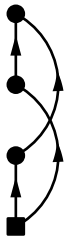
$$\begin{aligned} a_1 &= \epsilon^{k_5k_6k_7k_8}_{k_1k_2} \\ a_2 &= \epsilon^{k_9k_{10}}_{k_3k_4k_5k_6} \\ a_3 &= \epsilon_{k_7k_8k_9k_{10}} \end{aligned}$$

Diagram 171:

$$\begin{aligned} \mathrm{PO3.171} &= \lim_{\tau\to\infty} \frac{(-1)^3}{2(2!)^5} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{22}_{k_7k_8k_1k_2} \Omega^{22}_{k_9k_{10}k_3k_4} \Omega^{06}_{k_9k_{10}k_7k_8k_5k_6} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_7k_8}_{k_1k_2}} e^{-\tau_2\epsilon^{k_9k_{10}}_{k_3k_4}} e^{-\tau_3\epsilon_{k_5k_6k_7k_8k_9k_{10}}} \\ &= \frac{(-1)^3}{2(2!)^5} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{22}_{k_7k_8k_1k_2} \Omega^{22}_{k_9k_{10}k_3k_4} \Omega^{06}_{k_9k_{10}k_7k_8k_5k_6} \left[\frac{1}{\epsilon_{k_1k_2k_5k_6k_9k_{10}}\ \epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_5k_6k_7k_8k_9k_{10}}} + \frac{1}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_3k_4k_5k_6k_7k_8}\ \epsilon_{k_5k_6k_7k_8k_9k_{10}}} \right] \end{aligned} \tag{346}$$



$\rightarrow$ T5:

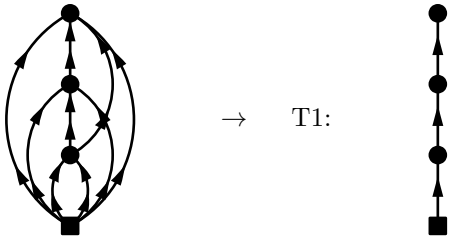


$$\mathrm{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{347}$$

$$a_1 = \epsilon^{k_7 k_8}_{k_1 k_2}$$
$$a_2 = \epsilon^{k_9 k_{10}}_{k_3 k_4}$$
$$a_3 = \epsilon_{k_5 k_6 k_7 k_8 k_9 k_{10}}$$

Diagram 172:

$$\text{PO3.172} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^3} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{22}_{k_7 k_8 k_1 k_2} \Omega^{13}_{k_9 k_7 k_3 k_4} \Omega^{04}_{k_9 k_8 k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7 k_8}_{k_1 k_2}} e^{-\tau_2 \epsilon^{k_9}_{k_3 k_4 k_7}} e^{-\tau_3 \epsilon_{k_5 k_6 k_8 k_9}}$$
$$= \frac{(-1)^3}{(2!)^3} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{22}_{k_7 k_8 k_1 k_2} \Omega^{13}_{k_9 k_7 k_3 k_4} \Omega^{04}_{k_9 k_8 k_5 k_6}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_3 k_4 k_7 k_5 k_6 k_8}\ \epsilon_{k_5 k_6 k_8 k_9}} \tag{348}$$

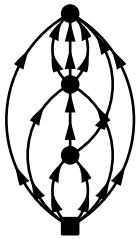


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{349}$$

$$a_1 = \epsilon^{k_7 k_8}_{k_1 k_2}$$
$$a_2 = \epsilon^{k_9}_{k_3 k_4 k_7}$$
$$a_3 = \epsilon_{k_5 k_6 k_8 k_9}$$

Diagram 173:

$$\text{PO3.173} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^3(3!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{22}_{k_7 k_8 k_1 k_2} \Omega^{33}_{k_9 k_{10} k_{11} k_7 k_3 k_4} \Omega^{06}_{k_9 k_{10} k_{11} k_8 k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7 k_8}_{k_1 k_2}} e^{-\tau_2 \epsilon^{k_9 k_{10} k_{11}}_{k_3 k_4 k_7}} e^{-\tau_3 \epsilon_{k_5 k_6 k_8 k_9 k_{10} k_{11}}}$$
$$= \frac{(-1)^3}{(2!)^3(3!)} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{22}_{k_7 k_8 k_1 k_2} \Omega^{33}_{k_9 k_{10} k_{11} k_7 k_3 k_4} \Omega^{06}_{k_9 k_{10} k_{11} k_8 k_5 k_6}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_3 k_4 k_7 k_5 k_6 k_8}\ \epsilon_{k_5 k_6 k_8 k_9 k_{10} k_{11}}} \tag{350}$$



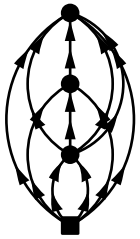
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{351}$$

$$\begin{aligned} a_1 &= \epsilon^{k_7k_8}_{k_1k_2} \\ a_2 &= \epsilon^{k_9k_{10}k_{11}}_{k_3k_4k_7} \\ a_3 &= \epsilon_{k_5k_6k_8k_9k_{10}k_{11}} \end{aligned}$$

Diagram 174:

$$\begin{aligned} \mathrm{PO3.174} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^3(3!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{42}_{k_7k_8k_9k_{10}k_1k_2} \Omega^{13}_{k_{11}k_7k_3k_4} \Omega^{06}_{k_{11}k_8k_9k_{10}k_5k_6} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_7k_8k_9k_{10}}_{k_1k_2}} e^{-\tau_2\epsilon^{k_{11}}_{k_3k_4k_7}} e^{-\tau_3\epsilon_{k_5k_6k_8k_9k_{10}k_{11}}} \\ &= \frac{(-1)^3}{(2!)^3(3!)} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{42}_{k_7k_8k_9k_{10}k_1k_2} \Omega^{13}_{k_{11}k_7k_3k_4} \Omega^{06}_{k_{11}k_8k_9k_{10}k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_3k_4k_7k_5k_6k_8k_9k_{10}}\ \epsilon_{k_5k_6k_8k_9k_{10}k_{11}}} \end{aligned} \tag{352}$$



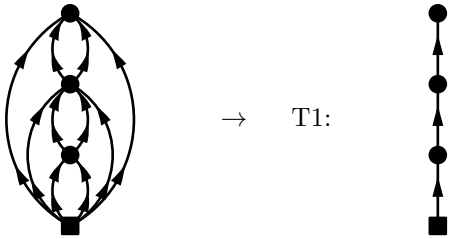
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{353}$$

$$a_1 = \epsilon^{k_7 k_8 k_9 k_{10}}_{k_1 k_2}$$
$$a_2 = \epsilon^{k_{11}}_{k_3 k_4 k_7}$$
$$a_3 = \epsilon_{k_5 k_6 k_8 k_9 k_{10} k_{11}}$$

Diagram 175:

$$\text{PO3.175} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^5} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{22}_{k_7 k_8 k_1 k_2} \Omega^{24}_{k_9 k_{10} k_7 k_8 k_3 k_4} \Omega^{04}_{k_9 k_{10} k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_7 k_8}_{k_1 k_2}} e^{-\tau_2 \epsilon^{k_9 k_{10}}_{k_3 k_4 k_7 k_8}} e^{-\tau_3 \epsilon_{k_5 k_6 k_9 k_{10}}}$$
$$= \frac{(-1)^3}{(2!)^5} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{22}_{k_7 k_8 k_1 k_2} \Omega^{24}_{k_9 k_{10} k_7 k_8 k_3 k_4} \Omega^{04}_{k_9 k_{10} k_5 k_6}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_3 k_4 k_7 k_8 k_5 k_6}\ \epsilon_{k_5 k_6 k_9 k_{10}}} \tag{354}$$



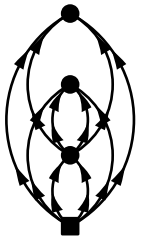
$\rightarrow$ T1:

$$\text{T1} = \frac{1}{(a_1 + a_2 + a_3)(a_2 + a_3)a_3} \tag{355}$$

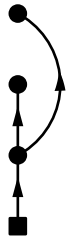
$$a_1 = \epsilon^{k_7 k_8}_{k_1 k_2}$$
$$a_2 = \epsilon^{k_9 k_{10}}_{k_3 k_4 k_7 k_8}$$
$$a_3 = \epsilon_{k_5 k_6 k_9 k_{10}}$$

Diagram 176:

$$\text{PO3.176} = \lim_{\tau\to\infty} \frac{(-1)^3}{2(2!)^5} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{42}_{k_7 k_8 k_9 k_{10} k_1 k_2} \Omega^{04}_{k_7 k_8 k_3 k_4} \Omega^{04}_{k_9 k_{10} k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_1) e^{-\tau_1 \epsilon^{k_7 k_8 k_9 k_{10}}_{k_1 k_2}} e^{-\tau_2 \epsilon_{k_3 k_4 k_7 k_8}} e^{-\tau_3 \epsilon_{k_5 k_6 k_9 k_{10}}}$$
$$= \frac{(-1)^3}{2(2!)^5} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{42}_{k_7 k_8 k_9 k_{10} k_1 k_2} \Omega^{04}_{k_7 k_8 k_3 k_4} \Omega^{04}_{k_9 k_{10} k_5 k_6}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_3 k_4 k_7 k_8}\ \epsilon_{k_5 k_6 k_9 k_{10}}} \tag{356}$$



$\rightarrow$ T2:



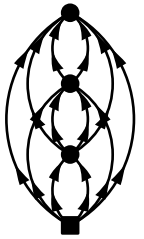
$$\mathrm{T2} = \frac{1}{(a_1+a_2+a_3)a_2a_3} \tag{357}$$

$$a_1 = \epsilon^{k_7k_8k_9k_{10}}_{k_1k_2}$$
$$a_2 = \epsilon_{k_3k_4k_7k_8}$$
$$a_3 = \epsilon_{k_5k_6k_9k_{10}}$$

Diagram 177:

$$\mathrm{PO3.177} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^6} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{42}_{k_7k_8k_9k_{10}k_1k_2} \Omega^{24}_{k_{11}k_{12}k_7k_8k_3k_4} \Omega^{06}_{k_{11}k_{12}k_9k_{10}k_5k_6} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_7k_8k_9k_{10}}_{k_1k_2}} e^{-\tau_2\epsilon^{k_{11}k_{12}}_{k_3k_4k_7k_8}} e^{-\tau_3\epsilon_{k_5k_6k_9k_{10}}}$$

$$= \frac{(-1)^3}{(2!)^6} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{42}_{k_7k_8k_9k_{10}k_1k_2} \Omega^{24}_{k_{11}k_{12}k_7k_8k_3k_4} \Omega^{06}_{k_{11}k_{12}k_9k_{10}k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_3k_4k_7k_8k_5k_6k_9k_{10}}\ \epsilon_{k_5k_6k_9k_{10}k_{11}k_{12}}} \tag{358}$$



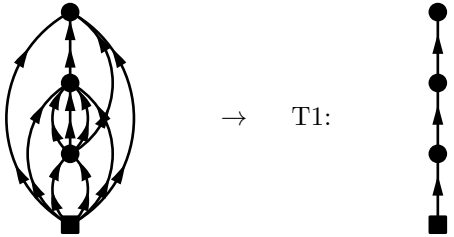
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{359}$$

$$a_1 = \epsilon^{k_7k_8k_9k_{10}}_{k_1k_2}$$
$$a_2 = \epsilon^{k_{11}k_{12}}_{k_3k_4k_7k_8}$$
$$a_3 = \epsilon_{k_5k_6k_9k_{10}k_{11}k_{12}}$$

Diagram 178:

$$\text{PO3.178} = \lim_{\tau\to\infty}\frac{(-1)^3}{(2!)^3(3!)}\sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6}\Omega^{42}_{k_7k_8k_9k_{10}k_1k_2}\Omega^{15}_{k_{11}k_7k_8k_9k_3k_4}\Omega^{04}_{k_{11}k_{10}k_5k_6}\int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2)e^{-\tau_1\epsilon^{k_7k_8k_9k_{10}}_{k_1k_2}}e^{-\tau_2\epsilon^{k_{11}}_{k_3k_4k_7k_8k_9}}e^{-\tau_3\epsilon_{k_5k_6k_{10}k_{11}}}$$
$$= \frac{(-1)^3}{(2!)^3(3!)}\sum_{k_i}\frac{O^{60}_{k_1k_2k_3k_4k_5k_6}\Omega^{42}_{k_7k_8k_9k_{10}k_1k_2}\Omega^{15}_{k_{11}k_7k_8k_9k_3k_4}\Omega^{04}_{k_{11}k_{10}k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_3k_4k_7k_8k_9k_5k_6k_{10}}\ \epsilon_{k_5k_6k_{10}k_{11}}} \tag{360}$$

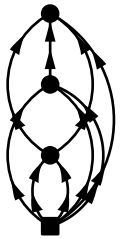
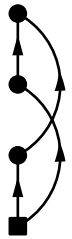


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{361}$$

$$a_1 = \epsilon^{k_7k_8k_9k_{10}}_{k_1k_2}$$
$$a_2 = \epsilon^{k_{11}}_{k_3k_4k_7k_8k_9}$$
$$a_3 = \epsilon_{k_5k_6k_{10}k_{11}}$$

Diagram 179:

$$\text{PO3.179} = \lim_{\tau\to\infty}\frac{(-1)^3}{(2!)^2(3!)}\sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6}\Omega^{22}_{k_7k_8k_1k_2}\Omega^{13}_{k_9k_3k_4k_5}\Omega^{04}_{k_9k_7k_8k_6}\int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2)e^{-\tau_1\epsilon^{k_7k_8}_{k_1k_2}}e^{-\tau_2\epsilon^{k_9}_{k_3k_4k_5}}e^{-\tau_3\epsilon_{k_6k_7k_8k_9}}$$
$$= \frac{(-1)^3}{(2!)^2(3!)}\sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6}\Omega^{22}_{k_7k_8k_1k_2}\Omega^{13}_{k_9k_3k_4k_5}\Omega^{04}_{k_9k_7k_8k_6}\left[\frac{1}{\epsilon_{k_1k_2k_6k_9}\ \epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_6k_7k_8k_9}}+\frac{1}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_3k_4k_5k_6k_7k_8}\ \epsilon_{k_6k_7k_8k_9}}\right] \tag{362}$$

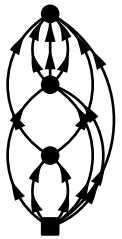
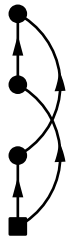



$$\text{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{363}$$

$$\begin{aligned} a_1 &= \epsilon^{k_7 k_8}_{k_1 k_2} \\ a_2 &= \epsilon^{k_9}_{k_3 k_4 k_5} \\ a_3 &= \epsilon_{k_6 k_7 k_8 k_9} \end{aligned}$$

Diagram 180:

$$\begin{aligned} \text{PO3.180} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)^2} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{22}_{k_7k_8k_1k_2} \Omega^{33}_{k_9k_{10}k_{11}k_3k_4k_5} \Omega^{06}_{k_9k_{10}k_{11}k_7k_8k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7k_8}_{k_1k_2}} e^{-\tau_2 \epsilon^{k_9k_{10}k_{11}}_{k_3k_4k_5}} e^{-\tau_3 \epsilon_{k_6k_7k_8k_9k_{10}k_{11}}} \\ &= \frac{(-1)^3}{(2!)^2(3!)^2} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{22}_{k_7k_8k_1k_2} \Omega^{33}_{k_9k_{10}k_{11}k_3k_4k_5} \Omega^{06}_{k_9k_{10}k_{11}k_7k_8k_6} \left[\frac{1}{\epsilon_{k_1k_2k_6k_9k_{10}k_{11}}\ \epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_6k_7k_8k_9k_{10}k_{11}}} + \frac{1}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_3k_4k_5k_6k_7k_8}\ \epsilon_{k_6k_7k_8k_9k_{10}k_{11}}} \right. \end{aligned} \tag{364}$$

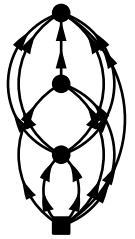



$$\text{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{365}$$

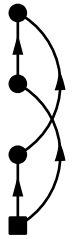
$$a_1 = \epsilon^{k_7 k_8}_{k_1 k_2}$$
$$a_2 = \epsilon^{k_9 k_{10} k_{11}}_{k_3 k_4 k_5}$$
$$a_3 = \epsilon_{k_6 k_7 k_8 k_9 k_{10} k_{11}}$$

Diagram 181:

$$\text{PO3.181} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)(4!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{42}_{k_7 k_8 k_9 k_{10} k_1 k_2} \Omega^{13}_{k_{11} k_3 k_4 k_5} \Omega^{06}_{k_{11} k_7 k_8 k_9 k_{10} k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7 k_8 k_9 k_{10}}_{k_1 k_2}} e^{-\tau_2 \epsilon^{k_{11}}_{k_3 k_4 k_5}} e^{-\tau_3 \epsilon_{k_6 k_7 k_8 k_9 k_{10} k_{11}}}$$
$$= \frac{(-1)^3}{(2!)(3!)(4!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{42}_{k_7 k_8 k_9 k_{10} k_1 k_2} \Omega^{13}_{k_{11} k_3 k_4 k_5} \Omega^{06}_{k_{11} k_7 k_8 k_9 k_{10} k_6} \left[\frac{1}{\epsilon_{k_1 k_2 k_6 k_{11}}\ \epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_6 k_7 k_8 k_9 k_{10} k_{11}}} + \frac{1}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_3 k_4 k_5 k_6 k_7 k_8 k_9 k_{10}}\ \epsilon_{k_6 k_7 k_8 k_9 k_{10} k_1} \right.$$
(366)



$\rightarrow$ T5:

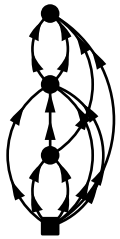


$$\text{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3}$$
(367)

$$a_1 = \epsilon^{k_7 k_8 k_9 k_{10}}_{k_1 k_2}$$
$$a_2 = \epsilon^{k_{11}}_{k_3 k_4 k_5}$$
$$a_3 = \epsilon_{k_6 k_7 k_8 k_9 k_{10} k_{11}}$$

Diagram 182:

$$\text{PO3.182} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{22}_{k_7 k_8 k_1 k_2} \Omega^{24}_{k_9 k_{10} k_7 k_3 k_4 k_5} \Omega^{04}_{k_9 k_{10} k_8 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7 k_8}_{k_1 k_2}} e^{-\tau_2 \epsilon^{k_9 k_{10}}_{k_3 k_4 k_5 k_7}} e^{-\tau_3 \epsilon_{k_6 k_8 k_9 k_{10}}}$$
$$= \frac{-(-1)^3}{(2!)^2(3!)} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{22}_{k_7 k_8 k_1 k_2} \Omega^{24}_{k_9 k_{10} k_7 k_3 k_4 k_5} \Omega^{04}_{k_9 k_{10} k_8 k_6}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_3 k_4 k_5 k_7 k_6 k_8}\ \epsilon_{k_6 k_8 k_9 k_{10}}}$$
(368)

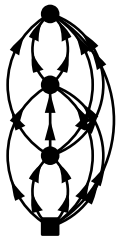



$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{369}$$

$$\begin{aligned} a_1 &= \epsilon^{k_7 k_8}_{k_1 k_2} \\ a_2 &= \epsilon^{k_9 k_{10}}_{k_3 k_4 k_5 k_7} \\ a_3 &= \epsilon_{k_6 k_8 k_9 k_{10}} \end{aligned}$$

Diagram 183:

$$\begin{aligned} \text{PO3.183} &= \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)^2(3!)^2} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{42}_{k_7k_8k_9k_{10}k_1k_2} \Omega^{24}_{k_{11}k_{12}k_7k_3k_4k_5} \Omega^{06}_{k_{11}k_{12}k_8k_9k_{10}k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7k_8k_9k_{10}}_{k_1k_2}} e^{-\tau_2 \epsilon^{k_{11}k_{12}}_{k_3k_4k_5k_7}} e^{-\tau_3 \epsilon_{k_6k_8}} \\ &= \frac{-(-1)^3}{(2!)^2(3!)^2} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{42}_{k_7k_8k_9k_{10}k_1k_2} \Omega^{24}_{k_{11}k_{12}k_7k_3k_4k_5} \Omega^{06}_{k_{11}k_{12}k_8k_9k_{10}k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_3k_4k_5k_7k_6k_8k_9k_{10}}\ \epsilon_{k_6k_8k_9k_{10}k_{11}k_{12}}} \end{aligned} \tag{370}$$



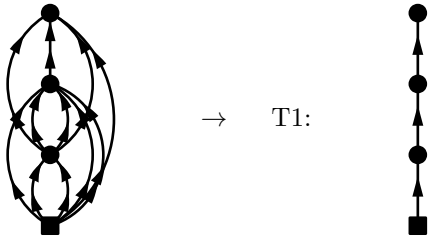

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{371}$$

$$a_1 = \epsilon^{k_7 k_8 k_9 k_{10}}_{k_1 k_2}$$
$$a_2 = \epsilon^{k_{11} k_{12}}_{k_3 k_4 k_5 k_7}$$
$$a_3 = \epsilon_{k_6 k_8 k_9 k_{10} k_{11} k_{12}}$$

Diagram 184:

$$\text{PO3.184} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^3(3!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{42}_{k_7k_8k_9k_{10}k_1k_2} \Omega^{15}_{k_{11}k_7k_8k_3k_4k_5} \Omega^{04}_{k_{11}k_9k_{10}k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7k_8k_9k_{10}}_{k_1k_2}} e^{-\tau_2 \epsilon^{k_{11}}_{k_3k_4k_5k_7k_8}} e^{-\tau_3 \epsilon_{k_6k_9k_{10}k_{11}}}$$

$$= \frac{(-1)^3}{(2!)^3(3!)} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{42}_{k_7k_8k_9k_{10}k_1k_2} \Omega^{15}_{k_{11}k_7k_8k_3k_4k_5} \Omega^{04}_{k_{11}k_9k_{10}k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_3k_4k_5k_7k_8k_6k_9k_{10}}\ \epsilon_{k_6k_9k_{10}k_{11}}} \tag{372}$$



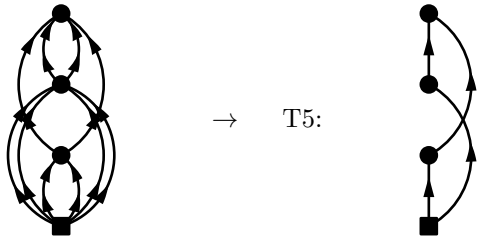
$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{373}$$

$$a_1 = \epsilon^{k_7 k_8 k_9 k_{10}}_{k_1 k_2}$$
$$a_2 = \epsilon^{k_{11}}_{k_3 k_4 k_5 k_7 k_8}$$
$$a_3 = \epsilon_{k_6 k_9 k_{10} k_{11}}$$

Diagram 185:

$$\text{PO3.185} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^3(4!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{22}_{k_7k_8k_1k_2} \Omega^{24}_{k_9k_{10}k_3k_4k_5k_6} \Omega^{04}_{k_9k_{10}k_7k_8} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7k_8}_{k_1k_2}} e^{-\tau_2 \epsilon^{k_9k_{10}}_{k_3k_4k_5k_6}} e^{-\tau_3 \epsilon_{k_7k_8k_9k_{10}}}$$

$$= \frac{(-1)^3}{(2!)^3(4!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{22}_{k_7k_8k_1k_2} \Omega^{24}_{k_9k_{10}k_3k_4k_5k_6} \Omega^{04}_{k_9k_{10}k_7k_8} \left[\frac{1}{\epsilon_{k_1k_2k_9k_{10}}\ \epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_7k_8k_9k_{10}}} + \frac{1}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_3k_4k_5k_6k_7k_8}\ \epsilon_{k_7k_8k_9k_{10}}} \right] \tag{374}$$

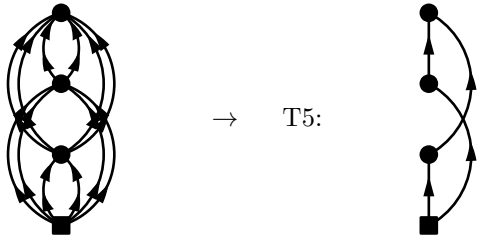


$$\text{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{375}$$

$$\begin{aligned} a_1 &= \epsilon^{k_7 k_8}_{k_1 k_2} \\ a_2 &= \epsilon^{k_9 k_{10}}_{k_3 k_4 k_5 k_6} \\ a_3 &= \epsilon_{k_7 k_8 k_9 k_{10}} \end{aligned}$$

Diagram 186:

$$\begin{aligned} \text{PO3.186} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(4!)^2} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{42}_{k_7k_8k_9k_{10}k_1k_2} \Omega^{24}_{k_{11}k_{12}k_3k_4k_5k_6} \Omega^{06}_{k_{11}k_{12}k_7k_8k_9k_{10}} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7k_8k_9k_{10}}_{k_1k_2}} e^{-\tau_2 \epsilon^{k_{11}k_{12}}_{k_3k_4k_5k_6}} e^{-\tau_3 \epsilon_{k_7k_8k_9k_{10}k_{11}k_{12}}} \\ &= \frac{(-1)^3}{(2!)^2(4!)^2} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{42}_{k_7k_8k_9k_{10}k_1k_2} \Omega^{24}_{k_{11}k_{12}k_3k_4k_5k_6} \Omega^{06}_{k_{11}k_{12}k_7k_8k_9k_{10}} \left[\frac{1}{\epsilon_{k_1k_2k_{11}k_{12}}\ \epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_7k_8k_9k_{10}k_{11}k_{12}}} + \frac{1}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_3k_4k_5k_6k_7k_8k_9k_{10}}\ \epsilon_{k_7k_8k_9k} \right. \end{aligned} \tag{376}$$

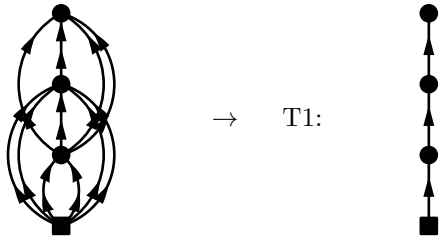


$$\text{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{377}$$

$$a_1 = \epsilon^{k_7 k_8 k_9 k_{10}}_{k_1 k_2}$$
$$a_2 = \epsilon^{k_{11} k_{12}}_{k_3 k_4 k_5 k_6}$$
$$a_3 = \epsilon_{k_7 k_8 k_9 k_{10} k_{11} k_{12}}$$

Diagram 187:

$$\text{PO3.187} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)(4!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{42}_{k_7 k_8 k_9 k_{10} k_1 k_2} \Omega^{15}_{k_{11} k_7 k_3 k_4 k_5 k_6} \Omega^{04}_{k_{11} k_8 k_9 k_{10}} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7 k_8 k_9 k_{10}}_{k_1 k_2}} e^{-\tau_2 \epsilon^{k_{11}}_{k_3 k_4 k_5 k_6 k_7}} e^{-\tau_3 \epsilon_{k_8 k_9 k_{10}}}$$
$$= \frac{(-1)^3}{(2!)(3!)(4!)} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{42}_{k_7 k_8 k_9 k_{10} k_1 k_2} \Omega^{15}_{k_{11} k_7 k_3 k_4 k_5 k_6} \Omega^{04}_{k_{11} k_8 k_9 k_{10}}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6} \ \epsilon_{k_3 k_4 k_5 k_6 k_7 k_8 k_9 k_{10}} \ \epsilon_{k_8 k_9 k_{10} k_{11}}} \tag{378}$$



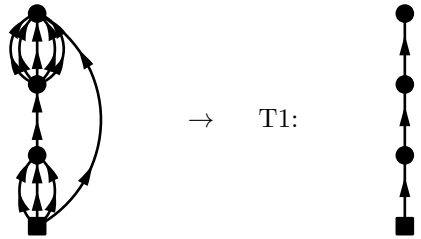
$\rightarrow$ T1:

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{379}$$

$$a_1 = \epsilon^{k_7 k_8 k_9 k_{10}}_{k_1 k_2}$$
$$a_2 = \epsilon^{k_{11}}_{k_3 k_4 k_5 k_6 k_7}$$
$$a_3 = \epsilon_{k_8 k_9 k_{10} k_{11}}$$

Diagram 188:

$$\text{PO3.188} = \lim_{\tau\to\infty} \frac{(-1)^3}{(3!)(5!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{13}_{k_5 k_1 k_2 k_3} \Omega^{51}_{k_6 k_7 k_8 k_9 k_{10} k_5} \Omega^{06}_{k_6 k_7 k_8 k_9 k_{10} k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5}_{k_1 k_2 k_3}} e^{-\tau_2 \epsilon^{k_6 k_7 k_8 k_9 k_{10}}_{k_5}} e^{-\tau_3 \epsilon_{k_4 k_6 k_7 k_8 k_9 k_{10}}}$$
$$= \frac{(-1)^3}{(3!)(5!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{13}_{k_5 k_1 k_2 k_3} \Omega^{51}_{k_6 k_7 k_8 k_9 k_{10} k_5} \Omega^{06}_{k_6 k_7 k_8 k_9 k_{10} k_4}}{\epsilon_{k_1 k_2 k_3 k_4} \ \epsilon_{k_5 k_4} \ \epsilon_{k_4 k_6 k_7 k_8 k_9 k_{10}}} \tag{380}$$



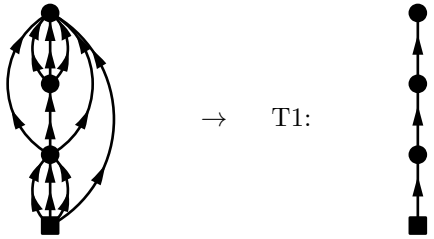
$\rightarrow$ T1:

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{381}$$

$$\begin{aligned} a_1 &= \epsilon^{k_5}_{k_1k_2k_3} \\ a_2 &= \epsilon^{k_6k_7k_8k_9k_{10}}_{k_5} \\ a_3 &= \epsilon_{k_4k_6k_7k_8k_9k_{10}} \end{aligned}$$

Diagram 189:

$$\begin{aligned} \text{PO3.189} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{33}_{k_5k_6k_7k_1k_2k_3} \Omega^{31}_{k_8k_9k_{10}k_5} \Omega^{06}_{k_8k_9k_{10}k_6k_7k_4} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_5k_6k_7}_{k_1k_2k_3}} e^{-\tau_2\epsilon^{k_8k_9k_{10}}_{k_5}} e^{-\tau_3\epsilon_{k_4k_6k_7k_8k_9k_{10}}} \\ &= \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{33}_{k_5k_6k_7k_1k_2k_3} \Omega^{31}_{k_8k_9k_{10}k_5} \Omega^{06}_{k_8k_9k_{10}k_6k_7k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_5k_4k_6k_7}\ \epsilon_{k_4k_6k_7k_8k_9k_{10}}} \end{aligned} \tag{382}$$



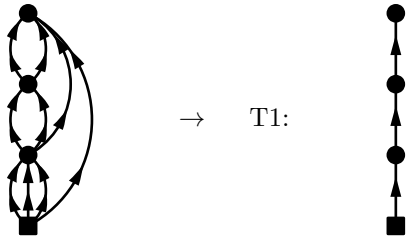
$\rightarrow$ T1:

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{383}$$

$$a_1 = \epsilon^{k_5 k_6 k_7}_{k_1 k_2 k_3}$$
$$a_2 = \epsilon^{k_8 k_9 k_{10}}_{k_5}$$
$$a_3 = \epsilon_{k_4 k_6 k_7 k_8 k_9 k_{10}}$$

Diagram 190:

$$\text{PO3.190} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{33}_{k_5 k_6 k_7 k_1 k_2 k_3} \Omega^{22}_{k_8 k_9 k_5 k_6} \Omega^{04}_{k_8 k_9 k_7 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5 k_6 k_7}_{k_1 k_2 k_3}} e^{-\tau_2 \epsilon^{k_8 k_9}_{k_5 k_6}} e^{-\tau_3 \epsilon_{k_4 k_7 k_8 k_9}}$$
$$= \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{33}_{k_5 k_6 k_7 k_1 k_2 k_3} \Omega^{22}_{k_8 k_9 k_5 k_6} \Omega^{04}_{k_8 k_9 k_7 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_5 k_6 k_4 k_7}\ \epsilon_{k_4 k_7 k_8 k_9}} \tag{384}$$

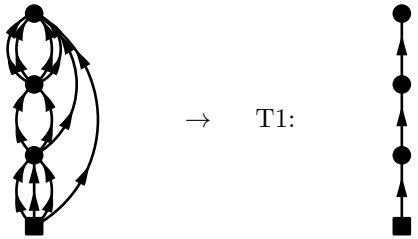


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{385}$$

$$a_1 = \epsilon^{k_5 k_6 k_7}_{k_1 k_2 k_3}$$
$$a_2 = \epsilon^{k_8 k_9}_{k_5 k_6}$$
$$a_3 = \epsilon_{k_4 k_7 k_8 k_9}$$

Diagram 191:

$$\text{PO3.191} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)(4!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{33}_{k_5 k_6 k_7 k_1 k_2 k_3} \Omega^{42}_{k_8 k_9 k_{10} k_{11} k_5 k_6} \Omega^{06}_{k_8 k_9 k_{10} k_{11} k_7 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5 k_6 k_7}_{k_1 k_2 k_3}} e^{-\tau_2 \epsilon^{k_8 k_9 k_{10} k_{11}}_{k_5 k_6}} e^{-\tau_3 \epsilon_{k_4 k_7 k_8 k_9 k_1}}$$
$$= \frac{(-1)^3}{(2!)(3!)(4!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{33}_{k_5 k_6 k_7 k_1 k_2 k_3} \Omega^{42}_{k_8 k_9 k_{10} k_{11} k_5 k_6} \Omega^{06}_{k_8 k_9 k_{10} k_{11} k_7 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_5 k_6 k_4 k_7}\ \epsilon_{k_4 k_7 k_8 k_9 k_{10} k_{11}}} \tag{386}$$

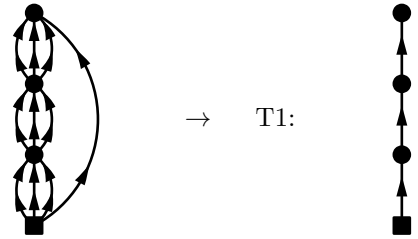


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{387}$$

$$\begin{aligned} a_1 &= \epsilon^{k_5k_6k_7}_{k_1k_2k_3} \\ a_2 &= \epsilon^{k_8k_9k_{10}k_{11}}_{k_5k_6} \\ a_3 &= \epsilon_{k_4k_7k_8k_9k_{10}k_{11}} \end{aligned}$$

Diagram 192:

$$\begin{aligned} \text{PO3.192} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(3!)^3} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{33}_{k_5k_6k_7k_1k_2k_3} \Omega^{33}_{k_8k_9k_{10}k_5k_6k_7} \Omega^{04}_{k_8k_9k_{10}k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5k_6k_7}_{k_1k_2k_3}} e^{-\tau_2 \epsilon^{k_8k_9k_{10}}_{k_5k_6k_7}} e^{-\tau_3 \epsilon_{k_4k_8k_9k_{10}}} \\ &= \frac{(-1)^3}{(3!)^3} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{33}_{k_5k_6k_7k_1k_2k_3} \Omega^{33}_{k_8k_9k_{10}k_5k_6k_7} \Omega^{04}_{k_8k_9k_{10}k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_5k_6k_7k_4}\ \epsilon_{k_4k_8k_9k_{10}}} \end{aligned} \tag{388}$$

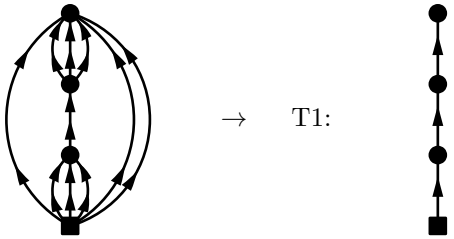


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{389}$$

$$a_1 = \epsilon^{k_5 k_6 k_7}_{k_1 k_2 k_3}$$
$$a_2 = \epsilon^{k_8 k_9 k_{10}}_{k_5 k_6 k_7}$$
$$a_3 = \epsilon_{k_4 k_8 k_9 k_{10}}$$

Diagram 193:

$$\text{PO3.193} = \lim_{\tau\to\infty} \frac{(-1)^3}{(3!)^3} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{13}_{k_7k_1k_2k_3} \Omega^{31}_{k_8k_9k_{10}k_7} \Omega^{06}_{k_8k_9k_{10}k_4k_5k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7}_{k_1k_2k_3}} e^{-\tau_2 \epsilon^{k_8k_9k_{10}}_{k_7}} e^{-\tau_3 \epsilon_{k_4k_5k_6k_8k_9k_{10}}}$$
$$= \frac{(-1)^3}{(3!)^3} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{13}_{k_7k_1k_2k_3} \Omega^{31}_{k_8k_9k_{10}k_7} \Omega^{06}_{k_8k_9k_{10}k_4k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_7k_4k_5k_6}\ \epsilon_{k_4k_5k_6k_8k_9k_{10}}} \tag{390}$$

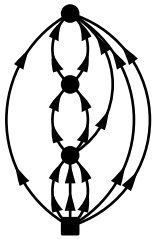


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{391}$$

$$a_1 = \epsilon^{k_7}_{k_1k_2k_3}$$
$$a_2 = \epsilon^{k_8k_9k_{10}}_{k_7}$$
$$a_3 = \epsilon_{k_4k_5k_6k_8k_9k_{10}}$$

Diagram 194:

$$\text{PO3.194} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)^2} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{33}_{k_7k_8k_9k_1k_2k_3} \Omega^{22}_{k_{10}k_{11}k_7k_8} \Omega^{06}_{k_{10}k_{11}k_9k_4k_5k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7k_8k_9}_{k_1k_2k_3}} e^{-\tau_2 \epsilon^{k_{10}k_{11}}_{k_7k_8}} e^{-\tau_3 \epsilon_{k_4k_5k_6k_9k_{10}k_{11}}}$$
$$= \frac{(-1)^3}{(2!)^2(3!)^2} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{33}_{k_7k_8k_9k_1k_2k_3} \Omega^{22}_{k_{10}k_{11}k_7k_8} \Omega^{06}_{k_{10}k_{11}k_9k_4k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_7k_8k_4k_5k_6k_9}\ \epsilon_{k_4k_5k_6k_9k_{10}k_{11}}} \tag{392}$$



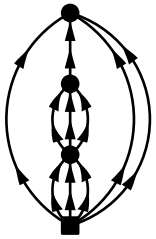
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{393}$$

$$\begin{aligned} a_1 &= \epsilon^{k_7k_8k_9}_{k_1k_2k_3} \\ a_2 &= \epsilon^{k_{10}k_{11}}_{k_7k_8} \\ a_3 &= \epsilon_{k_4k_5k_6k_9k_{10}k_{11}} \end{aligned}$$

Diagram 195:

$$\begin{aligned} \mathrm{PO3.195} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(3!)^3} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{33}_{k_7k_8k_9k_1k_2k_3} \Omega^{13}_{k_{10}k_7k_8k_9} \Omega^{04}_{k_{10}k_4k_5k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7k_8k_9}_{k_1k_2k_3}} e^{-\tau_2 \epsilon^{k_{10}}_{k_7k_8k_9}} e^{-\tau_3 \epsilon_{k_4k_5k_6k_{10}}} \\ &= \frac{(-1)^3}{(3!)^3} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{33}_{k_7k_8k_9k_1k_2k_3} \Omega^{13}_{k_{10}k_7k_8k_9} \Omega^{04}_{k_{10}k_4k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_7k_8k_9k_4k_5k_6}\ \epsilon_{k_4k_5k_6k_{10}}} \end{aligned} \tag{394}$$



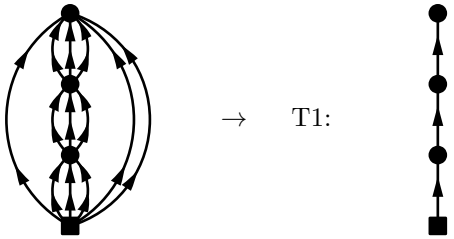
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{395}$$

$$a_1 = \epsilon^{k_7 k_8 k_9}_{k_1 k_2 k_3}$$
$$a_2 = \epsilon^{k_{10}}_{k_7 k_8 k_9}$$
$$a_3 = \epsilon_{k_4 k_5 k_6 k_{10}}$$

Diagram 196:

$$\text{PO3.196} = \lim_{\tau\to\infty} \frac{(-1)^3}{(3!)^4} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{33}_{k_7k_8k_9k_1k_2k_3} \Omega^{33}_{k_{10}k_{11}k_{12}k_7k_8k_9} \Omega^{06}_{k_{10}k_{11}k_{12}k_4k_5k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7k_8k_9}_{k_1k_2k_3}} e^{-\tau_2 \epsilon^{k_{10}k_{11}k_{12}}_{k_7k_8k_9}} e^{-\tau_3 \epsilon_{k_4k_5k_6k_{10}k_{11}k_{12}}}$$
$$= \frac{(-1)^3}{(3!)^4} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{33}_{k_7k_8k_9k_1k_2k_3} \Omega^{33}_{k_{10}k_{11}k_{12}k_7k_8k_9} \Omega^{06}_{k_{10}k_{11}k_{12}k_4k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_7k_8k_9k_4k_5k_6}\ \epsilon_{k_4k_5k_6k_{10}k_{11}k_{12}}} \tag{396}$$

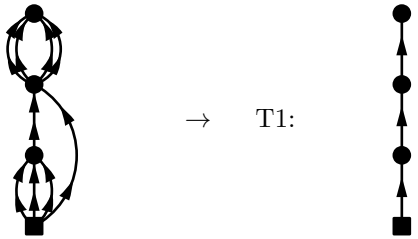


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{397}$$

$$a_1 = \epsilon^{k_7k_8k_9}_{k_1k_2k_3}$$
$$a_2 = \epsilon^{k_{10}k_{11}k_{12}}_{k_7k_8k_9}$$
$$a_3 = \epsilon_{k_4k_5k_6k_{10}k_{11}k_{12}}$$

Diagram 197:

$$\text{PO3.197} = \lim_{\tau\to\infty} \frac{(-1)^3}{(3!)(4!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{13}_{k_5k_1k_2k_3} \Omega^{42}_{k_6k_7k_8k_9k_5k_4} \Omega^{04}_{k_6k_7k_8k_9} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5}_{k_1k_2k_3}} e^{-\tau_2 \epsilon^{k_6k_7k_8k_9}_{k_4k_5}} e^{-\tau_3 \epsilon_{k_6k_7k_8k_9}}$$
$$= \frac{(-1)^3}{(3!)(4!)} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{13}_{k_5k_1k_2k_3} \Omega^{42}_{k_6k_7k_8k_9k_5k_4} \Omega^{04}_{k_6k_7k_8k_9}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_4k_5}\ \epsilon_{k_6k_7k_8k_9}} \tag{398}$$



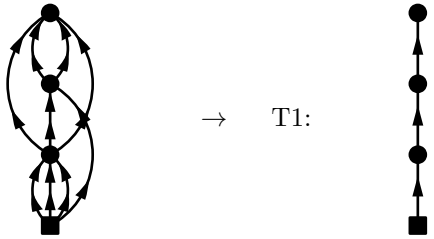
$$\rightarrow \quad \text{T1:}$$

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{399}$$

$$\begin{aligned} a_1 &= \epsilon^{k_5}_{k_1k_2k_3} \\ a_2 &= \epsilon^{k_6k_7k_8k_9}_{k_4k_5} \\ a_3 &= \epsilon_{k_6k_7k_8k_9} \end{aligned}$$

