

$ln[*]:= \$k = 0;$

$R_{1,2} \bar{R}_{3,4} // m_{1,3 \rightarrow 1} // m_{2,4 \rightarrow 2}$

» EZip called with $\{vs, \mathcal{F}, \mathcal{E}\} =$

$$\left\{ \begin{aligned} & \{p_{1,[1]}, p_{1,[3]}, p_{2,[1]}, p_{2,[3]}, p_{3,[1]}, p_{3,[3]}, \pi_{1,[1]}, \pi_{1,[3]}, \pi_{2,[1]}, \pi_{2,[3]}, \pi_{3,[1]}, \pi_{3,[3]}, \\ & x_{1,[1]}, x_{1,[3]}, x_{2,[1]}, x_{2,[3]}, x_{3,[1]}, x_{3,[3]}, \xi_{1,[1]}, \xi_{1,[3]}, \xi_{2,[1]}, \xi_{2,[3]}, \xi_{3,[1]}, \xi_{3,[3]}, \\ & p_{1,[1]} \pi_{1,[1]} + p_{1,[3]} \pi_{1,[3]} + p_{2,[1]} \pi_{2,[1]} + p_{2,[3]} \pi_{2,[3]} + p_{3,[1]} \pi_{3,[1]} + p_{3,[3]} \pi_{3,[3]} + \\ & x_{1,[1]} \xi_{1,[1]} + x_{1,[3]} \xi_{1,[3]} + x_{2,[1]} \xi_{2,[1]} + x_{2,[3]} \xi_{2,[3]} + x_{3,[1]} \xi_{3,[1]} + x_{3,[3]} \xi_{3,[3]}, \\ & \mathbb{E} \left[1, p_{1,1} (\pi_{1,[1]} + \pi_{1,[3]}) + p_{2,1} (\pi_{2,[1]} + \pi_{2,[3]}) + p_{3,1} (\pi_{3,[1]} + \pi_{3,[3]}) + (-1 + T_1) (-p_{1,2} + p_{1,[1]}) x_{1,2} + \right. \\ & \left. \left(-1 + \frac{1}{T_1} \right) (-p_{1,4} + p_{1,[3]}) x_{1,4} - \pi_{1,[3]} \xi_{1,[1]} + x_{1,1} (\xi_{1,[1]} + \xi_{1,[3]}) - \pi_{2,[3]} \xi_{2,[1]} + \right. \\ & \left. x_{2,1} (\xi_{2,[1]} + \xi_{2,[3]}) - \pi_{3,[3]} \xi_{3,[1]} + x_{3,1} (\xi_{3,[1]} + \xi_{3,[3]}) \right], \in \text{Series}[0] \} \end{aligned} \right\}$$

» EZip1 called with $\{vs, \mathcal{F}, \omega, Q, P\} =$

$$\left\{ \begin{aligned} & \{p_{1,[1]}, p_{1,[3]}, p_{2,[1]}, p_{2,[3]}, p_{3,[1]}, p_{3,[3]}, \pi_{1,[1]}, \pi_{1,[3]}, \pi_{2,[1]}, \pi_{2,[3]}, \pi_{3,[1]}, \pi_{3,[3]}, \\ & x_{1,[1]}, x_{1,[3]}, x_{2,[1]}, x_{2,[3]}, x_{3,[1]}, x_{3,[3]}, \xi_{1,[1]}, \xi_{1,[3]}, \xi_{2,[1]}, \xi_{2,[3]}, \xi_{3,[1]}, \xi_{3,[3]}, \\ & p_{1,[1]} \pi_{1,[1]} + p_{1,[3]} \pi_{1,[3]} + p_{2,[1]} \pi_{2,[1]} + p_{2,[3]} \pi_{2,[3]} + p_{3,[1]} \pi_{3,[1]} + p_{3,[3]} \pi_{3,[3]} + \\ & x_{1,[1]} \xi_{1,[1]} + x_{1,[3]} \xi_{1,[3]} + x_{2,[1]} \xi_{2,[1]} + x_{2,[3]} \xi_{2,[3]} + x_{3,[1]} \xi_{3,[1]} + x_{3,[3]} \xi_{3,[3]}, 1, \\ & p_{1,1} (\pi_{1,[1]} + \pi_{1,[3]}) + p_{2,1} (\pi_{2,[1]} + \pi_{2,[3]}) + p_{3,1} (\pi_{3,[1]} + \pi_{3,[3]}) + (-1 + T_1) (-p_{1,2} + p_{1,[1]}) x_{1,2} + \\ & \left(-1 + \frac{1}{T_1} \right) (-p_{1,4} + p_{1,[3]}) x_{1,4} - \pi_{1,[3]} \xi_{1,[1]} + x_{1,1} (\xi_{1,[1]} + \xi_{1,[3]}) - \pi_{2,[3]} \xi_{2,[1]} + \\ & x_{2,1} (\xi_{2,[1]} + \xi_{2,[3]}) - \pi_{3,[3]} \xi_{3,[1]} + x_{3,1} (\xi_{3,[1]} + \xi_{3,[3]}) \right], \in \text{Series}[0] \} \end{aligned} \right\}$$