Diagram 198:

$$\begin{aligned} \text{PO3.198} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{33}_{k_5k_6k_7k_1k_2k_3} \Omega^{22}_{k_8k_9k_5k_4} \Omega^{04}_{k_8k_9k_6k_7} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5k_6k_7}_{k_1k_2k_3}} e^{-\tau_2 \epsilon^{k_8k_9}_{k_4k_5}} e^{-\tau_3 \epsilon_{k_6k_7k_8k_9}} \\ &= \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{33}_{k_5k_6k_7k_1k_2k_3} \Omega^{22}_{k_8k_9k_5k_4} \Omega^{04}_{k_8k_9k_6k_7}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_4k_5k_6k_7}\ \epsilon_{k_6k_7k_8k_9}} \end{aligned} \tag{400}$$



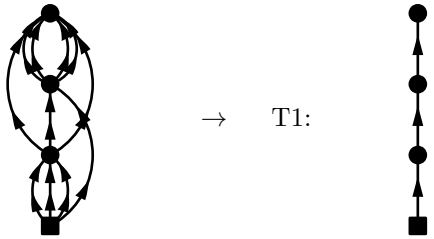
$$\rightarrow \quad \text{T1:}$$

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{401}$$

$$a_1 = \epsilon^{k_5k_6k_7}_{k_1k_2k_3}$$
$$a_2 = \epsilon^{k_8k_9}_{k_4k_5}$$
$$a_3 = \epsilon_{k_6k_7k_8k_9}$$

Diagram 199:

$$\text{PO3.199} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)(4!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{33}_{k_5k_6k_7k_1k_2k_3} \Omega^{42}_{k_8k_9k_{10}k_{11}k_5k_4} \Omega^{06}_{k_8k_9k_{10}k_{11}k_6k_7} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_5k_6k_7}_{k_1k_2k_3}} e^{-\tau_2\epsilon^{k_8k_9k_{10}k_{11}}_{k_4k_5}} e^{-\tau_3\epsilon_{k_6k_7k_8k_9k_1}}$$
$$= \frac{(-1)^3}{(2!)(3!)(4!)} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{33}_{k_5k_6k_7k_1k_2k_3} \Omega^{42}_{k_8k_9k_{10}k_{11}k_5k_4} \Omega^{06}_{k_8k_9k_{10}k_{11}k_6k_7}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_4k_5k_6k_7}\ \epsilon_{k_6k_7k_8k_9k_{10}k_{11}}} \tag{402}$$



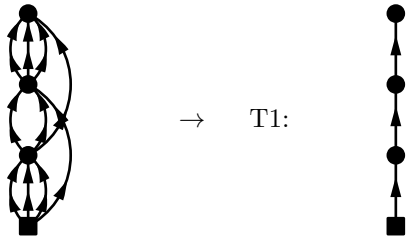
$\to$ T1:

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{403}$$

$$a_1 = \epsilon^{k_5k_6k_7}_{k_1k_2k_3}$$
$$a_2 = \epsilon^{k_8k_9k_{10}k_{11}}_{k_4k_5}$$
$$a_3 = \epsilon_{k_6k_7k_8k_9k_{10}k_{11}}$$

Diagram 200:

$$\text{PO3.200} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{33}_{k_5k_6k_7k_1k_2k_3} \Omega^{33}_{k_8k_9k_{10}k_5k_6k_4} \Omega^{04}_{k_8k_9k_{10}k_7} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_5k_6k_7}_{k_1k_2k_3}} e^{-\tau_2\epsilon^{k_8k_9k_{10}}_{k_4k_5k_6}} e^{-\tau_3\epsilon_{k_7k_8k_9k_{10}}}$$
$$= \frac{-(-1)^3}{(2!)(3!)^2} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{33}_{k_5k_6k_7k_1k_2k_3} \Omega^{33}_{k_8k_9k_{10}k_5k_6k_4} \Omega^{04}_{k_8k_9k_{10}k_7}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_4k_5k_6k_7}\ \epsilon_{k_7k_8k_9k_{10}}} \tag{404}$$



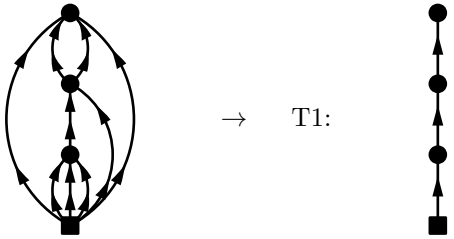
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{405}$$

$$\begin{aligned} a_1 &= \epsilon^{k_5k_6k_7}_{k_1k_2k_3} \\ a_2 &= \epsilon^{k_8k_9k_{10}}_{k_4k_5k_6} \\ a_3 &= \epsilon_{k_7k_8k_9k_{10}} \end{aligned}$$

Diagram 201:

$$\begin{aligned} \mathrm{PO3.201} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{13}_{k_7k_1k_2k_3} \Omega^{22}_{k_8k_9k_7k_4} \Omega^{04}_{k_8k_9k_5k_6} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_7}_{k_1k_2k_3}} e^{-\tau_2\epsilon^{k_8k_9}_{k_4k_7}} e^{-\tau_3\epsilon_{k_5k_6k_8k_9}} \\ &= \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{13}_{k_7k_1k_2k_3} \Omega^{22}_{k_8k_9k_7k_4} \Omega^{04}_{k_8k_9k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_4k_7k_5k_6}\ \epsilon_{k_5k_6k_8k_9}} \end{aligned} \tag{406}$$



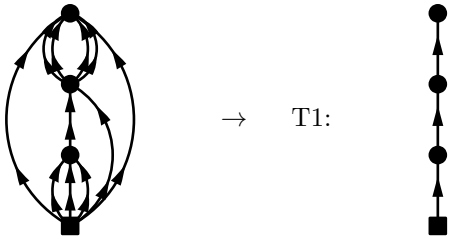
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{407}$$

$$a_1 = \epsilon^{k_7}_{k_1k_2k_3}$$
$$a_2 = \epsilon^{k_8k_9}_{k_4k_7}$$
$$a_3 = \epsilon_{k_5k_6k_8k_9}$$

Diagram 202:

$$\text{PO3.202} = \lim_{\tau\to\infty}\frac{(-1)^3}{(2!)(3!)(4!)}\sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6}\Omega^{13}_{k_7k_1k_2k_3}\Omega^{42}_{k_8k_9k_{10}k_{11}k_7k_4}\Omega^{06}_{k_8k_9k_{10}k_{11}k_5k_6}\int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2)e^{-\tau_1\epsilon^{k_7}_{k_1k_2k_3}}e^{-\tau_2\epsilon^{k_8k_9k_{10}k_{11}}_{k_4k_7}}e^{-\tau_3\epsilon_{k_5k_6k_8k_9k_{10}k_{11}}}$$
$$= \frac{(-1)^3}{(2!)(3!)(4!)}\sum_{k_i}\frac{O^{60}_{k_1k_2k_3k_4k_5k_6}\Omega^{13}_{k_7k_1k_2k_3}\Omega^{42}_{k_8k_9k_{10}k_{11}k_7k_4}\Omega^{06}_{k_8k_9k_{10}k_{11}k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_4k_7k_5k_6}\ \epsilon_{k_5k_6k_8k_9k_{10}k_{11}}} \tag{408}$$

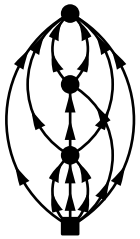


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{409}$$

$$a_1 = \epsilon^{k_7}_{k_1k_2k_3}$$
$$a_2 = \epsilon^{k_8k_9k_{10}k_{11}}_{k_4k_7}$$
$$a_3 = \epsilon_{k_5k_6k_8k_9k_{10}k_{11}}$$

Diagram 203:

$$\text{PO3.203} = \lim_{\tau\to\infty}\frac{(-1)^3}{(2!)^3(3!)}\sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6}\Omega^{33}_{k_7k_8k_9k_1k_2k_3}\Omega^{22}_{k_{10}k_{11}k_7k_4}\Omega^{06}_{k_{10}k_{11}k_8k_9k_5k_6}\int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2)e^{-\tau_1\epsilon^{k_7k_8k_9}_{k_1k_2k_3}}e^{-\tau_2\epsilon^{k_{10}k_{11}}_{k_4k_7}}e^{-\tau_3\epsilon_{k_5k_6k_8k_9k_{10}k_{11}}}$$
$$= \frac{(-1)^3}{(2!)^3(3!)}\sum_{k_i}\frac{O^{60}_{k_1k_2k_3k_4k_5k_6}\Omega^{33}_{k_7k_8k_9k_1k_2k_3}\Omega^{22}_{k_{10}k_{11}k_7k_4}\Omega^{06}_{k_{10}k_{11}k_8k_9k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_4k_7k_5k_6k_8k_9}\ \epsilon_{k_5k_6k_8k_9k_{10}k_{11}}} \tag{410}$$



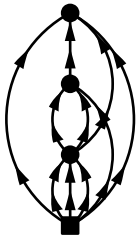
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{411}$$

$$\begin{aligned} a_1 &= \epsilon^{k_7k_8k_9}_{k_1k_2k_3} \\ a_2 &= \epsilon^{k_{10}k_{11}}_{k_4k_7} \\ a_3 &= \epsilon_{k_5k_6k_8k_9k_{10}k_{11}} \end{aligned}$$

Diagram 204:

$$\begin{aligned} \mathrm{PO3.204} &= \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{33}_{k_7k_8k_9k_1k_2k_3} \Omega^{13}_{k_{10}k_7k_8k_4} \Omega^{04}_{k_{10}k_9k_5k_6} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_7k_8k_9}_{k_1k_2k_3}} e^{-\tau_2\epsilon^{k_{10}}_{k_4k_7k_8}} e^{-\tau_3\epsilon_{k_5k_6k_9k_{10}}} \\ &= \frac{-(-1)^3}{(2!)^2(3!)} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{33}_{k_7k_8k_9k_1k_2k_3} \Omega^{13}_{k_{10}k_7k_8k_4} \Omega^{04}_{k_{10}k_9k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_4k_7k_8k_5k_6k_9}\ \epsilon_{k_5k_6k_9k_{10}}} \end{aligned} \tag{412}$$



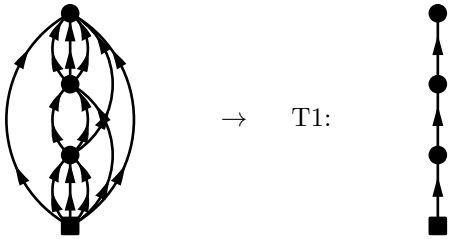
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{413}$$

$$a_1 = \epsilon^{k_7k_8k_9}_{k_1k_2k_3}$$
$$a_2 = \epsilon^{k_{10}}_{k_4k_7k_8}$$
$$a_3 = \epsilon_{k_5k_6k_9k_{10}}$$

Diagram 205:

$$\text{PO3.205} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)^2(3!)^2} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{33}_{k_7k_8k_9k_1k_2k_3} \Omega^{33}_{k_{10}k_{11}k_{12}k_7k_8k_4} \Omega^{06}_{k_{10}k_{11}k_{12}k_9k_5k_6} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_7k_8k_9}_{k_1k_2k_3}} e^{-\tau_2\epsilon^{k_{10}k_{11}k_{12}}_{k_4k_7k_8}} e^{-\tau_3\epsilon_{k_5k_6k_9}}$$
$$= \frac{-(-1)^3}{(2!)^2(3!)^2} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{33}_{k_7k_8k_9k_1k_2k_3} \Omega^{33}_{k_{10}k_{11}k_{12}k_7k_8k_4} \Omega^{06}_{k_{10}k_{11}k_{12}k_9k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_4k_7k_8k_5k_6k_9}\ \epsilon_{k_5k_6k_9k_{10}k_{11}k_{12}}} \tag{414}$$

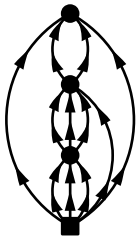


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{415}$$

$$a_1 = \epsilon^{k_7k_8k_9}_{k_1k_2k_3}$$
$$a_2 = \epsilon^{k_{10}k_{11}k_{12}}_{k_4k_7k_8}$$
$$a_3 = \epsilon_{k_5k_6k_9k_{10}k_{11}k_{12}}$$

Diagram 206:

$$\text{PO3.206} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)^2} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{33}_{k_7k_8k_9k_1k_2k_3} \Omega^{24}_{k_{10}k_{11}k_7k_8k_9k_4} \Omega^{04}_{k_{10}k_{11}k_5k_6} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_7k_8k_9}_{k_1k_2k_3}} e^{-\tau_2\epsilon^{k_{10}k_{11}}_{k_4k_7k_8k_9}} e^{-\tau_3\epsilon_{k_5k_6k_{10}k_{11}}}$$
$$= \frac{(-1)^3}{(2!)^2(3!)^2} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{33}_{k_7k_8k_9k_1k_2k_3} \Omega^{24}_{k_{10}k_{11}k_7k_8k_9k_4} \Omega^{04}_{k_{10}k_{11}k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_4k_7k_8k_9k_5k_6}\ \epsilon_{k_5k_6k_{10}k_{11}}} \tag{416}$$



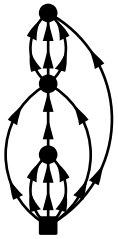
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{417}$$

$$\begin{aligned} a_1 &= \epsilon^{k_7k_8k_9}_{k_1k_2k_3} \\ a_2 &= \epsilon^{k_{10}k_{11}}_{k_4k_7k_8k_9} \\ a_3 &= \epsilon_{k_5k_6k_{10}k_{11}} \end{aligned}$$

Diagram 207:

$$\begin{aligned} \mathrm{PO3.207} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{13}_{k_7k_1k_2k_3} \Omega^{33}_{k_8k_9k_{10}k_7k_4k_5} \Omega^{04}_{k_8k_9k_{10}k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7}_{k_1k_2k_3}} e^{-\tau_2 \epsilon^{k_8k_9k_{10}}_{k_4k_5k_7}} e^{-\tau_3 \epsilon_{k_6k_8k_9k_{10}}} \\ &= \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{13}_{k_7k_1k_2k_3} \Omega^{33}_{k_8k_9k_{10}k_7k_4k_5} \Omega^{04}_{k_8k_9k_{10}k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_4k_5k_7k_6}\ \epsilon_{k_6k_8k_9k_{10}}} \end{aligned} \tag{418}$$



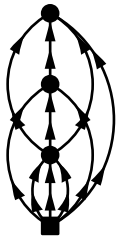
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{419}$$

$$a_1 = \epsilon^{k_7}_{k_1k_2k_3}$$
$$a_2 = \epsilon^{k_8k_9k_{10}}_{k_4k_5k_7}$$
$$a_3 = \epsilon_{k_6k_8k_9k_{10}}$$

Diagram 208:

$$\text{PO3.208} = \lim_{\tau\to\infty}\frac{(-1)^3}{(2!)^2(3!)}\sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6}\Omega^{33}_{k_7k_8k_9k_1k_2k_3}\Omega^{13}_{k_{10}k_7k_4k_5}\Omega^{04}_{k_{10}k_8k_9k_6}\int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2)e^{-\tau_1\epsilon^{k_7k_8k_9}_{k_1k_2k_3}}e^{-\tau_2\epsilon^{k_{10}}_{k_4k_5k_7}}e^{-\tau_3\epsilon_{k_6k_8k_9k_{10}}}$$
$$= \frac{(-1)^3}{(2!)^2(3!)}\sum_{k_i}\frac{O^{60}_{k_1k_2k_3k_4k_5k_6}\Omega^{33}_{k_7k_8k_9k_1k_2k_3}\Omega^{13}_{k_{10}k_7k_4k_5}\Omega^{04}_{k_{10}k_8k_9k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_4k_5k_7k_6k_8k_9}\ \epsilon_{k_6k_8k_9k_{10}}} \tag{420}$$



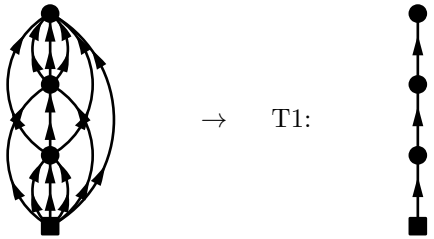
$\rightarrow$ T1:

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{421}$$

$$a_1 = \epsilon^{k_7k_8k_9}_{k_1k_2k_3}$$
$$a_2 = \epsilon^{k_{10}}_{k_4k_5k_7}$$
$$a_3 = \epsilon_{k_6k_8k_9k_{10}}$$

Diagram 209:

$$\text{PO3.209} = \lim_{\tau\to\infty}\frac{(-1)^3}{(2!)^2(3!)^2}\sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6}\Omega^{33}_{k_7k_8k_9k_1k_2k_3}\Omega^{33}_{k_{10}k_{11}k_{12}k_7k_4k_5}\Omega^{06}_{k_{10}k_{11}k_{12}k_8k_9k_6}\int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2)e^{-\tau_1\epsilon^{k_7k_8k_9}_{k_1k_2k_3}}e^{-\tau_2\epsilon^{k_{10}k_{11}k_{12}}_{k_4k_5k_7}}e^{-\tau_3\epsilon_{k_6k_8k_9}}$$
$$= \frac{(-1)^3}{(2!)^2(3!)^2}\sum_{k_i}\frac{O^{60}_{k_1k_2k_3k_4k_5k_6}\Omega^{33}_{k_7k_8k_9k_1k_2k_3}\Omega^{33}_{k_{10}k_{11}k_{12}k_7k_4k_5}\Omega^{06}_{k_{10}k_{11}k_{12}k_8k_9k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_4k_5k_7k_6k_8k_9}\ \epsilon_{k_6k_8k_9k_{10}k_{11}k_{12}}} \tag{422}$$



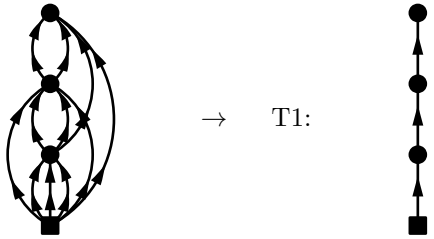
$$\rightarrow \quad \text{T1:}$$

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{423}$$

$$\begin{aligned} a_1 &= \epsilon^{k_7k_8k_9}_{k_1k_2k_3} \\ a_2 &= \epsilon^{k_{10}k_{11}k_{12}}_{k_4k_5k_7} \\ a_3 &= \epsilon_{k_6k_8k_9k_{10}k_{11}k_{12}} \end{aligned}$$

Diagram 210:

$$\begin{aligned} \text{PO3.210} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^3(3!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{33}_{k_7k_8k_9k_1k_2k_3} \Omega^{24}_{k_{10}k_{11}k_7k_8k_4k_5} \Omega^{04}_{k_{10}k_{11}k_9k_6} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_7k_8k_9}_{k_1k_2k_3}} e^{-\tau_2\epsilon^{k_{10}k_{11}}_{k_4k_5k_7k_8}} e^{-\tau_3\epsilon_{k_6k_9k_{10}k_{11}}} \\ &= \frac{(-1)^3}{(2!)^3(3!)} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{33}_{k_7k_8k_9k_1k_2k_3} \Omega^{24}_{k_{10}k_{11}k_7k_8k_4k_5} \Omega^{04}_{k_{10}k_{11}k_9k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_4k_5k_7k_8k_6k_9}\ \epsilon_{k_6k_9k_{10}k_{11}}} \end{aligned} \tag{424}$$



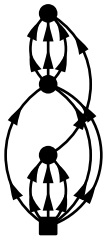
$$\rightarrow \quad \text{T1:}$$

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{425}$$

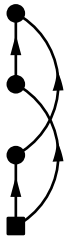
$$a_1 = \epsilon^{k_7 k_8 k_9}_{k_1 k_2 k_3}$$
$$a_2 = \epsilon^{k_{10} k_{11}}_{k_4 k_5 k_7 k_8}$$
$$a_3 = \epsilon_{k_6 k_9 k_{10} k_{11}}$$

Diagram 211:

$$\text{PO3.211} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(3!)^3} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{13}_{k_7 k_1 k_2 k_3} \Omega^{33}_{k_8 k_9 k_{10} k_4 k_5 k_6} \Omega^{04}_{k_8 k_9 k_{10} k_7} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_7}_{k_1 k_2 k_3}} e^{-\tau_2 \epsilon^{k_8 k_9 k_{10}}_{k_4 k_5 k_6}} e^{-\tau_3 \epsilon_{k_7 k_8 k_9 k_{10}}}$$
$$= \frac{-(-1)^3}{(3!)^3} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{13}_{k_7 k_1 k_2 k_3} \Omega^{33}_{k_8 k_9 k_{10} k_4 k_5 k_6} \Omega^{04}_{k_8 k_9 k_{10} k_7} \left[\frac{1}{\epsilon_{k_1 k_2 k_3 k_8 k_9 k_{10}}\ \epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_7 k_8 k_9 k_{10}}} + \frac{1}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_4 k_5 k_6 k_7}\ \epsilon_{k_7 k_8 k_9 k_{10}}} \right] \tag{426}$$



$\rightarrow$ T5:



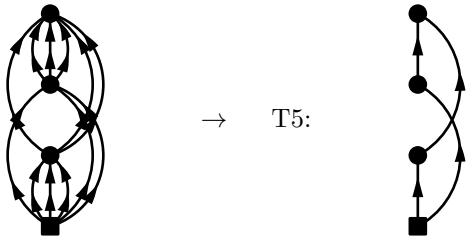
$$\text{T5} = \frac{1}{(a_1 + a_3)(a_2 + a_1 + a_3)a_3} + \frac{1}{(a_1 + a_2 + a_3)(a_2 + a_3)a_3} \tag{427}$$

$$a_1 = \epsilon^{k_7}_{k_1 k_2 k_3}$$
$$a_2 = \epsilon^{k_8 k_9 k_{10}}_{k_4 k_5 k_6}$$
$$a_3 = \epsilon_{k_7 k_8 k_9 k_{10}}$$

Diagram 212:

$$\mathrm{PO3.212} = \lim_{\tau\to\infty} \frac{-(-1)^3}{2(3!)^4} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{33}_{k_7k_8k_9k_1k_2k_3} \Omega^{33}_{k_{10}k_{11}k_{12}k_4k_5k_6} \Omega^{06}_{k_{10}k_{11}k_{12}k_7k_8k_9} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7k_8k_9}_{k_1k_2k_3}} e^{-\tau_2 \epsilon^{k_{10}k_{11}k_{12}}_{k_4k_5k_6}} e^{-\tau_3 \epsilon_{k_7k_8k_9k_{10}k_{11}k_{12}}}$$

$$= \frac{-(-1)^3}{2(3!)^4} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{33}_{k_7k_8k_9k_1k_2k_3} \Omega^{33}_{k_{10}k_{11}k_{12}k_4k_5k_6} \Omega^{06}_{k_{10}k_{11}k_{12}k_7k_8k_9} \left[\frac{1}{\epsilon_{k_1k_2k_3k_{10}k_{11}k_{12}}\ \epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_7k_8k_9k_{10}k_{11}k_{12}}} + \frac{1}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_4k_5k_6k_7k_8k_9}\ \epsilon_{k_7k_8k_9k_{10}}} \right. \tag{428}$$



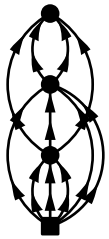
$$\mathrm{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{429}$$

$$a_1 = \epsilon^{k_7k_8k_9}_{k_1k_2k_3}$$
$$a_2 = \epsilon^{k_{10}k_{11}k_{12}}_{k_4k_5k_6}$$
$$a_3 = \epsilon_{k_7k_8k_9k_{10}k_{11}k_{12}}$$

Diagram 213:

$$\mathrm{PO3.213} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)^2} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{33}_{k_7k_8k_9k_1k_2k_3} \Omega^{24}_{k_{10}k_{11}k_7k_4k_5k_6} \Omega^{04}_{k_{10}k_{11}k_8k_9} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7k_8k_9}_{k_1k_2k_3}} e^{-\tau_2 \epsilon^{k_{10}k_{11}}_{k_4k_5k_6k_7}} e^{-\tau_3 \epsilon_{k_8k_9k_{10}k_{11}}}$$

$$= \frac{(-1)^3}{(2!)^2(3!)^2} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{33}_{k_7k_8k_9k_1k_2k_3} \Omega^{24}_{k_{10}k_{11}k_7k_4k_5k_6} \Omega^{04}_{k_{10}k_{11}k_8k_9}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_4k_5k_6k_7k_8k_9}\ \epsilon_{k_8k_9k_{10}k_{11}}} \tag{430}$$



$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{431}$$

$$\begin{aligned} a_1 &= \epsilon^{k_7k_8k_9}_{k_1k_2k_3} \\ a_2 &= \epsilon^{k_{10}k_{11}}_{k_4k_5k_6k_7} \\ a_3 &= \epsilon_{k_8k_9k_{10}k_{11}} \end{aligned}$$

Diagram 214:

$$\begin{aligned} \mathrm{PO3.214} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(3!)(4!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{24}_{k_5k_6k_1k_2k_3k_4} \Omega^{31}_{k_7k_8k_9k_5} \Omega^{04}_{k_7k_8k_9k_6} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5k_6}_{k_1k_2k_3k_4}} e^{-\tau_2 \epsilon^{k_7k_8k_9}_{k_5}} e^{-\tau_3 \epsilon_{k_6k_7k_8k_9}} \\ &= \frac{(-1)^3}{(3!)(4!)} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{24}_{k_5k_6k_1k_2k_3k_4} \Omega^{31}_{k_7k_8k_9k_5} \Omega^{04}_{k_7k_8k_9k_6}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_5k_6}\ \epsilon_{k_6k_7k_8k_9}} \end{aligned} \tag{432}$$

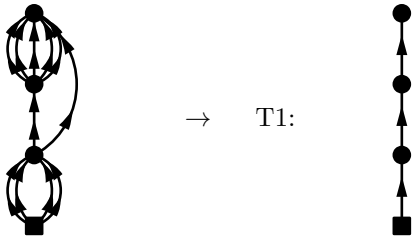
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{433}$$

$$a_1 = \epsilon^{k_5 k_6}_{k_1 k_2 k_3 k_4}$$
$$a_2 = \epsilon^{k_7 k_8 k_9}_{k_5}$$
$$a_3 = \epsilon_{k_6 k_7 k_8 k_9}$$

Diagram 215:

$$\text{PO3.215} = \lim_{\tau\to\infty} \frac{(-1)^3}{(4!)(5!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{24}_{k_5 k_6 k_1 k_2 k_3 k_4} \Omega^{51}_{k_7 k_8 k_9 k_{10} k_{11} k_5} \Omega^{06}_{k_7 k_8 k_9 k_{10} k_{11} k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5 k_6}_{k_1 k_2 k_3 k_4}} e^{-\tau_2 \epsilon^{k_7 k_8 k_9 k_{10} k_{11}}_{k_5}} e^{-\tau_3 \epsilon_{k_6 k_7 k_8 k_9 k_1}}$$
$$= \frac{(-1)^3}{(4!)(5!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{24}_{k_5 k_6 k_1 k_2 k_3 k_4} \Omega^{51}_{k_7 k_8 k_9 k_{10} k_{11} k_5} \Omega^{06}_{k_7 k_8 k_9 k_{10} k_{11} k_6}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_5 k_6}\ \epsilon_{k_6 k_7 k_8 k_9 k_{10} k_{11}}} \tag{434}$$



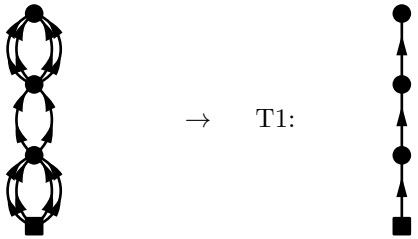
$\rightarrow$ T1:

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{435}$$

$$a_1 = \epsilon^{k_5 k_6}_{k_1 k_2 k_3 k_4}$$
$$a_2 = \epsilon^{k_7 k_8 k_9 k_{10} k_{11}}_{k_5}$$
$$a_3 = \epsilon_{k_6 k_7 k_8 k_9 k_{10} k_{11}}$$

Diagram 216:

$$\text{PO3.216} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(4!)^2} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{24}_{k_5 k_6 k_1 k_2 k_3 k_4} \Omega^{42}_{k_7 k_8 k_9 k_{10} k_5 k_6} \Omega^{04}_{k_7 k_8 k_9 k_{10}} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5 k_6}_{k_1 k_2 k_3 k_4}} e^{-\tau_2 \epsilon^{k_7 k_8 k_9 k_{10}}_{k_5 k_6}} e^{-\tau_3 \epsilon_{k_7 k_8 k_9 k_{10}}}$$
$$= \frac{(-1)^3}{(2!)(4!)^2} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{24}_{k_5 k_6 k_1 k_2 k_3 k_4} \Omega^{42}_{k_7 k_8 k_9 k_{10} k_5 k_6} \Omega^{04}_{k_7 k_8 k_9 k_{10}}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_5 k_6}\ \epsilon_{k_7 k_8 k_9 k_{10}}} \tag{436}$$



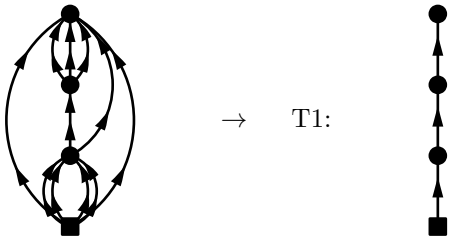
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{437}$$

$$\begin{aligned} a_1 &= \epsilon^{k_5 k_6}_{k_1 k_2 k_3 k_4} \\ a_2 &= \epsilon^{k_7 k_8 k_9 k_{10}}_{k_5 k_6} \\ a_3 &= \epsilon_{k_7 k_8 k_9 k_{10}} \end{aligned}$$

Diagram 217:

$$\begin{aligned} \mathrm{PO3.217} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)(4!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{24}_{k_7k_8k_1k_2k_3k_4} \Omega^{31}_{k_9k_{10}k_{11}k_7} \Omega^{06}_{k_9k_{10}k_{11}k_8k_5k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7k_8}_{k_1k_2k_3k_4}} e^{-\tau_2 \epsilon^{k_9k_{10}k_{11}}_{k_7}} e^{-\tau_3 \epsilon_{k_5k_6k_8k_9k_1} \\ &= \frac{(-1)^3}{(2!)(3!)(4!)} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{24}_{k_7k_8k_1k_2k_3k_4} \Omega^{31}_{k_9k_{10}k_{11}k_7} \Omega^{06}_{k_9k_{10}k_{11}k_8k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_7k_5k_6k_8}\ \epsilon_{k_5k_6k_8k_9k_{10}k_{11}}} \end{aligned} \tag{438}$$



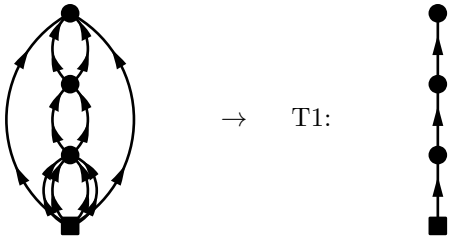
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{439}$$

$$a_1 = \epsilon^{k_7 k_8}_{k_1 k_2 k_3 k_4}$$
$$a_2 = \epsilon^{k_9 k_{10} k_{11}}_{k_7}$$
$$a_3 = \epsilon_{k_5 k_6 k_8 k_9 k_{10} k_{11}}$$

Diagram 218:

$$\text{PO3.218} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^3(4!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{24}_{k_7 k_8 k_1 k_2 k_3 k_4} \Omega^{22}_{k_9 k_{10} k_7 k_8} \Omega^{04}_{k_9 k_{10} k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7 k_8}_{k_1 k_2 k_3 k_4}} e^{-\tau_2 \epsilon^{k_9 k_{10}}_{k_7 k_8}} e^{-\tau_3 \epsilon_{k_5 k_6 k_9 k_{10}}}$$
$$= \frac{(-1)^3}{(2!)^3(4!)} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{24}_{k_7 k_8 k_1 k_2 k_3 k_4} \Omega^{22}_{k_9 k_{10} k_7 k_8} \Omega^{04}_{k_9 k_{10} k_5 k_6}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_7 k_8 k_5 k_6}\ \epsilon_{k_5 k_6 k_9 k_{10}}} \tag{440}$$

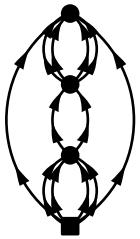


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{441}$$

$$a_1 = \epsilon^{k_7 k_8}_{k_1 k_2 k_3 k_4}$$
$$a_2 = \epsilon^{k_9 k_{10}}_{k_7 k_8}$$
$$a_3 = \epsilon_{k_5 k_6 k_9 k_{10}}$$

Diagram 219:

$$\text{PO3.219} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(4!)^2} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{24}_{k_7 k_8 k_1 k_2 k_3 k_4} \Omega^{42}_{k_9 k_{10} k_{11} k_{12} k_7 k_8} \Omega^{06}_{k_9 k_{10} k_{11} k_{12} k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7 k_8}_{k_1 k_2 k_3 k_4}} e^{-\tau_2 \epsilon^{k_9 k_{10} k_{11} k_{12}}_{k_7 k_8}} e^{-\tau_3 \epsilon_{k_5 k_6 k_9 k_{10} k_{11} k_1}}$$
$$= \frac{(-1)^3}{(2!)^2(4!)^2} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{24}_{k_7 k_8 k_1 k_2 k_3 k_4} \Omega^{42}_{k_9 k_{10} k_{11} k_{12} k_7 k_8} \Omega^{06}_{k_9 k_{10} k_{11} k_{12} k_5 k_6}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_7 k_8 k_5 k_6}\ \epsilon_{k_5 k_6 k_9 k_{10} k_{11} k_{12}}} \tag{442}$$



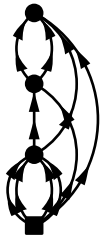
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{443}$$

$$\begin{aligned} a_1 &= \epsilon^{k_7 k_8}_{k_1 k_2 k_3 k_4} \\ a_2 &= \epsilon^{k_9 k_{10} k_{11} k_{12}}_{k_7 k_8} \\ a_3 &= \epsilon_{k_5 k_6 k_9 k_{10} k_{11} k_{12}} \end{aligned}$$

Diagram 220:

$$\begin{aligned} \mathrm{PO3.220} &= \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)(4!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{24}_{k_7 k_8 k_1 k_2 k_3 k_4} \Omega^{22}_{k_9 k_{10} k_7 k_5} \Omega^{04}_{k_9 k_{10} k_8 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7 k_8}_{k_1 k_2 k_3 k_4}} e^{-\tau_2 \epsilon^{k_9 k_{10}}_{k_5 k_7}} e^{-\tau_3 \epsilon_{k_6 k_8 k_9 k_{10}}} \\ &= \frac{-(-1)^3}{(2!)(4!)} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{24}_{k_7 k_8 k_1 k_2 k_3 k_4} \Omega^{22}_{k_9 k_{10} k_7 k_5} \Omega^{04}_{k_9 k_{10} k_8 k_6}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_5 k_7 k_6 k_8}\ \epsilon_{k_6 k_8 k_9 k_{10}}} \end{aligned} \tag{444}$$



$\rightarrow$ T1:

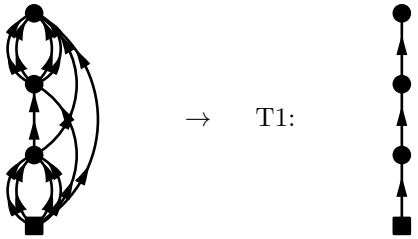
$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{445}$$

$$a_1 = \epsilon^{k_7 k_8}_{k_1 k_2 k_3 k_4}$$
$$a_2 = \epsilon^{k_9 k_{10}}_{k_5 k_7}$$
$$a_3 = \epsilon_{k_6 k_8 k_9 k_{10}}$$

Diagram 221:

$$\text{PO3.221} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(4!)^2} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{24}_{k_7k_8k_1k_2k_3k_4} \Omega^{42}_{k_9k_{10}k_{11}k_{12}k_7k_5} \Omega^{06}_{k_9k_{10}k_{11}k_{12}k_8k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7k_8}_{k_1k_2k_3k_4}} e^{-\tau_2 \epsilon^{k_9k_{10}k_{11}k_{12}}_{k_5k_7}} e^{-\tau_3 \epsilon_{k_6k_8}}$$

$$= \frac{-(-1)^3}{(4!)^2} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{24}_{k_7k_8k_1k_2k_3k_4} \Omega^{42}_{k_9k_{10}k_{11}k_{12}k_7k_5} \Omega^{06}_{k_9k_{10}k_{11}k_{12}k_8k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_5k_7k_6k_8}\ \epsilon_{k_6k_8k_9k_{10}k_{11}k_{12}}} \tag{446}$$



$\rightarrow$ T1:

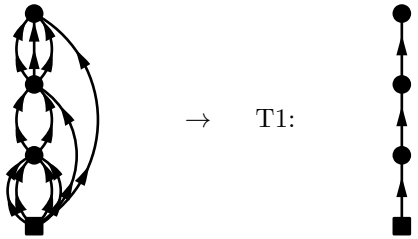
$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{447}$$

$$a_1 = \epsilon^{k_7 k_8}_{k_1 k_2 k_3 k_4}$$
$$a_2 = \epsilon^{k_9 k_{10} k_{11} k_{12}}_{k_5 k_7}$$
$$a_3 = \epsilon_{k_6 k_8 k_9 k_{10} k_{11} k_{12}}$$

Diagram 222:

$$\text{PO3.222} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)(4!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{24}_{k_7k_8k_1k_2k_3k_4} \Omega^{33}_{k_9k_{10}k_{11}k_7k_8k_5} \Omega^{04}_{k_9k_{10}k_{11}k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7k_8}_{k_1k_2k_3k_4}} e^{-\tau_2 \epsilon^{k_9k_{10}k_{11}}_{k_5k_7k_8}} e^{-\tau_3 \epsilon_{k_6k_9k_{10}k_{11}}}$$

$$= \frac{(-1)^3}{(2!)(3!)(4!)} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{24}_{k_7k_8k_1k_2k_3k_4} \Omega^{33}_{k_9k_{10}k_{11}k_7k_8k_5} \Omega^{04}_{k_9k_{10}k_{11}k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_5k_7k_8k_6}\ \epsilon_{k_6k_9k_{10}k_{11}}} \tag{448}$$

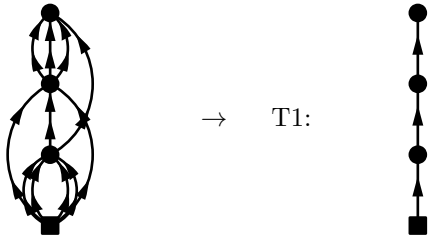


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{449}$$

$$\begin{aligned} a_1 &= \epsilon^{k_7 k_8}_{k_1 k_2 k_3 k_4} \\ a_2 &= \epsilon^{k_9 k_{10} k_{11}}_{k_5 k_7 k_8} \\ a_3 &= \epsilon_{k_6 k_9 k_{10} k_{11}} \end{aligned}$$

Diagram 223:

$$\begin{aligned} \text{PO3.223} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)(4!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{24}_{k_7 k_8 k_1 k_2 k_3 k_4} \Omega^{33}_{k_9 k_{10} k_{11} k_7 k_5 k_6} \Omega^{04}_{k_9 k_{10} k_{11} k_8} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7 k_8}_{k_1 k_2 k_3 k_4}} e^{-\tau_2 \epsilon^{k_9 k_{10} k_{11}}_{k_5 k_6 k_7}} e^{-\tau_3 \epsilon_{k_8 k_9 k_{10} k_{11}}} \\ &= \frac{(-1)^3}{(2!)(3!)(4!)} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{24}_{k_7 k_8 k_1 k_2 k_3 k_4} \Omega^{33}_{k_9 k_{10} k_{11} k_7 k_5 k_6} \Omega^{04}_{k_9 k_{10} k_{11} k_8}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6} \ \epsilon_{k_5 k_6 k_7 k_8} \ \epsilon_{k_8 k_9 k_{10} k_{11}}} \end{aligned} \tag{450}$$

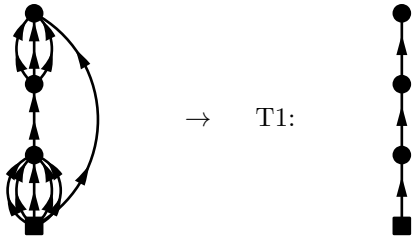


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{451}$$

$$a_1 = \epsilon^{k_7 k_8}_{k_1 k_2 k_3 k_4}$$
$$a_2 = \epsilon^{k_9 k_{10} k_{11}}_{k_5 k_6 k_7}$$
$$a_3 = \epsilon_{k_8 k_9 k_{10} k_{11}}$$

Diagram 224:

$$\text{PO3.224} = \lim_{\tau\to\infty} \frac{(-1)^3}{(3!)(5!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{15}_{k_7 k_1 k_2 k_3 k_4 k_5} \Omega^{31}_{k_8 k_9 k_{10} k_7} \Omega^{04}_{k_8 k_9 k_{10} k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_7}_{k_1 k_2 k_3 k_4 k_5}} e^{-\tau_2 \epsilon^{k_8 k_9 k_{10}}_{k_7}} e^{-\tau_3 \epsilon_{k_6 k_8 k_9 k_{10}}}$$
$$= \frac{(-1)^3}{(3!)(5!)} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{15}_{k_7 k_1 k_2 k_3 k_4 k_5} \Omega^{31}_{k_8 k_9 k_{10} k_7} \Omega^{04}_{k_8 k_9 k_{10} k_6}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_7 k_6}\ \epsilon_{k_6 k_8 k_9 k_{10}}} \tag{452}$$



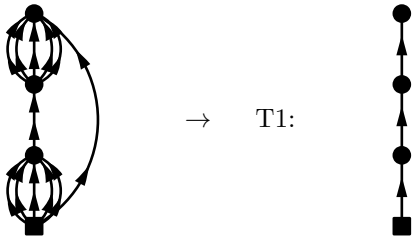
$\rightarrow$ T1:

$$\text{T1} = \frac{1}{(a_1 + a_2 + a_3)(a_2 + a_3)a_3} \tag{453}$$

$$a_1 = \epsilon^{k_7}_{k_1 k_2 k_3 k_4 k_5}$$
$$a_2 = \epsilon^{k_8 k_9 k_{10}}_{k_7}$$
$$a_3 = \epsilon_{k_6 k_8 k_9 k_{10}}$$

Diagram 225:

$$\text{PO3.225} = \lim_{\tau\to\infty} \frac{(-1)^3}{(5!)^2} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{15}_{k_7 k_1 k_2 k_3 k_4 k_5} \Omega^{51}_{k_8 k_9 k_{10} k_{11} k_{12} k_7} \Omega^{06}_{k_8 k_9 k_{10} k_{11} k_{12} k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_7}_{k_1 k_2 k_3 k_4 k_5}} e^{-\tau_2 \epsilon^{k_8 k_9 k_{10} k_{11} k_{12}}_{k_7}} e^{-\tau_3 \epsilon_{k_6 k_8 k_9 k_{10} k_{11} k_1}}$$
$$= \frac{(-1)^3}{(5!)^2} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{15}_{k_7 k_1 k_2 k_3 k_4 k_5} \Omega^{51}_{k_8 k_9 k_{10} k_{11} k_{12} k_7} \Omega^{06}_{k_8 k_9 k_{10} k_{11} k_{12} k_6}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_7 k_6}\ \epsilon_{k_6 k_8 k_9 k_{10} k_{11} k_{12}}} \tag{454}$$



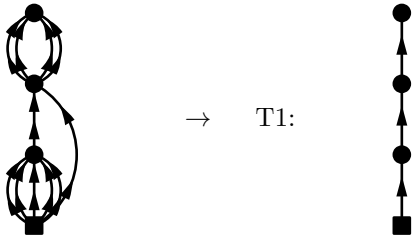
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{455}$$

$$\begin{aligned} a_1 &= \epsilon^{k_7}_{k_1k_2k_3k_4k_5} \\ a_2 &= \epsilon^{k_8k_9k_{10}k_{11}k_{12}}_{k_7} \\ a_3 &= \epsilon_{k_6k_8k_9k_{10}k_{11}k_{12}} \end{aligned}$$

Diagram 226:

$$\begin{aligned} \mathrm{PO3.226} &= \lim_{\tau\to\infty}\frac{(-1)^3}{(4!)(5!)}\sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6}\Omega^{15}_{k_7k_1k_2k_3k_4k_5}\Omega^{42}_{k_8k_9k_{10}k_{11}k_7k_6}\Omega^{04}_{k_8k_9k_{10}k_{11}}\int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2)e^{-\tau_1\epsilon^{k_7}_{k_1k_2k_3k_4k_5}}e^{-\tau_2\epsilon^{k_8k_9k_{10}k_{11}}_{k_6k_7}}e^{-\tau_3\epsilon_{k_8k_9k_{10}k_{11}}} \\ &= \frac{(-1)^3}{(4!)(5!)}\sum_{k_i}\frac{O^{60}_{k_1k_2k_3k_4k_5k_6}\Omega^{15}_{k_7k_1k_2k_3k_4k_5}\Omega^{42}_{k_8k_9k_{10}k_{11}k_7k_6}\Omega^{04}_{k_8k_9k_{10}k_{11}}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_6k_7}\ \epsilon_{k_8k_9k_{10}k_{11}}} \end{aligned} \tag{456}$$



$\rightarrow$ T1:

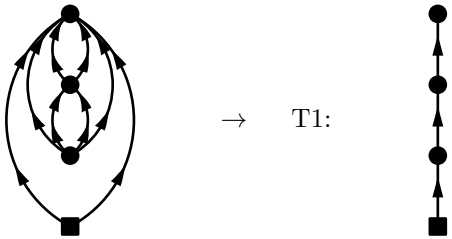
$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{457}$$

$$a_1 = \epsilon^{k_7}_{k_1k_2k_3k_4k_5}$$
$$a_2 = \epsilon^{k_8k_9k_{10}k_{11}}_{k_6k_7}$$
$$a_3 = \epsilon_{k_8k_9k_{10}k_{11}}$$

3.2 Three-body canonical diagrams for a generic operator only

Diagram 227:

$$\text{PO3.227} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^4} \sum_{k_i} O^{20}_{k_1k_2} \Omega^{40}_{k_3k_4k_5k_6} \Omega^{22}_{k_7k_8k_3k_4} \Omega^{06}_{k_7k_8k_5k_6k_1k_2} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_3k_4k_5k_6}} e^{-\tau_2\epsilon^{k_7k_8}_{k_3k_4}} e^{-\tau_3\epsilon_{k_1k_2k_5k_6k_7k_8}}$$
$$= \frac{(-1)^3}{(2!)^4} \sum_{k_i} \frac{O^{20}_{k_1k_2} \Omega^{40}_{k_3k_4k_5k_6} \Omega^{22}_{k_7k_8k_3k_4} \Omega^{06}_{k_7k_8k_5k_6k_1k_2}}{\epsilon_{k_1k_2}\ \epsilon_{k_3k_4k_1k_2k_5k_6}\ \epsilon_{k_1k_2k_5k_6k_7k_8}} \tag{458}$$



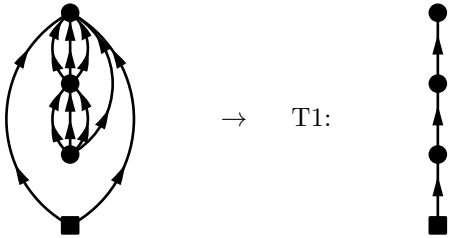
$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{459}$$

$$a_1 = \epsilon^{k_3k_4k_5k_6}$$
$$a_2 = \epsilon^{k_7k_8}_{k_3k_4}$$
$$a_3 = \epsilon_{k_1k_2k_5k_6k_7k_8}$$

Diagram 228:

$$\text{PO3.228} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{20}_{k_1k_2} \Omega^{40}_{k_3k_4k_5k_6} \Omega^{33}_{k_7k_8k_9k_3k_4k_5} \Omega^{06}_{k_7k_8k_9k_6k_1k_2} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_3k_4k_5k_6}} e^{-\tau_2\epsilon^{k_7k_8k_9}_{k_3k_4k_5}} e^{-\tau_3\epsilon_{k_1k_2k_6k_7k_8k_9}}$$

$$= \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} \frac{O^{20}_{k_1k_2} \Omega^{40}_{k_3k_4k_5k_6} \Omega^{33}_{k_7k_8k_9k_3k_4k_5} \Omega^{06}_{k_7k_8k_9k_6k_1k_2}}{\epsilon_{k_1k_2}\ \epsilon_{k_3k_4k_5k_1k_2k_6}\ \epsilon_{k_1k_2k_6k_7k_8k_9}} \tag{460}$$



$\to$ T1:

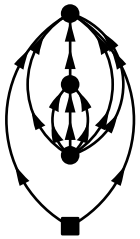
$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{461}$$

$$a_1 = \epsilon^{k_3k_4k_5k_6}$$
$$a_2 = \epsilon^{k_7k_8k_9}_{k_3k_4k_5}$$
$$a_3 = \epsilon_{k_1k_2k_6k_7k_8k_9}$$

Diagram 229:

$$\text{PO3.229} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{20}_{k_1k_2} \Omega^{60}_{k_3k_4k_5k_6k_7k_8} \Omega^{13}_{k_9k_3k_4k_5} \Omega^{06}_{k_9k_6k_7k_8k_1k_2} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_3k_4k_5k_6k_7k_8}} e^{-\tau_2\epsilon^{k_9}_{k_3k_4k_5}} e^{-\tau_3\epsilon_{k_1k_2k_6k_7k_8k_9}}$$

$$= \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} \frac{O^{20}_{k_1k_2} \Omega^{60}_{k_3k_4k_5k_6k_7k_8} \Omega^{13}_{k_9k_3k_4k_5} \Omega^{06}_{k_9k_6k_7k_8k_1k_2}}{\epsilon_{k_1k_2}\ \epsilon_{k_3k_4k_5k_1k_2k_6k_7k_8}\ \epsilon_{k_1k_2k_6k_7k_8k_9}} \tag{462}$$



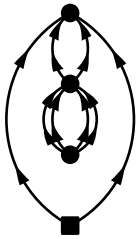
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{463}$$

$$\begin{aligned} a_1 &= \epsilon^{k_3k_4k_5k_6k_7k_8} \\ a_2 &= \epsilon^{k_9}_{k_3k_4k_5} \\ a_3 &= \epsilon_{k_1k_2k_6k_7k_8k_9} \end{aligned}$$

Diagram 230:

$$\begin{aligned} \mathrm{PO3.230} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(4!)} \sum_{k_i} O^{20}_{k_1k_2}\Omega^{40}_{k_3k_4k_5k_6}\Omega^{24}_{k_7k_8k_3k_4k_5k_6}\Omega^{04}_{k_7k_8k_1k_2} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2)e^{-\tau_1\epsilon^{k_3k_4k_5k_6}}e^{-\tau_2\epsilon^{k_7k_8}_{k_3k_4k_5k_6}}e^{-\tau_3\epsilon_{k_1k_2k_7k_8}} \\ &= \frac{(-1)^3}{(2!)^2(4!)} \sum_{k_i} \frac{O^{20}_{k_1k_2}\Omega^{40}_{k_3k_4k_5k_6}\Omega^{24}_{k_7k_8k_3k_4k_5k_6}\Omega^{04}_{k_7k_8k_1k_2}}{\epsilon_{k_1k_2}\ \epsilon_{k_3k_4k_5k_6k_1k_2}\ \epsilon_{k_1k_2k_7k_8}} \end{aligned} \tag{464}$$



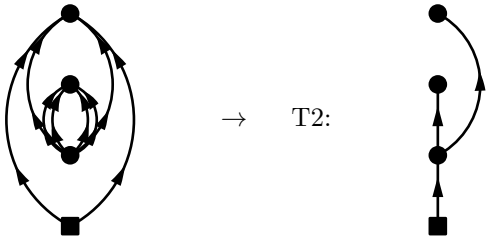
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{465}$$

$$a_1 = \epsilon^{k_3k_4k_5k_6}$$
$$a_2 = \epsilon^{k_7k_8}_{k_3k_4k_5k_6}$$
$$a_3 = \epsilon_{k_1k_2k_7k_8}$$

Diagram 231:

$$\text{PO3.231} = \lim_{\tau\to\infty}\frac{(-1)^3}{(2!)^2(4!)}\sum_{k_i} O^{20}_{k_1k_2}\Omega^{60}_{k_3k_4k_5k_6k_7k_8}\Omega^{04}_{k_3k_4k_5k_6}\Omega^{04}_{k_7k_8k_1k_2}\int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)e^{-\tau_1\epsilon^{k_3k_4k_5k_6k_7k_8}}e^{-\tau_2\epsilon_{k_3k_4k_5k_6}}e^{-\tau_3\epsilon_{k_1k_2k_7k_8}}$$
$$= \frac{(-1)^3}{(2!)^2(4!)}\sum_{k_i}\frac{O^{20}_{k_1k_2}\Omega^{60}_{k_3k_4k_5k_6k_7k_8}\Omega^{04}_{k_3k_4k_5k_6}\Omega^{04}_{k_7k_8k_1k_2}}{\epsilon_{k_1k_2}\ \epsilon_{k_3k_4k_5k_6}\ \epsilon_{k_1k_2k_7k_8}} \tag{466}$$

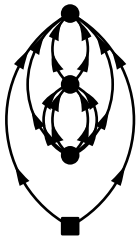


$$\text{T2} = \frac{1}{(a_1+a_2+a_3)a_2a_3} \tag{467}$$

$$a_1 = \epsilon^{k_3k_4k_5k_6k_7k_8}$$
$$a_2 = \epsilon_{k_3k_4k_5k_6}$$
$$a_3 = \epsilon_{k_1k_2k_7k_8}$$

Diagram 232:

$$\text{PO3.232} = \lim_{\tau\to\infty}\frac{(-1)^3}{(2!)^3(4!)}\sum_{k_i} O^{20}_{k_1k_2}\Omega^{60}_{k_3k_4k_5k_6k_7k_8}\Omega^{24}_{k_9k_{10}k_3k_4k_5k_6}\Omega^{06}_{k_9k_{10}k_7k_8k_1k_2}\int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2)e^{-\tau_1\epsilon^{k_3k_4k_5k_6k_7k_8}}e^{-\tau_2\epsilon^{k_9k_{10}}_{k_3k_4k_5k_6}}e^{-\tau_3\epsilon_{k_1k_2k_7k_8k_9k_{10}}}$$
$$= \frac{(-1)^3}{(2!)^3(4!)}\sum_{k_i}\frac{O^{20}_{k_1k_2}\Omega^{60}_{k_3k_4k_5k_6k_7k_8}\Omega^{24}_{k_9k_{10}k_3k_4k_5k_6}\Omega^{06}_{k_9k_{10}k_7k_8k_1k_2}}{\epsilon_{k_1k_2}\ \epsilon_{k_3k_4k_5k_6k_1k_2k_7k_8}\ \epsilon_{k_1k_2k_7k_8k_9k_{10}}} \tag{468}$$



$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{469}$$

$$\begin{aligned} a_1 &= \epsilon^{k_3k_4k_5k_6k_7k_8} \\ a_2 &= \epsilon^{k_9k_{10}}_{k_3k_4k_5k_6} \\ a_3 &= \epsilon_{k_1k_2k_7k_8k_9k_{10}} \end{aligned}$$

Diagram 233:

$$\begin{aligned} \mathrm{PO3.233} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(5!)} \sum_{k_i} O^{20}_{k_1k_2} \Omega^{60}_{k_3k_4k_5k_6k_7k_8} \Omega^{15}_{k_9k_3k_4k_5k_6k_7} \Omega^{04}_{k_9k_8k_1k_2} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_3k_4k_5k_6k_7k_8}} e^{-\tau_2\epsilon^{k_9}_{k_3k_4k_5k_6k_7}} e^{-\tau_3\epsilon_{k_1k_2k_8k_9}} \\ &= \frac{(-1)^3}{(2!)(5!)} \sum_{k_i} \frac{O^{20}_{k_1k_2} \Omega^{60}_{k_3k_4k_5k_6k_7k_8} \Omega^{15}_{k_9k_3k_4k_5k_6k_7} \Omega^{04}_{k_9k_8k_1k_2}}{\epsilon_{k_1k_2}\ \epsilon_{k_3k_4k_5k_6k_7k_1k_2k_8}\ \epsilon_{k_1k_2k_8k_9}} \end{aligned} \tag{470}$$

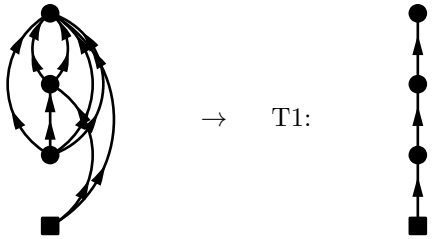
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{471}$$

$$a_1 = \epsilon^{k_3 k_4 k_5 k_6 k_7 k_8}$$
$$a_2 = \epsilon^{k_9}_{k_3 k_4 k_5 k_6 k_7}$$
$$a_3 = \epsilon_{k_1 k_2 k_8 k_9}$$

Diagram 234:

$$\text{PO3.234} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)(3!)} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{40}_{k_3 k_4 k_5 k_6} \Omega^{22}_{k_7 k_8 k_3 k_1} \Omega^{06}_{k_7 k_8 k_4 k_5 k_6 k_2} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_3 k_4 k_5 k_6}} e^{-\tau_2 \epsilon^{k_7 k_8}_{k_1 k_3}} e^{-\tau_3 \epsilon_{k_2 k_4 k_5 k_6 k_7 k_8}}$$
$$= \frac{-(-1)^3}{(2!)(3!)} \sum_{k_i} \frac{O^{20}_{k_1 k_2} \Omega^{40}_{k_3 k_4 k_5 k_6} \Omega^{22}_{k_7 k_8 k_3 k_1} \Omega^{06}_{k_7 k_8 k_4 k_5 k_6 k_2}}{\epsilon_{k_1 k_2}\ \epsilon_{k_1 k_3 k_2 k_4 k_5 k_6}\ \epsilon_{k_2 k_4 k_5 k_6 k_7 k_8}} \tag{472}$$

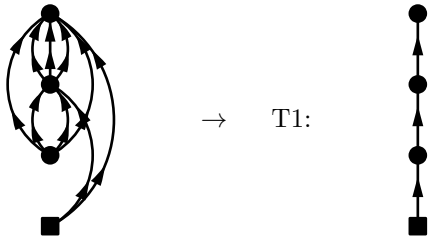


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{473}$$

$$a_1 = \epsilon^{k_3 k_4 k_5 k_6}$$
$$a_2 = \epsilon^{k_7 k_8}_{k_1 k_3}$$
$$a_3 = \epsilon_{k_2 k_4 k_5 k_6 k_7 k_8}$$

Diagram 235:

$$\text{PO3.235} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{40}_{k_3 k_4 k_5 k_6} \Omega^{33}_{k_7 k_8 k_9 k_3 k_4 k_1} \Omega^{06}_{k_7 k_8 k_9 k_5 k_6 k_2} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_3 k_4 k_5 k_6}} e^{-\tau_2 \epsilon^{k_7 k_8 k_9}_{k_1 k_3 k_4}} e^{-\tau_3 \epsilon_{k_2 k_5 k_6 k_7 k_8 k_9}}$$
$$= \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} \frac{O^{20}_{k_1 k_2} \Omega^{40}_{k_3 k_4 k_5 k_6} \Omega^{33}_{k_7 k_8 k_9 k_3 k_4 k_1} \Omega^{06}_{k_7 k_8 k_9 k_5 k_6 k_2}}{\epsilon_{k_1 k_2}\ \epsilon_{k_1 k_3 k_4 k_2 k_5 k_6}\ \epsilon_{k_2 k_5 k_6 k_7 k_8 k_9}} \tag{474}$$



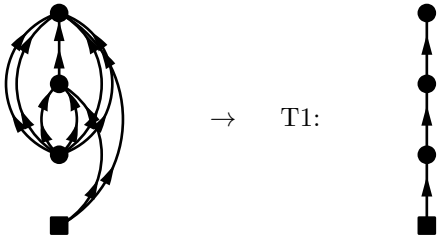
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{475}$$

$$\begin{aligned} a_1 &= \epsilon^{k_3k_4k_5k_6} \\ a_2 &= \epsilon^{k_7k_8k_9}_{k_1k_3k_4} \\ a_3 &= \epsilon_{k_2k_5k_6k_7k_8k_9} \end{aligned}$$

Diagram 236:

$$\begin{aligned} \mathrm{PO3.236} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(4!)} \sum_{k_i} O^{20}_{k_1k_2} \Omega^{60}_{k_3k_4k_5k_6k_7k_8} \Omega^{13}_{k_9k_3k_4k_1} \Omega^{06}_{k_9k_5k_6k_7k_8k_2} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_3k_4k_5k_6k_7k_8}} e^{-\tau_2\epsilon^{k_9}_{k_1k_3k_4}} e^{-\tau_3\epsilon_{k_2k_5k_6k_7k_8k_9}} \\ &= \frac{(-1)^3}{(2!)(4!)} \sum_{k_i} \frac{O^{20}_{k_1k_2}\Omega^{60}_{k_3k_4k_5k_6k_7k_8}\Omega^{13}_{k_9k_3k_4k_1}\Omega^{06}_{k_9k_5k_6k_7k_8k_2}}{\epsilon_{k_1k_2}\ \epsilon_{k_1k_3k_4k_2k_5k_6k_7k_8}\ \epsilon_{k_2k_5k_6k_7k_8k_9}} \end{aligned} \tag{476}$$



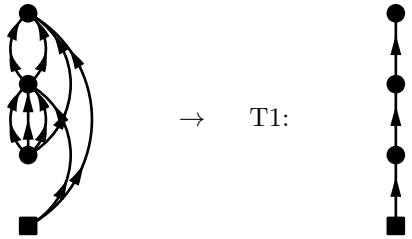
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{477}$$

$$a_1 = \epsilon^{k_3 k_4 k_5 k_6 k_7 k_8}$$
$$a_2 = \epsilon^{k_9}_{k_1 k_3 k_4}$$
$$a_3 = \epsilon_{k_2 k_5 k_6 k_7 k_8 k_9}$$

Diagram 237:

$$\text{PO3.237} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)(3!)} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{40}_{k_3 k_4 k_5 k_6} \Omega^{24}_{k_7 k_8 k_3 k_4 k_5 k_1} \Omega^{04}_{k_7 k_8 k_6 k_2} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_3 k_4 k_5 k_6}} e^{-\tau_2 \epsilon^{k_7 k_8}_{k_1 k_3 k_4 k_5}} e^{-\tau_3 \epsilon_{k_2 k_6 k_7 k_8}}$$
$$= \frac{-(-1)^3}{(2!)(3!)} \sum_{k_i} \frac{O^{20}_{k_1 k_2} \Omega^{40}_{k_3 k_4 k_5 k_6} \Omega^{24}_{k_7 k_8 k_3 k_4 k_5 k_1} \Omega^{04}_{k_7 k_8 k_6 k_2}}{\epsilon_{k_1 k_2}\ \epsilon_{k_1 k_3 k_4 k_5 k_2 k_6}\ \epsilon_{k_2 k_6 k_7 k_8}} \tag{478}$$



$\to$ T1:

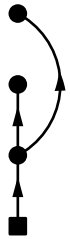
$$\text{T1} = \frac{1}{(a_1 + a_2 + a_3)(a_2 + a_3)a_3} \tag{479}$$

$$a_1 = \epsilon^{k_3 k_4 k_5 k_6}$$
$$a_2 = \epsilon^{k_7 k_8}_{k_1 k_3 k_4 k_5}$$
$$a_3 = \epsilon_{k_2 k_6 k_7 k_8}$$

Diagram 238:

$$\text{PO3.238} = \lim_{\tau\to\infty} \frac{-(-1)^3}{2(3!)^2} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{60}_{k_3 k_4 k_5 k_6 k_7 k_8} \Omega^{04}_{k_3 k_4 k_5 k_1} \Omega^{04}_{k_6 k_7 k_8 k_2} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_1) e^{-\tau_1 \epsilon^{k_3 k_4 k_5 k_6 k_7 k_8}} e^{-\tau_2 \epsilon_{k_1 k_3 k_4 k_5}} e^{-\tau_3 \epsilon_{k_2 k_6 k_7 k_8}}$$
$$= \frac{-(-1)^3}{2(3!)^2} \sum_{k_i} \frac{O^{20}_{k_1 k_2} \Omega^{60}_{k_3 k_4 k_5 k_6 k_7 k_8} \Omega^{04}_{k_3 k_4 k_5 k_1} \Omega^{04}_{k_6 k_7 k_8 k_2}}{\epsilon_{k_1 k_2}\ \epsilon_{k_1 k_3 k_4 k_5}\ \epsilon_{k_2 k_6 k_7 k_8}} \tag{480}$$

$\rightarrow$ T2:



$$\mathrm{T2} = \frac{1}{(a_1+a_2+a_3)a_2a_3} \tag{481}$$

$$a_1 = \epsilon^{k_3k_4k_5k_6k_7k_8}$$
$$a_2 = \epsilon_{k_1k_3k_4k_5}$$
$$a_3 = \epsilon_{k_2k_6k_7k_8}$$

Diagram 239:

$$\mathrm{PO3.239} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{20}_{k_1k_2} \Omega^{60}_{k_3k_4k_5k_6k_7k_8} \Omega^{24}_{k_9k_{10}k_3k_4k_5k_1} \Omega^{06}_{k_9k_{10}k_6k_7k_8k_2} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_3k_4k_5k_6k_7k_8}} e^{-\tau_2\epsilon^{k_9k_{10}}_{k_1k_3k_4k_5}} e^{-\tau_3\epsilon_{k_2k_6k_7k_8k_9k_{10}}}$$
$$= \frac{-(-1)^3}{(2!)(3!)^2} \sum_{k_i} \frac{O^{20}_{k_1k_2} \Omega^{60}_{k_3k_4k_5k_6k_7k_8} \Omega^{24}_{k_9k_{10}k_3k_4k_5k_1} \Omega^{06}_{k_9k_{10}k_6k_7k_8k_2}}{\epsilon_{k_1k_2}\ \epsilon_{k_1k_3k_4k_5k_2k_6k_7k_8}\ \epsilon_{k_2k_6k_7k_8k_9k_{10}}} \tag{482}$$

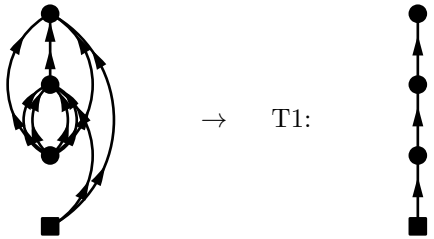
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{483}$$

$$a_1 = \epsilon^{k_3k_4k_5k_6k_7k_8}$$
$$a_2 = \epsilon^{k_9k_{10}}_{k_1k_3k_4k_5}$$
$$a_3 = \epsilon_{k_2k_6k_7k_8k_9k_{10}}$$

Diagram 240:

$$\text{PO3.240} = \lim_{\tau\to\infty}\frac{(-1)^3}{(2!)(4!)}\sum_{k_i} O^{20}_{k_1k_2}\Omega^{60}_{k_3k_4k_5k_6k_7k_8}\Omega^{15}_{k_9k_3k_4k_5k_6k_1}\Omega^{04}_{k_9k_7k_8k_2}\int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2)e^{-\tau_1\epsilon^{k_3k_4k_5k_6k_7k_8}}e^{-\tau_2\epsilon^{k_9}_{k_1k_3k_4k_5k_6}}e^{-\tau_3\epsilon_{k_2k_7k_8k_9}}$$
$$= \frac{(-1)^3}{(2!)(4!)}\sum_{k_i}\frac{O^{20}_{k_1k_2}\Omega^{60}_{k_3k_4k_5k_6k_7k_8}\Omega^{15}_{k_9k_3k_4k_5k_6k_1}\Omega^{04}_{k_9k_7k_8k_2}}{\epsilon_{k_1k_2}\ \epsilon_{k_1k_3k_4k_5k_6k_2k_7k_8}\ \epsilon_{k_2k_7k_8k_9}} \tag{484}$$



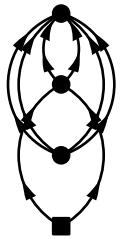
$\rightarrow$ T1:

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{485}$$

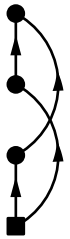
$$a_1 = \epsilon^{k_3k_4k_5k_6k_7k_8}$$
$$a_2 = \epsilon^{k_9}_{k_1k_3k_4k_5k_6}$$
$$a_3 = \epsilon_{k_2k_7k_8k_9}$$

Diagram 241:

$$\text{PO3.241} = \lim_{\tau\to\infty}\frac{(-1)^3}{(2!)^2(4!)}\sum_{k_i} O^{20}_{k_1k_2}\Omega^{40}_{k_3k_4k_5k_6}\Omega^{22}_{k_7k_8k_1k_2}\Omega^{06}_{k_7k_8k_3k_4k_5k_6}\int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2)e^{-\tau_1\epsilon^{k_3k_4k_5k_6}}e^{-\tau_2\epsilon^{k_7k_8}_{k_1k_2}}e^{-\tau_3\epsilon_{k_3k_4k_5k_6k_7k_8}}$$
$$= \frac{(-1)^3}{(2!)^2(4!)}\sum_{k_i} O^{20}_{k_1k_2}\Omega^{40}_{k_3k_4k_5k_6}\Omega^{22}_{k_7k_8k_1k_2}\Omega^{06}_{k_7k_8k_3k_4k_5k_6}\left[\frac{1}{\epsilon_{k_7k_8}\ \epsilon_{k_1k_2}\ \epsilon_{k_3k_4k_5k_6k_7k_8}}+\frac{1}{\epsilon_{k_1k_2}\ \epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_3k_4k_5k_6k_7k_8}}\right] \tag{486}$$



$\rightarrow$ T5:

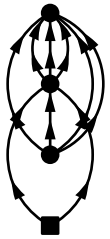


$$\mathrm{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{487}$$

$$\begin{aligned} a_1 &= \epsilon^{k_3k_4k_5k_6} \\ a_2 &= \epsilon^{k_7k_8}_{k_1k_2} \\ a_3 &= \epsilon_{k_3k_4k_5k_6k_7k_8} \end{aligned}$$

Diagram 242:

$$\begin{aligned} \mathrm{PO3.242} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{20}_{k_1k_2} \Omega^{40}_{k_3k_4k_5k_6} \Omega^{33}_{k_7k_8k_9k_3k_1k_2} \Omega^{06}_{k_7k_8k_9k_4k_5k_6} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_3k_4k_5k_6}} e^{-\tau_2\epsilon^{k_7k_8k_9}_{k_1k_2k_3}} e^{-\tau_3\epsilon_{k_4k_5k_6k_7k_8k_9}} \\ &= \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} \frac{O^{20}_{k_1k_2} \Omega^{40}_{k_3k_4k_5k_6} \Omega^{33}_{k_7k_8k_9k_3k_1k_2} \Omega^{06}_{k_7k_8k_9k_4k_5k_6}}{\epsilon_{k_1k_2}\ \epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_4k_5k_6k_7k_8k_9}} \end{aligned} \tag{488}$$



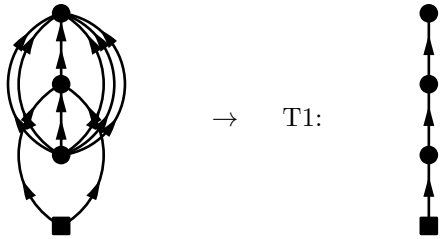
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{489}$$

$$a_1 = \epsilon^{k_3k_4k_5k_6}$$
$$a_2 = \epsilon^{k_7k_8k_9}_{k_1k_2k_3}$$
$$a_3 = \epsilon_{k_4k_5k_6k_7k_8k_9}$$

Diagram 243:

$$\text{PO3.243} = \lim_{\tau\to\infty}\frac{(-1)^3}{(2!)(5!)}\sum_{k_i} O^{20}_{k_1k_2}\Omega^{60}_{k_3k_4k_5k_6k_7k_8}\Omega^{13}_{k_9k_3k_1k_2}\Omega^{06}_{k_9k_4k_5k_6k_7k_8}\int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2)e^{-\tau_1\epsilon^{k_3k_4k_5k_6k_7k_8}}e^{-\tau_2\epsilon^{k_9}_{k_1k_2k_3}}e^{-\tau_3\epsilon_{k_4k_5k_6k_7k_8k_9}}$$
$$= \frac{(-1)^3}{(2!)(5!)}\sum_{k_i}\frac{O^{20}_{k_1k_2}\Omega^{60}_{k_3k_4k_5k_6k_7k_8}\Omega^{13}_{k_9k_3k_1k_2}\Omega^{06}_{k_9k_4k_5k_6k_7k_8}}{\epsilon_{k_1k_2}\ \epsilon_{k_1k_2k_3k_4k_5k_6k_7k_8}\ \epsilon_{k_4k_5k_6k_7k_8k_9}} \tag{490}$$



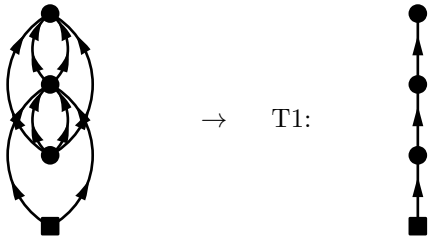
$\rightarrow$ T1:

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{491}$$

$$a_1 = \epsilon^{k_3k_4k_5k_6k_7k_8}$$
$$a_2 = \epsilon^{k_9}_{k_1k_2k_3}$$
$$a_3 = \epsilon_{k_4k_5k_6k_7k_8k_9}$$

Diagram 244:

$$\text{PO3.244} = \lim_{\tau\to\infty}\frac{(-1)^3}{(2!)^4}\sum_{k_i} O^{20}_{k_1k_2}\Omega^{40}_{k_3k_4k_5k_6}\Omega^{24}_{k_7k_8k_3k_4k_1k_2}\Omega^{04}_{k_7k_8k_5k_6}\int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2)e^{-\tau_1\epsilon^{k_3k_4k_5k_6}}e^{-\tau_2\epsilon^{k_7k_8}_{k_1k_2k_3k_4}}e^{-\tau_3\epsilon_{k_5k_6k_7k_8}}$$
$$= \frac{(-1)^3}{(2!)^4}\sum_{k_i}\frac{O^{20}_{k_1k_2}\Omega^{40}_{k_3k_4k_5k_6}\Omega^{24}_{k_7k_8k_3k_4k_1k_2}\Omega^{04}_{k_7k_8k_5k_6}}{\epsilon_{k_1k_2}\ \epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_5k_6k_7k_8}} \tag{492}$$

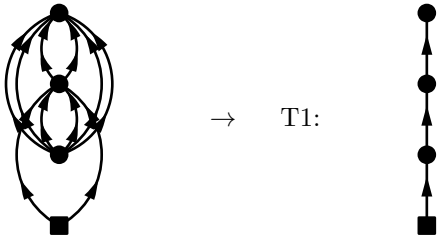


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{493}$$

$$\begin{aligned} a_1 &= \epsilon^{k_3k_4k_5k_6} \\ a_2 &= \epsilon^{k_7k_8}_{k_1k_2k_3k_4} \\ a_3 &= \epsilon_{k_5k_6k_7k_8} \end{aligned}$$

Diagram 245:

$$\begin{aligned} \text{PO3.245} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^3(4!)} \sum_{k_i} O^{20}_{k_1k_2}\Omega^{60}_{k_3k_4k_5k_6k_7k_8}\Omega^{24}_{k_9k_{10}k_3k_4k_1k_2}\Omega^{06}_{k_9k_{10}k_5k_6k_7k_8} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2)e^{-\tau_1\epsilon^{k_3k_4k_5k_6k_7k_8}}e^{-\tau_2\epsilon^{k_9k_{10}}_{k_1k_2k_3k_4}}e^{-\tau_3\epsilon_{k_5k_6k_7k_8k_9k_{10}}} \\ &= \frac{(-1)^3}{(2!)^3(4!)} \sum_{k_i} \frac{O^{20}_{k_1k_2}\Omega^{60}_{k_3k_4k_5k_6k_7k_8}\Omega^{24}_{k_9k_{10}k_3k_4k_1k_2}\Omega^{06}_{k_9k_{10}k_5k_6k_7k_8}}{\epsilon_{k_1k_2}\ \epsilon_{k_1k_2k_3k_4k_5k_6k_7k_8}\ \epsilon_{k_5k_6k_7k_8k_9k_{10}}} \end{aligned} \tag{494}$$

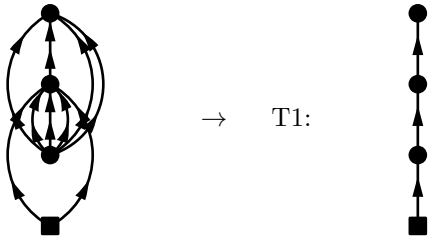


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{495}$$

$$a_1 = \epsilon^{k_3k_4k_5k_6k_7k_8}$$
$$a_2 = \epsilon^{k_9k_{10}}_{k_1k_2k_3k_4}$$
$$a_3 = \epsilon_{k_5k_6k_7k_8k_9k_{10}}$$

Diagram 246:

$$\text{PO3.246} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{20}_{k_1k_2} \Omega^{60}_{k_3k_4k_5k_6k_7k_8} \Omega^{15}_{k_9k_3k_4k_5k_1k_2} \Omega^{04}_{k_9k_6k_7k_8} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_3k_4k_5k_6k_7k_8}} e^{-\tau_2\epsilon^{k_9}_{k_1k_2k_3k_4k_5}} e^{-\tau_3\epsilon_{k_6k_7k_8k_9}}$$
$$= \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} \frac{O^{20}_{k_1k_2} \Omega^{60}_{k_3k_4k_5k_6k_7k_8} \Omega^{15}_{k_9k_3k_4k_5k_1k_2} \Omega^{04}_{k_9k_6k_7k_8}}{\epsilon_{k_1k_2}\ \epsilon_{k_1k_2k_3k_4k_5k_6k_7k_8}\ \epsilon_{k_6k_7k_8k_9}} \tag{496}$$

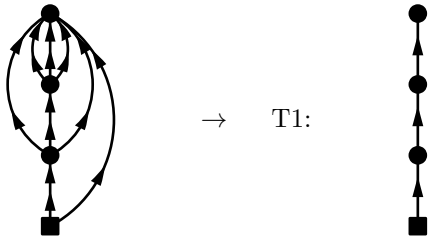


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{497}$$

$$a_1 = \epsilon^{k_3k_4k_5k_6k_7k_8}$$
$$a_2 = \epsilon^{k_9}_{k_1k_2k_3k_4k_5}$$
$$a_3 = \epsilon_{k_6k_7k_8k_9}$$

Diagram 247:

$$\text{PO3.247} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} O^{20}_{k_1k_2} \Omega^{31}_{k_3k_4k_5k_1} \Omega^{31}_{k_6k_7k_8k_3} \Omega^{06}_{k_6k_7k_8k_4k_5k_2} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_3k_4k_5}_{k_1}} e^{-\tau_2\epsilon^{k_6k_7k_8}_{k_3}} e^{-\tau_3\epsilon_{k_2k_4k_5k_6k_7k_8}}$$
$$= \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} \frac{O^{20}_{k_1k_2} \Omega^{31}_{k_3k_4k_5k_1} \Omega^{31}_{k_6k_7k_8k_3} \Omega^{06}_{k_6k_7k_8k_4k_5k_2}}{\epsilon_{k_1k_2}\ \epsilon_{k_3k_2k_4k_5}\ \epsilon_{k_2k_4k_5k_6k_7k_8}} \tag{498}$$



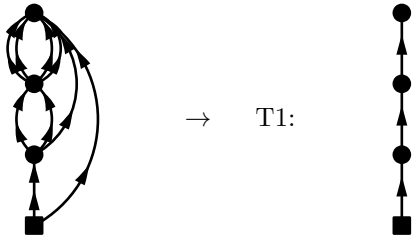
$$\rightarrow \quad \text{T1:}$$

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{499}$$

$$\begin{aligned} a_1 &= \epsilon_{k_1}^{k_3k_4k_5} \\ a_2 &= \epsilon_{k_3}^{k_6k_7k_8} \\ a_3 &= \epsilon_{k_2k_4k_5k_6k_7k_8} \end{aligned}$$

Diagram 248:

$$\begin{aligned} \text{PO3.248} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(4!)} \sum_{k_i} O^{20}_{k_1k_2} \Omega^{31}_{k_3k_4k_5k_1} \Omega^{42}_{k_6k_7k_8k_9k_3k_4} \Omega^{06}_{k_6k_7k_8k_9k_5k_2} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon_{k_1}^{k_3k_4k_5}} e^{-\tau_2\epsilon_{k_3k_4}^{k_6k_7k_8k_9}} e^{-\tau_3\epsilon_{k_2k_5k_6k_7k_8k_9}} \\ &= \frac{(-1)^3}{(2!)(4!)} \sum_{k_i} \frac{O^{20}_{k_1k_2} \Omega^{31}_{k_3k_4k_5k_1} \Omega^{42}_{k_6k_7k_8k_9k_3k_4} \Omega^{06}_{k_6k_7k_8k_9k_5k_2}}{\epsilon_{k_1k_2}\ \epsilon_{k_3k_4k_2k_5}\ \epsilon_{k_2k_5k_6k_7k_8k_9}} \end{aligned} \tag{500}$$



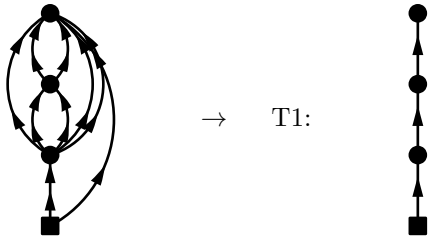
$$\rightarrow \quad \text{T1:}$$

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{501}$$

$$a_1 = \epsilon^{k_3 k_4 k_5}_{k_1}$$
$$a_2 = \epsilon^{k_6 k_7 k_8 k_9}_{k_3 k_4}$$
$$a_3 = \epsilon_{k_2 k_5 k_6 k_7 k_8 k_9}$$

Diagram 249:

$$\text{PO3.249} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{51}_{k_3 k_4 k_5 k_6 k_7 k_1} \Omega^{22}_{k_8 k_9 k_3 k_4} \Omega^{06}_{k_8 k_9 k_5 k_6 k_7 k_2} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_3 k_4 k_5 k_6 k_7}_{k_1}} e^{-\tau_2 \epsilon^{k_8 k_9}_{k_3 k_4}} e^{-\tau_3 \epsilon_{k_2 k_5 k_6 k_7 k_8 k_9}}$$
$$= \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} \frac{O^{20}_{k_1 k_2} \Omega^{51}_{k_3 k_4 k_5 k_6 k_7 k_1} \Omega^{22}_{k_8 k_9 k_3 k_4} \Omega^{06}_{k_8 k_9 k_5 k_6 k_7 k_2}}{\epsilon_{k_1 k_2}\ \epsilon_{k_3 k_4 k_2 k_5 k_6 k_7}\ \epsilon_{k_2 k_5 k_6 k_7 k_8 k_9}} \tag{502}$$

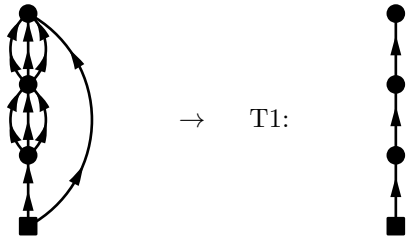


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{503}$$

$$a_1 = \epsilon^{k_3 k_4 k_5 k_6 k_7}_{k_1}$$
$$a_2 = \epsilon^{k_8 k_9}_{k_3 k_4}$$
$$a_3 = \epsilon_{k_2 k_5 k_6 k_7 k_8 k_9}$$

Diagram 250:

$$\text{PO3.250} = \lim_{\tau\to\infty} \frac{(-1)^3}{(3!)^2} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{31}_{k_3 k_4 k_5 k_1} \Omega^{33}_{k_6 k_7 k_8 k_3 k_4 k_5} \Omega^{04}_{k_6 k_7 k_8 k_2} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_3 k_4 k_5}_{k_1}} e^{-\tau_2 \epsilon^{k_6 k_7 k_8}_{k_3 k_4 k_5}} e^{-\tau_3 \epsilon_{k_2 k_6 k_7 k_8}}$$
$$= \frac{(-1)^3}{(3!)^2} \sum_{k_i} \frac{O^{20}_{k_1 k_2} \Omega^{31}_{k_3 k_4 k_5 k_1} \Omega^{33}_{k_6 k_7 k_8 k_3 k_4 k_5} \Omega^{04}_{k_6 k_7 k_8 k_2}}{\epsilon_{k_1 k_2}\ \epsilon_{k_3 k_4 k_5 k_2}\ \epsilon_{k_2 k_6 k_7 k_8}} \tag{504}$$

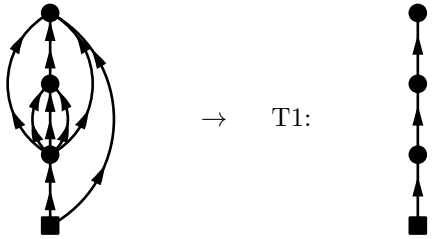


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{505}$$

$$\begin{aligned} a_1 &= \epsilon_{k_1}^{k_3k_4k_5} \\ a_2 &= \epsilon_{k_3k_4k_5}^{k_6k_7k_8} \\ a_3 &= \epsilon_{k_2k_6k_7k_8} \end{aligned}$$

Diagram 251:

$$\begin{aligned} \text{PO3.251} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} O^{20}_{k_1k_2} \Omega^{51}_{k_3k_4k_5k_6k_7k_1} \Omega^{13}_{k_8k_3k_4k_5} \Omega^{04}_{k_8k_6k_7k_2} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon_{k_1}^{k_3k_4k_5k_6k_7}} e^{-\tau_2 \epsilon_{k_3k_4k_5}^{k_8}} e^{-\tau_3 \epsilon_{k_2k_6k_7k_8}} \\ &= \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} \frac{O^{20}_{k_1k_2} \Omega^{51}_{k_3k_4k_5k_6k_7k_1} \Omega^{13}_{k_8k_3k_4k_5} \Omega^{04}_{k_8k_6k_7k_2}}{\epsilon_{k_1k_2}\ \epsilon_{k_3k_4k_5k_2k_6k_7}\ \epsilon_{k_2k_6k_7k_8}} \end{aligned} \tag{506}$$

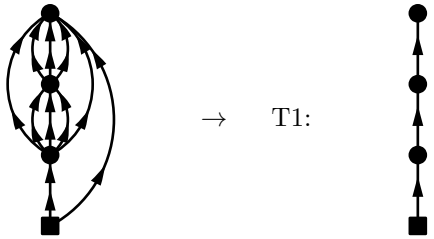


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{507}$$

$$a_1 = \epsilon^{k_3k_4k_5k_6k_7}_{k_1}$$
$$a_2 = \epsilon^{k_8}_{k_3k_4k_5}$$
$$a_3 = \epsilon_{k_2k_6k_7k_8}$$