» EZip2 called with $\{vs, \mathcal{F}, \omega, Q, P\} =$

$$\left\{ \begin{aligned} & \{p_{1,[1]}, p_{1,[3]}, p_{2,[1]}, p_{2,[3]}, p_{3,[1]}, p_{3,[3]}, \pi_{1,[1]}, \pi_{1,[3]}, \pi_{2,[1]}, \pi_{2,[3]}, \pi_{3,[1]}, \pi_{3,[3]}, \\ & x_{1,[1]}, x_{1,[3]}, x_{2,[1]}, x_{2,[3]}, x_{3,[1]}, x_{3,[3]}, \xi_{1,[1]}, \xi_{1,[3]}, \xi_{2,[1]}, \xi_{2,[3]}, \xi_{3,[1]}, \xi_{3,[3]}, \\ & p_{1,[1]} \pi_{1,[1]} + p_{1,[3]} \pi_{1,[3]} + p_{2,[1]} \pi_{2,[1]} + p_{2,[3]} \pi_{2,[3]} + p_{3,[1]} \pi_{3,[1]} + \\ & p_{3,[3]} \pi_{3,[3]} - \pi_{1,[3]} \xi_{1,[1]} + x_{1,[1]} \xi_{1,[1]} + x_{1,[3]} \xi_{1,[3]} - \pi_{2,[3]} \xi_{2,[1]} + \\ & x_{2,[1]} \xi_{2,[1]} + x_{2,[3]} \xi_{2,[3]} - \pi_{3,[3]} \xi_{3,[1]} + x_{3,[1]} \xi_{3,[1]} + x_{3,[3]} \xi_{3,[3]}, 1, \\ & p_{1,1} \pi_{1,[1]} + p_{1,1} \pi_{1,[3]} + p_{2,1} \pi_{2,[1]} + p_{2,1} \pi_{2,[3]} + p_{3,1} \pi_{3,[1]} + p_{3,1} \pi_{3,[3]} + (1 - T_1) p_{1,2} x_{1,2} + \\ & (-1 + T_1) p_{1,[1]} x_{1,2} + \frac{(-1 + T_1) p_{1,4} x_{1,4}}{T_1} + \frac{(1 - T_1) p_{1,[3]} x_{1,4}}{T_1} + x_{1,1} \xi_{1,[1]} + \\ & x_{1,1} \xi_{1,[3]} + x_{2,1} \xi_{2,[1]} + x_{2,1} \xi_{2,[3]} + x_{3,1} \xi_{3,[1]} + x_{3,1} \xi_{3,[3]}, \in \text{Series}[0] \} \end{aligned} \right\}$$