Diagram 252:

$$\text{PO3.252} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{20}_{k_1k_2} \Omega^{51}_{k_3k_4k_5k_6k_7k_1} \Omega^{33}_{k_8k_9k_{10}k_3k_4k_5} \Omega^{06}_{k_8k_9k_{10}k_6k_7k_2} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_3k_4k_5k_6k_7}_{k_1}} e^{-\tau_2\epsilon^{k_8k_9k_{10}}_{k_3k_4k_5}} e^{-\tau_3\epsilon_{k_2k_6k_7k_8k_9k_{10}}}$$
$$= \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} \frac{O^{20}_{k_1k_2} \Omega^{51}_{k_3k_4k_5k_6k_7k_1} \Omega^{33}_{k_8k_9k_{10}k_3k_4k_5} \Omega^{06}_{k_8k_9k_{10}k_6k_7k_2}}{\epsilon_{k_1k_2}\ \epsilon_{k_3k_4k_5k_2k_6k_7}\ \epsilon_{k_2k_6k_7k_8k_9k_{10}}} \tag{508}$$



$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{509}$$

$$a_1 = \epsilon^{k_3k_4k_5k_6k_7}_{k_1}$$
$$a_2 = \epsilon^{k_8k_9k_{10}}_{k_3k_4k_5}$$
$$a_3 = \epsilon_{k_2k_6k_7k_8k_9k_{10}}$$

Diagram 253:

$$\text{PO3.253} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(4!)} \sum_{k_i} O^{20}_{k_1k_2} \Omega^{51}_{k_3k_4k_5k_6k_7k_1} \Omega^{24}_{k_8k_9k_3k_4k_5k_6} \Omega^{04}_{k_8k_9k_7k_2} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_3k_4k_5k_6k_7}_{k_1}} e^{-\tau_2\epsilon^{k_8k_9}_{k_3k_4k_5k_6}} e^{-\tau_3\epsilon_{k_2k_7k_8k_9}}$$
$$= \frac{(-1)^3}{(2!)(4!)} \sum_{k_i} \frac{O^{20}_{k_1k_2} \Omega^{51}_{k_3k_4k_5k_6k_7k_1} \Omega^{24}_{k_8k_9k_3k_4k_5k_6} \Omega^{04}_{k_8k_9k_7k_2}}{\epsilon_{k_1k_2}\ \epsilon_{k_3k_4k_5k_6k_2k_7}\ \epsilon_{k_2k_7k_8k_9}} \tag{510}$$

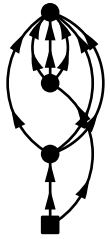
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{511}$$

$$\begin{aligned} a_1 &= \epsilon_{k_1}^{k_3k_4k_5k_6k_7} \\ a_2 &= \epsilon_{k_3k_4k_5k_6}^{k_8k_9} \\ a_3 &= \epsilon_{k_2k_7k_8k_9} \end{aligned}$$

Diagram 254:

$$\begin{aligned} \mathrm{PO3.254} &= \lim_{\tau\to\infty} \frac{-(-1)^3}{2(3!)^2} \sum_{k_i} O^{20}_{k_1k_2} \Omega^{31}_{k_3k_4k_5k_1} \Omega^{31}_{k_6k_7k_8k_2} \Omega^{06}_{k_6k_7k_8k_3k_4k_5} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon_{k_1}^{k_3k_4k_5}} e^{-\tau_2 \epsilon_{k_2}^{k_6k_7k_8}} e^{-\tau_3 \epsilon_{k_3k_4k_5k_6k_7k_8}} \\ &= \frac{-(-1)^3}{2(3!)^2} \sum_{k_i} O^{20}_{k_1k_2} \Omega^{31}_{k_3k_4k_5k_1} \Omega^{31}_{k_6k_7k_8k_2} \Omega^{06}_{k_6k_7k_8k_3k_4k_5} \left[\frac{1}{\epsilon_{k_1k_6k_7k_8}\ \epsilon_{k_1k_2}\ \epsilon_{k_3k_4k_5k_6k_7k_8}} + \frac{1}{\epsilon_{k_1k_2}\ \epsilon_{k_2k_3k_4k_5}\ \epsilon_{k_3k_4k_5k_6k_7k_8}} \right] \end{aligned} \tag{512}$$



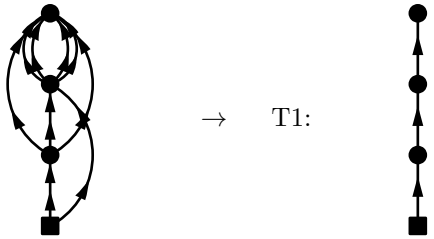
$\rightarrow$ T5:

$$\mathrm{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{513}$$

$$a_1 = \epsilon_{k_1}^{k_3 k_4 k_5}$$
$$a_2 = \epsilon_{k_2}^{k_6 k_7 k_8}$$
$$a_3 = \epsilon_{k_3 k_4 k_5 k_6 k_7 k_8}$$

Diagram 255:

$$\text{PO3.255} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(4!)} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{31}_{k_3 k_4 k_5 k_1} \Omega^{42}_{k_6 k_7 k_8 k_9 k_3 k_2} \Omega^{06}_{k_6 k_7 k_8 k_9 k_4 k_5} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon_{k_1}^{k_3 k_4 k_5}} e^{-\tau_2 \epsilon_{k_2 k_3}^{k_6 k_7 k_8 k_9}} e^{-\tau_3 \epsilon_{k_4 k_5 k_6 k_7 k_8 k_9}}$$
$$= \frac{(-1)^3}{(2!)(4!)} \sum_{k_i} \frac{O^{20}_{k_1 k_2} \Omega^{31}_{k_3 k_4 k_5 k_1} \Omega^{42}_{k_6 k_7 k_8 k_9 k_3 k_2} \Omega^{06}_{k_6 k_7 k_8 k_9 k_4 k_5}}{\epsilon_{k_1 k_2}\ \epsilon_{k_2 k_3 k_4 k_5}\ \epsilon_{k_4 k_5 k_6 k_7 k_8 k_9}} \tag{514}$$

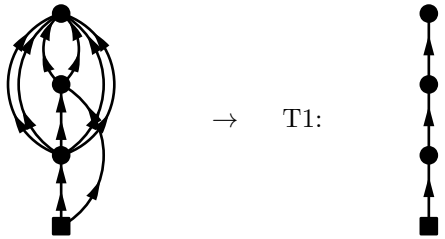


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{515}$$

$$a_1 = \epsilon_{k_1}^{k_3 k_4 k_5}$$
$$a_2 = \epsilon_{k_2 k_3}^{k_6 k_7 k_8 k_9}$$
$$a_3 = \epsilon_{k_4 k_5 k_6 k_7 k_8 k_9}$$

Diagram 256:

$$\text{PO3.256} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(4!)} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{51}_{k_3 k_4 k_5 k_6 k_7 k_1} \Omega^{22}_{k_8 k_9 k_3 k_2} \Omega^{06}_{k_8 k_9 k_4 k_5 k_6 k_7} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon_{k_1}^{k_3 k_4 k_5 k_6 k_7}} e^{-\tau_2 \epsilon_{k_2 k_3}^{k_8 k_9}} e^{-\tau_3 \epsilon_{k_4 k_5 k_6 k_7 k_8 k_9}}$$
$$= \frac{(-1)^3}{(2!)(4!)} \sum_{k_i} \frac{O^{20}_{k_1 k_2} \Omega^{51}_{k_3 k_4 k_5 k_6 k_7 k_1} \Omega^{22}_{k_8 k_9 k_3 k_2} \Omega^{06}_{k_8 k_9 k_4 k_5 k_6 k_7}}{\epsilon_{k_1 k_2}\ \epsilon_{k_2 k_3 k_4 k_5 k_6 k_7}\ \epsilon_{k_4 k_5 k_6 k_7 k_8 k_9}} \tag{516}$$



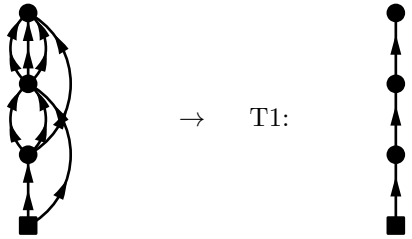
$$\rightarrow \quad \text{T1:}$$

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{517}$$

$$\begin{aligned} a_1 &= \epsilon_{k_1}^{k_3k_4k_5k_6k_7} \\ a_2 &= \epsilon_{k_2k_3}^{k_8k_9} \\ a_3 &= \epsilon_{k_4k_5k_6k_7k_8k_9} \end{aligned}$$

Diagram 257:

$$\begin{aligned} \text{PO3.257} &= \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)(3!)} \sum_{k_i} O^{20}_{k_1k_2} \Omega^{31}_{k_3k_4k_5k_1} \Omega^{33}_{k_6k_7k_8k_3k_4k_2} \Omega^{04}_{k_6k_7k_8k_5} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon_{k_1}^{k_3k_4k_5}} e^{-\tau_2 \epsilon_{k_2k_3k_4}^{k_6k_7k_8}} e^{-\tau_3 \epsilon_{k_5k_6k_7k_8}} \\ &= \frac{-(-1)^3}{(2!)(3!)} \sum_{k_i} \frac{O^{20}_{k_1k_2} \Omega^{31}_{k_3k_4k_5k_1} \Omega^{33}_{k_6k_7k_8k_3k_4k_2} \Omega^{04}_{k_6k_7k_8k_5}}{\epsilon_{k_1k_2}\ \epsilon_{k_2k_3k_4k_5}\ \epsilon_{k_5k_6k_7k_8}} \end{aligned} \tag{518}$$



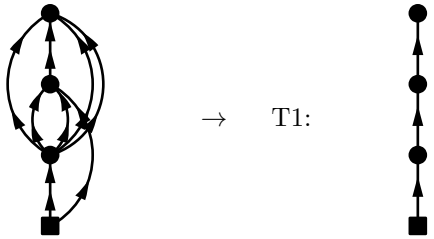
$$\rightarrow \quad \text{T1:}$$

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{519}$$

$$a_1 = \epsilon_{k_1}^{k_3 k_4 k_5}$$
$$a_2 = \epsilon_{k_2 k_3 k_4}^{k_6 k_7 k_8}$$
$$a_3 = \epsilon_{k_5 k_6 k_7 k_8}$$

Diagram 258:

$$\text{PO3.258} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)(3!)} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{51}_{k_3 k_4 k_5 k_6 k_7 k_1} \Omega^{13}_{k_8 k_3 k_4 k_2} \Omega^{04}_{k_8 k_5 k_6 k_7} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon_{k_1}^{k_3 k_4 k_5 k_6 k_7}} e^{-\tau_2 \epsilon_{k_2 k_3 k_4}^{k_8}} e^{-\tau_3 \epsilon_{k_5 k_6 k_7 k_8}}$$
$$= \frac{-(-1)^3}{(2!)(3!)} \sum_{k_i} \frac{O^{20}_{k_1 k_2} \Omega^{51}_{k_3 k_4 k_5 k_6 k_7 k_1} \Omega^{13}_{k_8 k_3 k_4 k_2} \Omega^{04}_{k_8 k_5 k_6 k_7}}{\epsilon_{k_1 k_2}\ \epsilon_{k_2 k_3 k_4 k_5 k_6 k_7}\ \epsilon_{k_5 k_6 k_7 k_8}} \tag{520}$$



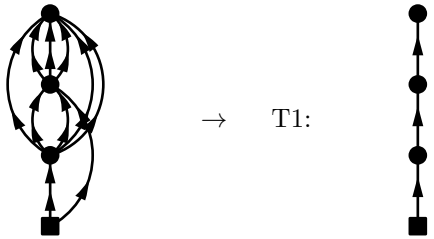
$\rightarrow$ T1:

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{521}$$

$$a_1 = \epsilon_{k_1}^{k_3 k_4 k_5 k_6 k_7}$$
$$a_2 = \epsilon_{k_2 k_3 k_4}^{k_8}$$
$$a_3 = \epsilon_{k_5 k_6 k_7 k_8}$$

Diagram 259:

$$\text{PO3.259} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{51}_{k_3 k_4 k_5 k_6 k_7 k_1} \Omega^{33}_{k_8 k_9 k_{10} k_3 k_4 k_2} \Omega^{06}_{k_8 k_9 k_{10} k_5 k_6 k_7} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon_{k_1}^{k_3 k_4 k_5 k_6 k_7}} e^{-\tau_2 \epsilon_{k_2 k_3 k_4}^{k_8 k_9 k_{10}}} e^{-\tau_3 \epsilon_{k_5 k_6 k_7 k_8 k_9 k_{10}}}$$
$$= \frac{-(-1)^3}{(2!)(3!)^2} \sum_{k_i} \frac{O^{20}_{k_1 k_2} \Omega^{51}_{k_3 k_4 k_5 k_6 k_7 k_1} \Omega^{33}_{k_8 k_9 k_{10} k_3 k_4 k_2} \Omega^{06}_{k_8 k_9 k_{10} k_5 k_6 k_7}}{\epsilon_{k_1 k_2}\ \epsilon_{k_2 k_3 k_4 k_5 k_6 k_7}\ \epsilon_{k_5 k_6 k_7 k_8 k_9 k_{10}}} \tag{522}$$

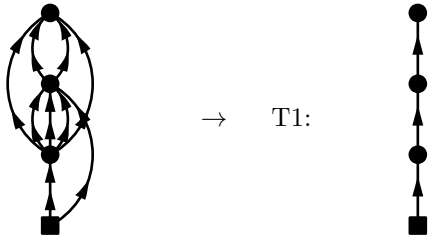


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{523}$$

$$\begin{aligned} a_1 &= \epsilon^{k_3k_4k_5k_6k_7}_{k_1} \\ a_2 &= \epsilon^{k_8k_9k_{10}}_{k_2k_3k_4} \\ a_3 &= \epsilon_{k_5k_6k_7k_8k_9k_{10}} \end{aligned}$$

Diagram 260:

$$\begin{aligned} \text{PO3.260} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{20}_{k_1k_2} \Omega^{51}_{k_3k_4k_5k_6k_7k_1} \Omega^{24}_{k_8k_9k_3k_4k_5k_2} \Omega^{04}_{k_8k_9k_6k_7} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_3k_4k_5k_6k_7}_{k_1}} e^{-\tau_2\epsilon^{k_8k_9}_{k_2k_3k_4k_5}} e^{-\tau_3\epsilon_{k_6k_7k_8k_9}} \\ &= \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} \frac{O^{20}_{k_1k_2} \Omega^{51}_{k_3k_4k_5k_6k_7k_1} \Omega^{24}_{k_8k_9k_3k_4k_5k_2} \Omega^{04}_{k_8k_9k_6k_7}}{\epsilon_{k_1k_2}\ \epsilon_{k_2k_3k_4k_5k_6k_7}\ \epsilon_{k_6k_7k_8k_9}} \end{aligned} \tag{524}$$

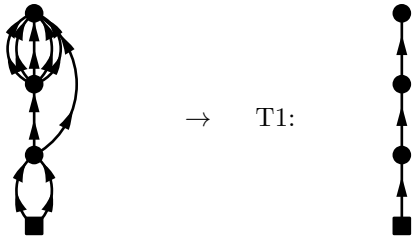


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{525}$$

$$a_1 = \epsilon^{k_3 k_4 k_5 k_6 k_7}_{k_1}$$
$$a_2 = \epsilon^{k_8 k_9}_{k_2 k_3 k_4 k_5}$$
$$a_3 = \epsilon_{k_6 k_7 k_8 k_9}$$

Diagram 261:

$$\text{PO3.261} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(5!)} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{22}_{k_3 k_4 k_1 k_2} \Omega^{51}_{k_5 k_6 k_7 k_8 k_9 k_3} \Omega^{06}_{k_5 k_6 k_7 k_8 k_9 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_3 k_4}_{k_1 k_2}} e^{-\tau_2 \epsilon^{k_5 k_6 k_7 k_8 k_9}_{k_3}} e^{-\tau_3 \epsilon_{k_4 k_5 k_6 k_7 k_8 k_9}}$$
$$= \frac{(-1)^3}{(2!)(5!)} \sum_{k_i} \frac{O^{20}_{k_1 k_2} \Omega^{22}_{k_3 k_4 k_1 k_2} \Omega^{51}_{k_5 k_6 k_7 k_8 k_9 k_3} \Omega^{06}_{k_5 k_6 k_7 k_8 k_9 k_4}}{\epsilon_{k_1 k_2}\ \epsilon_{k_3 k_4}\ \epsilon_{k_4 k_5 k_6 k_7 k_8 k_9}} \tag{526}$$



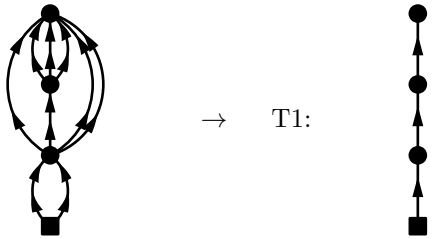
$\rightarrow$ T1:

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{527}$$

$$a_1 = \epsilon^{k_3 k_4}_{k_1 k_2}$$
$$a_2 = \epsilon^{k_5 k_6 k_7 k_8 k_9}_{k_3}$$
$$a_3 = \epsilon_{k_4 k_5 k_6 k_7 k_8 k_9}$$

Diagram 262:

$$\text{PO3.262} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{42}_{k_3 k_4 k_5 k_6 k_1 k_2} \Omega^{31}_{k_7 k_8 k_9 k_3} \Omega^{06}_{k_7 k_8 k_9 k_4 k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_3 k_4 k_5 k_6}_{k_1 k_2}} e^{-\tau_2 \epsilon^{k_7 k_8 k_9}_{k_3}} e^{-\tau_3 \epsilon_{k_4 k_5 k_6 k_7 k_8 k_9}}$$
$$= \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} \frac{O^{20}_{k_1 k_2} \Omega^{42}_{k_3 k_4 k_5 k_6 k_1 k_2} \Omega^{31}_{k_7 k_8 k_9 k_3} \Omega^{06}_{k_7 k_8 k_9 k_4 k_5 k_6}}{\epsilon_{k_1 k_2}\ \epsilon_{k_3 k_4 k_5 k_6}\ \epsilon_{k_4 k_5 k_6 k_7 k_8 k_9}} \tag{528}$$



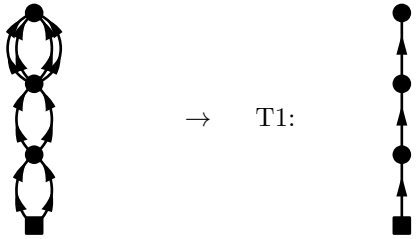
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{529}$$

$$\begin{aligned} a_1 &= \epsilon^{k_3k_4k_5k_6}_{k_1k_2} \\ a_2 &= \epsilon^{k_7k_8k_9}_{k_3} \\ a_3 &= \epsilon_{k_4k_5k_6k_7k_8k_9} \end{aligned}$$

Diagram 263:

$$\begin{aligned} \mathrm{PO3.263} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(4!)} \sum_{k_i} O^{20}_{k_1k_2}\Omega^{22}_{k_3k_4k_1k_2}\Omega^{42}_{k_5k_6k_7k_8k_3k_4}\Omega^{04}_{k_5k_6k_7k_8} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2)e^{-\tau_1\epsilon^{k_3k_4}_{k_1k_2}}e^{-\tau_2\epsilon^{k_5k_6k_7k_8}_{k_3k_4}}e^{-\tau_3\epsilon_{k_5k_6k_7k_8}} \\ &= \frac{(-1)^3}{(2!)^2(4!)} \sum_{k_i} \frac{O^{20}_{k_1k_2}\Omega^{22}_{k_3k_4k_1k_2}\Omega^{42}_{k_5k_6k_7k_8k_3k_4}\Omega^{04}_{k_5k_6k_7k_8}}{\epsilon_{k_1k_2}\ \epsilon_{k_3k_4}\ \epsilon_{k_5k_6k_7k_8}} \end{aligned} \tag{530}$$



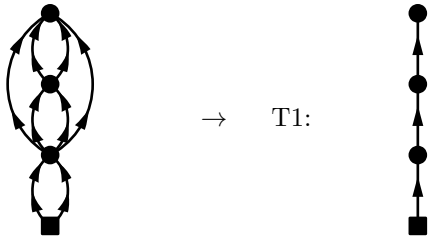
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{531}$$

$$a_1 = \epsilon^{k_3k_4}_{k_1k_2}$$
$$a_2 = \epsilon^{k_5k_6k_7k_8}_{k_3k_4}$$
$$a_3 = \epsilon_{k_5k_6k_7k_8}$$

Diagram 264:

$$\text{PO3.264} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^4} \sum_{k_i} O^{20}_{k_1k_2} \Omega^{42}_{k_3k_4k_5k_6k_1k_2} \Omega^{22}_{k_7k_8k_3k_4} \Omega^{04}_{k_7k_8k_5k_6} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_3k_4k_5k_6}_{k_1k_2}} e^{-\tau_2\epsilon^{k_7k_8}_{k_3k_4}} e^{-\tau_3\epsilon_{k_5k_6k_7k_8}}$$
$$= \frac{(-1)^3}{(2!)^4} \sum_{k_i} \frac{O^{20}_{k_1k_2} \Omega^{42}_{k_3k_4k_5k_6k_1k_2} \Omega^{22}_{k_7k_8k_3k_4} \Omega^{04}_{k_7k_8k_5k_6}}{\epsilon_{k_1k_2}\ \epsilon_{k_3k_4k_5k_6}\ \epsilon_{k_5k_6k_7k_8}} \tag{532}$$



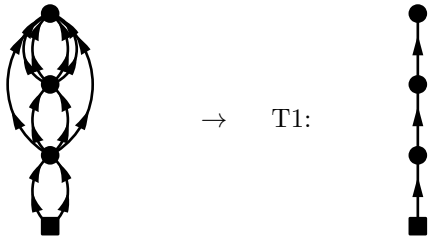
$\to$ T1:

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{533}$$

$$a_1 = \epsilon^{k_3k_4k_5k_6}_{k_1k_2}$$
$$a_2 = \epsilon^{k_7k_8}_{k_3k_4}$$
$$a_3 = \epsilon_{k_5k_6k_7k_8}$$

Diagram 265:

$$\text{PO3.265} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^3(4!)} \sum_{k_i} O^{20}_{k_1k_2} \Omega^{42}_{k_3k_4k_5k_6k_1k_2} \Omega^{42}_{k_7k_8k_9k_{10}k_3k_4} \Omega^{06}_{k_7k_8k_9k_{10}k_5k_6} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_3k_4k_5k_6}_{k_1k_2}} e^{-\tau_2\epsilon^{k_7k_8k_9k_{10}}_{k_3k_4}} e^{-\tau_3\epsilon_{k_5k_6k_7k_8k_9k_{10}}}$$
$$= \frac{(-1)^3}{(2!)^3(4!)} \sum_{k_i} \frac{O^{20}_{k_1k_2} \Omega^{42}_{k_3k_4k_5k_6k_1k_2} \Omega^{42}_{k_7k_8k_9k_{10}k_3k_4} \Omega^{06}_{k_7k_8k_9k_{10}k_5k_6}}{\epsilon_{k_1k_2}\ \epsilon_{k_3k_4k_5k_6}\ \epsilon_{k_5k_6k_7k_8k_9k_{10}}} \tag{534}$$

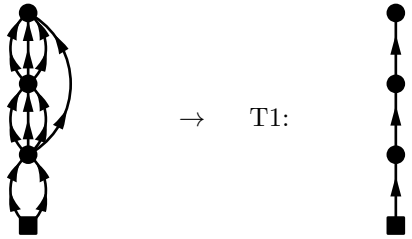


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{535}$$

$$\begin{aligned} a_1 &= \epsilon^{k_3k_4k_5k_6}_{k_1k_2} \\ a_2 &= \epsilon^{k_7k_8k_9k_{10}}_{k_3k_4} \\ a_3 &= \epsilon_{k_5k_6k_7k_8k_9k_{10}} \end{aligned}$$

Diagram 266:

$$\begin{aligned} \text{PO3.266} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{20}_{k_1k_2} \Omega^{42}_{k_3k_4k_5k_6k_1k_2} \Omega^{33}_{k_7k_8k_9k_3k_4k_5} \Omega^{04}_{k_7k_8k_9k_6} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_3k_4k_5k_6}_{k_1k_2}} e^{-\tau_2\epsilon^{k_7k_8k_9}_{k_3k_4k_5}} e^{-\tau_3\epsilon_{k_6k_7k_8k_9}} \\ &= \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} \frac{O^{20}_{k_1k_2} \Omega^{42}_{k_3k_4k_5k_6k_1k_2} \Omega^{33}_{k_7k_8k_9k_3k_4k_5} \Omega^{04}_{k_7k_8k_9k_6}}{\epsilon_{k_1k_2}\ \epsilon_{k_3k_4k_5k_6}\ \epsilon_{k_6k_7k_8k_9}} \end{aligned} \tag{536}$$



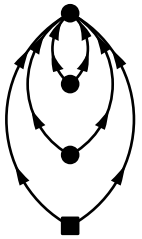
$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{537}$$

$$a_1 = \epsilon^{k_3 k_4 k_5 k_6}_{k_1 k_2}$$
$$a_2 = \epsilon^{k_7 k_8 k_9}_{k_3 k_4 k_5}$$
$$a_3 = \epsilon_{k_6 k_7 k_8 k_9}$$

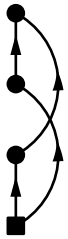
3.3 Three-body non-canonical diagrams

Diagram 267:

$$\begin{aligned}\text{PO3.267} &= \lim_{\tau\to\infty} \frac{(-1)^3}{2(2!)^3} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{20}_{k_3 k_4} \Omega^{20}_{k_5 k_6} \Omega^{06}_{k_5 k_6 k_3 k_4 k_1 k_2} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_3 k_4}} e^{-\tau_2 \epsilon^{k_5 k_6}} e^{-\tau_3 \epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}} \\ &= \frac{(-1)^3}{2(2!)^3} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{20}_{k_3 k_4} \Omega^{20}_{k_5 k_6} \Omega^{06}_{k_5 k_6 k_3 k_4 k_1 k_2} \left[\frac{1}{\epsilon_{k_1 k_2 k_5 k_6}\ \epsilon_{k_1 k_2}\ \epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}} + \frac{1}{\epsilon_{k_1 k_2}\ \epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}} \right] \end{aligned} \tag{538}$$



$\rightarrow$ T5:



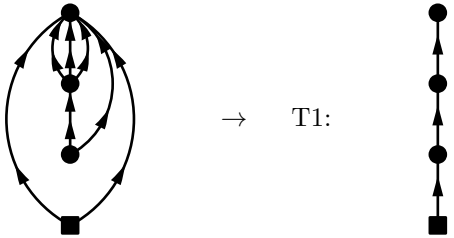
$$\text{T5} = \frac{1}{(a_1 + a_3)(a_2 + a_1 + a_3)a_3} + \frac{1}{(a_1 + a_2 + a_3)(a_2 + a_3)a_3} \tag{539}$$

$$a_1 = \epsilon^{k_3 k_4}$$
$$a_2 = \epsilon^{k_5 k_6}$$
$$a_3 = \epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}$$

Diagram 268:

$$\text{PO3.268} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} O^{20}_{k_1k_2}\Omega^{20}_{k_3k_4}\Omega^{31}_{k_5k_6k_7k_3}\Omega^{06}_{k_5k_6k_7k_4k_1k_2} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2)e^{-\tau_1\epsilon^{k_3k_4}}e^{-\tau_2\epsilon^{k_5k_6k_7}_{k_3}}e^{-\tau_3\epsilon_{k_1k_2k_4k_5k_6k_7}}$$

$$= \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} \frac{O^{20}_{k_1k_2}\Omega^{20}_{k_3k_4}\Omega^{31}_{k_5k_6k_7k_3}\Omega^{06}_{k_5k_6k_7k_4k_1k_2}}{\epsilon_{k_1k_2}\ \epsilon_{k_3k_1k_2k_4}\ \epsilon_{k_1k_2k_4k_5k_6k_7}} \tag{540}$$



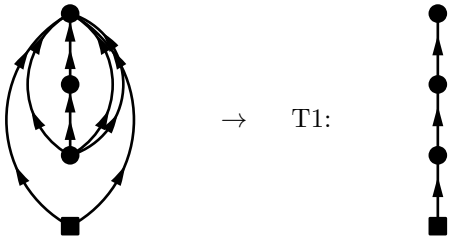
$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{541}$$

$$a_1 = \epsilon^{k_3k_4}$$
$$a_2 = \epsilon^{k_5k_6k_7}_{k_3}$$
$$a_3 = \epsilon_{k_1k_2k_4k_5k_6k_7}$$

Diagram 269:

$$\text{PO3.269} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} O^{20}_{k_1k_2}\Omega^{40}_{k_3k_4k_5k_6}\Omega^{11}_{k_7k_3}\Omega^{06}_{k_7k_4k_5k_6k_1k_2} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2)e^{-\tau_1\epsilon^{k_3k_4k_5k_6}}e^{-\tau_2\epsilon^{k_7}_{k_3}}e^{-\tau_3\epsilon_{k_1k_2k_4k_5k_6k_7}}$$

$$= \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} \frac{O^{20}_{k_1k_2}\Omega^{40}_{k_3k_4k_5k_6}\Omega^{11}_{k_7k_3}\Omega^{06}_{k_7k_4k_5k_6k_1k_2}}{\epsilon_{k_1k_2}\ \epsilon_{k_3k_1k_2k_4k_5k_6}\ \epsilon_{k_1k_2k_4k_5k_6k_7}} \tag{542}$$



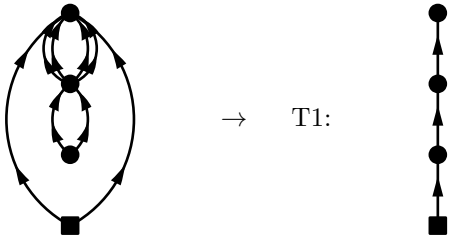
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{543}$$

$$\begin{aligned} a_1 &= \epsilon^{k_3k_4k_5k_6} \\ a_2 &= \epsilon^{k_7}_{k_3} \\ a_3 &= \epsilon_{k_1k_2k_4k_5k_6k_7} \end{aligned}$$

Diagram 270:

$$\begin{aligned} \mathrm{PO3.270} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(4!)} \sum_{k_i} O^{20}_{k_1k_2}\Omega^{20}_{k_3k_4}\Omega^{42}_{k_5k_6k_7k_8k_3k_4}\Omega^{06}_{k_5k_6k_7k_8k_1k_2} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2)e^{-\tau_1\epsilon^{k_3k_4}}e^{-\tau_2\epsilon^{k_5k_6k_7k_8}_{k_3k_4}}e^{-\tau_3\epsilon_{k_1k_2k_5k_6k_7k_8}} \\ &= \frac{(-1)^3}{(2!)^2(4!)} \sum_{k_i} \frac{O^{20}_{k_1k_2}\Omega^{20}_{k_3k_4}\Omega^{42}_{k_5k_6k_7k_8k_3k_4}\Omega^{06}_{k_5k_6k_7k_8k_1k_2}}{\epsilon_{k_1k_2}\ \epsilon_{k_3k_4k_1k_2}\ \epsilon_{k_1k_2k_5k_6k_7k_8}} \end{aligned} \tag{544}$$



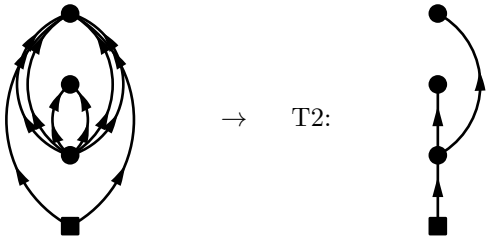
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{545}$$

$$a_1 = \epsilon^{k_3 k_4}$$
$$a_2 = \epsilon^{k_5 k_6 k_7 k_8}_{k_3 k_4}$$
$$a_3 = \epsilon_{k_1 k_2 k_5 k_6 k_7 k_8}$$

Diagram 271:

$$\text{PO3.271} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(4!)} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{60}_{k_3 k_4 k_5 k_6 k_7 k_8} \Omega^{02}_{k_3 k_4} \Omega^{06}_{k_5 k_6 k_7 k_8 k_1 k_2} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1) e^{-\tau_1 \epsilon^{k_3 k_4 k_5 k_6 k_7 k_8}} e^{-\tau_2 \epsilon_{k_3 k_4}} e^{-\tau_3 \epsilon_{k_1 k_2 k_5 k_6 k_7 k_8}}$$
$$= \frac{(-1)^3}{(2!)^2(4!)} \sum_{k_i} \frac{O^{20}_{k_1 k_2} \Omega^{60}_{k_3 k_4 k_5 k_6 k_7 k_8} \Omega^{02}_{k_3 k_4} \Omega^{06}_{k_5 k_6 k_7 k_8 k_1 k_2}}{\epsilon_{k_1 k_2}\ \epsilon_{k_3 k_4}\ \epsilon_{k_1 k_2 k_5 k_6 k_7 k_8}} \tag{546}$$

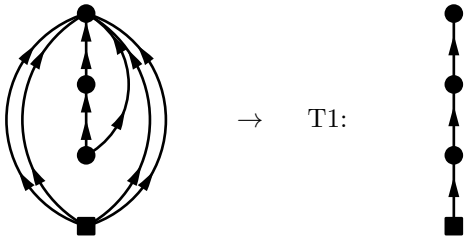


$$\text{T2} = \frac{1}{(a_1+a_2+a_3)a_2 a_3} \tag{547}$$

$$a_1 = \epsilon^{k_3 k_4 k_5 k_6 k_7 k_8}$$
$$a_2 = \epsilon_{k_3 k_4}$$
$$a_3 = \epsilon_{k_1 k_2 k_5 k_6 k_7 k_8}$$

Diagram 272:

$$\text{PO3.272} = \lim_{\tau\to\infty} \frac{(-1)^3}{(4!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{20}_{k_5 k_6} \Omega^{11}_{k_7 k_5} \Omega^{06}_{k_7 k_6 k_1 k_2 k_3 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5 k_6}} e^{-\tau_2 \epsilon^{k_7}_{k_5}} e^{-\tau_3 \epsilon_{k_1 k_2 k_3 k_4 k_6 k_7}}$$
$$= \frac{(-1)^3}{(4!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{20}_{k_5 k_6} \Omega^{11}_{k_7 k_5} \Omega^{06}_{k_7 k_6 k_1 k_2 k_3 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_5 k_1 k_2 k_3 k_4 k_6}\ \epsilon_{k_1 k_2 k_3 k_4 k_6 k_7}} \tag{548}$$

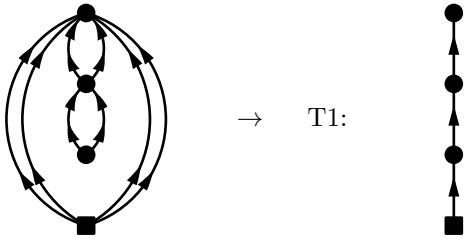


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{549}$$

$$\begin{aligned} a_1 &= \epsilon^{k_5k_6} \\ a_2 &= \epsilon^{k_7}_{k_5} \\ a_3 &= \epsilon_{k_1k_2k_3k_4k_6k_7} \end{aligned}$$

Diagram 273:

$$\begin{aligned} \text{PO3.273} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(4!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{20}_{k_5k_6} \Omega^{22}_{k_7k_8k_5k_6} \Omega^{06}_{k_7k_8k_1k_2k_3k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_5k_6}} e^{-\tau_2\epsilon^{k_7k_8}_{k_5k_6}} e^{-\tau_3\epsilon_{k_1k_2k_3k_4k_7k_8}} \\ &= \frac{(-1)^3}{(2!)^2(4!)} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{20}_{k_5k_6} \Omega^{22}_{k_7k_8k_5k_6} \Omega^{06}_{k_7k_8k_1k_2k_3k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_5k_6k_1k_2k_3k_4}\ \epsilon_{k_1k_2k_3k_4k_7k_8}} \end{aligned} \tag{550}$$

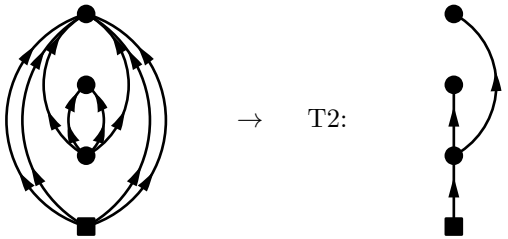


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{551}$$

$$a_1 = \epsilon^{k_5 k_6}$$
$$a_2 = \epsilon^{k_7 k_8}_{k_5 k_6}$$
$$a_3 = \epsilon_{k_1 k_2 k_3 k_4 k_7 k_8}$$

Diagram 274:

$$\text{PO3.274} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(4!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{40}_{k_5 k_6 k_7 k_8} \Omega^{02}_{k_5 k_6} \Omega^{06}_{k_7 k_8 k_1 k_2 k_3 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_1) e^{-\tau_1 \epsilon^{k_5 k_6 k_7 k_8}} e^{-\tau_2 \epsilon_{k_5 k_6}} e^{-\tau_3 \epsilon_{k_1 k_2 k_3 k_4 k_7 k_8}}$$
$$= \frac{(-1)^3}{(2!)^2(4!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{40}_{k_5 k_6 k_7 k_8} \Omega^{02}_{k_5 k_6} \Omega^{06}_{k_7 k_8 k_1 k_2 k_3 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_5 k_6}\ \epsilon_{k_1 k_2 k_3 k_4 k_7 k_8}} \tag{552}$$

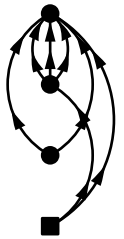


$$\text{T2} = \frac{1}{(a_1 + a_2 + a_3) a_2 a_3} \tag{553}$$

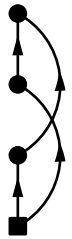
$$a_1 = \epsilon^{k_5 k_6 k_7 k_8}$$
$$a_2 = \epsilon_{k_5 k_6}$$
$$a_3 = \epsilon_{k_1 k_2 k_3 k_4 k_7 k_8}$$

Diagram 275:

$$\text{PO3.275} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{20}_{k_3 k_4} \Omega^{31}_{k_5 k_6 k_7 k_1} \Omega^{06}_{k_5 k_6 k_7 k_3 k_4 k_2} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_3 k_4}} e^{-\tau_2 \epsilon^{k_5 k_6 k_7}_{k_1}} e^{-\tau_3 \epsilon_{k_2 k_3 k_4 k_5 k_6 k_7}}$$
$$= \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{20}_{k_3 k_4} \Omega^{31}_{k_5 k_6 k_7 k_1} \Omega^{06}_{k_5 k_6 k_7 k_3 k_4 k_2} \left[\frac{1}{\epsilon_{k_2 k_5 k_6 k_7}\ \epsilon_{k_1 k_2}\ \epsilon_{k_2 k_3 k_4 k_5 k_6 k_7}} + \frac{1}{\epsilon_{k_1 k_2}\ \epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_2 k_3 k_4 k_5 k_6 k_7}} \right] \tag{554}$$



$\rightarrow$ T5:

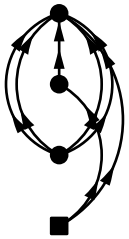


$$\mathrm{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{555}$$

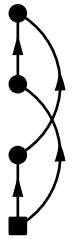
$$\begin{aligned} a_1 &= \epsilon^{k_3 k_4} \\ a_2 &= \epsilon^{k_5 k_6 k_7}_{k_1} \\ a_3 &= \epsilon_{k_2 k_3 k_4 k_5 k_6 k_7} \end{aligned}$$

Diagram 276:

$$\begin{aligned} \mathrm{PO3.276} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(4!)} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{40}_{k_3 k_4 k_5 k_6} \Omega^{11}_{k_7 k_1} \Omega^{06}_{k_7 k_3 k_4 k_5 k_6 k_2} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_3 k_4 k_5 k_6}} e^{-\tau_2 \epsilon^{k_7}_{k_1}} e^{-\tau_3 \epsilon_{k_2 k_3 k_4 k_5 k_6 k_7}} \\ &= \frac{(-1)^3}{(4!)} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{40}_{k_3 k_4 k_5 k_6} \Omega^{11}_{k_7 k_1} \Omega^{06}_{k_7 k_3 k_4 k_5 k_6 k_2} \left[\frac{1}{\epsilon_{k_2 k_7}\ \epsilon_{k_1 k_2}\ \epsilon_{k_2 k_3 k_4 k_5 k_6 k_7}} + \frac{1}{\epsilon_{k_1 k_2}\ \epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_2 k_3 k_4 k_5 k_6 k_7}} \right] \end{aligned} \tag{556}$$



$\rightarrow$ T5:

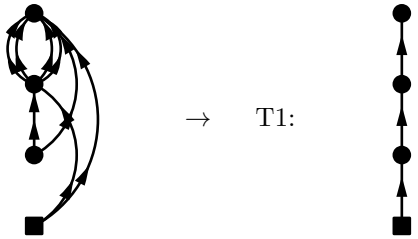


$$\mathrm{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{557}$$

$$a_1 = \epsilon^{k_3 k_4 k_5 k_6}$$
$$a_2 = \epsilon^{k_7}_{k_1}$$
$$a_3 = \epsilon_{k_2 k_3 k_4 k_5 k_6 k_7}$$

Diagram 277:

$$\text{PO3.277} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(4!)} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{20}_{k_3 k_4} \Omega^{42}_{k_5 k_6 k_7 k_8 k_3 k_1} \Omega^{06}_{k_5 k_6 k_7 k_8 k_4 k_2} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_3 k_4}} e^{-\tau_2 \epsilon^{k_5 k_6 k_7 k_8}_{k_1 k_3}} e^{-\tau_3 \epsilon_{k_2 k_4 k_5 k_6 k_7 k_8}}$$
$$= \frac{-(-1)^3}{(4!)} \sum_{k_i} \frac{O^{20}_{k_1 k_2} \Omega^{20}_{k_3 k_4} \Omega^{42}_{k_5 k_6 k_7 k_8 k_3 k_1} \Omega^{06}_{k_5 k_6 k_7 k_8 k_4 k_2}}{\epsilon_{k_1 k_2}\ \epsilon_{k_1 k_3 k_2 k_4}\ \epsilon_{k_2 k_4 k_5 k_6 k_7 k_8}} \tag{558}$$



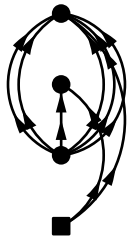
$\rightarrow$ T1:

$$\text{T1} = \frac{1}{(a_1 + a_2 + a_3)(a_2 + a_3)a_3} \tag{559}$$

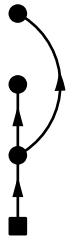
$$a_1 = \epsilon^{k_3 k_4}$$
$$a_2 = \epsilon^{k_5 k_6 k_7 k_8}_{k_1 k_3}$$
$$a_3 = \epsilon_{k_2 k_4 k_5 k_6 k_7 k_8}$$

Diagram 278:

$$\text{PO3.278} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(5!)} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{60}_{k_3 k_4 k_5 k_6 k_7 k_8} \Omega^{02}_{k_3 k_1} \Omega^{06}_{k_4 k_5 k_6 k_7 k_8 k_2} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_1) e^{-\tau_1 \epsilon^{k_3 k_4 k_5 k_6 k_7 k_8}} e^{-\tau_2 \epsilon_{k_1 k_3}} e^{-\tau_3 \epsilon_{k_2 k_4 k_5 k_6 k_7 k_8}}$$
$$= \frac{-(-1)^3}{(5!)} \sum_{k_i} \frac{O^{20}_{k_1 k_2} \Omega^{60}_{k_3 k_4 k_5 k_6 k_7 k_8} \Omega^{02}_{k_3 k_1} \Omega^{06}_{k_4 k_5 k_6 k_7 k_8 k_2}}{\epsilon_{k_1 k_2}\ \epsilon_{k_1 k_3}\ \epsilon_{k_2 k_4 k_5 k_6 k_7 k_8}} \tag{560}$$



$\rightarrow$ T2:

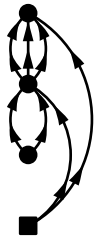


$$\mathrm{T2} = \frac{1}{(a_1+a_2+a_3)a_2a_3} \tag{561}$$

$$\begin{aligned} a_1 &= \epsilon^{k_3k_4k_5k_6k_7k_8} \\ a_2 &= \epsilon_{k_1k_3} \\ a_3 &= \epsilon_{k_2k_4k_5k_6k_7k_8} \end{aligned}$$

Diagram 279:

$$\begin{aligned} \mathrm{PO3.279} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} O^{20}_{k_1k_2}\Omega^{20}_{k_3k_4}\Omega^{33}_{k_5k_6k_7k_3k_4k_1}\Omega^{04}_{k_5k_6k_7k_2} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2)e^{-\tau_1\epsilon^{k_3k_4}}e^{-\tau_2\epsilon^{k_5k_6k_7}_{k_1k_3k_4}}e^{-\tau_3\epsilon_{k_2k_5k_6k_7}} \\ &= \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} \frac{O^{20}_{k_1k_2}\Omega^{20}_{k_3k_4}\Omega^{33}_{k_5k_6k_7k_3k_4k_1}\Omega^{04}_{k_5k_6k_7k_2}}{\epsilon_{k_1k_2}\ \epsilon_{k_1k_3k_4k_2}\ \epsilon_{k_2k_5k_6k_7}} \end{aligned} \tag{562}$$



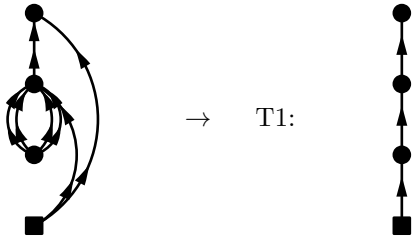
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{563}$$

$$a_1 = \epsilon^{k_3 k_4}$$
$$a_2 = \epsilon^{k_5 k_6 k_7}_{k_1 k_3 k_4}$$
$$a_3 = \epsilon_{k_2 k_5 k_6 k_7}$$

Diagram 280:

$$\text{PO3.280} = \lim_{\tau\to\infty} \frac{(-1)^3}{(4!)} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{40}_{k_3 k_4 k_5 k_6} \Omega^{15}_{k_7 k_3 k_4 k_5 k_6 k_1} \Omega^{02}_{k_7 k_2} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_3 k_4 k_5 k_6}} e^{-\tau_2 \epsilon^{k_7}_{k_1 k_3 k_4 k_5 k_6}} e^{-\tau_3 \epsilon_{k_2 k_7}}$$
$$= \frac{(-1)^3}{(4!)} \sum_{k_i} \frac{O^{20}_{k_1 k_2} \Omega^{40}_{k_3 k_4 k_5 k_6} \Omega^{15}_{k_7 k_3 k_4 k_5 k_6 k_1} \Omega^{02}_{k_7 k_2}}{\epsilon_{k_1 k_2}\ \epsilon_{k_1 k_3 k_4 k_5 k_6 k_2}\ \epsilon_{k_2 k_7}} \tag{564}$$



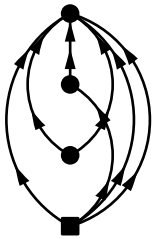
$\rightarrow$ T1:

$$\text{T1} = \frac{1}{(a_1 + a_2 + a_3)(a_2 + a_3)a_3} \tag{565}$$

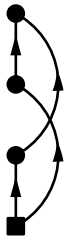
$$a_1 = \epsilon^{k_3 k_4 k_5 k_6}$$
$$a_2 = \epsilon^{k_7}_{k_1 k_3 k_4 k_5 k_6}$$
$$a_3 = \epsilon_{k_2 k_7}$$

Diagram 281:

$$\text{PO3.281} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{20}_{k_5 k_6} \Omega^{11}_{k_7 k_1} \Omega^{06}_{k_7 k_5 k_6 k_2 k_3 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_5 k_6}} e^{-\tau_2 \epsilon^{k_7}_{k_1}} e^{-\tau_3 \epsilon_{k_2 k_3 k_4 k_5 k_6 k_7}}$$
$$= \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{20}_{k_5 k_6} \Omega^{11}_{k_7 k_1} \Omega^{06}_{k_7 k_5 k_6 k_2 k_3 k_4} \left[\frac{1}{\epsilon_{k_2 k_3 k_4 k_7}\ \epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_2 k_3 k_4 k_5 k_6 k_7}} + \frac{1}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_2 k_3 k_4 k_5 k_6 k_7}} \right] \tag{566}$$



$\rightarrow$ T5:

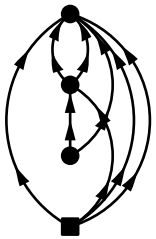


$$\mathrm{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{567}$$

$$\begin{aligned} a_1 &= \epsilon^{k_5 k_6} \\ a_2 &= \epsilon^{k_7}_{k_1} \\ a_3 &= \epsilon_{k_2 k_3 k_4 k_5 k_6 k_7} \end{aligned}$$

Diagram 282:

$$\begin{aligned} \mathrm{PO3.282} &= \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)(3!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{20}_{k_5 k_6} \Omega^{22}_{k_7 k_8 k_5 k_1} \Omega^{06}_{k_7 k_8 k_6 k_2 k_3 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5 k_6}} e^{-\tau_2 \epsilon^{k_7 k_8}_{k_1 k_5}} e^{-\tau_3 \epsilon_{k_2 k_3 k_4 k_6 k_7 k_8}} \\ &= \frac{-(-1)^3}{(2!)(3!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{20}_{k_5 k_6} \Omega^{22}_{k_7 k_8 k_5 k_1} \Omega^{06}_{k_7 k_8 k_6 k_2 k_3 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_1 k_5 k_2 k_3 k_4 k_6}\ \epsilon_{k_2 k_3 k_4 k_6 k_7 k_8}} \end{aligned} \tag{568}$$



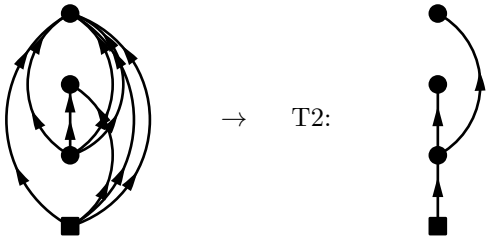
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{569}$$

$$a_1 = \epsilon^{k_5 k_6}$$
$$a_2 = \epsilon^{k_7 k_8}_{k_1 k_5}$$
$$a_3 = \epsilon_{k_2 k_3 k_4 k_6 k_7 k_8}$$

Diagram 283:

$$\text{PO3.283} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(3!)^2} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{40}_{k_5 k_6 k_7 k_8} \Omega^{02}_{k_5 k_1} \Omega^{06}_{k_6 k_7 k_8 k_2 k_3 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_1) e^{-\tau_1 \epsilon^{k_5 k_6 k_7 k_8}} e^{-\tau_2 \epsilon_{k_1 k_5}} e^{-\tau_3 \epsilon_{k_2 k_3 k_4 k_6 k_7 k_8}}$$
$$= \frac{-(-1)^3}{(3!)^2} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{40}_{k_5 k_6 k_7 k_8} \Omega^{02}_{k_5 k_1} \Omega^{06}_{k_6 k_7 k_8 k_2 k_3 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_1 k_5}\ \epsilon_{k_2 k_3 k_4 k_6 k_7 k_8}} \tag{570}$$

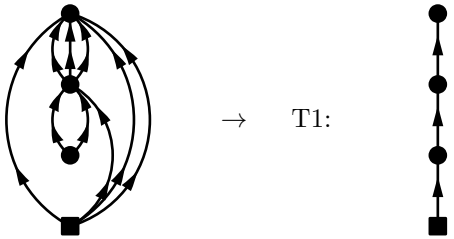


$$\text{T2} = \frac{1}{(a_1 + a_2 + a_3) a_2 a_3} \tag{571}$$

$$a_1 = \epsilon^{k_5 k_6 k_7 k_8}$$
$$a_2 = \epsilon_{k_1 k_5}$$
$$a_3 = \epsilon_{k_2 k_3 k_4 k_6 k_7 k_8}$$

Diagram 284:

$$\text{PO3.284} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{20}_{k_5 k_6} \Omega^{33}_{k_7 k_8 k_9 k_5 k_6 k_1} \Omega^{06}_{k_7 k_8 k_9 k_2 k_3 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_5 k_6}} e^{-\tau_2 \epsilon^{k_7 k_8 k_9}_{k_1 k_5 k_6}} e^{-\tau_3 \epsilon_{k_2 k_3 k_4 k_7 k_8 k_9}}$$
$$= \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{20}_{k_5 k_6} \Omega^{33}_{k_7 k_8 k_9 k_5 k_6 k_1} \Omega^{06}_{k_7 k_8 k_9 k_2 k_3 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_1 k_5 k_6 k_2 k_3 k_4}\ \epsilon_{k_2 k_3 k_4 k_7 k_8 k_9}} \tag{572}$$



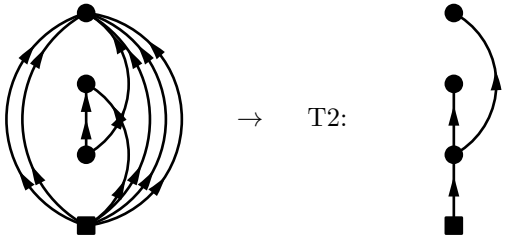
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{573}$$

$$\begin{aligned} a_1 &= \epsilon^{k_5 k_6} \\ a_2 &= \epsilon^{k_7 k_8 k_9}_{k_1 k_5 k_6} \\ a_3 &= \epsilon_{k_2 k_3 k_4 k_7 k_8 k_9} \end{aligned}$$

Diagram 285:

$$\begin{aligned} \mathrm{PO3.285} &= \lim_{\tau\to\infty} \frac{-(-1)^3}{(5!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{20}_{k_7 k_8} \Omega^{02}_{k_7 k_1} \Omega^{06}_{k_8 k_2 k_3 k_4 k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1) e^{-\tau_1 \epsilon^{k_7 k_8}} e^{-\tau_2 \epsilon_{k_1 k_7}} e^{-\tau_3 \epsilon_{k_2 k_3 k_4 k_5 k_6 k_8}} \\ &= \frac{-(-1)^3}{(5!)} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{20}_{k_7 k_8} \Omega^{02}_{k_7 k_1} \Omega^{06}_{k_8 k_2 k_3 k_4 k_5 k_6}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_1 k_7}\ \epsilon_{k_2 k_3 k_4 k_5 k_6 k_8}} \end{aligned} \tag{574}$$



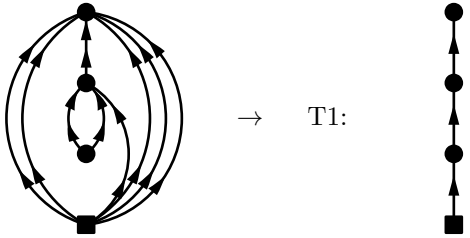
$\rightarrow$ T2:

$$\mathrm{T2} = \frac{1}{(a_1+a_2+a_3)a_2 a_3} \tag{575}$$

$$a_1 = \epsilon^{k_7 k_8}$$
$$a_2 = \epsilon_{k_1 k_7}$$
$$a_3 = \epsilon_{k_2 k_3 k_4 k_5 k_6 k_8}$$

Diagram 286:

$$\text{PO3.286} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(5!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{20}_{k_7 k_8} \Omega^{13}_{k_9 k_7 k_8 k_1} \Omega^{06}_{k_9 k_2 k_3 k_4 k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7 k_8}} e^{-\tau_2 \epsilon^{k_9}_{k_1 k_7 k_8}} e^{-\tau_3 \epsilon_{k_2 k_3 k_4 k_5 k_6 k_9}}$$
$$= \frac{(-1)^3}{(2!)(5!)} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{20}_{k_7 k_8} \Omega^{13}_{k_9 k_7 k_8 k_1} \Omega^{06}_{k_9 k_2 k_3 k_4 k_5 k_6}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_1 k_7 k_8 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_2 k_3 k_4 k_5 k_6 k_9}} \tag{576}$$

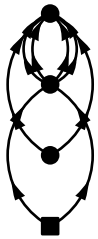


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{577}$$

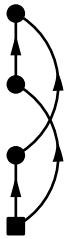
$$a_1 = \epsilon^{k_7 k_8}$$
$$a_2 = \epsilon^{k_9}_{k_1 k_7 k_8}$$
$$a_3 = \epsilon_{k_2 k_3 k_4 k_5 k_6 k_9}$$

Diagram 287:

$$\text{PO3.287} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(4!)} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{20}_{k_3 k_4} \Omega^{42}_{k_5 k_6 k_7 k_8 k_1 k_2} \Omega^{06}_{k_5 k_6 k_7 k_8 k_3 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_3 k_4}} e^{-\tau_2 \epsilon^{k_5 k_6 k_7 k_8}_{k_1 k_2}} e^{-\tau_3 \epsilon_{k_3 k_4 k_5 k_6 k_7 k_8}}$$
$$= \frac{(-1)^3}{(2!)^2(4!)} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{20}_{k_3 k_4} \Omega^{42}_{k_5 k_6 k_7 k_8 k_1 k_2} \Omega^{06}_{k_5 k_6 k_7 k_8 k_3 k_4} \left[\frac{1}{\epsilon_{k_5 k_6 k_7 k_8}\ \epsilon_{k_1 k_2}\ \epsilon_{k_3 k_4 k_5 k_6 k_7 k_8}} + \frac{1}{\epsilon_{k_1 k_2}\ \epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_3 k_4 k_5 k_6 k_7 k_8}} \right] \tag{578}$$



$\rightarrow$ T5:

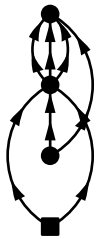


$$\mathrm{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{579}$$

$$\begin{aligned} a_1 &= \epsilon^{k_3k_4} \\ a_2 &= \epsilon^{k_5k_6k_7k_8}_{k_1k_2} \\ a_3 &= \epsilon_{k_3k_4k_5k_6k_7k_8} \end{aligned}$$

Diagram 288:

$$\begin{aligned} \mathrm{PO3.288} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} O^{20}_{k_1k_2}\Omega^{20}_{k_3k_4}\Omega^{33}_{k_5k_6k_7k_3k_1k_2}\Omega^{04}_{k_5k_6k_7k_4} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2)e^{-\tau_1\epsilon^{k_3k_4}}e^{-\tau_2\epsilon^{k_5k_6k_7}_{k_1k_2k_3}}e^{-\tau_3\epsilon_{k_4k_5k_6k_7}} \\ &= \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} \frac{O^{20}_{k_1k_2}\Omega^{20}_{k_3k_4}\Omega^{33}_{k_5k_6k_7k_3k_1k_2}\Omega^{04}_{k_5k_6k_7k_4}}{\epsilon_{k_1k_2}\ \epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_4k_5k_6k_7}} \end{aligned} \tag{580}$$



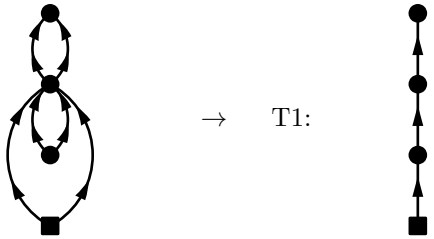
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{581}$$

$$a_1 = \epsilon^{k_3 k_4}$$
$$a_2 = \epsilon^{k_5 k_6 k_7}_{k_1 k_2 k_3}$$
$$a_3 = \epsilon_{k_4 k_5 k_6 k_7}$$

Diagram 289:

$$\text{PO3.289} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^3} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{20}_{k_3 k_4} \Omega^{24}_{k_5 k_6 k_3 k_4 k_1 k_2} \Omega^{02}_{k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_3 k_4}} e^{-\tau_2 \epsilon^{k_5 k_6}_{k_1 k_2 k_3 k_4}} e^{-\tau_3 \epsilon_{k_5 k_6}}$$
$$= \frac{(-1)^3}{(2!)^3} \sum_{k_i} \frac{O^{20}_{k_1 k_2} \Omega^{20}_{k_3 k_4} \Omega^{24}_{k_5 k_6 k_3 k_4 k_1 k_2} \Omega^{02}_{k_5 k_6}}{\epsilon_{k_1 k_2}\ \epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_5 k_6}} \tag{582}$$



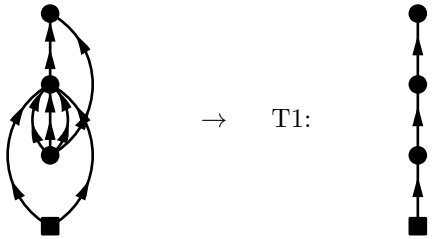
$\to$ T1:

$$\text{T1} = \frac{1}{(a_1 + a_2 + a_3)(a_2 + a_3)a_3} \tag{583}$$

$$a_1 = \epsilon^{k_3 k_4}$$
$$a_2 = \epsilon^{k_5 k_6}_{k_1 k_2 k_3 k_4}$$
$$a_3 = \epsilon_{k_5 k_6}$$

Diagram 290:

$$\text{PO3.290} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{40}_{k_3 k_4 k_5 k_6} \Omega^{15}_{k_7 k_3 k_4 k_5 k_1 k_2} \Omega^{02}_{k_7 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_3 k_4 k_5 k_6}} e^{-\tau_2 \epsilon^{k_7}_{k_1 k_2 k_3 k_4 k_5}} e^{-\tau_3 \epsilon_{k_6 k_7}}$$
$$= \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} \frac{O^{20}_{k_1 k_2} \Omega^{40}_{k_3 k_4 k_5 k_6} \Omega^{15}_{k_7 k_3 k_4 k_5 k_1 k_2} \Omega^{02}_{k_7 k_6}}{\epsilon_{k_1 k_2}\ \epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_6 k_7}} \tag{584}$$



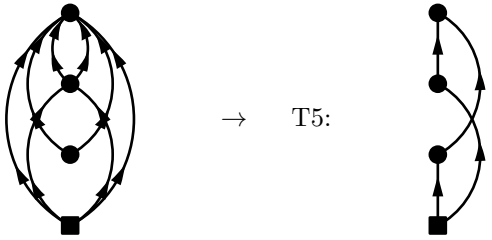
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{585}$$

$$\begin{aligned} a_1 &= \epsilon^{k_3k_4k_5k_6} \\ a_2 &= \epsilon^{k_7}_{k_1k_2k_3k_4k_5} \\ a_3 &= \epsilon_{k_6k_7} \end{aligned}$$

Diagram 291:

$$\begin{aligned} \mathrm{PO3.291} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^4} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{20}_{k_5k_6} \Omega^{22}_{k_7k_8k_1k_2} \Omega^{06}_{k_7k_8k_5k_6k_3k_4} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_5k_6}} e^{-\tau_2\epsilon^{k_7k_8}_{k_1k_2}} e^{-\tau_3\epsilon_{k_3k_4k_5k_6k_7k_8}} \\ &= \frac{(-1)^3}{(2!)^4} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{20}_{k_5k_6} \Omega^{22}_{k_7k_8k_1k_2} \Omega^{06}_{k_7k_8k_5k_6k_3k_4} \left[\frac{1}{\epsilon_{k_3k_4k_7k_8}\ \epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_3k_4k_5k_6k_7k_8}} + \frac{1}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_3k_4k_5k_6k_7k_8}} \right] \end{aligned} \tag{586}$$



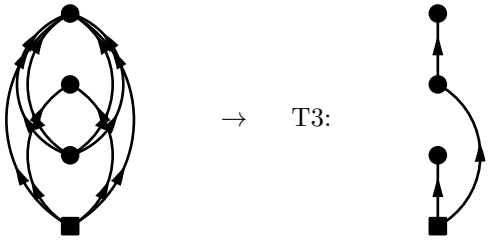
$\rightarrow$ T5:

$$\mathrm{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{587}$$

$$a_1 = \epsilon^{k_5 k_6}$$
$$a_2 = \epsilon^{k_7 k_8}_{k_1 k_2}$$
$$a_3 = \epsilon_{k_3 k_4 k_5 k_6 k_7 k_8}$$

Diagram 292:

$$\text{PO3.292} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(4!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{40}_{k_5 k_6 k_7 k_8} \Omega^{02}_{k_1 k_2} \Omega^{06}_{k_5 k_6 k_7 k_8 k_3 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3 - \tau_1) e^{-\tau_1 \epsilon^{k_5 k_6 k_7 k_8}} e^{-\tau_2 \epsilon_{k_1 k_2}} e^{-\tau_3 \epsilon_{k_3 k_4 k_5 k_6 k_7 k_8}}$$
$$= \frac{(-1)^3}{(2!)^2(4!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{40}_{k_5 k_6 k_7 k_8} \Omega^{02}_{k_1 k_2} \Omega^{06}_{k_5 k_6 k_7 k_8 k_3 k_4}}{\epsilon^{k_5 k_6 k_7 k_8}\ \epsilon_{k_1 k_2 k_3 k_4 k_5 k_6 k_7 k_8}\ \epsilon_{k_3 k_4 k_5 k_6 k_7 k_8}} \tag{588}$$

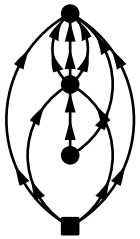


$$\text{T3} = \frac{1}{a_1(a_2 + a_3)a_3} \tag{589}$$

$$a_1 = \epsilon^{k_5 k_6 k_7 k_8}$$
$$a_2 = \epsilon_{k_1 k_2}$$
$$a_3 = \epsilon_{k_3 k_4 k_5 k_6 k_7 k_8}$$

Diagram 293:

$$\text{PO3.293} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{20}_{k_5 k_6} \Omega^{33}_{k_7 k_8 k_9 k_5 k_1 k_2} \Omega^{06}_{k_7 k_8 k_9 k_6 k_3 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_5 k_6}} e^{-\tau_2 \epsilon^{k_7 k_8 k_9}_{k_1 k_2 k_5}} e^{-\tau_3 \epsilon_{k_3 k_4 k_6 k_7 k_8 k_9}}$$
$$= \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{20}_{k_5 k_6} \Omega^{33}_{k_7 k_8 k_9 k_5 k_1 k_2} \Omega^{06}_{k_7 k_8 k_9 k_6 k_3 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_1 k_2 k_5 k_3 k_4 k_6}\ \epsilon_{k_3 k_4 k_6 k_7 k_8 k_9}} \tag{590}$$



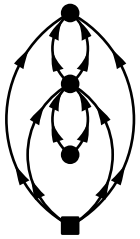
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{591}$$

$$\begin{aligned} a_1 &= \epsilon^{k_5k_6} \\ a_2 &= \epsilon^{k_7k_8k_9}_{k_1k_2k_5} \\ a_3 &= \epsilon_{k_3k_4k_6k_7k_8k_9} \end{aligned}$$

Diagram 294:

$$\begin{aligned} \mathrm{PO3.294} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^4} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{20}_{k_5k_6} \Omega^{24}_{k_7k_8k_5k_6k_1k_2} \Omega^{04}_{k_7k_8k_3k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5k_6}} e^{-\tau_2 \epsilon^{k_7k_8}_{k_1k_2k_5k_6}} e^{-\tau_3 \epsilon_{k_3k_4k_7k_8}} \\ &= \frac{(-1)^3}{(2!)^4} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{20}_{k_5k_6} \Omega^{24}_{k_7k_8k_5k_6k_1k_2} \Omega^{04}_{k_7k_8k_3k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_1k_2k_5k_6k_3k_4}\ \epsilon_{k_3k_4k_7k_8}} \end{aligned} \tag{592}$$



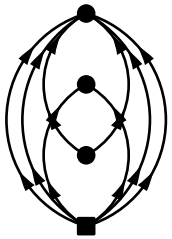
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{593}$$

$$a_1 = \epsilon^{k_5 k_6}$$
$$a_2 = \epsilon^{k_7 k_8}_{k_1 k_2 k_5 k_6}$$
$$a_3 = \epsilon_{k_3 k_4 k_7 k_8}$$

Diagram 295:

$$\text{PO3.295} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(4!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{20}_{k_7 k_8} \Omega^{02}_{k_1 k_2} \Omega^{06}_{k_7 k_8 k_3 k_4 k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3 - \tau_1) e^{-\tau_1 \epsilon^{k_7 k_8}} e^{-\tau_2 \epsilon_{k_1 k_2}} e^{-\tau_3 \epsilon_{k_3 k_4 k_5 k_6 k_7 k_8}}$$
$$= \frac{(-1)^3}{(2!)^2(4!)} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{20}_{k_7 k_8} \Omega^{02}_{k_1 k_2} \Omega^{06}_{k_7 k_8 k_3 k_4 k_5 k_6}}{\epsilon^{k_7 k_8}\ \epsilon_{k_1 k_2}\ \epsilon_{k_1 k_2 k_3 k_4 k_5 k_6 k_7 k_8}} \tag{594}$$



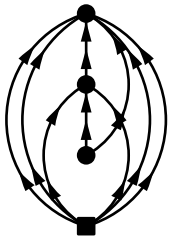
$\rightarrow$ T3:

$$\text{T3} = \frac{1}{a_1(a_2 + a_3)a_3} \tag{595}$$

$$a_1 = \epsilon^{k_7 k_8}$$
$$a_2 = \epsilon_{k_3 k_4 k_5 k_6 k_7 k_8}$$
$$a_3 = \epsilon_{k_1 k_2}$$

Diagram 296:

$$\text{PO3.296} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(4!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{20}_{k_7 k_8} \Omega^{13}_{k_9 k_7 k_1 k_2} \Omega^{06}_{k_9 k_8 k_3 k_4 k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_7 k_8}} e^{-\tau_2 \epsilon^{k_9}_{k_1 k_2 k_7}} e^{-\tau_3 \epsilon_{k_3 k_4 k_5 k_6 k_8 k_9}}$$
$$= \frac{(-1)^3}{(2!)(4!)} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{20}_{k_7 k_8} \Omega^{13}_{k_9 k_7 k_1 k_2} \Omega^{06}_{k_9 k_8 k_3 k_4 k_5 k_6}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_1 k_2 k_7 k_3 k_4 k_5 k_6 k_8}\ \epsilon_{k_3 k_4 k_5 k_6 k_8 k_9}} \tag{596}$$



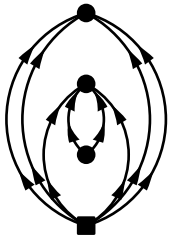
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1 + a_2 + a_3)(a_2 + a_3)a_3} \tag{597}$$

$$\begin{aligned} a_1 &= \epsilon^{k_7 k_8} \\ a_2 &= \epsilon^{k_9}_{k_1 k_2 k_7} \\ a_3 &= \epsilon_{k_3 k_4 k_5 k_6 k_8 k_9} \end{aligned}$$

Diagram 297:

$$\begin{aligned} \mathrm{PO3.297} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(4!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{20}_{k_7 k_8} \Omega^{04}_{k_7 k_8 k_1 k_2} \Omega^{04}_{k_3 k_4 k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1) e^{-\tau_1 \epsilon^{k_7 k_8}} e^{-\tau_2 \epsilon_{k_1 k_2 k_7 k_8}} e^{-\tau_3 \epsilon_{k_3 k_4 k_5 k_6}} \\ &= \frac{(-1)^3}{(2!)^2(4!)} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{20}_{k_7 k_8} \Omega^{04}_{k_7 k_8 k_1 k_2} \Omega^{04}_{k_3 k_4 k_5 k_6}}{\epsilon^{k_7 k_8}\ \epsilon_{k_1 k_2 k_7 k_8 k_3 k_4 k_5 k_6}\ \epsilon_{k_3 k_4 k_5 k_6}} \end{aligned} \tag{598}$$



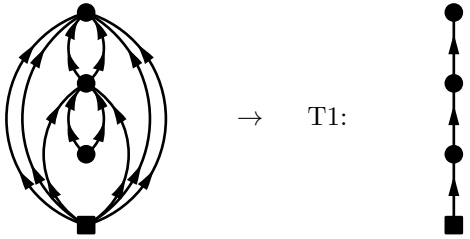
$\rightarrow$ T3:

$$\mathrm{T3} = \frac{1}{a_1(a_2 + a_3)a_3} \tag{599}$$

$$a_1 = \epsilon^{k_7 k_8}$$
$$a_2 = \epsilon_{k_1 k_2 k_7 k_8}$$
$$a_3 = \epsilon_{k_3 k_4 k_5 k_6}$$

Diagram 298:

$$\text{PO3.298} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^3(4!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{20}_{k_7k_8} \Omega^{24}_{k_9k_{10}k_7k_8k_1k_2} \Omega^{06}_{k_9k_{10}k_3k_4k_5k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7k_8}} e^{-\tau_2 \epsilon^{k_9k_{10}}_{k_1k_2k_7k_8}} e^{-\tau_3 \epsilon_{k_3k_4k_5k_6k_9k_{10}}}$$
$$= \frac{(-1)^3}{(2!)^3(4!)} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{20}_{k_7k_8} \Omega^{24}_{k_9k_{10}k_7k_8k_1k_2} \Omega^{06}_{k_9k_{10}k_3k_4k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_1k_2k_7k_8k_3k_4k_5k_6}\ \epsilon_{k_3k_4k_5k_6k_9k_{10}}} \tag{600}$$

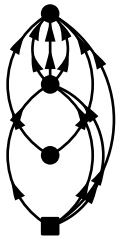


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{601}$$

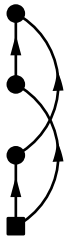
$$a_1 = \epsilon^{k_7 k_8}$$
$$a_2 = \epsilon^{k_9 k_{10}}_{k_1 k_2 k_7 k_8}$$
$$a_3 = \epsilon_{k_3 k_4 k_5 k_6 k_9 k_{10}}$$

Diagram 299:

$$\text{PO3.299} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{20}_{k_5k_6} \Omega^{33}_{k_7k_8k_9k_1k_2k_3} \Omega^{06}_{k_7k_8k_9k_5k_6k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5k_6}} e^{-\tau_2 \epsilon^{k_7k_8k_9}_{k_1k_2k_3}} e^{-\tau_3 \epsilon_{k_4k_5k_6k_7k_8k_9}}$$
$$= \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{20}_{k_5k_6} \Omega^{33}_{k_7k_8k_9k_1k_2k_3} \Omega^{06}_{k_7k_8k_9k_5k_6k_4} \left[\frac{1}{\epsilon_{k_4k_7k_8k_9}\ \epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_4k_5k_6k_7k_8k_9}} + \frac{1}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_4k_5k_6k_7k_8k_9}} \right] \tag{602}$$



$\rightarrow$ T5:

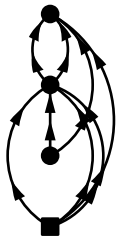


$$\mathrm{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{603}$$

$$\begin{aligned} a_1 &= \epsilon^{k_5 k_6} \\ a_2 &= \epsilon^{k_7 k_8 k_9}_{k_1 k_2 k_3} \\ a_3 &= \epsilon_{k_4 k_5 k_6 k_7 k_8 k_9} \end{aligned}$$

Diagram 300:

$$\begin{aligned} \mathrm{PO3.300} &= \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)(3!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{20}_{k_5k_6} \Omega^{24}_{k_7k_8k_5k_1k_2k_3} \Omega^{04}_{k_7k_8k_6k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5k_6}} e^{-\tau_2 \epsilon^{k_7k_8}_{k_1k_2k_3k_5}} e^{-\tau_3 \epsilon_{k_4k_6k_7k_8}} \\ &= \frac{-(-1)^3}{(2!)(3!)} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{20}_{k_5k_6} \Omega^{24}_{k_7k_8k_5k_1k_2k_3} \Omega^{04}_{k_7k_8k_6k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_1k_2k_3k_5k_4k_6}\ \epsilon_{k_4k_6k_7k_8}} \end{aligned} \tag{604}$$



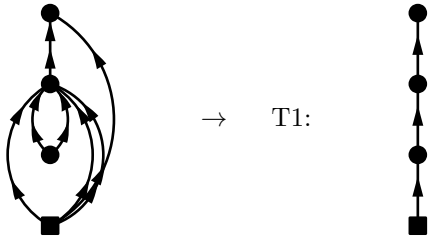
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{605}$$

$$a_1 = \epsilon^{k_5 k_6}$$
$$a_2 = \epsilon^{k_7 k_8}_{k_1 k_2 k_3 k_5}$$
$$a_3 = \epsilon_{k_4 k_6 k_7 k_8}$$

Diagram 301:

$$\text{PO3.301} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{20}_{k_5 k_6} \Omega^{15}_{k_7 k_5 k_6 k_1 k_2 k_3} \Omega^{02}_{k_7 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_5 k_6}} e^{-\tau_2 \epsilon^{k_7}_{k_1 k_2 k_3 k_5 k_6}} e^{-\tau_3 \epsilon_{k_4 k_7}}$$
$$= \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{20}_{k_5 k_6} \Omega^{15}_{k_7 k_5 k_6 k_1 k_2 k_3} \Omega^{02}_{k_7 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_1 k_2 k_3 k_5 k_6 k_4}\ \epsilon_{k_4 k_7}} \tag{606}$$

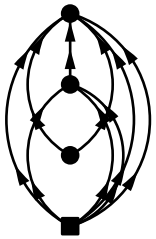


$$\text{T1} = \frac{1}{(a_1 + a_2 + a_3)(a_2 + a_3)a_3} \tag{607}$$

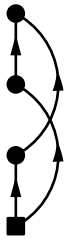
$$a_1 = \epsilon^{k_5 k_6}$$
$$a_2 = \epsilon^{k_7}_{k_1 k_2 k_3 k_5 k_6}$$
$$a_3 = \epsilon_{k_4 k_7}$$

Diagram 302:

$$\text{PO3.302} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{20}_{k_7 k_8} \Omega^{13}_{k_9 k_1 k_2 k_3} \Omega^{06}_{k_9 k_7 k_8 k_4 k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_7 k_8}} e^{-\tau_2 \epsilon^{k_9}_{k_1 k_2 k_3}} e^{-\tau_3 \epsilon_{k_4 k_5 k_6 k_7 k_8 k_9}}$$
$$= \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{20}_{k_7 k_8} \Omega^{13}_{k_9 k_1 k_2 k_3} \Omega^{06}_{k_9 k_7 k_8 k_4 k_5 k_6} \left[\frac{1}{\epsilon_{k_4 k_5 k_6 k_9}\ \epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_4 k_5 k_6 k_7 k_8 k_9}} + \frac{1}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_1 k_2 k_3 k_4 k_5 k_6 k_7 k_8}\ \epsilon_{k_4 k_5 k_6 k_7 k_8 k_9}} \right] \tag{608}$$



$\rightarrow$ T5:

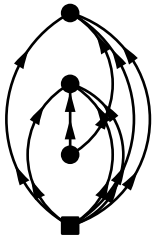


$$\text{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{609}$$

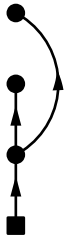
$$\begin{aligned} a_1 &= \epsilon^{k_7 k_8} \\ a_2 &= \epsilon^{k_9}_{k_1 k_2 k_3} \\ a_3 &= \epsilon_{k_4 k_5 k_6 k_7 k_8 k_9} \end{aligned}$$

Diagram 303:

$$\begin{aligned} \text{PO3.303} &= \lim_{\tau\to\infty} \frac{-(-1)^3}{2(3!)^2} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{20}_{k_7k_8} \Omega^{04}_{k_7k_1k_2k_3} \Omega^{04}_{k_8k_4k_5k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1) e^{-\tau_1 \epsilon^{k_7k_8}} e^{-\tau_2 \epsilon_{k_1k_2k_3k_7}} e^{-\tau_3 \epsilon_{k_4k_5k_6k_8}} \\ &= \frac{-(-1)^3}{2(3!)^2} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{20}_{k_7k_8} \Omega^{04}_{k_7k_1k_2k_3} \Omega^{04}_{k_8k_4k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_1k_2k_3k_7}\ \epsilon_{k_4k_5k_6k_8}} \end{aligned} \tag{610}$$



$\rightarrow$ T2:

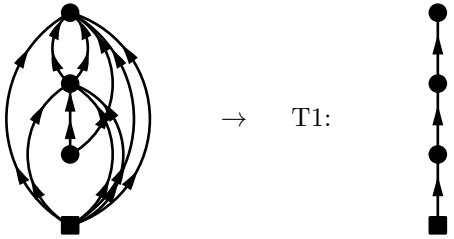


$$\text{T2} = \frac{1}{(a_1+a_2+a_3)a_2a_3} \tag{611}$$

$$a_1 = \epsilon^{k_7 k_8}$$
$$a_2 = \epsilon_{k_1 k_2 k_3 k_7}$$
$$a_3 = \epsilon_{k_4 k_5 k_6 k_8}$$

Diagram 304:

$$\text{PO3.304} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{20}_{k_7 k_8} \Omega^{24}_{k_9 k_{10} k_7 k_1 k_2 k_3} \Omega^{06}_{k_9 k_{10} k_8 k_4 k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7 k_8}} e^{-\tau_2 \epsilon^{k_9 k_{10}}_{k_1 k_2 k_3 k_7}} e^{-\tau_3 \epsilon_{k_4 k_5 k_6 k_8 k_9 k_{10}}}$$
$$= \frac{-(-1)^3}{(2!)(3!)^2} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{20}_{k_7 k_8} \Omega^{24}_{k_9 k_{10} k_7 k_1 k_2 k_3} \Omega^{06}_{k_9 k_{10} k_8 k_4 k_5 k_6}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_1 k_2 k_3 k_7 k_4 k_5 k_6 k_8}\ \epsilon_{k_4 k_5 k_6 k_8 k_9 k_{10}}} \tag{612}$$

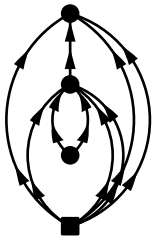


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{613}$$

$$a_1 = \epsilon^{k_7 k_8}$$
$$a_2 = \epsilon^{k_9 k_{10}}_{k_1 k_2 k_3 k_7}$$
$$a_3 = \epsilon_{k_4 k_5 k_6 k_8 k_9 k_{10}}$$

Diagram 305:

$$\text{PO3.305} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{20}_{k_7 k_8} \Omega^{15}_{k_9 k_7 k_8 k_1 k_2 k_3} \Omega^{04}_{k_9 k_4 k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7 k_8}} e^{-\tau_2 \epsilon^{k_9}_{k_1 k_2 k_3 k_7 k_8}} e^{-\tau_3 \epsilon_{k_4 k_5 k_6 k_9}}$$
$$= \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{20}_{k_7 k_8} \Omega^{15}_{k_9 k_7 k_8 k_1 k_2 k_3} \Omega^{04}_{k_9 k_4 k_5 k_6}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_1 k_2 k_3 k_7 k_8 k_4 k_5 k_6}\ \epsilon_{k_4 k_5 k_6 k_9}} \tag{614}$$



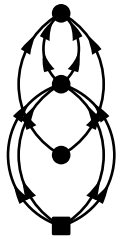
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{615}$$

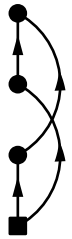
$$\begin{aligned} a_1 &= \epsilon^{k_7 k_8} \\ a_2 &= \epsilon^{k_9}_{k_1 k_2 k_3 k_7 k_8} \\ a_3 &= \epsilon_{k_4 k_5 k_6 k_9} \end{aligned}$$

Diagram 306:

$$\begin{aligned} \mathrm{PO3.306} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(4!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{20}_{k_5k_6} \Omega^{24}_{k_7k_8k_1k_2k_3k_4} \Omega^{04}_{k_7k_8k_5k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5k_6}} e^{-\tau_2 \epsilon^{k_7k_8}_{k_1k_2k_3k_4}} e^{-\tau_3 \epsilon_{k_5k_6k_7k_8}} \\ &= \frac{(-1)^3}{(2!)^2(4!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{20}_{k_5k_6} \Omega^{24}_{k_7k_8k_1k_2k_3k_4} \Omega^{04}_{k_7k_8k_5k_6} \left[\frac{1}{\epsilon_{k_7k_8}\ \epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_5k_6k_7k_8}} + \frac{1}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_5k_6k_7k_8}} \right] \end{aligned} \tag{616}$$



$\rightarrow$ T5:

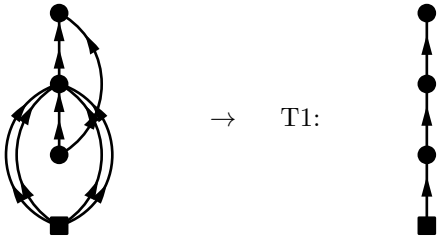


$$\mathrm{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{617}$$

$$a_1 = \epsilon^{k_5 k_6}$$
$$a_2 = \epsilon^{k_7 k_8}_{k_1 k_2 k_3 k_4}$$
$$a_3 = \epsilon_{k_5 k_6 k_7 k_8}$$

Diagram 307:

$$\text{PO3.307} = \lim_{\tau\to\infty} \frac{(-1)^3}{(4!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{20}_{k_5 k_6} \Omega^{15}_{k_7 k_5 k_1 k_2 k_3 k_4} \Omega^{02}_{k_7 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5 k_6}} e^{-\tau_2 \epsilon^{k_7}_{k_1 k_2 k_3 k_4 k_5}} e^{-\tau_3 \epsilon_{k_6 k_7}}$$
$$= \frac{(-1)^3}{(4!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{20}_{k_5 k_6} \Omega^{15}_{k_7 k_5 k_1 k_2 k_3 k_4} \Omega^{02}_{k_7 k_6}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_6 k_7}} \tag{618}$$



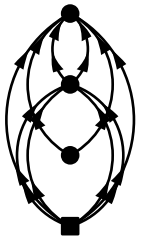
$\rightarrow$ T1:

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{619}$$

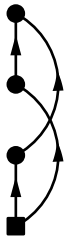
$$a_1 = \epsilon^{k_5 k_6}$$
$$a_2 = \epsilon^{k_7}_{k_1 k_2 k_3 k_4 k_5}$$
$$a_3 = \epsilon_{k_6 k_7}$$

Diagram 308:

$$\text{PO3.308} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^3(4!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{20}_{k_7 k_8} \Omega^{24}_{k_9 k_{10} k_1 k_2 k_3 k_4} \Omega^{06}_{k_9 k_{10} k_7 k_8 k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7 k_8}} e^{-\tau_2 \epsilon^{k_9 k_{10}}_{k_1 k_2 k_3 k_4}} e^{-\tau_3 \epsilon_{k_5 k_6 k_7 k_8 k_9 k_{10}}}$$
$$= \frac{(-1)^3}{(2!)^3(4!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{20}_{k_7 k_8} \Omega^{24}_{k_9 k_{10} k_1 k_2 k_3 k_4} \Omega^{06}_{k_9 k_{10} k_7 k_8 k_5 k_6} \left[\frac{1}{\epsilon_{k_5 k_6 k_9 k_{10}}\ \epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_5 k_6 k_7 k_8 k_9 k_{10}}} + \frac{1}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_1 k_2 k_3 k_4 k_5 k_6 k_7 k_8}\ \epsilon_{k_5 k_6 k_7 k_8 k_9 k_{10}}} \right] \tag{620}$$



$\rightarrow$ T5:

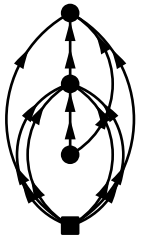


$$\mathrm{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{621}$$

$$\begin{aligned} a_1 &= \epsilon^{k_7 k_8} \\ a_2 &= \epsilon^{k_9 k_{10}}_{k_1 k_2 k_3 k_4} \\ a_3 &= \epsilon_{k_5 k_6 k_7 k_8 k_9 k_{10}} \end{aligned}$$