» EZip3 called with $\{vs, \mathcal{F}, \omega, Q, P\} =$

$$\left\{ \begin{aligned} & \{p_{1,[1]}, p_{1,[3]}, p_{2,[1]}, p_{2,[3]}, p_{3,[1]}, p_{3,[3]}, \pi_{1,[1]}, \pi_{1,[3]}, \pi_{2,[1]}, \pi_{2,[3]}, \pi_{3,[1]}, \pi_{3,[3]}, \\ & x_{1,[1]}, x_{1,[3]}, x_{2,[1]}, x_{2,[3]}, x_{3,[1]}, x_{3,[3]}, \xi_{1,[1]}, \xi_{1,[3]}, \xi_{2,[1]}, \xi_{2,[3]}, \xi_{3,[1]}, \xi_{3,[3]}, \\ & p_{1,[1]} \pi_{1,[1]} + p_{1,[3]} \pi_{1,[3]} + p_{2,[1]} \pi_{2,[1]} + p_{2,[3]} \pi_{2,[3]} + p_{3,[1]} \pi_{3,[1]} + \\ & p_{3,[3]} \pi_{3,[3]} - \pi_{1,[3]} \xi_{1,[1]} + x_{1,[1]} \xi_{1,[1]} + x_{1,[3]} \xi_{1,[3]} - \pi_{2,[3]} \xi_{2,[1]} + \\ & x_{2,[1]} \xi_{2,[1]} + x_{2,[3]} \xi_{2,[3]} - \pi_{3,[3]} \xi_{3,[1]} + x_{3,[1]} \xi_{3,[1]} + x_{3,[3]} \xi_{3,[3]}, 1, \\ & (-1 + T_1) p_{1,1} x_{1,2} + (1 - T_1) p_{1,2} x_{1,2} + \frac{(1 - T_1) p_{1,1} x_{1,4}}{T_1} + \frac{(-1 + T_1) p_{1,4} x_{1,4}}{T_1}, \in \text{Series}[0] \} \end{aligned} \right\}$$

» EZip called with $\{vs, \mathcal{F}, \mathcal{E}\} =$

$$\left\{ \begin{aligned} & \{p_{1,[2]}, p_{1,[4]}, p_{2,[2]}, p_{2,[4]}, p_{3,[2]}, p_{3,[4]}, \pi_{1,[2]}, \pi_{1,[4]}, \pi_{2,[2]}, \pi_{2,[4]}, \pi_{3,[2]}, \pi_{3,[4]}, \\ & x_{1,[2]}, x_{1,[4]}, x_{2,[2]}, x_{2,[4]}, x_{3,[2]}, x_{3,[4]}, \xi_{1,[2]}, \xi_{1,[4]}, \xi_{2,[2]}, \xi_{2,[4]}, \xi_{3,[2]}, \xi_{3,[4]}\}, \\ & p_{1,[2]} \pi_{1,[2]} + p_{1,[4]} \pi_{1,[4]} + p_{2,[2]} \pi_{2,[2]} + p_{2,[4]} \pi_{2,[4]} + p_{3,[2]} \pi_{3,[2]} + p_{3,[4]} \pi_{3,[4]} + \\ & x_{1,[2]} \xi_{1,[2]} + x_{1,[4]} \xi_{1,[4]} + x_{2,[2]} \xi_{2,[2]} + x_{2,[4]} \xi_{2,[4]} + x_{3,[2]} \xi_{3,[2]} + x_{3,[4]} \xi_{3,[4]}, \\ & \mathbb{E} \left[1, p_{1,2} (\pi_{1,[2]} + \pi_{1,[4]}) + p_{2,2} (\pi_{2,[2]} + \pi_{2,[4]}) + p_{3,2} (\pi_{3,[2]} + \pi_{3,[4]}) + (-1 + T_1) p_{1,1} x_{1,[2]} + (1 - T_1) \right. \\ & \quad p_{1,[2]} x_{1,[2]} + \frac{(1 - T_1) p_{1,1} x_{1,[4]}}{T_1} + \frac{(-1 + T_1) p_{1,[4]} x_{1,[4]}}{T_1} - \pi_{1,[4]} \xi_{1,[2]} + x_{1,2} (\xi_{1,[2]} + \xi_{1,[4]}) - \\ & \quad \left. \pi_{2,[4]} \xi_{2,[2]} + x_{2,2} (\xi_{2,[2]} + \xi_{2,[4]}) - \pi_{3,[4]} \xi_{3,[2]} + x_{3,2} (\xi_{3,[2]} + \xi_{3,[4]}) \right], \in \text{Series}[0] \} \end{aligned} \right\}$$