Diagram 309:

$$\begin{aligned} \mathrm{PO3.309} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(4!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{20}_{k_7k_8} \Omega^{15}_{k_9k_7k_1k_2k_3k_4} \Omega^{04}_{k_9k_8k_5k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7k_8}} e^{-\tau_2 \epsilon^{k_9}_{k_1k_2k_3k_4k_7}} e^{-\tau_3 \epsilon_{k_5k_6k_8k_9}} \\ &= \frac{(-1)^3}{(2!)(4!)} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{20}_{k_7k_8} \Omega^{15}_{k_9k_7k_1k_2k_3k_4} \Omega^{04}_{k_9k_8k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_1k_2k_3k_4k_7k_5k_6k_8}\ \epsilon_{k_5k_6k_8k_9}} \end{aligned} \tag{622}$$



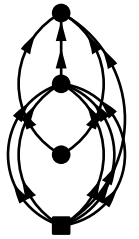
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{623}$$

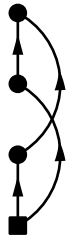
$$a_1 = \epsilon^{k_7 k_8}$$
$$a_2 = \epsilon^{k_9}_{k_1 k_2 k_3 k_4 k_7}$$
$$a_3 = \epsilon_{k_5 k_6 k_8 k_9}$$

Diagram 310:

$$\text{PO3.310} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(5!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{20}_{k_7 k_8} \Omega^{15}_{k_9 k_1 k_2 k_3 k_4 k_5} \Omega^{04}_{k_9 k_7 k_8 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7 k_8}} e^{-\tau_2 \epsilon^{k_9}_{k_1 k_2 k_3 k_4 k_5}} e^{-\tau_3 \epsilon_{k_6 k_7 k_8 k_9}}$$
$$= \frac{(-1)^3}{(2!)(5!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{20}_{k_7 k_8} \Omega^{15}_{k_9 k_1 k_2 k_3 k_4 k_5} \Omega^{04}_{k_9 k_7 k_8 k_6} \left[\frac{1}{\epsilon_{k_6 k_9}\ \epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_6 k_7 k_8 k_9}} + \frac{1}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_1 k_2 k_3 k_4 k_5 k_6 k_7 k_8}\ \epsilon_{k_6 k_7 k_8 k_9}} \right] \tag{624}$$



$\rightarrow$ T5:

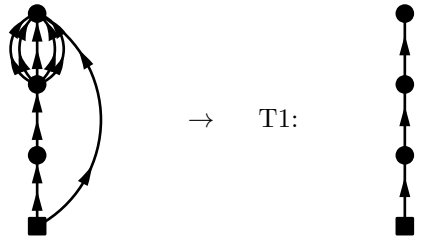


$$\text{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{625}$$

$$a_1 = \epsilon^{k_7 k_8}$$
$$a_2 = \epsilon^{k_9}_{k_1 k_2 k_3 k_4 k_5}$$
$$a_3 = \epsilon_{k_6 k_7 k_8 k_9}$$

Diagram 311:

$$\text{PO3.311} = \lim_{\tau\to\infty} \frac{(-1)^3}{(5!)} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{11}_{k_3 k_1} \Omega^{51}_{k_4 k_5 k_6 k_7 k_8 k_3} \Omega^{06}_{k_4 k_5 k_6 k_7 k_8 k_2} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_3}_{k_1}} e^{-\tau_2 \epsilon^{k_4 k_5 k_6 k_7 k_8}_{k_3}} e^{-\tau_3 \epsilon_{k_2 k_4 k_5 k_6 k_7 k_8}}$$
$$= \frac{(-1)^3}{(5!)} \sum_{k_i} \frac{O^{20}_{k_1 k_2} \Omega^{11}_{k_3 k_1} \Omega^{51}_{k_4 k_5 k_6 k_7 k_8 k_3} \Omega^{06}_{k_4 k_5 k_6 k_7 k_8 k_2}}{\epsilon_{k_1 k_2}\ \epsilon_{k_3 k_2}\ \epsilon_{k_2 k_4 k_5 k_6 k_7 k_8}} \tag{626}$$



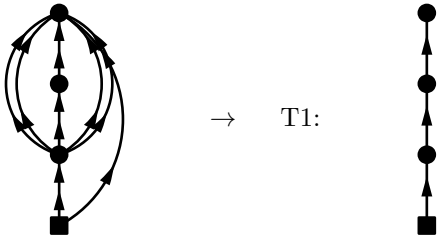
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{627}$$

$$\begin{aligned} a_1 &= \epsilon^{k_3}_{k_1} \\ a_2 &= \epsilon^{k_4 k_5 k_6 k_7 k_8}_{k_3} \\ a_3 &= \epsilon_{k_2 k_4 k_5 k_6 k_7 k_8} \end{aligned}$$

Diagram 312:

$$\begin{aligned} \mathrm{PO3.312} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(4!)} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{51}_{k_3 k_4 k_5 k_6 k_7 k_1} \Omega^{11}_{k_8 k_3} \Omega^{06}_{k_8 k_4 k_5 k_6 k_7 k_2} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_3 k_4 k_5 k_6 k_7}_{k_1}} e^{-\tau_2 \epsilon^{k_8}_{k_3}} e^{-\tau_3 \epsilon_{k_2 k_4 k_5 k_6 k_7 k_8}} \\ &= \frac{(-1)^3}{(4!)} \sum_{k_i} \frac{O^{20}_{k_1 k_2} \Omega^{51}_{k_3 k_4 k_5 k_6 k_7 k_1} \Omega^{11}_{k_8 k_3} \Omega^{06}_{k_8 k_4 k_5 k_6 k_7 k_2}}{\epsilon_{k_1 k_2}\ \epsilon_{k_3 k_2 k_4 k_5 k_6 k_7}\ \epsilon_{k_2 k_4 k_5 k_6 k_7 k_8}} \end{aligned} \tag{628}$$



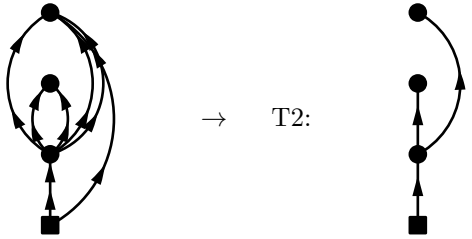
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{629}$$

$$a_1 = \epsilon_{k_1}^{k_3 k_4 k_5 k_6 k_7}$$
$$a_2 = \epsilon_{k_3}^{k_8}$$
$$a_3 = \epsilon_{k_2 k_4 k_5 k_6 k_7 k_8}$$

Diagram 313:

$$\text{PO3.313} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{51}_{k_3 k_4 k_5 k_6 k_7 k_1} \Omega^{02}_{k_3 k_4} \Omega^{04}_{k_5 k_6 k_7 k_2} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_1) e^{-\tau_1 \epsilon_{k_1}^{k_3 k_4 k_5 k_6 k_7}} e^{-\tau_2 \epsilon_{k_3 k_4}} e^{-\tau_3 \epsilon_{k_2 k_5 k_6 k_7}}$$
$$= \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} \frac{O^{20}_{k_1 k_2} \Omega^{51}_{k_3 k_4 k_5 k_6 k_7 k_1} \Omega^{02}_{k_3 k_4} \Omega^{04}_{k_5 k_6 k_7 k_2}}{\epsilon_{k_1 k_2}\ \epsilon_{k_3 k_4}\ \epsilon_{k_2 k_5 k_6 k_7}} \tag{630}$$

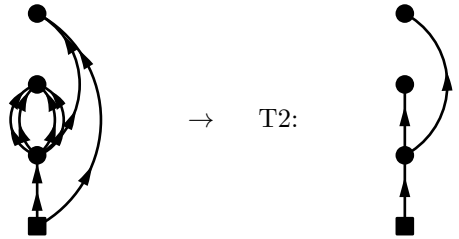


$$\text{T2} = \frac{1}{(a_1 + a_2 + a_3) a_2 a_3} \tag{631}$$

$$a_1 = \epsilon_{k_1}^{k_3 k_4 k_5 k_6 k_7}$$
$$a_2 = \epsilon_{k_3 k_4}$$
$$a_3 = \epsilon_{k_2 k_5 k_6 k_7}$$

Diagram 314:

$$\text{PO3.314} = \lim_{\tau\to\infty} \frac{(-1)^3}{(4!)} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{51}_{k_3 k_4 k_5 k_6 k_7 k_1} \Omega^{04}_{k_3 k_4 k_5 k_6} \Omega^{02}_{k_7 k_2} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_1) e^{-\tau_1 \epsilon_{k_1}^{k_3 k_4 k_5 k_6 k_7}} e^{-\tau_2 \epsilon_{k_3 k_4 k_5 k_6}} e^{-\tau_3 \epsilon_{k_2 k_7}}$$
$$= \frac{(-1)^3}{(4!)} \sum_{k_i} \frac{O^{20}_{k_1 k_2} \Omega^{51}_{k_3 k_4 k_5 k_6 k_7 k_1} \Omega^{04}_{k_3 k_4 k_5 k_6} \Omega^{02}_{k_7 k_2}}{\epsilon_{k_1 k_2}\ \epsilon_{k_3 k_4 k_5 k_6}\ \epsilon_{k_2 k_7}} \tag{632}$$



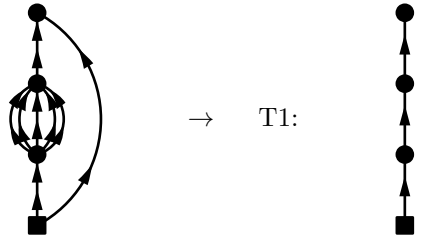
$\rightarrow$ T2:

$$\mathrm{T2} = \frac{1}{(a_1+a_2+a_3)a_2a_3} \tag{633}$$

$$\begin{aligned} a_1 &= \epsilon_{k_1}^{k_3k_4k_5k_6k_7} \\ a_2 &= \epsilon_{k_3k_4k_5k_6} \\ a_3 &= \epsilon_{k_2k_7} \end{aligned}$$

Diagram 315:

$$\begin{aligned} \mathrm{PO3.315} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(5!)} \sum_{k_i} O^{20}_{k_1k_2} \Omega^{51}_{k_3k_4k_5k_6k_7k_1} \Omega^{15}_{k_8k_3k_4k_5k_6k_7} \Omega^{02}_{k_8k_2} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon_{k_1}^{k_3k_4k_5k_6k_7}} e^{-\tau_2 \epsilon^{k_8}_{k_3k_4k_5k_6k_7}} e^{-\tau_3 \epsilon_{k_2k_8}} \\ &= \frac{(-1)^3}{(5!)} \sum_{k_i} \frac{O^{20}_{k_1k_2} \Omega^{51}_{k_3k_4k_5k_6k_7k_1} \Omega^{15}_{k_8k_3k_4k_5k_6k_7} \Omega^{02}_{k_8k_2}}{\epsilon_{k_1k_2}\ \epsilon_{k_3k_4k_5k_6k_7k_2}\ \epsilon_{k_2k_8}} \end{aligned} \tag{634}$$



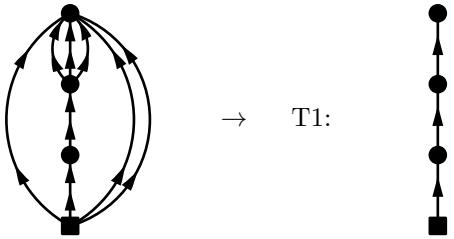
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{635}$$

$$a_1 = \epsilon_{k_1}^{k_3 k_4 k_5 k_6 k_7}$$
$$a_2 = \epsilon_{k_3 k_4 k_5 k_6 k_7}^{k_8}$$
$$a_3 = \epsilon_{k_2 k_8}$$

Diagram 316:

$$\text{PO3.316} = \lim_{\tau\to\infty} \frac{(-1)^3}{(3!)^2} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{11}_{k_5 k_1} \Omega^{31}_{k_6 k_7 k_8 k_5} \Omega^{06}_{k_6 k_7 k_8 k_2 k_3 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5}_{k_1}} e^{-\tau_2 \epsilon^{k_6 k_7 k_8}_{k_5}} e^{-\tau_3 \epsilon_{k_2 k_3 k_4 k_6 k_7 k_8}}$$
$$= \frac{(-1)^3}{(3!)^2} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{11}_{k_5 k_1} \Omega^{31}_{k_6 k_7 k_8 k_5} \Omega^{06}_{k_6 k_7 k_8 k_2 k_3 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_5 k_2 k_3 k_4}\ \epsilon_{k_2 k_3 k_4 k_6 k_7 k_8}} \tag{636}$$

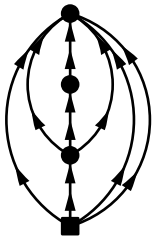


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{637}$$

$$a_1 = \epsilon_{k_1}^{k_5}$$
$$a_2 = \epsilon_{k_5}^{k_6 k_7 k_8}$$
$$a_3 = \epsilon_{k_2 k_3 k_4 k_6 k_7 k_8}$$

Diagram 317:

$$\text{PO3.317} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{31}_{k_5 k_6 k_7 k_1} \Omega^{11}_{k_8 k_5} \Omega^{06}_{k_8 k_6 k_7 k_2 k_3 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5 k_6 k_7}_{k_1}} e^{-\tau_2 \epsilon^{k_8}_{k_5}} e^{-\tau_3 \epsilon_{k_2 k_3 k_4 k_6 k_7 k_8}}$$
$$= \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{31}_{k_5 k_6 k_7 k_1} \Omega^{11}_{k_8 k_5} \Omega^{06}_{k_8 k_6 k_7 k_2 k_3 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_5 k_2 k_3 k_4 k_6 k_7}\ \epsilon_{k_2 k_3 k_4 k_6 k_7 k_8}} \tag{638}$$



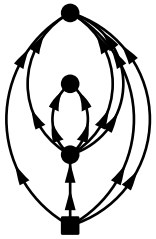
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{639}$$

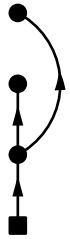
$$\begin{aligned} a_1 &= \epsilon^{k_5k_6k_7}_{k_1} \\ a_2 &= \epsilon^{k_8}_{k_5} \\ a_3 &= \epsilon_{k_2k_3k_4k_6k_7k_8} \end{aligned}$$

Diagram 318:

$$\begin{aligned} \mathrm{PO3.318} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{51}_{k_5k_6k_7k_8k_9k_1} \Omega^{02}_{k_5k_6} \Omega^{06}_{k_7k_8k_9k_2k_3k_4} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1) e^{-\tau_1\epsilon^{k_5k_6k_7k_8k_9}_{k_1}} e^{-\tau_2\epsilon_{k_5k_6}} e^{-\tau_3\epsilon_{k_2k_3k_4k_7k_8k_9}} \\ &= \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{51}_{k_5k_6k_7k_8k_9k_1} \Omega^{02}_{k_5k_6} \Omega^{06}_{k_7k_8k_9k_2k_3k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_5k_6}\ \epsilon_{k_2k_3k_4k_7k_8k_9}} \end{aligned} \tag{640}$$



$\rightarrow$ T2:

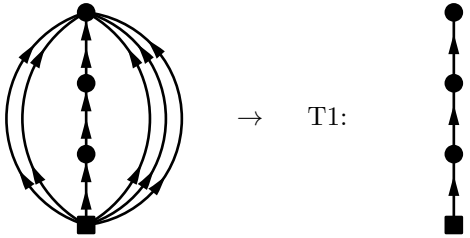


$$\mathrm{T2} = \frac{1}{(a_1+a_2+a_3)a_2a_3} \tag{641}$$

$$a_1 = \epsilon_{k_1}^{k_5 k_6 k_7 k_8 k_9}$$
$$a_2 = \epsilon_{k_5 k_6}$$
$$a_3 = \epsilon_{k_2 k_3 k_4 k_7 k_8 k_9}$$

Diagram 319:

$$\text{PO3.319} = \lim_{\tau\to\infty} \frac{(-1)^3}{(5!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{11}_{k_7 k_1} \Omega^{11}_{k_8 k_7} \Omega^{06}_{k_8 k_2 k_3 k_4 k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon_{k_1}^{k_7}} e^{-\tau_2 \epsilon_{k_7}^{k_8}} e^{-\tau_3 \epsilon_{k_2 k_3 k_4 k_5 k_6 k_8}}$$
$$= \frac{(-1)^3}{(5!)} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{11}_{k_7 k_1} \Omega^{11}_{k_8 k_7} \Omega^{06}_{k_8 k_2 k_3 k_4 k_5 k_6}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_7 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_2 k_3 k_4 k_5 k_6 k_8}} \tag{642}$$

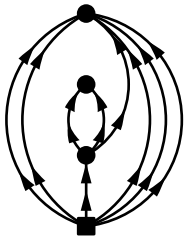


$$\text{T1} = \frac{1}{(a_1 + a_2 + a_3)(a_2 + a_3)a_3} \tag{643}$$

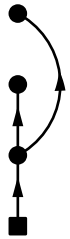
$$a_1 = \epsilon_{k_1}^{k_7}$$
$$a_2 = \epsilon_{k_7}^{k_8}$$
$$a_3 = \epsilon_{k_2 k_3 k_4 k_5 k_6 k_8}$$

Diagram 320:

$$\text{PO3.320} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(5!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{31}_{k_7 k_8 k_9 k_1} \Omega^{02}_{k_7 k_8} \Omega^{06}_{k_9 k_2 k_3 k_4 k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_1) e^{-\tau_1 \epsilon_{k_1}^{k_7 k_8 k_9}} e^{-\tau_2 \epsilon_{k_7 k_8}} e^{-\tau_3 \epsilon_{k_2 k_3 k_4 k_5 k_6 k_9}}$$
$$= \frac{(-1)^3}{(2!)(5!)} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{31}_{k_7 k_8 k_9 k_1} \Omega^{02}_{k_7 k_8} \Omega^{06}_{k_9 k_2 k_3 k_4 k_5 k_6}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_7 k_8}\ \epsilon_{k_2 k_3 k_4 k_5 k_6 k_9}} \tag{644}$$



$\rightarrow$ T2:



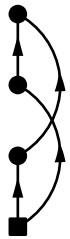
$$\mathrm{T2} = \frac{1}{(a_1+a_2+a_3)a_2a_3} \tag{645}$$

$$\begin{aligned} a_1 &= \epsilon_{k_1}^{k_7k_8k_9} \\ a_2 &= \epsilon_{k_7k_8} \\ a_3 &= \epsilon_{k_2k_3k_4k_5k_6k_9} \end{aligned}$$

Diagram 321:

$$\begin{aligned} \mathrm{PO3.321} &= \lim_{\tau\to\infty} \frac{-(-1)^3}{(5!)} \sum_{k_i} O^{20}_{k_1k_2}\Omega^{11}_{k_3k_1}\Omega^{51}_{k_4k_5k_6k_7k_8k_2}\Omega^{06}_{k_4k_5k_6k_7k_8k_3} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2)e^{-\tau_1\epsilon^{k_3}_{k_1}}e^{-\tau_2\epsilon^{k_4k_5k_6k_7k_8}_{k_2}}e^{-\tau_3\epsilon_{k_3k_4k_5k_6k_7k_8}} \\ &= \frac{-(-1)^3}{(5!)} \sum_{k_i} O^{20}_{k_1k_2}\Omega^{11}_{k_3k_1}\Omega^{51}_{k_4k_5k_6k_7k_8k_2}\Omega^{06}_{k_4k_5k_6k_7k_8k_3} \left[\frac{1}{\epsilon_{k_1k_4k_5k_6k_7k_8}\ \epsilon_{k_1k_2}\ \epsilon_{k_3k_4k_5k_6k_7k_8}} + \frac{1}{\epsilon_{k_1k_2}\ \epsilon_{k_2k_3}\ \epsilon_{k_3k_4k_5k_6k_7k_8}}\right] \end{aligned} \tag{646}$$

$\rightarrow$ T5:

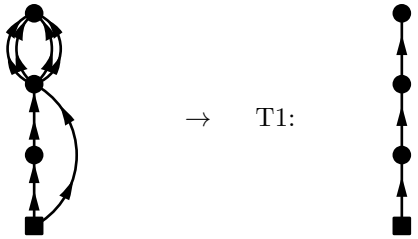


$$\mathrm{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{647}$$

$$
\begin{aligned}
a_1 &= \epsilon_{k_1}^{k_3} \\
a_2 &= \epsilon_{k_2}^{k_4 k_5 k_6 k_7 k_8} \\
a_3 &= \epsilon_{k_3 k_4 k_5 k_6 k_7 k_8}
\end{aligned}
$$

Diagram 322:

$$
\begin{aligned}
\text{PO3.322} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(4!)} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{11}_{k_3 k_1} \Omega^{42}_{k_4 k_5 k_6 k_7 k_3 k_2} \Omega^{04}_{k_4 k_5 k_6 k_7} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_3}_{k_1}} e^{-\tau_2 \epsilon^{k_4 k_5 k_6 k_7}_{k_2 k_3}} e^{-\tau_3 \epsilon_{k_4 k_5 k_6 k_7}} \\
&= \frac{(-1)^3}{(4!)} \sum_{k_i} \frac{O^{20}_{k_1 k_2} \Omega^{11}_{k_3 k_1} \Omega^{42}_{k_4 k_5 k_6 k_7 k_3 k_2} \Omega^{04}_{k_4 k_5 k_6 k_7}}{\epsilon_{k_1 k_2}\ \epsilon_{k_2 k_3}\ \epsilon_{k_4 k_5 k_6 k_7}}
\end{aligned} \tag{648}
$$



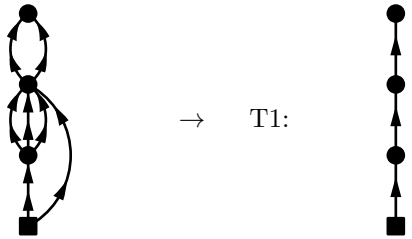
$\rightarrow$ T1:

$$
\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{649}
$$

$$
\begin{aligned}
a_1 &= \epsilon_{k_1}^{k_3} \\
a_2 &= \epsilon_{k_2 k_3}^{k_4 k_5 k_6 k_7} \\
a_3 &= \epsilon_{k_4 k_5 k_6 k_7}
\end{aligned}
$$

Diagram 323:

$$
\begin{aligned}
\text{PO3.323} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} O^{20}_{k_1 k_2} \Omega^{31}_{k_3 k_4 k_5 k_1} \Omega^{24}_{k_6 k_7 k_3 k_4 k_5 k_2} \Omega^{02}_{k_6 k_7} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_3 k_4 k_5}_{k_1}} e^{-\tau_2 \epsilon^{k_6 k_7}_{k_2 k_3 k_4 k_5}} e^{-\tau_3 \epsilon_{k_6 k_7}} \\
&= \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} \frac{O^{20}_{k_1 k_2} \Omega^{31}_{k_3 k_4 k_5 k_1} \Omega^{24}_{k_6 k_7 k_3 k_4 k_5 k_2} \Omega^{02}_{k_6 k_7}}{\epsilon_{k_1 k_2}\ \epsilon_{k_2 k_3 k_4 k_5}\ \epsilon_{k_6 k_7}}
\end{aligned} \tag{650}
$$



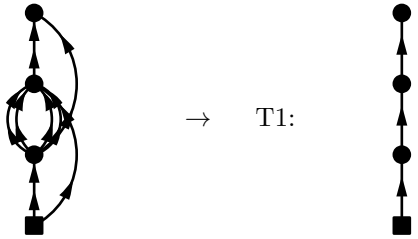
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{651}$$

$$\begin{aligned} a_1 &= \epsilon_{k_1}^{k_3k_4k_5} \\ a_2 &= \epsilon_{k_2k_3k_4k_5}^{k_6k_7} \\ a_3 &= \epsilon_{k_6k_7} \end{aligned}$$

Diagram 324:

$$\begin{aligned} \mathrm{PO3.324} &= \lim_{\tau\to\infty} \frac{-(-1)^3}{(4!)} \sum_{k_i} O^{20}_{k_1k_2} \Omega^{51}_{k_3k_4k_5k_6k_7k_1} \Omega^{15}_{k_8k_3k_4k_5k_6k_2} \Omega^{02}_{k_8k_7} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon_{k_1}^{k_3k_4k_5k_6k_7}} e^{-\tau_2 \epsilon^{k_8}_{k_2k_3k_4k_5k_6}} e^{-\tau_3 \epsilon_{k_7k_8}} \\ &= \frac{-(-1)^3}{(4!)} \sum_{k_i} \frac{O^{20}_{k_1k_2} \Omega^{51}_{k_3k_4k_5k_6k_7k_1} \Omega^{15}_{k_8k_3k_4k_5k_6k_2} \Omega^{02}_{k_8k_7}}{\epsilon_{k_1k_2}\ \epsilon_{k_2k_3k_4k_5k_6k_7}\ \epsilon_{k_7k_8}} \end{aligned} \tag{652}$$



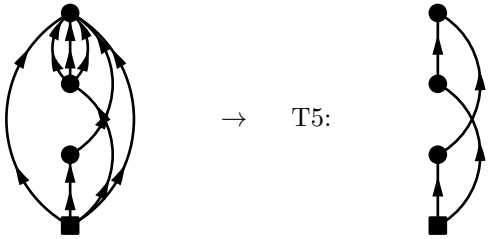
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{653}$$

$$a_1 = \epsilon^{k_3k_4k_5k_6k_7}_{k_1}$$
$$a_2 = \epsilon^{k_8}_{k_2k_3k_4k_5k_6}$$
$$a_3 = \epsilon_{k_7k_8}$$

Diagram 325:

$$\text{PO3.325} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)(3!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{11}_{k_5k_1} \Omega^{31}_{k_6k_7k_8k_2} \Omega^{06}_{k_6k_7k_8k_5k_3k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5}_{k_1}} e^{-\tau_2 \epsilon^{k_6k_7k_8}_{k_2}} e^{-\tau_3 \epsilon_{k_3k_4k_5k_6k_7k_8}}$$
$$= \frac{-(-1)^3}{(2!)(3!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{11}_{k_5k_1} \Omega^{31}_{k_6k_7k_8k_2} \Omega^{06}_{k_6k_7k_8k_5k_3k_4} \left[\frac{1}{\epsilon_{k_1k_3k_4k_6k_7k_8}\ \epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_3k_4k_5k_6k_7k_8}} + \frac{1}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_2k_3k_4k_5}\ \epsilon_{k_3k_4k_5k_6k_7k_8}} \right] \tag{654}$$

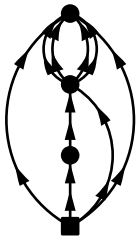


$$\text{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{655}$$

$$a_1 = \epsilon^{k_5}_{k_1}$$
$$a_2 = \epsilon^{k_6k_7k_8}_{k_2}$$
$$a_3 = \epsilon_{k_3k_4k_5k_6k_7k_8}$$

Diagram 326:

$$\text{PO3.326} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(4!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{11}_{k_5k_1} \Omega^{42}_{k_6k_7k_8k_9k_5k_2} \Omega^{06}_{k_6k_7k_8k_9k_3k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5}_{k_1}} e^{-\tau_2 \epsilon^{k_6k_7k_8k_9}_{k_2k_5}} e^{-\tau_3 \epsilon_{k_3k_4k_6k_7k_8k_9}}$$
$$= \frac{(-1)^3}{(2!)(4!)} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{11}_{k_5k_1} \Omega^{42}_{k_6k_7k_8k_9k_5k_2} \Omega^{06}_{k_6k_7k_8k_9k_3k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_2k_5k_3k_4}\ \epsilon_{k_3k_4k_6k_7k_8k_9}} \tag{656}$$



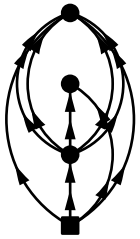
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{657}$$

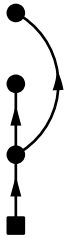
$$\begin{aligned} a_1 &= \epsilon^{k_5}_{k_1} \\ a_2 &= \epsilon^{k_6k_7k_8k_9}_{k_2k_5} \\ a_3 &= \epsilon_{k_3k_4k_6k_7k_8k_9} \end{aligned}$$

Diagram 327:

$$\begin{aligned} \mathrm{PO3.327} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(4!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{51}_{k_5k_6k_7k_8k_9k_1} \Omega^{02}_{k_5k_2} \Omega^{06}_{k_6k_7k_8k_9k_3k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1) e^{-\tau_1 \epsilon^{k_5k_6k_7k_8k_9}_{k_1}} e^{-\tau_2\epsilon_{k_2k_5}} e^{-\tau_3\epsilon_{k_3k_4k_6k_7k_8k_9}} \\ &= \frac{(-1)^3}{(2!)(4!)} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{51}_{k_5k_6k_7k_8k_9k_1} \Omega^{02}_{k_5k_2} \Omega^{06}_{k_6k_7k_8k_9k_3k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_2k_5}\ \epsilon_{k_3k_4k_6k_7k_8k_9}} \end{aligned} \tag{658}$$



$\rightarrow$ T2:

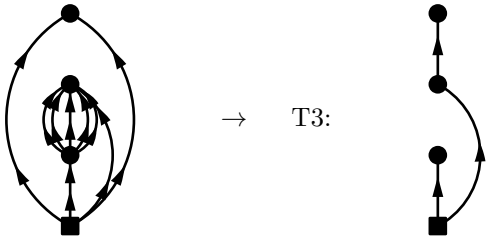


$$\mathrm{T2} = \frac{1}{(a_1+a_2+a_3)a_2a_3} \tag{659}$$

$$a_1 = \epsilon_{k_1}^{k_5 k_6 k_7 k_8 k_9}$$
$$a_2 = \epsilon_{k_2 k_5}$$
$$a_3 = \epsilon_{k_3 k_4 k_6 k_7 k_8 k_9}$$

Diagram 328:

$$\text{PO3.328} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(5!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{51}_{k_5 k_6 k_7 k_8 k_9 k_1} \Omega^{06}_{k_5 k_6 k_7 k_8 k_9 k_2} \Omega^{02}_{k_3 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1) e^{-\tau_1 \epsilon_{k_1}^{k_5 k_6 k_7 k_8 k_9}} e^{-\tau_2 \epsilon_{k_2 k_5 k_6 k_7 k_8 k_9}} e^{-\tau_3 \epsilon_{k_3 k_4}}$$
$$= \frac{(-1)^3}{(2!)(5!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{51}_{k_5 k_6 k_7 k_8 k_9 k_1} \Omega^{06}_{k_5 k_6 k_7 k_8 k_9 k_2} \Omega^{02}_{k_3 k_4}}{\epsilon_{k_1}^{k_5 k_6 k_7 k_8 k_9} \ \epsilon_{k_2 k_5 k_6 k_7 k_8 k_9 k_3 k_4} \ \epsilon_{k_3 k_4}} \tag{660}$$

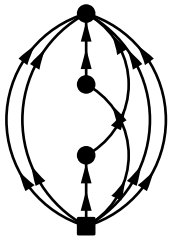


$$\text{T3} = \frac{1}{a_1(a_2 + a_3)a_3} \tag{661}$$

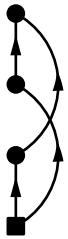
$$a_1 = \epsilon_{k_1}^{k_5 k_6 k_7 k_8 k_9}$$
$$a_2 = \epsilon_{k_2 k_5 k_6 k_7 k_8 k_9}$$
$$a_3 = \epsilon_{k_3 k_4}$$

Diagram 329:

$$\text{PO3.329} = \lim_{\tau\to\infty} \frac{-(-1)^3}{2(4!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{11}_{k_7 k_1} \Omega^{11}_{k_8 k_2} \Omega^{06}_{k_8 k_7 k_3 k_4 k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon_{k_1}^{k_7}} e^{-\tau_2 \epsilon_{k_2}^{k_8}} e^{-\tau_3 \epsilon_{k_3 k_4 k_5 k_6 k_7 k_8}}$$
$$= \frac{-(-1)^3}{2(4!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{11}_{k_7 k_1} \Omega^{11}_{k_8 k_2} \Omega^{06}_{k_8 k_7 k_3 k_4 k_5 k_6} \left[\frac{1}{\epsilon_{k_1 k_3 k_4 k_5 k_6 k_8} \ \epsilon_{k_1 k_2 k_3 k_4 k_5 k_6} \ \epsilon_{k_3 k_4 k_5 k_6 k_7 k_8}} + \frac{1}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6} \ \epsilon_{k_2 k_3 k_4 k_5 k_6 k_7} \ \epsilon_{k_3 k_4 k_5 k_6 k_7 k_8}} \right] \tag{662}$$



$\rightarrow$ T5:

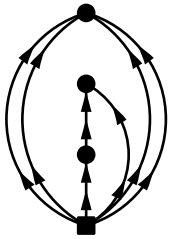


$$\mathrm{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{663}$$

$$\begin{aligned} a_1 &= \epsilon^{k_7}_{k_1} \\ a_2 &= \epsilon^{k_8}_{k_2} \\ a_3 &= \epsilon_{k_3k_4k_5k_6k_7k_8} \end{aligned}$$

Diagram 330:

$$\begin{aligned} \mathrm{PO3.330} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(4!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{11}_{k_7k_1} \Omega^{02}_{k_7k_2} \Omega^{04}_{k_3k_4k_5k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1) e^{-\tau_1 \epsilon^{k_7}_{k_1}} e^{-\tau_2 \epsilon_{k_2k_7}} e^{-\tau_3 \epsilon_{k_3k_4k_5k_6}} \\ &= \frac{(-1)^3}{(4!)} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{11}_{k_7k_1} \Omega^{02}_{k_7k_2} \Omega^{04}_{k_3k_4k_5k_6}}{\epsilon^{k_7}_{k_1}\ \epsilon_{k_2k_7}\ \epsilon_{k_2k_7k_3k_4k_5k_6}} \end{aligned} \tag{664}$$



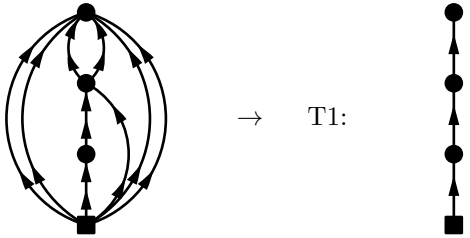
$\rightarrow$ T3:

$$\mathrm{T3} = \frac{1}{a_1(a_2+a_3)a_3} \tag{665}$$

$$a_1 = \epsilon^{k_7}_{k_1}$$
$$a_2 = \epsilon_{k_3k_4k_5k_6}$$
$$a_3 = \epsilon_{k_2k_7}$$

Diagram 331:

$$\text{PO3.331} = \lim_{\tau\to\infty}\frac{(-1)^3}{(2!)(4!)}\sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6}\Omega^{11}_{k_7k_1}\Omega^{22}_{k_8k_9k_7k_2}\Omega^{06}_{k_8k_9k_3k_4k_5k_6}\int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2)e^{-\tau_1\epsilon^{k_7}_{k_1}}e^{-\tau_2\epsilon^{k_8k_9}_{k_2k_7}}e^{-\tau_3\epsilon_{k_3k_4k_5k_6k_8k_9}}$$
$$= \frac{(-1)^3}{(2!)(4!)}\sum_{k_i}\frac{O^{60}_{k_1k_2k_3k_4k_5k_6}\Omega^{11}_{k_7k_1}\Omega^{22}_{k_8k_9k_7k_2}\Omega^{06}_{k_8k_9k_3k_4k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_2k_7k_3k_4k_5k_6}\ \epsilon_{k_3k_4k_5k_6k_8k_9}} \tag{666}$$

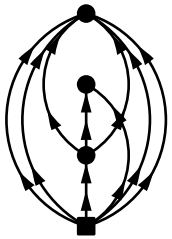


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{667}$$

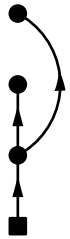
$$a_1 = \epsilon^{k_7}_{k_1}$$
$$a_2 = \epsilon^{k_8k_9}_{k_2k_7}$$
$$a_3 = \epsilon_{k_3k_4k_5k_6k_8k_9}$$

Diagram 332:

$$\text{PO3.332} = \lim_{\tau\to\infty}\frac{(-1)^3}{(2!)(4!)}\sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6}\Omega^{31}_{k_7k_8k_9k_1}\Omega^{02}_{k_7k_2}\Omega^{06}_{k_8k_9k_3k_4k_5k_6}\int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)e^{-\tau_1\epsilon^{k_7k_8k_9}_{k_1}}e^{-\tau_2\epsilon_{k_2k_7}}e^{-\tau_3\epsilon_{k_3k_4k_5k_6k_8k_9}}$$
$$= \frac{(-1)^3}{(2!)(4!)}\sum_{k_i}\frac{O^{60}_{k_1k_2k_3k_4k_5k_6}\Omega^{31}_{k_7k_8k_9k_1}\Omega^{02}_{k_7k_2}\Omega^{06}_{k_8k_9k_3k_4k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_2k_7}\ \epsilon_{k_3k_4k_5k_6k_8k_9}} \tag{668}$$



$\rightarrow$ T2:

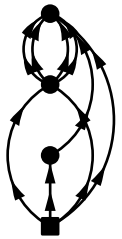


$$\mathrm{T2} = \frac{1}{(a_1+a_2+a_3)a_2a_3} \tag{669}$$

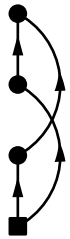
$$\begin{aligned} a_1 &= \epsilon_{k_1}^{k_7k_8k_9} \\ a_2 &= \epsilon_{k_2k_7} \\ a_3 &= \epsilon_{k_3k_4k_5k_6k_8k_9} \end{aligned}$$

Diagram 333:

$$\begin{aligned} \mathrm{PO3.333} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(4!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{11}_{k_5k_1} \Omega^{42}_{k_6k_7k_8k_9k_2k_3} \Omega^{06}_{k_6k_7k_8k_9k_5k_4} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_5}_{k_1}} e^{-\tau_2\epsilon^{k_6k_7k_8k_9}_{k_2k_3}} e^{-\tau_3\epsilon_{k_4k_5k_6k_7k_8k_9}} \\ &= \frac{(-1)^3}{(2!)(4!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{11}_{k_5k_1} \Omega^{42}_{k_6k_7k_8k_9k_2k_3} \Omega^{06}_{k_6k_7k_8k_9k_5k_4} \left[\frac{1}{\epsilon_{k_1k_4k_6k_7k_8k_9}\ \epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_4k_5k_6k_7k_8k_9}} + \frac{1}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_2k_3k_4k_5}\ \epsilon_{k_4k_5k_6k_7k_8k_9}} \right] \end{aligned} \tag{670}$$



$\rightarrow$ T5:

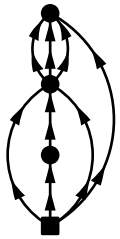


$$\mathrm{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{671}$$

$$a_1 = \epsilon^{k_5}_{k_1}$$
$$a_2 = \epsilon^{k_6 k_7 k_8 k_9}_{k_2 k_3}$$
$$a_3 = \epsilon_{k_4 k_5 k_6 k_7 k_8 k_9}$$

Diagram 334:

$$\text{PO3.334} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{11}_{k_5 k_1} \Omega^{33}_{k_6 k_7 k_8 k_5 k_2 k_3} \Omega^{04}_{k_6 k_7 k_8 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_5}_{k_1}} e^{-\tau_2 \epsilon^{k_6 k_7 k_8}_{k_2 k_3 k_5}} e^{-\tau_3 \epsilon_{k_4 k_6 k_7 k_8}}$$
$$= \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{11}_{k_5 k_1} \Omega^{33}_{k_6 k_7 k_8 k_5 k_2 k_3} \Omega^{04}_{k_6 k_7 k_8 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_2 k_3 k_5 k_4}\ \epsilon_{k_4 k_6 k_7 k_8}} \tag{672}$$



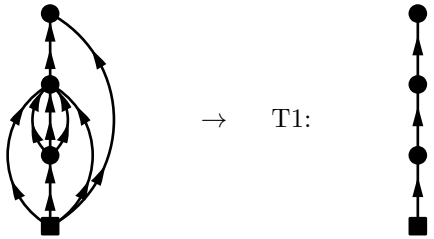
$\rightarrow$ T1:

$$\text{T1} = \frac{1}{(a_1 + a_2 + a_3)(a_2 + a_3)a_3} \tag{673}$$

$$a_1 = \epsilon^{k_5}_{k_1}$$
$$a_2 = \epsilon^{k_6 k_7 k_8}_{k_2 k_3 k_5}$$
$$a_3 = \epsilon_{k_4 k_6 k_7 k_8}$$

Diagram 335:

$$\text{PO3.335} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{31}_{k_5 k_6 k_7 k_1} \Omega^{15}_{k_8 k_5 k_6 k_7 k_2 k_3} \Omega^{02}_{k_8 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_5 k_6 k_7}_{k_1}} e^{-\tau_2 \epsilon^{k_8}_{k_2 k_3 k_5 k_6 k_7}} e^{-\tau_3 \epsilon_{k_4 k_8}}$$
$$= \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{31}_{k_5 k_6 k_7 k_1} \Omega^{15}_{k_8 k_5 k_6 k_7 k_2 k_3} \Omega^{02}_{k_8 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_2 k_3 k_5 k_6 k_7 k_4}\ \epsilon_{k_4 k_8}} \tag{674}$$

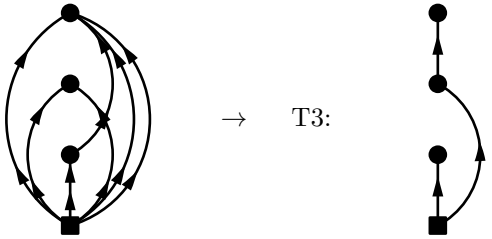


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{675}$$

$$\begin{aligned} a_1 &= \epsilon^{k_5k_6k_7}_{k_1} \\ a_2 &= \epsilon^{k_8}_{k_2k_3k_5k_6k_7} \\ a_3 &= \epsilon_{k_4k_8} \end{aligned}$$

Diagram 336:

$$\begin{aligned} \text{PO3.336} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{11}_{k_7k_1} \Omega^{02}_{k_2k_3} \Omega^{04}_{k_7k_4k_5k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3-\tau_1) e^{-\tau_1 \epsilon^{k_7}_{k_1}} e^{-\tau_2 \epsilon_{k_2k_3}} e^{-\tau_3 \epsilon_{k_4k_5k_6k_7}} \\ &= \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{11}_{k_7k_1} \Omega^{02}_{k_2k_3} \Omega^{04}_{k_7k_4k_5k_6}}{\epsilon^{k_7}_{k_1} \ \epsilon_{k_2k_3k_4k_5k_6k_7} \ \epsilon_{k_4k_5k_6k_7}} \end{aligned} \tag{676}$$

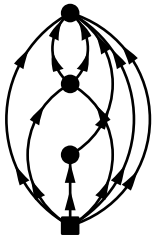


$$\text{T3} = \frac{1}{a_1(a_2+a_3)a_3} \tag{677}$$

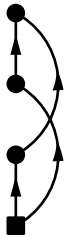
$$a_1 = \epsilon_{k_1}^{k_7}$$
$$a_2 = \epsilon_{k_2 k_3}$$
$$a_3 = \epsilon_{k_4 k_5 k_6 k_7}$$

Diagram 337:

$$\text{PO3.337} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{11}_{k_7k_1} \Omega^{22}_{k_8k_9k_2k_3} \Omega^{06}_{k_8k_9k_7k_4k_5k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7}_{k_1}} e^{-\tau_2 \epsilon^{k_8k_9}_{k_2k_3}} e^{-\tau_3 \epsilon_{k_4k_5k_6k_7k_8k_9}}$$
$$= \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{11}_{k_7k_1} \Omega^{22}_{k_8k_9k_2k_3} \Omega^{06}_{k_8k_9k_7k_4k_5k_6} \left[\frac{1}{\epsilon_{k_1k_4k_5k_6k_8k_9}\ \epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_4k_5k_6k_7k_8k_9}} + \frac{1}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_2k_3k_4k_5k_6k_7}\ \epsilon_{k_4k_5k_6k_7k_8k_9}} \right] \tag{678}$$



$\rightarrow$ T5:

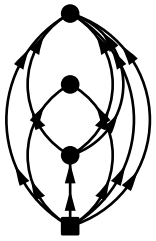


$$\text{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{679}$$

$$a_1 = \epsilon_{k_1}^{k_7}$$
$$a_2 = \epsilon_{k_2k_3}^{k_8k_9}$$
$$a_3 = \epsilon_{k_4k_5k_6k_7k_8k_9}$$

Diagram 338:

$$\text{PO3.338} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{31}_{k_7k_8k_9k_1} \Omega^{02}_{k_2k_3} \Omega^{06}_{k_7k_8k_9k_4k_5k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3-\tau_1) e^{-\tau_1 \epsilon^{k_7k_8k_9}_{k_1}} e^{-\tau_2 \epsilon_{k_2k_3}} e^{-\tau_3 \epsilon_{k_4k_5k_6k_7k_8k_9}}$$
$$= \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{31}_{k_7k_8k_9k_1} \Omega^{02}_{k_2k_3} \Omega^{06}_{k_7k_8k_9k_4k_5k_6}}{\epsilon^{k_7k_8k_9}_{k_1}\ \epsilon_{k_2k_3}\ \epsilon_{k_2k_3k_4k_5k_6k_7k_8k_9}} \tag{680}$$



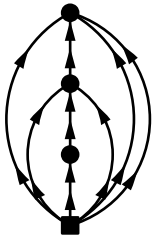
$\rightarrow$ T3:

$$\mathrm{T3} = \frac{1}{a_1(a_2+a_3)a_3} \tag{681}$$

$$\begin{aligned} a_1 &= \epsilon^{k_7 k_8 k_9}_{k_1} \\ a_2 &= \epsilon_{k_4 k_5 k_6 k_7 k_8 k_9} \\ a_3 &= \epsilon_{k_2 k_3} \end{aligned}$$

Diagram 339:

$$\begin{aligned} \mathrm{PO3.339} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{11}_{k_7k_1} \Omega^{13}_{k_8k_7k_2k_3} \Omega^{04}_{k_8k_4k_5k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7}_{k_1}} e^{-\tau_2 \epsilon^{k_8}_{k_2k_3k_7}} e^{-\tau_3 \epsilon_{k_4k_5k_6k_8}} \\ &= \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{11}_{k_7k_1} \Omega^{13}_{k_8k_7k_2k_3} \Omega^{04}_{k_8k_4k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_2k_3k_7k_4k_5k_6}\ \epsilon_{k_4k_5k_6k_8}} \end{aligned} \tag{682}$$



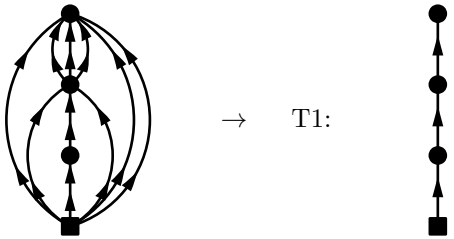
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{683}$$

$$a_1 = \epsilon^{k_7}_{k_1}$$
$$a_2 = \epsilon^{k_8}_{k_2 k_3 k_7}$$
$$a_3 = \epsilon_{k_4 k_5 k_6 k_8}$$

Diagram 340:

$$\text{PO3.340} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{11}_{k_7k_1} \Omega^{33}_{k_8k_9k_{10}k_7k_2k_3} \Omega^{06}_{k_8k_9k_{10}k_4k_5k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7}_{k_1}} e^{-\tau_2 \epsilon^{k_8k_9k_{10}}_{k_2k_3k_7}} e^{-\tau_3 \epsilon_{k_4k_5k_6k_8k_9k_{10}}}$$
$$= \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{11}_{k_7k_1} \Omega^{33}_{k_8k_9k_{10}k_7k_2k_3} \Omega^{06}_{k_8k_9k_{10}k_4k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_2k_3k_7k_4k_5k_6}\ \epsilon_{k_4k_5k_6k_8k_9k_{10}}} \tag{684}$$



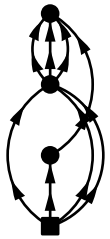
$\rightarrow$ T1:

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{685}$$

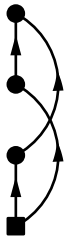
$$a_1 = \epsilon^{k_7}_{k_1}$$
$$a_2 = \epsilon^{k_8k_9k_{10}}_{k_2k_3k_7}$$
$$a_3 = \epsilon_{k_4k_5k_6k_8k_9k_{10}}$$

Diagram 341:

$$\text{PO3.341} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(3!)^2} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{11}_{k_5k_1} \Omega^{33}_{k_6k_7k_8k_2k_3k_4} \Omega^{04}_{k_6k_7k_8k_5} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5}_{k_1}} e^{-\tau_2 \epsilon^{k_6k_7k_8}_{k_2k_3k_4}} e^{-\tau_3 \epsilon_{k_5k_6k_7k_8}}$$
$$= \frac{-(-1)^3}{(3!)^2} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{11}_{k_5k_1} \Omega^{33}_{k_6k_7k_8k_2k_3k_4} \Omega^{04}_{k_6k_7k_8k_5} \left[\frac{1}{\epsilon_{k_1k_6k_7k_8}\ \epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_5k_6k_7k_8}} + \frac{1}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_2k_3k_4k_5}\ \epsilon_{k_5k_6k_7k_8}} \right] \tag{686}$$



$\rightarrow$ T5:

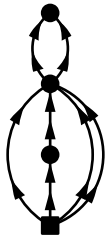


$$\mathrm{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{687}$$

$$\begin{aligned} a_1 &= \epsilon^{k_5}_{k_1} \\ a_2 &= \epsilon^{k_6 k_7 k_8}_{k_2 k_3 k_4} \\ a_3 &= \epsilon_{k_5 k_6 k_7 k_8} \end{aligned}$$

Diagram 342:

$$\begin{aligned} \mathrm{PO3.342} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{11}_{k_5 k_1} \Omega^{24}_{k_6 k_7 k_5 k_2 k_3 k_4} \Omega^{02}_{k_6 k_7} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5}_{k_1}} e^{-\tau_2 \epsilon^{k_6 k_7}_{k_2 k_3 k_4 k_5}} e^{-\tau_3 \epsilon_{k_6 k_7}} \\ &= \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{11}_{k_5 k_1} \Omega^{24}_{k_6 k_7 k_5 k_2 k_3 k_4} \Omega^{02}_{k_6 k_7}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_2 k_3 k_4 k_5}\ \epsilon_{k_6 k_7}} \end{aligned} \tag{688}$$



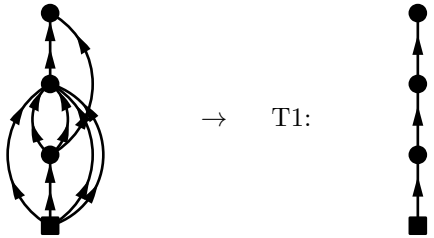
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{689}$$

$$a_1 = \epsilon^{k_5}_{k_1}$$
$$a_2 = \epsilon^{k_6 k_7}_{k_2 k_3 k_4 k_5}$$
$$a_3 = \epsilon_{k_6 k_7}$$

Diagram 343:

$$\text{PO3.343} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)(3!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{31}_{k_5 k_6 k_7 k_1} \Omega^{15}_{k_8 k_5 k_6 k_2 k_3 k_4} \Omega^{02}_{k_8 k_7} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_5 k_6 k_7}_{k_1}} e^{-\tau_2 \epsilon^{k_8}_{k_2 k_3 k_4 k_5 k_6}} e^{-\tau_3 \epsilon_{k_7 k_8}}$$
$$= \frac{-(-1)^3}{(2!)(3!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{31}_{k_5 k_6 k_7 k_1} \Omega^{15}_{k_8 k_5 k_6 k_2 k_3 k_4} \Omega^{02}_{k_8 k_7}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_2 k_3 k_4 k_5 k_6 k_7}\ \epsilon_{k_7 k_8}} \tag{690}$$



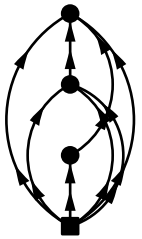
$\rightarrow$ T1:

$$\text{T1} = \frac{1}{(a_1 + a_2 + a_3)(a_2 + a_3)a_3} \tag{691}$$

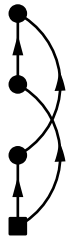
$$a_1 = \epsilon^{k_5 k_6 k_7}_{k_1}$$
$$a_2 = \epsilon^{k_8}_{k_2 k_3 k_4 k_5 k_6}$$
$$a_3 = \epsilon_{k_7 k_8}$$

Diagram 344:

$$\text{PO3.344} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)(3!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{11}_{k_7 k_1} \Omega^{13}_{k_8 k_2 k_3 k_4} \Omega^{04}_{k_8 k_7 k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_7}_{k_1}} e^{-\tau_2 \epsilon^{k_8}_{k_2 k_3 k_4}} e^{-\tau_3 \epsilon_{k_5 k_6 k_7 k_8}}$$
$$= \frac{-(-1)^3}{(2!)(3!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{11}_{k_7 k_1} \Omega^{13}_{k_8 k_2 k_3 k_4} \Omega^{04}_{k_8 k_7 k_5 k_6} \left[\frac{1}{\epsilon_{k_1 k_5 k_6 k_8}\ \epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_5 k_6 k_7 k_8}} + \frac{1}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_2 k_3 k_4 k_5 k_6 k_7}\ \epsilon_{k_5 k_6 k_7 k_8}} \right] \tag{692}$$



$\rightarrow$ T5:

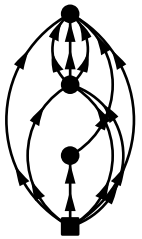


$$\text{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{693}$$

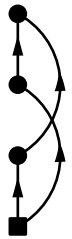
$$\begin{aligned} a_1 &= \epsilon^{k_7}_{k_1} \\ a_2 &= \epsilon^{k_8}_{k_2k_3k_4} \\ a_3 &= \epsilon_{k_5k_6k_7k_8} \end{aligned}$$

Diagram 345:

$$\begin{aligned} \text{PO3.345} &= \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{11}_{k_7k_1} \Omega^{33}_{k_8k_9k_{10}k_2k_3k_4} \Omega^{06}_{k_8k_9k_{10}k_7k_5k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7}_{k_1}} e^{-\tau_2 \epsilon^{k_8k_9k_{10}}_{k_2k_3k_4}} e^{-\tau_3 \epsilon_{k_5k_6k_7k_8k_9k_{10}}} \\ &= \frac{-(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{11}_{k_7k_1} \Omega^{33}_{k_8k_9k_{10}k_2k_3k_4} \Omega^{06}_{k_8k_9k_{10}k_7k_5k_6} \left[\frac{1}{\epsilon_{k_1k_5k_6k_8k_9k_{10}}\ \epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_5k_6k_7k_8k_9k_{10}}} + \frac{1}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_2k_3k_4k_5k_6k_7}\ \epsilon_{k_5k_6k_7k_8k_9k_{10}}} \right] \end{aligned} \tag{694}$$



$\rightarrow$ T5:

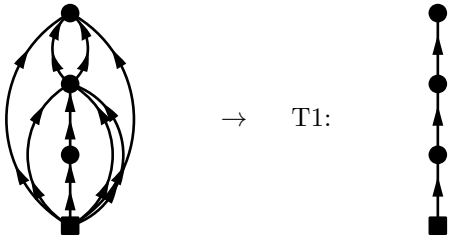


$$\text{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{695}$$

$$a_1 = \epsilon^{k_7}_{k_1}$$
$$a_2 = \epsilon^{k_8 k_9 k_{10}}_{k_2 k_3 k_4}$$
$$a_3 = \epsilon_{k_5 k_6 k_7 k_8 k_9 k_{10}}$$

Diagram 346:

$$\text{PO3.346} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{11}_{k_7k_1} \Omega^{24}_{k_8k_9k_7k_2k_3k_4} \Omega^{04}_{k_8k_9k_5k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7}_{k_1}} e^{-\tau_2 \epsilon^{k_8 k_9}_{k_2 k_3 k_4 k_7}} e^{-\tau_3 \epsilon_{k_5 k_6 k_8 k_9}}$$
$$= \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{11}_{k_7k_1} \Omega^{24}_{k_8k_9k_7k_2k_3k_4} \Omega^{04}_{k_8k_9k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_2k_3k_4k_7k_5k_6}\ \epsilon_{k_5k_6k_8k_9}} \tag{696}$$

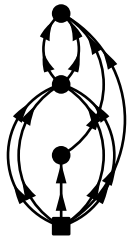


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{697}$$

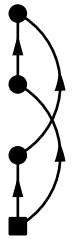
$$a_1 = \epsilon^{k_7}_{k_1}$$
$$a_2 = \epsilon^{k_8 k_9}_{k_2 k_3 k_4 k_7}$$
$$a_3 = \epsilon_{k_5 k_6 k_8 k_9}$$

Diagram 347:

$$\text{PO3.347} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(4!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{11}_{k_7k_1} \Omega^{24}_{k_8k_9k_2k_3k_4k_5} \Omega^{04}_{k_8k_9k_7k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7}_{k_1}} e^{-\tau_2 \epsilon^{k_8 k_9}_{k_2 k_3 k_4 k_5}} e^{-\tau_3 \epsilon_{k_6 k_7 k_8 k_9}}$$
$$= \frac{(-1)^3}{(2!)(4!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{11}_{k_7k_1} \Omega^{24}_{k_8k_9k_2k_3k_4k_5} \Omega^{04}_{k_8k_9k_7k_6} \left[\frac{1}{\epsilon_{k_1k_6k_8k_9}\ \epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_6k_7k_8k_9}} + \frac{1}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_2k_3k_4k_5k_6k_7}\ \epsilon_{k_6k_7k_8k_9}} \right] \tag{698}$$



$\rightarrow$ T5:

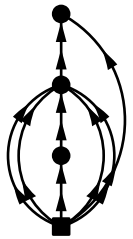


$$\mathrm{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{699}$$

$$\begin{aligned} a_1 &= \epsilon^{k_7}_{k_1} \\ a_2 &= \epsilon^{k_8 k_9}_{k_2 k_3 k_4 k_5} \\ a_3 &= \epsilon_{k_6 k_7 k_8 k_9} \end{aligned}$$

Diagram 348:

$$\begin{aligned} \mathrm{PO3.348} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(4!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{11}_{k_7k_1} \Omega^{15}_{k_8k_7k_2k_3k_4k_5} \Omega^{02}_{k_8k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7}_{k_1}} e^{-\tau_2 \epsilon^{k_8}_{k_2k_3k_4k_5k_7}} e^{-\tau_3 \epsilon_{k_6k_8}} \\ &= \frac{(-1)^3}{(4!)} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{11}_{k_7k_1} \Omega^{15}_{k_8k_7k_2k_3k_4k_5} \Omega^{02}_{k_8k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_2k_3k_4k_5k_7k_6}\ \epsilon_{k_6k_8}} \end{aligned} \tag{700}$$



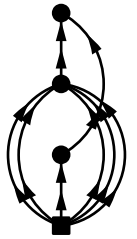
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{701}$$

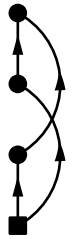
$$a_1 = \epsilon^{k_7}_{k_1}$$
$$a_2 = \epsilon^{k_8}_{k_2k_3k_4k_5k_7}$$
$$a_3 = \epsilon_{k_6k_8}$$

Diagram 349:

$$\text{PO3.349} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(5!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{11}_{k_7k_1} \Omega^{15}_{k_8k_2k_3k_4k_5k_6} \Omega^{02}_{k_8k_7} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_7}_{k_1}} e^{-\tau_2\epsilon^{k_8}_{k_2k_3k_4k_5k_6}} e^{-\tau_3\epsilon_{k_7k_8}}$$
$$= \frac{-(-1)^3}{(5!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{11}_{k_7k_1} \Omega^{15}_{k_8k_2k_3k_4k_5k_6} \Omega^{02}_{k_8k_7} \left[\frac{1}{\epsilon_{k_1k_8}\ \epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_7k_8}} + \frac{1}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_2k_3k_4k_5k_6k_7}\ \epsilon_{k_7k_8}} \right] \tag{702}$$



$\rightarrow$ T5:

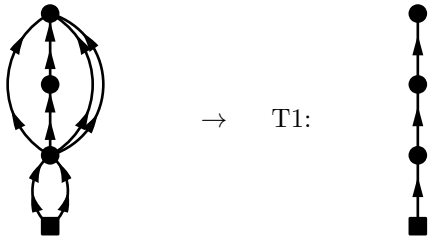


$$\text{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{703}$$

$$a_1 = \epsilon^{k_7}_{k_1}$$
$$a_2 = \epsilon^{k_8}_{k_2k_3k_4k_5k_6}$$
$$a_3 = \epsilon_{k_7k_8}$$

Diagram 350:

$$\text{PO3.350} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} O^{20}_{k_1k_2} \Omega^{42}_{k_3k_4k_5k_6k_1k_2} \Omega^{11}_{k_7k_3} \Omega^{04}_{k_7k_4k_5k_6} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_3k_4k_5k_6}_{k_1k_2}} e^{-\tau_2\epsilon^{k_7}_{k_3}} e^{-\tau_3\epsilon_{k_4k_5k_6k_7}}$$
$$= \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} \frac{O^{20}_{k_1k_2} \Omega^{42}_{k_3k_4k_5k_6k_1k_2} \Omega^{11}_{k_7k_3} \Omega^{04}_{k_7k_4k_5k_6}}{\epsilon_{k_1k_2}\ \epsilon_{k_3k_4k_5k_6}\ \epsilon_{k_4k_5k_6k_7}} \tag{704}$$



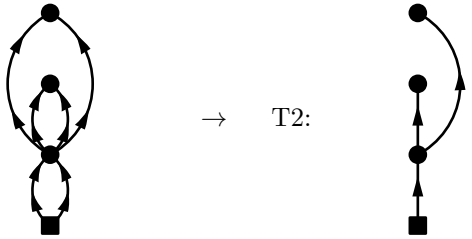
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{705}$$

$$\begin{aligned} a_1 &= \epsilon_{k_1k_2}^{k_3k_4k_5k_6} \\ a_2 &= \epsilon_{k_3}^{k_7} \\ a_3 &= \epsilon_{k_4k_5k_6k_7} \end{aligned}$$

Diagram 351:

$$\begin{aligned} \mathrm{PO3.351} &= \lim_{\tau\to\infty} \frac{(-1)^3}{2(2!)^3} \sum_{k_i} O^{20}_{k_1k_2} \Omega^{42}_{k_3k_4k_5k_6k_1k_2} \Omega^{02}_{k_3k_4} \Omega^{02}_{k_5k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1) e^{-\tau_1 \epsilon^{k_3k_4k_5k_6}_{k_1k_2}} e^{-\tau_2\epsilon_{k_3k_4}} e^{-\tau_3\epsilon_{k_5k_6}} \\ &= \frac{(-1)^3}{2(2!)^3} \sum_{k_i} \frac{O^{20}_{k_1k_2} \Omega^{42}_{k_3k_4k_5k_6k_1k_2} \Omega^{02}_{k_3k_4} \Omega^{02}_{k_5k_6}}{\epsilon_{k_1k_2}\ \epsilon_{k_3k_4}\ \epsilon_{k_5k_6}} \end{aligned} \tag{706}$$



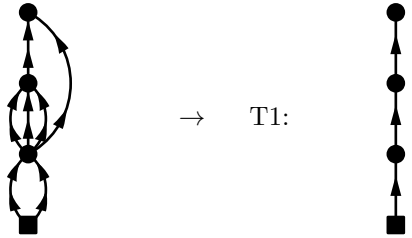
$\rightarrow$ T2:

$$\mathrm{T2} = \frac{1}{(a_1+a_2+a_3)a_2a_3} \tag{707}$$

$$a_1 = \epsilon^{k_3k_4k_5k_6}_{k_1k_2}$$
$$a_2 = \epsilon_{k_3k_4}$$
$$a_3 = \epsilon_{k_5k_6}$$

Diagram 352:

$$\text{PO3.352} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} O^{20}_{k_1k_2} \Omega^{42}_{k_3k_4k_5k_6k_1k_2} \Omega^{13}_{k_7k_3k_4k_5} \Omega^{02}_{k_7k_6} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_3k_4k_5k_6}_{k_1k_2}} e^{-\tau_2\epsilon^{k_7}_{k_3k_4k_5}} e^{-\tau_3\epsilon_{k_6k_7}}$$
$$= \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} \frac{O^{20}_{k_1k_2} \Omega^{42}_{k_3k_4k_5k_6k_1k_2} \Omega^{13}_{k_7k_3k_4k_5} \Omega^{02}_{k_7k_6}}{\epsilon_{k_1k_2}\ \epsilon_{k_3k_4k_5k_6}\ \epsilon_{k_6k_7}} \tag{708}$$

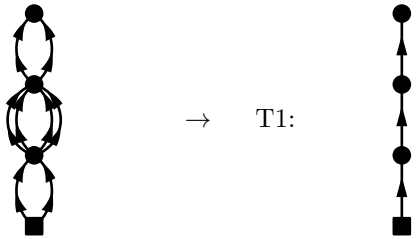


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{709}$$

$$a_1 = \epsilon^{k_3k_4k_5k_6}_{k_1k_2}$$
$$a_2 = \epsilon^{k_7}_{k_3k_4k_5}$$
$$a_3 = \epsilon_{k_6k_7}$$

Diagram 353:

$$\text{PO3.353} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(4!)} \sum_{k_i} O^{20}_{k_1k_2} \Omega^{42}_{k_3k_4k_5k_6k_1k_2} \Omega^{24}_{k_7k_8k_3k_4k_5k_6} \Omega^{02}_{k_7k_8} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_3k_4k_5k_6}_{k_1k_2}} e^{-\tau_2\epsilon^{k_7k_8}_{k_3k_4k_5k_6}} e^{-\tau_3\epsilon_{k_7k_8}}$$
$$= \frac{(-1)^3}{(2!)^2(4!)} \sum_{k_i} \frac{O^{20}_{k_1k_2} \Omega^{42}_{k_3k_4k_5k_6k_1k_2} \Omega^{24}_{k_7k_8k_3k_4k_5k_6} \Omega^{02}_{k_7k_8}}{\epsilon_{k_1k_2}\ \epsilon_{k_3k_4k_5k_6}\ \epsilon_{k_7k_8}} \tag{710}$$

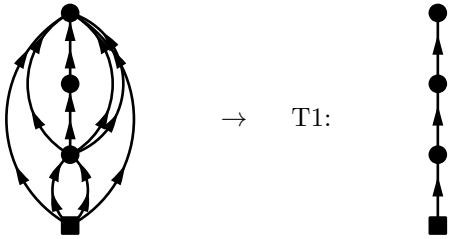


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{711}$$

$$\begin{aligned} a_1 &= \epsilon^{k_3k_4k_5k_6}_{k_1k_2} \\ a_2 &= \epsilon^{k_7k_8}_{k_3k_4k_5k_6} \\ a_3 &= \epsilon_{k_7k_8} \end{aligned}$$

Diagram 354:

$$\begin{aligned} \text{PO3.354} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{42}_{k_5k_6k_7k_8k_1k_2} \Omega^{11}_{k_9k_5} \Omega^{06}_{k_9k_6k_7k_8k_3k_4} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_5k_6k_7k_8}_{k_1k_2}} e^{-\tau_2\epsilon^{k_9}_{k_5}} e^{-\tau_3\epsilon_{k_3k_4k_6k_7k_8k_9}} \\ &= \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{42}_{k_5k_6k_7k_8k_1k_2} \Omega^{11}_{k_9k_5} \Omega^{06}_{k_9k_6k_7k_8k_3k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_5k_3k_4k_6k_7k_8}\ \epsilon_{k_3k_4k_6k_7k_8k_9}} \end{aligned} \tag{712}$$

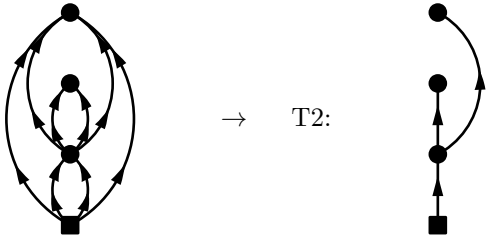


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{713}$$

$$a_1 = \epsilon^{k_5 k_6 k_7 k_8}_{k_1 k_2}$$
$$a_2 = \epsilon^{k_9}_{k_5}$$
$$a_3 = \epsilon_{k_3 k_4 k_6 k_7 k_8 k_9}$$

Diagram 355:

$$\text{PO3.355} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^4} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{42}_{k_5 k_6 k_7 k_8 k_1 k_2} \Omega^{02}_{k_5 k_6} \Omega^{04}_{k_7 k_8 k_3 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_1) e^{-\tau_1 \epsilon^{k_5 k_6 k_7 k_8}_{k_1 k_2}} e^{-\tau_2 \epsilon_{k_5 k_6}} e^{-\tau_3 \epsilon_{k_3 k_4 k_7 k_8}}$$
$$= \frac{(-1)^3}{(2!)^4} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{42}_{k_5 k_6 k_7 k_8 k_1 k_2} \Omega^{02}_{k_5 k_6} \Omega^{04}_{k_7 k_8 k_3 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_5 k_6}\ \epsilon_{k_3 k_4 k_7 k_8}} \tag{714}$$

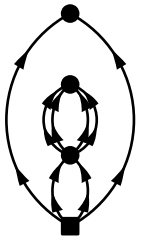


$$\text{T2} = \frac{1}{(a_1 + a_2 + a_3) a_2 a_3} \tag{715}$$

$$a_1 = \epsilon^{k_5 k_6 k_7 k_8}_{k_1 k_2}$$
$$a_2 = \epsilon_{k_5 k_6}$$
$$a_3 = \epsilon_{k_3 k_4 k_7 k_8}$$

Diagram 356:

$$\text{PO3.356} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(4!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{42}_{k_5 k_6 k_7 k_8 k_1 k_2} \Omega^{04}_{k_5 k_6 k_7 k_8} \Omega^{02}_{k_3 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1) e^{-\tau_1 \epsilon^{k_5 k_6 k_7 k_8}_{k_1 k_2}} e^{-\tau_2 \epsilon_{k_5 k_6 k_7 k_8}} e^{-\tau_3 \epsilon_{k_3 k_4}}$$
$$= \frac{(-1)^3}{(2!)^2(4!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{42}_{k_5 k_6 k_7 k_8 k_1 k_2} \Omega^{04}_{k_5 k_6 k_7 k_8} \Omega^{02}_{k_3 k_4}}{\epsilon^{k_5 k_6 k_7 k_8}_{k_1 k_2}\ \epsilon_{k_5 k_6 k_7 k_8 k_3 k_4}\ \epsilon_{k_3 k_4}} \tag{716}$$



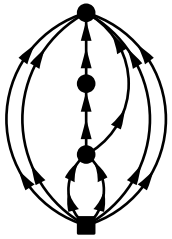
$\rightarrow$ T3:

$$\mathrm{T3} = \frac{1}{a_1(a_2+a_3)a_3} \tag{717}$$

$$\begin{aligned} a_1 &= \epsilon^{k_5k_6k_7k_8}_{k_1k_2} \\ a_2 &= \epsilon_{k_5k_6k_7k_8} \\ a_3 &= \epsilon_{k_3k_4} \end{aligned}$$

Diagram 357:

$$\begin{aligned} \mathrm{PO3.357} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(4!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{22}_{k_7k_8k_1k_2} \Omega^{11}_{k_9k_7} \Omega^{06}_{k_9k_8k_3k_4k_5k_6} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_7k_8}_{k_1k_2}} e^{-\tau_2\epsilon^{k_9}_{k_7}} e^{-\tau_3\epsilon_{k_3k_4k_5k_6k_8k_9}} \\ &= \frac{(-1)^3}{(2!)(4!)} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{22}_{k_7k_8k_1k_2} \Omega^{11}_{k_9k_7} \Omega^{06}_{k_9k_8k_3k_4k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_7k_3k_4k_5k_6k_8}\ \epsilon_{k_3k_4k_5k_6k_8k_9}} \end{aligned} \tag{718}$$



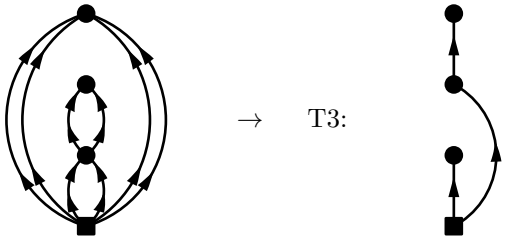
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{719}$$

$$a_1 = \epsilon^{k_7 k_8}_{k_1 k_2}$$
$$a_2 = \epsilon^{k_9}_{k_7}$$
$$a_3 = \epsilon_{k_3 k_4 k_5 k_6 k_8 k_9}$$

Diagram 358:

$$\text{PO3.358} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(4!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{22}_{k_7 k_8 k_1 k_2} \Omega^{02}_{k_7 k_8} \Omega^{04}_{k_3 k_4 k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1) e^{-\tau_1 \epsilon^{k_7 k_8}_{k_1 k_2}} e^{-\tau_2 \epsilon_{k_7 k_8}} e^{-\tau_3 \epsilon_{k_3 k_4 k_5 k_6}}$$
$$= \frac{(-1)^3}{(2!)^2(4!)} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{22}_{k_7 k_8 k_1 k_2} \Omega^{02}_{k_7 k_8} \Omega^{04}_{k_3 k_4 k_5 k_6}}{\epsilon_{k_1 k_2}\ \epsilon_{k_7 k_8}\ \epsilon_{k_3 k_4 k_5 k_6}} \tag{720}$$

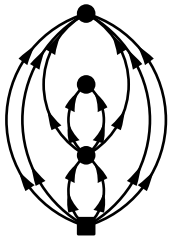


$$\text{T3} = \frac{1}{a_1(a_2 + a_3)a_3} \tag{721}$$

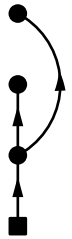
$$a_1 = \epsilon_{k_3 k_4 k_5 k_6}$$
$$a_2 = \epsilon^{k_7 k_8}_{k_1 k_2}$$
$$a_3 = \epsilon_{k_7 k_8}$$

Diagram 359:

$$\text{PO3.359} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^3(4!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{42}_{k_7 k_8 k_9 k_{10} k_1 k_2} \Omega^{02}_{k_7 k_8} \Omega^{06}_{k_9 k_{10} k_3 k_4 k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_1) e^{-\tau_1 \epsilon^{k_7 k_8 k_9 k_{10}}_{k_1 k_2}} e^{-\tau_2 \epsilon_{k_7 k_8}} e^{-\tau_3 \epsilon_{k_3 k_4 k_5 k_6 k_9 k_{10}}}$$
$$= \frac{(-1)^3}{(2!)^3(4!)} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{42}_{k_7 k_8 k_9 k_{10} k_1 k_2} \Omega^{02}_{k_7 k_8} \Omega^{06}_{k_9 k_{10} k_3 k_4 k_5 k_6}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_7 k_8}\ \epsilon_{k_3 k_4 k_5 k_6 k_9 k_{10}}} \tag{722}$$



$\rightarrow$ T2:

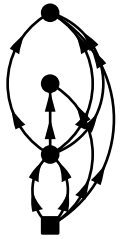


$$\text{T2} = \frac{1}{(a_1 + a_2 + a_3)a_2 a_3} \tag{723}$$

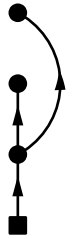
$$\begin{aligned} a_1 &= \epsilon^{k_7 k_8 k_9 k_{10}}_{k_1 k_2} \\ a_2 &= \epsilon_{k_7 k_8} \\ a_3 &= \epsilon_{k_3 k_4 k_5 k_6 k_9 k_{10}} \end{aligned}$$

Diagram 360:

$$\begin{aligned} \text{PO3.360} &= \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)(3!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{42}_{k_5 k_6 k_7 k_8 k_1 k_2} \Omega^{02}_{k_5 k_3} \Omega^{04}_{k_6 k_7 k_8 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_1) e^{-\tau_1 \epsilon^{k_5 k_6 k_7 k_8}_{k_1 k_2}} e^{-\tau_2 \epsilon_{k_3 k_5}} e^{-\tau_3 \epsilon_{k_4 k_6 k_7 k_8}} \\ &= \frac{-(-1)^3}{(2!)(3!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{42}_{k_5 k_6 k_7 k_8 k_1 k_2} \Omega^{02}_{k_5 k_3} \Omega^{04}_{k_6 k_7 k_8 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_3 k_5}\ \epsilon_{k_4 k_6 k_7 k_8}} \end{aligned} \tag{724}$$



$\rightarrow$ T2:

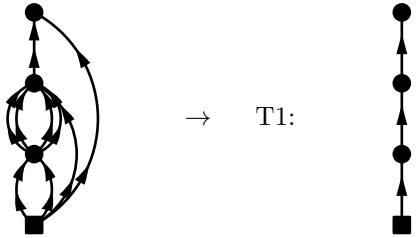


$$\text{T2} = \frac{1}{(a_1 + a_2 + a_3)a_2 a_3} \tag{725}$$

$$a_1 = \epsilon^{k_5 k_6 k_7 k_8}_{k_1 k_2}$$
$$a_2 = \epsilon_{k_3 k_5}$$
$$a_3 = \epsilon_{k_4 k_6 k_7 k_8}$$

Diagram 361:

$$\text{PO3.361} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(4!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{42}_{k_5 k_6 k_7 k_8 k_1 k_2} \Omega^{15}_{k_9 k_5 k_6 k_7 k_8 k_3} \Omega^{02}_{k_9 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_5 k_6 k_7 k_8}_{k_1 k_2}} e^{-\tau_2 \epsilon^{k_9}_{k_3 k_5 k_6 k_7 k_8}} e^{-\tau_3 \epsilon_{k_4 k_9}}$$
$$= \frac{(-1)^3}{(2!)(4!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{42}_{k_5 k_6 k_7 k_8 k_1 k_2} \Omega^{15}_{k_9 k_5 k_6 k_7 k_8 k_3} \Omega^{02}_{k_9 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_3 k_5 k_6 k_7 k_8 k_4}\ \epsilon_{k_4 k_9}} \tag{726}$$

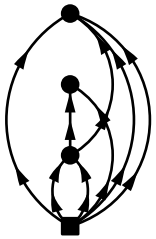


$$\text{T1} = \frac{1}{(a_1 + a_2 + a_3)(a_2 + a_3)a_3} \tag{727}$$

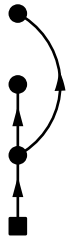
$$a_1 = \epsilon^{k_5 k_6 k_7 k_8}_{k_1 k_2}$$
$$a_2 = \epsilon^{k_9}_{k_3 k_5 k_6 k_7 k_8}$$
$$a_3 = \epsilon_{k_4 k_9}$$

Diagram 362:

$$\text{PO3.362} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)(3!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{22}_{k_7 k_8 k_1 k_2} \Omega^{02}_{k_7 k_3} \Omega^{04}_{k_8 k_4 k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_1) e^{-\tau_1 \epsilon^{k_7 k_8}_{k_1 k_2}} e^{-\tau_2 \epsilon_{k_3 k_7}} e^{-\tau_3 \epsilon_{k_4 k_5 k_6 k_8}}$$
$$= \frac{-(-1)^3}{(2!)(3!)} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{22}_{k_7 k_8 k_1 k_2} \Omega^{02}_{k_7 k_3} \Omega^{04}_{k_8 k_4 k_5 k_6}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_3 k_7}\ \epsilon_{k_4 k_5 k_6 k_8}} \tag{728}$$



$\rightarrow$ T2:

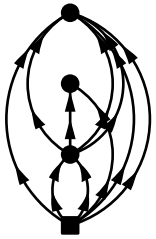


$$\text{T2} = \frac{1}{(a_1+a_2+a_3)a_2a_3} \tag{729}$$

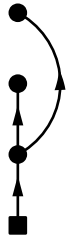
$$\begin{aligned} a_1 &= \epsilon^{k_7k_8}_{k_1k_2} \\ a_2 &= \epsilon_{k_3k_7} \\ a_3 &= \epsilon_{k_4k_5k_6k_8} \end{aligned}$$

Diagram 363:

$$\begin{aligned} \text{PO3.363} &= \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{42}_{k_7k_8k_9k_{10}k_1k_2} \Omega^{02}_{k_7k_3} \Omega^{06}_{k_8k_9k_{10}k_4k_5k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1) e^{-\tau_1 \epsilon^{k_7k_8k_9k_{10}}_{k_1k_2}} e^{-\tau_2\epsilon_{k_3k_7}} e^{-\tau_3\epsilon_{k_4k_5k_6k_8k_9k_{10}}} \\ &= \frac{-(-1)^3}{(2!)(3!)^2} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{42}_{k_7k_8k_9k_{10}k_1k_2} \Omega^{02}_{k_7k_3} \Omega^{06}_{k_8k_9k_{10}k_4k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_3k_7}\ \epsilon_{k_4k_5k_6k_8k_9k_{10}}} \end{aligned} \tag{730}$$



$\rightarrow$ T2:

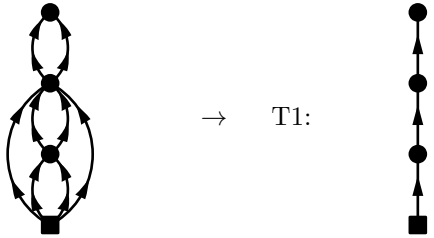


$$\text{T2} = \frac{1}{(a_1+a_2+a_3)a_2a_3} \tag{731}$$

$$a_1 = \epsilon^{k_7 k_8 k_9 k_{10}}_{k_1 k_2}$$
$$a_2 = \epsilon_{k_3 k_7}$$
$$a_3 = \epsilon_{k_4 k_5 k_6 k_8 k_9 k_{10}}$$

Diagram 364:

$$\text{PO3.364} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^4} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{22}_{k_5 k_6 k_1 k_2} \Omega^{24}_{k_7 k_8 k_5 k_6 k_3 k_4} \Omega^{02}_{k_7 k_8} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_5 k_6}_{k_1 k_2}} e^{-\tau_2 \epsilon^{k_7 k_8}_{k_3 k_4 k_5 k_6}} e^{-\tau_3 \epsilon_{k_7 k_8}}$$
$$= \frac{(-1)^3}{(2!)^4} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{22}_{k_5 k_6 k_1 k_2} \Omega^{24}_{k_7 k_8 k_5 k_6 k_3 k_4} \Omega^{02}_{k_7 k_8}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_3 k_4 k_5 k_6}\ \epsilon_{k_7 k_8}} \tag{732}$$

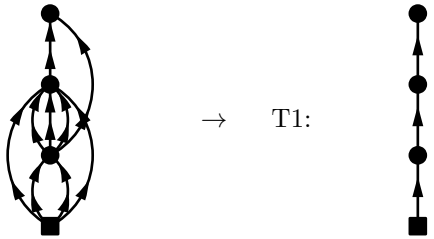


$$\text{T1} = \frac{1}{(a_1 + a_2 + a_3)(a_2 + a_3)a_3} \tag{733}$$

$$a_1 = \epsilon^{k_5 k_6}_{k_1 k_2}$$
$$a_2 = \epsilon^{k_7 k_8}_{k_3 k_4 k_5 k_6}$$
$$a_3 = \epsilon_{k_7 k_8}$$

Diagram 365:

$$\text{PO3.365} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{42}_{k_5 k_6 k_7 k_8 k_1 k_2} \Omega^{15}_{k_9 k_5 k_6 k_7 k_3 k_4} \Omega^{02}_{k_9 k_8} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_5 k_6 k_7 k_8}_{k_1 k_2}} e^{-\tau_2 \epsilon^{k_9}_{k_3 k_4 k_5 k_6 k_7}} e^{-\tau_3 \epsilon_{k_8 k_9}}$$
$$= \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{42}_{k_5 k_6 k_7 k_8 k_1 k_2} \Omega^{15}_{k_9 k_5 k_6 k_7 k_3 k_4} \Omega^{02}_{k_9 k_8}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_3 k_4 k_5 k_6 k_7 k_8}\ \epsilon_{k_8 k_9}} \tag{734}$$

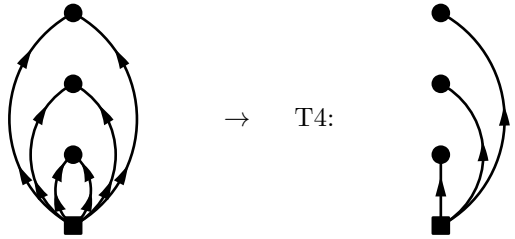


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{735}$$

$$\begin{aligned} a_1 &= \epsilon^{k_5k_6k_7k_8}_{k_1k_2} \\ a_2 &= \epsilon^{k_9}_{k_3k_4k_5k_6k_7} \\ a_3 &= \epsilon_{k_8k_9} \end{aligned}$$

Diagram 366:

$$\begin{aligned} \text{PO3.366} &= \lim_{\tau\to\infty} \frac{(-1)^3}{10(2!)^3} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{02}_{k_1k_2} \Omega^{02}_{k_3k_4} \Omega^{02}_{k_5k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 e^{-\tau_1\epsilon_{k_1k_2}} e^{-\tau_2\epsilon_{k_3k_4}} e^{-\tau_3\epsilon_{k_5k_6}} \\ &= \frac{(-1)^3}{10(2!)^3} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{02}_{k_1k_2} \Omega^{02}_{k_3k_4} \Omega^{02}_{k_5k_6}}{\epsilon_{k_1k_2}\ \epsilon_{k_3k_4}\ \epsilon_{k_5k_6}} \end{aligned} \tag{736}$$

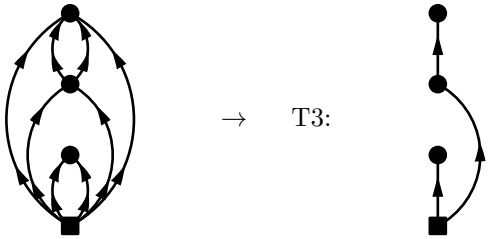


$$\text{T4} = \frac{1}{a_1a_2a_3} \tag{737}$$

$$a_1 = \epsilon_{k_1 k_2}$$
$$a_2 = \epsilon_{k_3 k_4}$$
$$a_3 = \epsilon_{k_5 k_6}$$

Diagram 367:

$$\text{PO3.367} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^4} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{02}_{k_1k_2} \Omega^{22}_{k_7k_8k_3k_4} \Omega^{04}_{k_7k_8k_5k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon_{k_1k_2}} e^{-\tau_2 \epsilon^{k_7k_8}_{k_3k_4}} e^{-\tau_3 \epsilon_{k_5k_6k_7k_8}}$$
$$= \frac{(-1)^3}{(2!)^4} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{02}_{k_1k_2} \Omega^{22}_{k_7k_8k_3k_4} \Omega^{04}_{k_7k_8k_5k_6}}{\epsilon_{k_1k_2}\ \epsilon_{k_3k_4k_5k_6}\ \epsilon_{k_5k_6k_7k_8}} \tag{738}$$



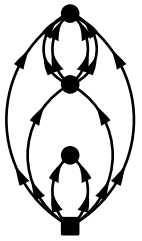
$\to$ T3:

$$\text{T3} = \frac{1}{a_1(a_2+a_3)a_3} \tag{739}$$

$$a_1 = \epsilon_{k_1 k_2}$$
$$a_2 = \epsilon^{k_7 k_8}_{k_3 k_4}$$
$$a_3 = \epsilon_{k_5 k_6 k_7 k_8}$$