» EZip1 called with $\{vs, \mathcal{F}, \omega, Q, P\} =$

$$\left\{ \begin{aligned} & \{p_{1,[2]}, p_{1,[4]}, p_{2,[2]}, p_{2,[4]}, p_{3,[2]}, p_{3,[4]}, \pi_{1,[2]}, \pi_{1,[4]}, \pi_{2,[2]}, \pi_{2,[4]}, \pi_{3,[2]}, \pi_{3,[4]}, \\ & x_{1,[2]}, x_{1,[4]}, x_{2,[2]}, x_{2,[4]}, x_{3,[2]}, x_{3,[4]}, \xi_{1,[2]}, \xi_{1,[4]}, \xi_{2,[2]}, \xi_{2,[4]}, \xi_{3,[2]}, \xi_{3,[4]}\}, \\ & p_{1,[2]} \pi_{1,[2]} + p_{1,[4]} \pi_{1,[4]} + p_{2,[2]} \pi_{2,[2]} + p_{2,[4]} \pi_{2,[4]} + p_{3,[2]} \pi_{3,[2]} + p_{3,[4]} \pi_{3,[4]} + \\ & x_{1,[2]} \xi_{1,[2]} + x_{1,[4]} \xi_{1,[4]} + x_{2,[2]} \xi_{2,[2]} + x_{2,[4]} \xi_{2,[4]} + x_{3,[2]} \xi_{3,[2]} + x_{3,[4]} \xi_{3,[4]}, \\ & 1, p_{1,2} (\pi_{1,[2]} + \pi_{1,[4]}) + p_{2,2} (\pi_{2,[2]} + \pi_{2,[4]}) + p_{3,2} (\pi_{3,[2]} + \pi_{3,[4]}) + \\ & \quad (-1 + T_1) p_{1,1} x_{1,[2]} + (1 - T_1) p_{1,[2]} x_{1,[2]} + \frac{(1 - T_1) p_{1,1} x_{1,[4]}}{T_1} + \\ & \quad \frac{(-1 + T_1) p_{1,[4]} x_{1,[4]}}{T_1} - \pi_{1,[4]} \xi_{1,[2]} + x_{1,2} (\xi_{1,[2]} + \xi_{1,[4]}) - \pi_{2,[4]} \xi_{2,[2]} + \\ & \quad x_{2,2} (\xi_{2,[2]} + \xi_{2,[4]}) - \pi_{3,[4]} \xi_{3,[2]} + x_{3,2} (\xi_{3,[2]} + \xi_{3,[4]}) \right], \in \text{Series}[0] \} \end{aligned} \right\}$$