Diagram 368:

$$\text{PO3.368} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^3(4!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{02}_{k_1k_2} \Omega^{42}_{k_7k_8k_9k_{10}k_3k_4} \Omega^{06}_{k_7k_8k_9k_{10}k_5k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon_{k_1k_2}} e^{-\tau_2 \epsilon^{k_7k_8k_9k_{10}}_{k_3k_4}} e^{-\tau_3 \epsilon_{k_5k_6k_7k_8k_9k_{10}}}$$
$$= \frac{(-1)^3}{(2!)^3(4!)} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{02}_{k_1k_2} \Omega^{42}_{k_7k_8k_9k_{10}k_3k_4} \Omega^{06}_{k_7k_8k_9k_{10}k_5k_6}}{\epsilon_{k_1k_2}\ \epsilon_{k_3k_4k_5k_6}\ \epsilon_{k_5k_6k_7k_8k_9k_{10}}} \tag{740}$$



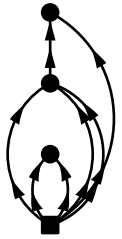
$\rightarrow$ T3:

$$\mathrm{T3} = \frac{1}{a_1(a_2+a_3)a_3} \tag{741}$$

$$\begin{aligned} a_1 &= \epsilon_{k_1k_2} \\ a_2 &= \epsilon^{k_7k_8k_9k_{10}}_{k_3k_4} \\ a_3 &= \epsilon_{k_5k_6k_7k_8k_9k_{10}} \end{aligned}$$

Diagram 369:

$$\begin{aligned} \mathrm{PO3.369} &= \lim_{\tau\to\infty}\frac{(-1)^3}{(2!)(3!)}\sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6}\Omega^{02}_{k_1k_2}\Omega^{13}_{k_7k_3k_4k_5}\Omega^{02}_{k_7k_6}\int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3\theta(\tau_3-\tau_2)e^{-\tau_1\epsilon_{k_1k_2}}e^{-\tau_2\epsilon^{k_7}_{k_3k_4k_5}}e^{-\tau_3\epsilon_{k_6k_7}} \\ &= \frac{(-1)^3}{(2!)(3!)}\sum_{k_i}\frac{O^{60}_{k_1k_2k_3k_4k_5k_6}\Omega^{02}_{k_1k_2}\Omega^{13}_{k_7k_3k_4k_5}\Omega^{02}_{k_7k_6}}{\epsilon_{k_1k_2}\ \epsilon_{k_3k_4k_5k_6}\ \epsilon_{k_6k_7}} \end{aligned} \tag{742}$$



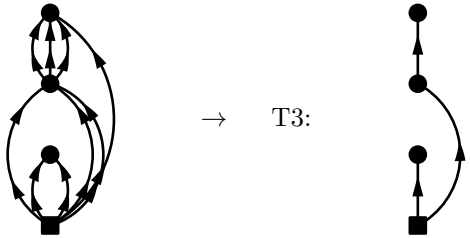
$\rightarrow$ T3:

$$\mathrm{T3} = \frac{1}{a_1(a_2+a_3)a_3} \tag{743}$$

$$a_1 = \epsilon_{k_1 k_2}$$
$$a_2 = \epsilon^{k_7}_{k_3 k_4 k_5}$$
$$a_3 = \epsilon_{k_6 k_7}$$

Diagram 370:

$$\text{PO3.370} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{02}_{k_1k_2} \Omega^{33}_{k_7k_8k_9k_3k_4k_5} \Omega^{04}_{k_7k_8k_9k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon_{k_1k_2}} e^{-\tau_2 \epsilon^{k_7k_8k_9}_{k_3k_4k_5}} e^{-\tau_3 \epsilon_{k_6k_7k_8k_9}}$$
$$= \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{02}_{k_1k_2} \Omega^{33}_{k_7k_8k_9k_3k_4k_5} \Omega^{04}_{k_7k_8k_9k_6}}{\epsilon_{k_1k_2}\ \epsilon_{k_3k_4k_5k_6}\ \epsilon_{k_6k_7k_8k_9}} \tag{744}$$

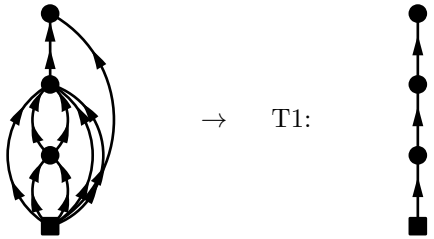


$$\text{T3} = \frac{1}{a_1(a_2+a_3)a_3} \tag{745}$$

$$a_1 = \epsilon_{k_1 k_2}$$
$$a_2 = \epsilon^{k_7k_8k_9}_{k_3k_4k_5}$$
$$a_3 = \epsilon_{k_6k_7k_8k_9}$$

Diagram 371:

$$\text{PO3.371} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{22}_{k_7k_8k_1k_2} \Omega^{15}_{k_9k_7k_8k_3k_4k_5} \Omega^{02}_{k_9k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7k_8}_{k_1k_2}} e^{-\tau_2 \epsilon^{k_9}_{k_3k_4k_5k_7k_8}} e^{-\tau_3 \epsilon_{k_6k_9}}$$
$$= \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{22}_{k_7k_8k_1k_2} \Omega^{15}_{k_9k_7k_8k_3k_4k_5} \Omega^{02}_{k_9k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_3k_4k_5k_7k_8k_6}\ \epsilon_{k_6k_9}} \tag{746}$$

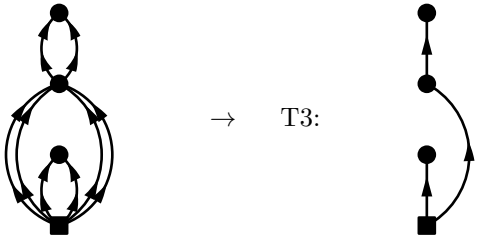


$$\text{T1} = \frac{1}{(a_1 + a_2 + a_3)(a_2 + a_3)a_3} \tag{747}$$

$$\begin{aligned} a_1 &= \epsilon^{k_7 k_8}_{k_1 k_2} \\ a_2 &= \epsilon^{k_9}_{k_3 k_4 k_5 k_7 k_8} \\ a_3 &= \epsilon_{k_6 k_9} \end{aligned}$$

Diagram 372:

$$\begin{aligned} \text{PO3.372} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(4!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{02}_{k_1 k_2} \Omega^{24}_{k_7 k_8 k_3 k_4 k_5 k_6} \Omega^{02}_{k_7 k_8} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon_{k_1 k_2}} e^{-\tau_2 \epsilon^{k_7 k_8}_{k_3 k_4 k_5 k_6}} e^{-\tau_3 \epsilon_{k_7 k_8}} \\ &= \frac{(-1)^3}{(2!)^2(4!)} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{02}_{k_1 k_2} \Omega^{24}_{k_7 k_8 k_3 k_4 k_5 k_6} \Omega^{02}_{k_7 k_8}}{\epsilon_{k_1 k_2}\ \epsilon_{k_3 k_4 k_5 k_6}\ \epsilon_{k_7 k_8}} \end{aligned} \tag{748}$$

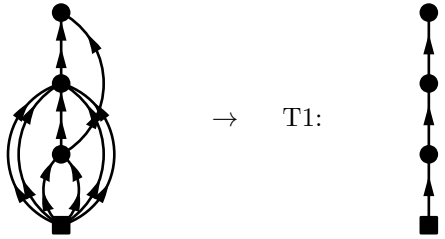


$$\text{T3} = \frac{1}{a_1(a_2 + a_3)a_3} \tag{749}$$

$$a_1 = \epsilon_{k_1 k_2}$$
$$a_2 = \epsilon^{k_7 k_8}_{k_3 k_4 k_5 k_6}$$
$$a_3 = \epsilon_{k_7 k_8}$$

Diagram 373:

$$\text{PO3.373} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(4!)} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{22}_{k_7 k_8 k_1 k_2} \Omega^{15}_{k_9 k_7 k_3 k_4 k_5 k_6} \Omega^{02}_{k_9 k_8} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7 k_8}_{k_1 k_2}} e^{-\tau_2 \epsilon^{k_9}_{k_3 k_4 k_5 k_6 k_7}} e^{-\tau_3 \epsilon_{k_8 k_9}}$$
$$= \frac{(-1)^3}{(2!)(4!)} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{22}_{k_7 k_8 k_1 k_2} \Omega^{15}_{k_9 k_7 k_3 k_4 k_5 k_6} \Omega^{02}_{k_9 k_8}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_3 k_4 k_5 k_6 k_7 k_8}\ \epsilon_{k_8 k_9}} \tag{750}$$

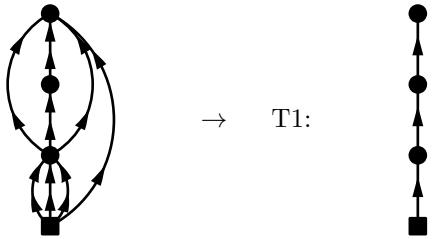


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{751}$$

$$a_1 = \epsilon^{k_7 k_8}_{k_1 k_2}$$
$$a_2 = \epsilon^{k_9}_{k_3 k_4 k_5 k_6 k_7}$$
$$a_3 = \epsilon_{k_8 k_9}$$

Diagram 374:

$$\text{PO3.374} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{33}_{k_5 k_6 k_7 k_1 k_2 k_3} \Omega^{11}_{k_8 k_5} \Omega^{04}_{k_8 k_6 k_7 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5 k_6 k_7}_{k_1 k_2 k_3}} e^{-\tau_2 \epsilon^{k_8}_{k_5}} e^{-\tau_3 \epsilon_{k_4 k_6 k_7 k_8}}$$
$$= \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{33}_{k_5 k_6 k_7 k_1 k_2 k_3} \Omega^{11}_{k_8 k_5} \Omega^{04}_{k_8 k_6 k_7 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_5 k_4 k_6 k_7}\ \epsilon_{k_4 k_6 k_7 k_8}} \tag{752}$$

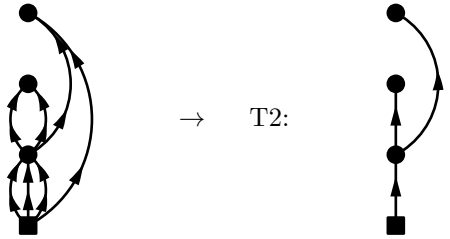


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{753}$$

$$\begin{aligned} a_1 &= \epsilon^{k_5k_6k_7}_{k_1k_2k_3} \\ a_2 &= \epsilon^{k_8}_{k_5} \\ a_3 &= \epsilon_{k_4k_6k_7k_8} \end{aligned}$$

Diagram 375:

$$\begin{aligned} \text{PO3.375} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{33}_{k_5k_6k_7k_1k_2k_3} \Omega^{02}_{k_5k_6} \Omega^{02}_{k_7k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1) e^{-\tau_1 \epsilon^{k_5k_6k_7}_{k_1k_2k_3}} e^{-\tau_2\epsilon_{k_5k_6}} e^{-\tau_3\epsilon_{k_4k_7}} \\ &= \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{33}_{k_5k_6k_7k_1k_2k_3} \Omega^{02}_{k_5k_6} \Omega^{02}_{k_7k_4}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_5k_6}\ \epsilon_{k_4k_7}} \end{aligned} \tag{754}$$

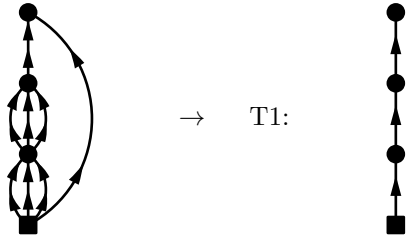


$$\text{T2} = \frac{1}{(a_1+a_2+a_3)a_2a_3} \tag{755}$$

$$a_1 = \epsilon^{k_5 k_6 k_7}_{k_1 k_2 k_3}$$
$$a_2 = \epsilon_{k_5 k_6}$$
$$a_3 = \epsilon_{k_4 k_7}$$

Diagram 376:

$$\text{PO3.376} = \lim_{\tau\to\infty} \frac{(-1)^3}{(3!)^2} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{33}_{k_5 k_6 k_7 k_1 k_2 k_3} \Omega^{13}_{k_8 k_5 k_6 k_7} \Omega^{02}_{k_8 k_4} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_5 k_6 k_7}_{k_1 k_2 k_3}} e^{-\tau_2 \epsilon^{k_8}_{k_5 k_6 k_7}} e^{-\tau_3 \epsilon_{k_4 k_8}}$$
$$= \frac{(-1)^3}{(3!)^2} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{33}_{k_5 k_6 k_7 k_1 k_2 k_3} \Omega^{13}_{k_8 k_5 k_6 k_7} \Omega^{02}_{k_8 k_4}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_5 k_6 k_7 k_4}\ \epsilon_{k_4 k_8}} \tag{756}$$

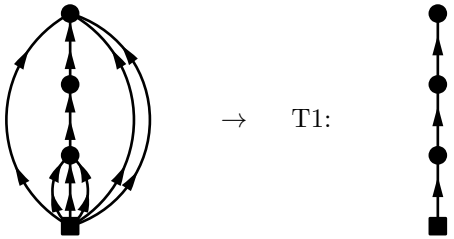


$$\text{T1} = \frac{1}{(a_1 + a_2 + a_3)(a_2 + a_3)a_3} \tag{757}$$

$$a_1 = \epsilon^{k_5 k_6 k_7}_{k_1 k_2 k_3}$$
$$a_2 = \epsilon^{k_8}_{k_5 k_6 k_7}$$
$$a_3 = \epsilon_{k_4 k_8}$$

Diagram 377:

$$\text{PO3.377} = \lim_{\tau\to\infty} \frac{(-1)^3}{(3!)^2} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{13}_{k_7 k_1 k_2 k_3} \Omega^{11}_{k_8 k_7} \Omega^{04}_{k_8 k_4 k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_7}_{k_1 k_2 k_3}} e^{-\tau_2 \epsilon^{k_8}_{k_7}} e^{-\tau_3 \epsilon_{k_4 k_5 k_6 k_8}}$$
$$= \frac{(-1)^3}{(3!)^2} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{13}_{k_7 k_1 k_2 k_3} \Omega^{11}_{k_8 k_7} \Omega^{04}_{k_8 k_4 k_5 k_6}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_7 k_4 k_5 k_6}\ \epsilon_{k_4 k_5 k_6 k_8}} \tag{758}$$

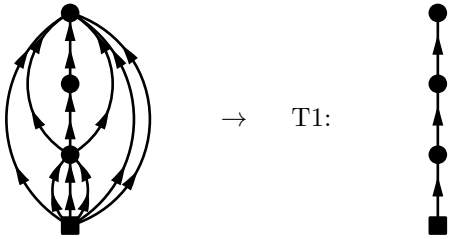


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{759}$$

$$\begin{aligned} a_1 &= \epsilon^{k_7}_{k_1k_2k_3} \\ a_2 &= \epsilon^{k_8}_{k_7} \\ a_3 &= \epsilon_{k_4k_5k_6k_8} \end{aligned}$$

Diagram 378:

$$\begin{aligned} \text{PO3.378} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{33}_{k_7k_8k_9k_1k_2k_3} \Omega^{11}_{k_{10}k_7} \Omega^{06}_{k_{10}k_8k_9k_4k_5k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7k_8k_9}_{k_1k_2k_3}} e^{-\tau_2 \epsilon^{k_{10}}_{k_7}} e^{-\tau_3 \epsilon_{k_4k_5k_6k_8k_9k_{10}}} \\ &= \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{33}_{k_7k_8k_9k_1k_2k_3} \Omega^{11}_{k_{10}k_7} \Omega^{06}_{k_{10}k_8k_9k_4k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_7k_4k_5k_6k_8k_9}\ \epsilon_{k_4k_5k_6k_8k_9k_{10}}} \end{aligned} \tag{760}$$

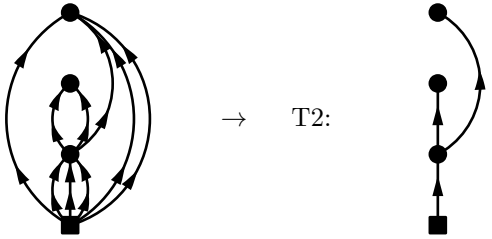


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{761}$$

$$a_1 = \epsilon^{k_7 k_8 k_9}_{k_1 k_2 k_3}$$
$$a_2 = \epsilon^{k_{10}}_{k_7}$$
$$a_3 = \epsilon_{k_4 k_5 k_6 k_8 k_9 k_{10}}$$

Diagram 379:

$$\text{PO3.379} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{33}_{k_7 k_8 k_9 k_1 k_2 k_3} \Omega^{02}_{k_7 k_8} \Omega^{04}_{k_9 k_4 k_5 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1) e^{-\tau_1 \epsilon^{k_7 k_8 k_9}_{k_1 k_2 k_3}} e^{-\tau_2 \epsilon_{k_7 k_8}} e^{-\tau_3 \epsilon_{k_4 k_5 k_6 k_9}}$$
$$= \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{33}_{k_7 k_8 k_9 k_1 k_2 k_3} \Omega^{02}_{k_7 k_8} \Omega^{04}_{k_9 k_4 k_5 k_6}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6}\ \epsilon_{k_7 k_8}\ \epsilon_{k_4 k_5 k_6 k_9}} \tag{762}$$

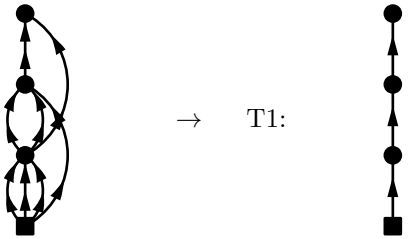


$$\text{T2} = \frac{1}{(a_1+a_2+a_3)a_2 a_3} \tag{763}$$

$$a_1 = \epsilon^{k_7 k_8 k_9}_{k_1 k_2 k_3}$$
$$a_2 = \epsilon_{k_7 k_8}$$
$$a_3 = \epsilon_{k_4 k_5 k_6 k_9}$$

Diagram 380:

$$\text{PO3.380} = \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)(3!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{33}_{k_5 k_6 k_7 k_1 k_2 k_3} \Omega^{13}_{k_8 k_5 k_6 k_4} \Omega^{02}_{k_8 k_7} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5 k_6 k_7}_{k_1 k_2 k_3}} e^{-\tau_2 \epsilon^{k_8}_{k_4 k_5 k_6}} e^{-\tau_3 \epsilon_{k_7 k_8}}$$
$$= \frac{-(-1)^3}{(2!)(3!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{33}_{k_5 k_6 k_7 k_1 k_2 k_3} \Omega^{13}_{k_8 k_5 k_6 k_4} \Omega^{02}_{k_8 k_7}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_4 k_5 k_6 k_7}\ \epsilon_{k_7 k_8}} \tag{764}$$

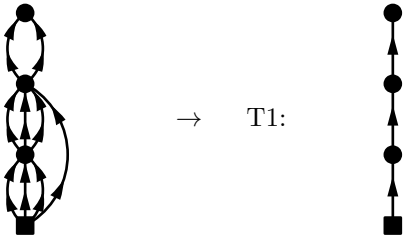


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{765}$$

$$\begin{aligned} a_1 &= \epsilon^{k_5k_6k_7}_{k_1k_2k_3} \\ a_2 &= \epsilon^{k_8}_{k_4k_5k_6} \\ a_3 &= \epsilon_{k_7k_8} \end{aligned}$$

Diagram 381:

$$\begin{aligned} \text{PO3.381} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{40}_{k_1k_2k_3k_4} \Omega^{33}_{k_5k_6k_7k_1k_2k_3} \Omega^{24}_{k_8k_9k_5k_6k_7k_4} \Omega^{02}_{k_8k_9} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_5k_6k_7}_{k_1k_2k_3}} e^{-\tau_2 \epsilon^{k_8k_9}_{k_4k_5k_6k_7}} e^{-\tau_3 \epsilon_{k_8k_9}} \\ &= \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} \frac{O^{40}_{k_1k_2k_3k_4} \Omega^{33}_{k_5k_6k_7k_1k_2k_3} \Omega^{24}_{k_8k_9k_5k_6k_7k_4} \Omega^{02}_{k_8k_9}}{\epsilon_{k_1k_2k_3k_4}\ \epsilon_{k_4k_5k_6k_7}\ \epsilon_{k_8k_9}} \end{aligned} \tag{766}$$

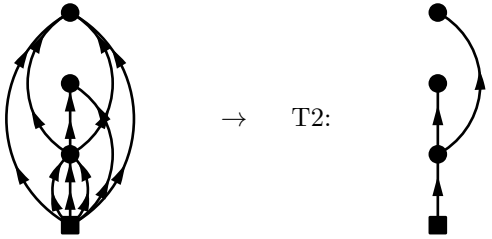


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{767}$$

$$a_1 = \epsilon^{k_5 k_6 k_7}_{k_1 k_2 k_3}$$
$$a_2 = \epsilon^{k_8 k_9}_{k_4 k_5 k_6 k_7}$$
$$a_3 = \epsilon_{k_8 k_9}$$

Diagram 382:

$$\text{PO3.382} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{33}_{k_7k_8k_9k_1k_2k_3} \Omega^{02}_{k_7k_4} \Omega^{04}_{k_8k_9k_5k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1) e^{-\tau_1 \epsilon^{k_7k_8k_9}_{k_1k_2k_3}} e^{-\tau_2 \epsilon_{k_4k_7}} e^{-\tau_3 \epsilon_{k_5k_6k_8k_9}}$$
$$= \frac{(-1)^3}{(2!)^2(3!)} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{33}_{k_7k_8k_9k_1k_2k_3} \Omega^{02}_{k_7k_4} \Omega^{04}_{k_8k_9k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_4k_7}\ \epsilon_{k_5k_6k_8k_9}} \tag{768}$$

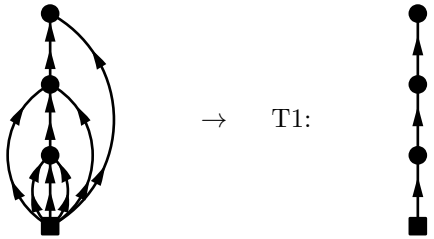


$$\text{T2} = \frac{1}{(a_1+a_2+a_3)a_2a_3} \tag{769}$$

$$a_1 = \epsilon^{k_7k_8k_9}_{k_1k_2k_3}$$
$$a_2 = \epsilon_{k_4k_7}$$
$$a_3 = \epsilon_{k_5k_6k_8k_9}$$

Diagram 383:

$$\text{PO3.383} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{13}_{k_7k_1k_2k_3} \Omega^{13}_{k_8k_7k_4k_5} \Omega^{02}_{k_8k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7}_{k_1k_2k_3}} e^{-\tau_2 \epsilon^{k_8}_{k_4k_5k_7}} e^{-\tau_3 \epsilon_{k_6k_8}}$$
$$= \frac{(-1)^3}{(2!)(3!)} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{13}_{k_7k_1k_2k_3} \Omega^{13}_{k_8k_7k_4k_5} \Omega^{02}_{k_8k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_4k_5k_7k_6}\ \epsilon_{k_6k_8}} \tag{770}$$

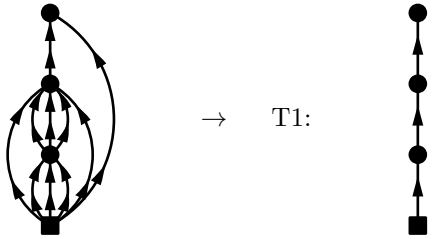


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{771}$$

$$\begin{aligned} a_1 &= \epsilon^{k_7}_{k_1k_2k_3} \\ a_2 &= \epsilon^{k_8}_{k_4k_5k_7} \\ a_3 &= \epsilon_{k_6k_8} \end{aligned}$$

Diagram 384:

$$\begin{aligned} \text{PO3.384} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{33}_{k_7k_8k_9k_1k_2k_3} \Omega^{15}_{k_{10}k_7k_8k_9k_4k_5} \Omega^{02}_{k_{10}k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7k_8k_9}_{k_1k_2k_3}} e^{-\tau_2 \epsilon^{k_{10}}_{k_4k_5k_7k_8k_9}} e^{-\tau_3 \epsilon_{k_6k_{10}}} \\ &= \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{33}_{k_7k_8k_9k_1k_2k_3} \Omega^{15}_{k_{10}k_7k_8k_9k_4k_5} \Omega^{02}_{k_{10}k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_4k_5k_7k_8k_9k_6}\ \epsilon_{k_6k_{10}}} \end{aligned} \tag{772}$$

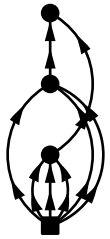


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{773}$$

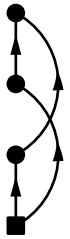
$$a_1 = \epsilon^{k_7 k_8 k_9}_{k_1 k_2 k_3}$$
$$a_2 = \epsilon^{k_{10}}_{k_4 k_5 k_7 k_8 k_9}$$
$$a_3 = \epsilon_{k_6 k_{10}}$$

Diagram 385:

$$\text{PO3.385} = \lim_{\tau\to\infty} \frac{-(-1)^3}{2(3!)^2} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{13}_{k_7k_1k_2k_3} \Omega^{13}_{k_8k_4k_5k_6} \Omega^{02}_{k_8k_7} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7}_{k_1k_2k_3}} e^{-\tau_2 \epsilon^{k_8}_{k_4k_5k_6}} e^{-\tau_3 \epsilon_{k_7k_8}}$$
$$= \frac{-(-1)^3}{2(3!)^2} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{13}_{k_7k_1k_2k_3} \Omega^{13}_{k_8k_4k_5k_6} \Omega^{02}_{k_8k_7} \left[\frac{1}{\epsilon_{k_1k_2k_3k_8}\ \epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_7k_8}} + \frac{1}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_4k_5k_6k_7}\ \epsilon_{k_7k_8}} \right] \tag{774}$$



$\rightarrow$ T5:

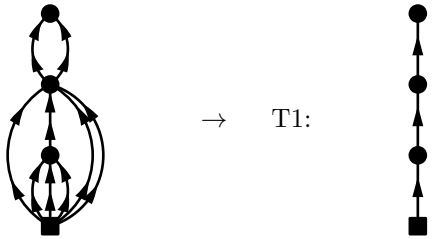


$$\text{T5} = \frac{1}{(a_1+a_3)(a_2+a_1+a_3)a_3} + \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{775}$$

$$a_1 = \epsilon^{k_7}_{k_1k_2k_3}$$
$$a_2 = \epsilon^{k_8}_{k_4k_5k_6}$$
$$a_3 = \epsilon_{k_7k_8}$$

Diagram 386:

$$\text{PO3.386} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{13}_{k_7k_1k_2k_3} \Omega^{24}_{k_8k_9k_7k_4k_5k_6} \Omega^{02}_{k_8k_9} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7}_{k_1k_2k_3}} e^{-\tau_2 \epsilon^{k_8k_9}_{k_4k_5k_6k_7}} e^{-\tau_3 \epsilon_{k_8k_9}}$$
$$= \frac{(-1)^3}{(2!)(3!)^2} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{13}_{k_7k_1k_2k_3} \Omega^{24}_{k_8k_9k_7k_4k_5k_6} \Omega^{02}_{k_8k_9}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_4k_5k_6k_7}\ \epsilon_{k_8k_9}} \tag{776}$$

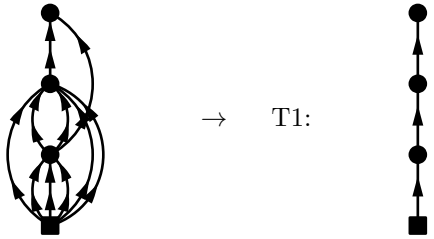


$$\text{T1} = \frac{1}{(a_1 + a_2 + a_3)(a_2 + a_3)a_3} \tag{777}$$

$$\begin{aligned} a_1 &= \epsilon^{k_7}_{k_1 k_2 k_3} \\ a_2 &= \epsilon^{k_8 k_9}_{k_4 k_5 k_6 k_7} \\ a_3 &= \epsilon_{k_8 k_9} \end{aligned}$$

Diagram 387:

$$\begin{aligned} \text{PO3.387} &= \lim_{\tau\to\infty} \frac{-(-1)^3}{(2!)(3!)^2} \sum_{k_i} O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{33}_{k_7 k_8 k_9 k_1 k_2 k_3} \Omega^{15}_{k_{10} k_7 k_8 k_4 k_5 k_6} \Omega^{02}_{k_{10} k_9} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_7 k_8 k_9}_{k_1 k_2 k_3}} e^{-\tau_2 \epsilon^{k_{10}}_{k_4 k_5 k_6 k_7 k_8}} e^{-\tau_3 \epsilon_{k_9 k_{10}}} \\ &= \frac{-(-1)^3}{(2!)(3!)^2} \sum_{k_i} \frac{O^{60}_{k_1 k_2 k_3 k_4 k_5 k_6} \Omega^{33}_{k_7 k_8 k_9 k_1 k_2 k_3} \Omega^{15}_{k_{10} k_7 k_8 k_4 k_5 k_6} \Omega^{02}_{k_{10} k_9}}{\epsilon_{k_1 k_2 k_3 k_4 k_5 k_6} \ \epsilon_{k_4 k_5 k_6 k_7 k_8 k_9} \ \epsilon_{k_9 k_{10}}} \end{aligned} \tag{778}$$

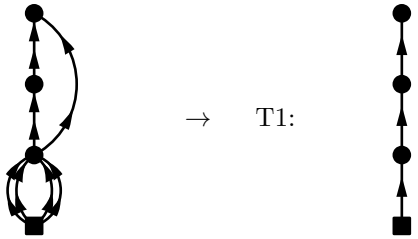


$$\text{T1} = \frac{1}{(a_1 + a_2 + a_3)(a_2 + a_3)a_3} \tag{779}$$

$$a_1 = \epsilon^{k_7 k_8 k_9}_{k_1 k_2 k_3}$$
$$a_2 = \epsilon^{k_{10}}_{k_4 k_5 k_6 k_7 k_8}$$
$$a_3 = \epsilon_{k_9 k_{10}}$$

Diagram 388:

$$\text{PO3.388} = \lim_{\tau\to\infty} \frac{(-1)^3}{(4!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{24}_{k_5 k_6 k_1 k_2 k_3 k_4} \Omega^{11}_{k_7 k_5} \Omega^{02}_{k_7 k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_5 k_6}_{k_1 k_2 k_3 k_4}} e^{-\tau_2 \epsilon^{k_7}_{k_5}} e^{-\tau_3 \epsilon_{k_6 k_7}}$$
$$= \frac{(-1)^3}{(4!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{24}_{k_5 k_6 k_1 k_2 k_3 k_4} \Omega^{11}_{k_7 k_5} \Omega^{02}_{k_7 k_6}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_5 k_6}\ \epsilon_{k_6 k_7}} \tag{780}$$



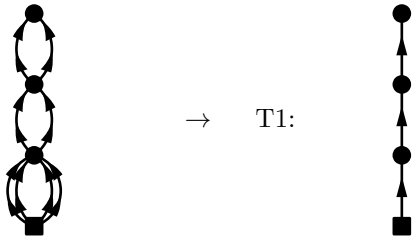
$\rightarrow$ T1:

$$\text{T1} = \frac{1}{(a_1 + a_2 + a_3)(a_2 + a_3)a_3} \tag{781}$$

$$a_1 = \epsilon^{k_5 k_6}_{k_1 k_2 k_3 k_4}$$
$$a_2 = \epsilon^{k_7}_{k_5}$$
$$a_3 = \epsilon_{k_6 k_7}$$

Diagram 389:

$$\text{PO3.389} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^2(4!)} \sum_{k_i} O^{40}_{k_1 k_2 k_3 k_4} \Omega^{24}_{k_5 k_6 k_1 k_2 k_3 k_4} \Omega^{22}_{k_7 k_8 k_5 k_6} \Omega^{02}_{k_7 k_8} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2 - \tau_1)\theta(\tau_3 - \tau_2) e^{-\tau_1 \epsilon^{k_5 k_6}_{k_1 k_2 k_3 k_4}} e^{-\tau_2 \epsilon^{k_7 k_8}_{k_5 k_6}} e^{-\tau_3 \epsilon_{k_7 k_8}}$$
$$= \frac{(-1)^3}{(2!)^2(4!)} \sum_{k_i} \frac{O^{40}_{k_1 k_2 k_3 k_4} \Omega^{24}_{k_5 k_6 k_1 k_2 k_3 k_4} \Omega^{22}_{k_7 k_8 k_5 k_6} \Omega^{02}_{k_7 k_8}}{\epsilon_{k_1 k_2 k_3 k_4}\ \epsilon_{k_5 k_6}\ \epsilon_{k_7 k_8}} \tag{782}$$



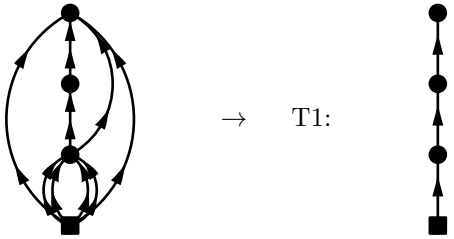
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{783}$$

$$\begin{aligned} a_1 &= \epsilon^{k_5k_6}_{k_1k_2k_3k_4} \\ a_2 &= \epsilon^{k_7k_8}_{k_5k_6} \\ a_3 &= \epsilon_{k_7k_8} \end{aligned}$$

Diagram 390:

$$\begin{aligned} \mathrm{PO3.390} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(4!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{24}_{k_7k_8k_1k_2k_3k_4} \Omega^{11}_{k_9k_7} \Omega^{04}_{k_9k_8k_5k_6} \int_0^\tau \mathrm{d}\tau_1\mathrm{d}\tau_2\mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1\epsilon^{k_7k_8}_{k_1k_2k_3k_4}} e^{-\tau_2\epsilon^{k_9}_{k_7}} e^{-\tau_3\epsilon_{k_5k_6k_8k_9}} \\ &= \frac{(-1)^3}{(2!)(4!)} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{24}_{k_7k_8k_1k_2k_3k_4} \Omega^{11}_{k_9k_7} \Omega^{04}_{k_9k_8k_5k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_7k_5k_6k_8}\ \epsilon_{k_5k_6k_8k_9}} \end{aligned} \tag{784}$$



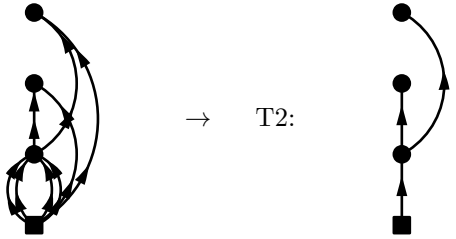
$\rightarrow$ T1:

$$\mathrm{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{785}$$

$$a_1 = \epsilon^{k_7 k_8}_{k_1 k_2 k_3 k_4}$$
$$a_2 = \epsilon^{k_9}_{k_7}$$
$$a_3 = \epsilon_{k_5 k_6 k_8 k_9}$$

Diagram 391:

$$\text{PO3.391} = \lim_{\tau\to\infty} \frac{-(-1)^3}{2(4!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{24}_{k_7k_8k_1k_2k_3k_4} \Omega^{02}_{k_7k_5} \Omega^{02}_{k_8k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1) e^{-\tau_1 \epsilon^{k_7k_8}_{k_1k_2k_3k_4}} e^{-\tau_2 \epsilon_{k_5k_7}} e^{-\tau_3 \epsilon_{k_6k_8}}$$
$$= \frac{-(-1)^3}{2(4!)} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{24}_{k_7k_8k_1k_2k_3k_4} \Omega^{02}_{k_7k_5} \Omega^{02}_{k_8k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_5k_7}\ \epsilon_{k_6k_8}} \tag{786}$$

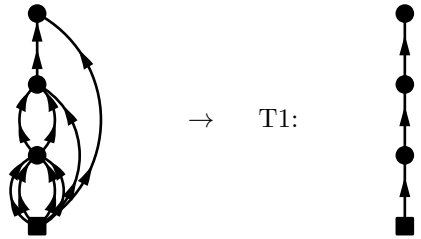


$$\text{T2} = \frac{1}{(a_1+a_2+a_3)a_2a_3} \tag{787}$$

$$a_1 = \epsilon^{k_7k_8}_{k_1k_2k_3k_4}$$
$$a_2 = \epsilon_{k_5k_7}$$
$$a_3 = \epsilon_{k_6k_8}$$

Diagram 392:

$$\text{PO3.392} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(4!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{24}_{k_7k_8k_1k_2k_3k_4} \Omega^{13}_{k_9k_7k_8k_5} \Omega^{02}_{k_9k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7k_8}_{k_1k_2k_3k_4}} e^{-\tau_2 \epsilon^{k_9}_{k_5k_7k_8}} e^{-\tau_3 \epsilon_{k_6k_9}}$$
$$= \frac{(-1)^3}{(2!)(4!)} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{24}_{k_7k_8k_1k_2k_3k_4} \Omega^{13}_{k_9k_7k_8k_5} \Omega^{02}_{k_9k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_5k_7k_8k_6}\ \epsilon_{k_6k_9}} \tag{788}$$

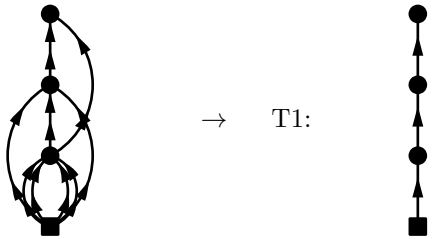


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{789}$$

$$\begin{aligned} a_1 &= \epsilon^{k_7 k_8}_{k_1 k_2 k_3 k_4} \\ a_2 &= \epsilon^{k_9}_{k_5 k_7 k_8} \\ a_3 &= \epsilon_{k_6 k_9} \end{aligned}$$

Diagram 393:

$$\begin{aligned} \text{PO3.393} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(4!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{24}_{k_7k_8k_1k_2k_3k_4} \Omega^{13}_{k_9k_7k_5k_6} \Omega^{02}_{k_9k_8} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7k_8}_{k_1k_2k_3k_4}} e^{-\tau_2 \epsilon^{k_9}_{k_5k_6k_7}} e^{-\tau_3 \epsilon_{k_8k_9}} \\ &= \frac{(-1)^3}{(2!)(4!)} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{24}_{k_7k_8k_1k_2k_3k_4} \Omega^{13}_{k_9k_7k_5k_6} \Omega^{02}_{k_9k_8}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_5k_6k_7k_8}\ \epsilon_{k_8k_9}} \end{aligned} \tag{790}$$

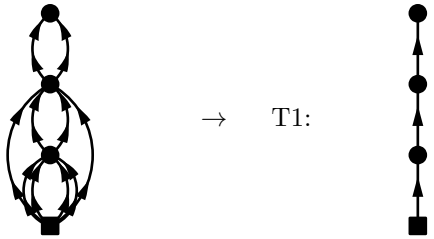


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{791}$$

$$a_1 = \epsilon^{k_7 k_8}_{k_1 k_2 k_3 k_4}$$
$$a_2 = \epsilon^{k_9}_{k_5 k_6 k_7}$$
$$a_3 = \epsilon_{k_8 k_9}$$

Diagram 394:

$$\text{PO3.394} = \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)^3(4!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{24}_{k_7k_8k_1k_2k_3k_4} \Omega^{24}_{k_9k_{10}k_7k_8k_5k_6} \Omega^{02}_{k_9k_{10}} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7k_8}_{k_1k_2k_3k_4}} e^{-\tau_2 \epsilon^{k_9k_{10}}_{k_5k_6k_7k_8}} e^{-\tau_3 \epsilon_{k_9k_{10}}}$$
$$= \frac{(-1)^3}{(2!)^3(4!)} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{24}_{k_7k_8k_1k_2k_3k_4} \Omega^{24}_{k_9k_{10}k_7k_8k_5k_6} \Omega^{02}_{k_9k_{10}}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_5k_6k_7k_8}\ \epsilon_{k_9k_{10}}} \tag{792}$$

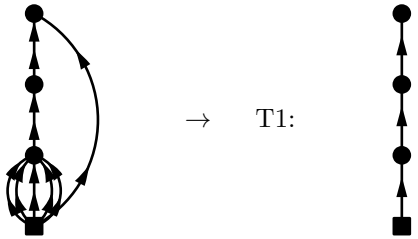


$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{793}$$

$$a_1 = \epsilon^{k_7 k_8}_{k_1 k_2 k_3 k_4}$$
$$a_2 = \epsilon^{k_9 k_{10}}_{k_5 k_6 k_7 k_8}$$
$$a_3 = \epsilon_{k_9 k_{10}}$$

Diagram 395:

$$\text{PO3.395} = \lim_{\tau\to\infty} \frac{(-1)^3}{(5!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{15}_{k_7k_1k_2k_3k_4k_5} \Omega^{11}_{k_8k_7} \Omega^{02}_{k_8k_6} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7}_{k_1k_2k_3k_4k_5}} e^{-\tau_2 \epsilon^{k_8}_{k_7}} e^{-\tau_3 \epsilon_{k_6k_8}}$$
$$= \frac{(-1)^3}{(5!)} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{15}_{k_7k_1k_2k_3k_4k_5} \Omega^{11}_{k_8k_7} \Omega^{02}_{k_8k_6}}{\epsilon_{k_1k_2k_3k_4k_5k_6}\ \epsilon_{k_7k_6}\ \epsilon_{k_6k_8}} \tag{794}$$



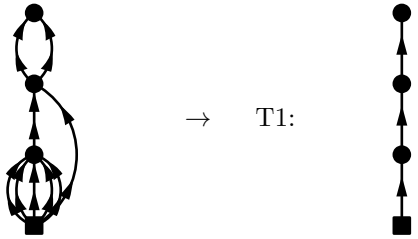
$$\rightarrow \quad \text{T1:}$$

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{795}$$

$$\begin{aligned} a_1 &= \epsilon^{k_7}_{k_1k_2k_3k_4k_5} \\ a_2 &= \epsilon^{k_8}_{k_7} \\ a_3 &= \epsilon_{k_6k_8} \end{aligned}$$

Diagram 396:

$$\begin{aligned} \text{PO3.396} &= \lim_{\tau\to\infty} \frac{(-1)^3}{(2!)(5!)} \sum_{k_i} O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{15}_{k_7k_1k_2k_3k_4k_5} \Omega^{22}_{k_8k_9k_7k_6} \Omega^{02}_{k_8k_9} \int_0^\tau \mathrm{d}\tau_1 \mathrm{d}\tau_2 \mathrm{d}\tau_3 \theta(\tau_2-\tau_1)\theta(\tau_3-\tau_2) e^{-\tau_1 \epsilon^{k_7}_{k_1k_2k_3k_4k_5}} e^{-\tau_2 \epsilon^{k_8k_9}_{k_6k_7}} e^{-\tau_3 \epsilon_{k_8k_9}} \\ &= \frac{(-1)^3}{(2!)(5!)} \sum_{k_i} \frac{O^{60}_{k_1k_2k_3k_4k_5k_6} \Omega^{15}_{k_7k_1k_2k_3k_4k_5} \Omega^{22}_{k_8k_9k_7k_6} \Omega^{02}_{k_8k_9}}{\epsilon_{k_1k_2k_3k_4k_5k_6} \ \epsilon_{k_6k_7} \ \epsilon_{k_8k_9}} \end{aligned} \tag{796}$$



$$\rightarrow \quad \text{T1:}$$

$$\text{T1} = \frac{1}{(a_1+a_2+a_3)(a_2+a_3)a_3} \tag{797}$$

$$a_1 = \epsilon^{k_7}_{k_1 k_2 k_3 k_4 k_5}$$
$$a_2 = \epsilon^{k_8 k_9}_{k_6 k_7}$$
$$a_3 = \epsilon_{k_8 k_9}$$