» EZip2 called with $\{vs, \mathcal{F}, \omega, Q, P\} =$

$$\left\{ \begin{aligned} & \{p_{1,[2]}, p_{1,[4]}, p_{2,[2]}, p_{2,[4]}, p_{3,[2]}, p_{3,[4]}, \pi_{1,[2]}, \pi_{1,[4]}, \pi_{2,[2]}, \pi_{2,[4]}, \pi_{3,[2]}, \pi_{3,[4]}, \\ & x_{1,[2]}, x_{1,[4]}, x_{2,[2]}, x_{2,[4]}, x_{3,[2]}, x_{3,[4]}, \xi_{1,[2]}, \xi_{1,[4]}, \xi_{2,[2]}, \xi_{2,[4]}, \xi_{3,[2]}, \xi_{3,[4]}\}, \\ & p_{1,[2]} \pi_{1,[2]} + (-1 + T_1) p_{1,[2]} \pi_{1,[4]} + p_{1,[4]} \pi_{1,[4]} + p_{2,[2]} \pi_{2,[2]} + p_{2,[4]} \pi_{2,[4]} + p_{3,[2]} \pi_{3,[2]} + \\ & \quad p_{3,[4]} \pi_{3,[4]} + (1 - T_1) p_{1,[2]} x_{1,[2]} + \frac{(1 - 2 T_1 + T_1^2) p_{1,[2]} x_{1,[4]}}{T_1} + \frac{(-1 + T_1) p_{1,[4]} x_{1,[4]}}{T_1} - \\ & \quad \pi_{1,[4]} \xi_{1,[2]} + x_{1,[2]} \xi_{1,[2]} + \frac{(1 - T_1) x_{1,[4]} \xi_{1,[2]}}{T_1} + x_{1,[4]} \xi_{1,[4]} - \pi_{2,[4]} \xi_{2,[2]} + x_{2,[2]} \xi_{2,[2]} + \\ & \quad x_{2,[4]} \xi_{2,[4]} - \pi_{3,[4]} \xi_{3,[2]} + x_{3,[2]} \xi_{3,[2]} + x_{3,[4]} \xi_{3,[4]}, 1, p_{1,2} \pi_{1,[2]} + p_{1,2} \pi_{1,[4]} + \\ & \quad p_{2,2} \pi_{2,[2]} + p_{2,2} \pi_{2,[4]} + p_{3,2} \pi_{3,[2]} + p_{3,2} \pi_{3,[4]} + (-1 + T_1) p_{1,1} x_{1,[2]} + \frac{(1 - T_1) p_{1,1} x_{1,[4]}}{T_1} + \\ & \quad x_{1,2} \xi_{1,[2]} + x_{1,2} \xi_{1,[4]} + x_{2,2} \xi_{2,[2]} + x_{2,2} \xi_{2,[4]} + x_{3,2} \xi_{3,[2]} + x_{3,2} \xi_{3,[4]}, \in \text{Series}[0] \} \end{aligned} \right\}$$

» EZip3 called with $\{vs, \mathcal{F}, \omega, Q, P\} =$

$$\left\{ \begin{aligned} & \{p_{1,[2]}, p_{1,[4]}, p_{2,[2]}, p_{2,[4]}, p_{3,[2]}, p_{3,[4]}, \pi_{1,[2]}, \pi_{1,[4]}, \pi_{2,[2]}, \pi_{2,[4]}, \pi_{3,[2]}, \pi_{3,[4]}, \\ & x_{1,[2]}, x_{1,[4]}, x_{2,[2]}, x_{2,[4]}, x_{3,[2]}, x_{3,[4]}, \xi_{1,[2]}, \xi_{1,[4]}, \xi_{2,[2]}, \xi_{2,[4]}, \xi_{3,[2]}, \xi_{3,[4]}\}, \\ & p_{1,[2]} \pi_{1,[2]} + (-1 + T_1) p_{1,[2]} \pi_{1,[4]} + p_{1,[4]} \pi_{1,[4]} + p_{2,[2]} \pi_{2,[2]} + p_{2,[4]} \pi_{2,[4]} + p_{3,[2]} \pi_{3,[2]} + \\ & \quad p_{3,[4]} \pi_{3,[4]} + (1 - T_1) p_{1,[2]} x_{1,[2]} + \frac{(1 - 2 T_1 + T_1^2) p_{1,[2]} x_{1,[4]}}{T_1} + \frac{(-1 + T_1) p_{1,[4]} x_{1,[4]}}{T_1} - \\ & \quad \pi_{1,[4]} \xi_{1,[2]} + x_{1,[2]} \xi_{1,[2]} + \frac{(1 - T_1) x_{1,[4]} \xi_{1,[2]}}{T_1} + x_{1,[4]} \xi_{1,[4]} - \pi_{2,[4]} \xi_{2,[2]} + \\ & \quad x_{2,[2]} \xi_{2,[2]} + x_{2,[4]} \xi_{2,[4]} - \pi_{3,[4]} \xi_{3,[2]} + x_{3,[2]} \xi_{3,[2]} + x_{3,[4]} \xi_{3,[4]}, 1, 0, \in \text{Series}[0] \} \end{aligned} \right\}$$

Out[*]=

$$E_{\{\} \rightarrow \{1,2\}} [1, 0, \in \text{Series}[0]]$$

In[*]:= \$k = 1;

$$R_{1,2} \bar{R}_{3,4} // m_{1,3 \rightarrow 1} // m_{2,4 \rightarrow 2}$$

$$\begin{aligned}
 & \gg E \left[1, (-1 + T_1) (-p_{1,2} + p_{1,[1]}) x_{1,2} + \left(-1 + \frac{1}{T_1} \right) (-p_{1,4} + p_{1,[3]}) x_{1,4}, \right. \\
 & \quad \in \text{Series} \left[0, \frac{1}{2} (1 - 3 T_1) p_{1,2} p_{1,[1]} x_{1,2}^2 + \frac{1}{2} (-1 + T_1) p_{1,[1]}^2 x_{1,2}^2 - \frac{(-1 - T_1) p_{1,4} p_{1,[3]} x_{1,4}^2}{2 T_1^3} - \right. \\
 & \quad \left. \frac{(1 - T_1) p_{1,[3]}^2 x_{1,4}^2}{2 T_1^3} + p_{1,2} p_{1,[1]} x_{1,2} x_{1,[1]} - \frac{p_{1,4} p_{1,[3]} x_{1,4} x_{1,[3]}}{T_1^2} - \frac{(-1 + T_1) p_{1,[3]}^2 x_{1,4} x_{1,[3]}}{T_1^2} \right] \Bigg] \\
 & \gg E [1, p_{1,1} (\pi_{1,[1]} + \pi_{1,[3]}) + p_{2,1} (\pi_{2,[1]} + \pi_{2,[3]}) + \\
 & \quad p_{3,1} (\pi_{3,[1]} + \pi_{3,[3]}) - \pi_{1,[3]} \xi_{1,[1]} + x_{1,1} (\xi_{1,[1]} + \xi_{1,[3]}) - \pi_{2,[3]} \xi_{2,[1]} + \\
 & \quad x_{2,1} (\xi_{2,[1]} + \xi_{2,[3]}) - \pi_{3,[3]} \xi_{3,[1]} + x_{3,1} (\xi_{3,[1]} + \xi_{3,[3]})], \in \text{Series}[0, 0]] \\
 & \gg E \left[1, p_{1,1} (\pi_{1,[1]} + \pi_{1,[3]}) + p_{2,1} (\pi_{2,[1]} + \pi_{2,[3]}) + p_{3,1} (\pi_{3,[1]} + \pi_{3,[3]}) + \right. \\
 & \quad (-1 + T_1) (-p_{1,2} + p_{1,[1]}) x_{1,2} + \left(-1 + \frac{1}{T_1} \right) (-p_{1,4} + p_{1,[3]}) x_{1,4} - \pi_{1,[3]} \xi_{1,[1]} + \\
 & \quad x_{1,1} (\xi_{1,[1]} + \xi_{1,[3]}) - \pi_{2,[3]} \xi_{2,[1]} + x_{2,1} (\xi_{2,[1]} + \xi_{2,[3]}) - \pi_{3,[3]} \xi_{3,[1]} + x_{3,1} (\xi_{3,[1]} + \xi_{3,[3]})], \\
 & \quad \in \text{Series} \left[0, \frac{1}{2} (1 - 3 T_1) p_{1,2} p_{1,[1]} x_{1,2}^2 + \frac{1}{2} (-1 + T_1) p_{1,[1]}^2 x_{1,2}^2 - \frac{(-1 - T_1) p_{1,4} p_{1,[3]} x_{1,4}^2}{2 T_1^3} - \right. \\
 & \quad \left. \frac{(1 - T_1) p_{1,[3]}^2 x_{1,4}^2}{2 T_1^3} + p_{1,2} p_{1,[1]} x_{1,2} x_{1,[1]} - \frac{p_{1,4} p_{1,[3]} x_{1,4} x_{1,[3]}}{T_1^2} - \frac{(-1 + T_1) p_{1,[3]}^2 x_{1,4} x_{1,[3]}}{T_1^2} \right] \Bigg] \\
 & \gg \text{EZip called with } \{\text{vs}, \mathcal{F}, \mathcal{E}\} = \\
 & \quad \left\{ \{ p_{1,[1]}, p_{1,[3]}, p_{2,[1]}, p_{2,[3]}, p_{3,[1]}, p_{3,[3]}, \pi_{1,[1]}, \pi_{1,[3]}, \pi_{2,[1]}, \pi_{2,[3]}, \pi_{3,[1]}, \pi_{3,[3]}, \right. \\
 & \quad x_{1,[1]}, x_{1,[3]}, x_{2,[1]}, x_{2,[3]}, x_{3,[1]}, x_{3,[3]}, \xi_{1,[1]}, \xi_{1,[3]}, \xi_{2,[1]}, \xi_{2,[3]}, \xi_{3,[1]}, \xi_{3,[3]} \}, \\
 & \quad p_{1,[1]} \pi_{1,[1]} + p_{1,[3]} \pi_{1,[3]} + p_{2,[1]} \pi_{2,[1]} + p_{2,[3]} \pi_{2,[3]} + p_{3,[1]} \pi_{3,[1]} + p_{3,[3]} \pi_{3,[3]} + \\
 & \quad x_{1,[1]} \xi_{1,[1]} + x_{1,[3]} \xi_{1,[3]} + x_{2,[1]} \xi_{2,[1]} + x_{2,[3]} \xi_{2,[3]} + x_{3,[1]} \xi_{3,[1]} + x_{3,[3]} \xi_{3,[3]}, \\
 & \quad E \left[1, p_{1,1} (\pi_{1,[1]} + \pi_{1,[3]}) + p_{2,1} (\pi_{2,[1]} + \pi_{2,[3]}) + p_{3,1} (\pi_{3,[1]} + \pi_{3,[3]}) + \right. \\
 & \quad (-1 + T_1) (-p_{1,2} + p_{1,[1]}) x_{1,2} + \left(-1 + \frac{1}{T_1} \right) (-p_{1,4} + p_{1,[3]}) x_{1,4} - \pi_{1,[3]} \xi_{1,[1]} + \\
 & \quad x_{1,1} (\xi_{1,[1]} + \xi_{1,[3]}) - \pi_{2,[3]} \xi_{2,[1]} + x_{2,1} (\xi_{2,[1]} + \xi_{2,[3]}) - \pi_{3,[3]} \xi_{3,[1]} + x_{3,1} (\xi_{3,[1]} + \xi_{3,[3]})], \\
 & \quad \in \text{Series} \left[0, \frac{1}{2} (1 - 3 T_1) p_{1,2} p_{1,[1]} x_{1,2}^2 + \frac{1}{2} (-1 + T_1) p_{1,[1]}^2 x_{1,2}^2 - \frac{(-1 - T_1) p_{1,4} p_{1,[3]} x_{1,4}^2}{2 T_1^3} - \right. \\
 & \quad \left. \frac{(1 - T_1) p_{1,[3]}^2 x_{1,4}^2}{2 T_1^3} + p_{1,2} p_{1,[1]} x_{1,2} x_{1,[1]} - \frac{p_{1,4} p_{1,[3]} x_{1,4} x_{1,[3]}}{T_1^2} - \frac{(-1 + T_1) p_{1,[3]}^2 x_{1,4} x_{1,[3]}}{T_1^2} \right] \Bigg] \Bigg\}
 \end{aligned}$$

» EZip1 called with {vs, $\mathcal{F}$, ω , Q, P} =

$$\left\{ \begin{aligned} & \{ p_{1,[1]}, p_{1,[3]}, p_{2,[1]}, p_{2,[3]}, p_{3,[1]}, p_{3,[3]}, \pi_{1,[1]}, \pi_{1,[3]}, \pi_{2,[1]}, \pi_{2,[3]}, \pi_{3,[1]}, \pi_{3,[3]}, \\ & x_{1,[1]}, x_{1,[3]}, x_{2,[1]}, x_{2,[3]}, x_{3,[1]}, x_{3,[3]}, \xi_{1,[1]}, \xi_{1,[3]}, \xi_{2,[1]}, \xi_{2,[3]}, \xi_{3,[1]}, \xi_{3,[3]} \}, \\ & p_{1,[1]} \pi_{1,[1]} + p_{1,[3]} \pi_{1,[3]} + p_{2,[1]} \pi_{2,[1]} + p_{2,[3]} \pi_{2,[3]} + p_{3,[1]} \pi_{3,[1]} + p_{3,[3]} \pi_{3,[3]} + \\ & x_{1,[1]} \xi_{1,[1]} + x_{1,[3]} \xi_{1,[3]} + x_{2,[1]} \xi_{2,[1]} + x_{2,[3]} \xi_{2,[3]} + x_{3,[1]} \xi_{3,[1]} + x_{3,[3]} \xi_{3,[3]}, 1, \\ & p_{1,1} (\pi_{1,[1]} + \pi_{1,[3]}) + p_{2,1} (\pi_{2,[1]} + \pi_{2,[3]}) + p_{3,1} (\pi_{3,[1]} + \pi_{3,[3]}) + (-1 + T_1) (-p_{1,2} + p_{1,[1]}) x_{1,2} + \\ & \left(-1 + \frac{1}{T_1} \right) (-p_{1,4} + p_{1,[3]}) x_{1,4} - \pi_{1,[3]} \xi_{1,[1]} + x_{1,1} (\xi_{1,[1]} + \xi_{1,[3]}) - \\ & \pi_{2,[3]} \xi_{2,[1]} + x_{2,1} (\xi_{2,[1]} + \xi_{2,[3]}) - \pi_{3,[3]} \xi_{3,[1]} + x_{3,1} (\xi_{3,[1]} + \xi_{3,[3]}) , \\ & \in \text{Series} \left[0, \frac{1}{2} (1 - 3 T_1) p_{1,2} p_{1,[1]} x_{1,2}^2 + \frac{1}{2} (-1 + T_1) p_{1,[1]}^2 x_{1,2}^2 - \frac{(-1 - T_1) p_{1,4} p_{1,[3]} x_{1,4}^2}{2 T_1^3} - \right. \\ & \left. \frac{(1 - T_1) p_{1,[3]}^2 x_{1,4}^2}{2 T_1^3} + p_{1,2} p_{1,[1]} x_{1,2} x_{1,[1]} - \frac{p_{1,4} p_{1,[3]} x_{1,4} x_{1,[3]}}{T_1^2} - \frac{(-1 + T_1) p_{1,[3]}^2 x_{1,4} x_{1,[3]}}{T_1^2} \right] \end{aligned} \right\}$$

» EZip2 called with {vs, $\mathcal{F}$, ω , Q, P} =

$$\left\{ \begin{aligned} & \{ p_{1,[1]}, p_{1,[3]}, p_{2,[1]}, p_{2,[3]}, p_{3,[1]}, p_{3,[3]}, \pi_{1,[1]}, \pi_{1,[3]}, \pi_{2,[1]}, \pi_{2,[3]}, \pi_{3,[1]}, \pi_{3,[3]}, \\ & x_{1,[1]}, x_{1,[3]}, x_{2,[1]}, x_{2,[3]}, x_{3,[1]}, x_{3,[3]}, \xi_{1,[1]}, \xi_{1,[3]}, \xi_{2,[1]}, \xi_{2,[3]}, \xi_{3,[1]}, \xi_{3,[3]} \}, \\ & p_{1,[1]} \pi_{1,[1]} + p_{1,[3]} \pi_{1,[3]} + p_{2,[1]} \pi_{2,[1]} + p_{2,[3]} \pi_{2,[3]} + p_{3,[1]} \pi_{3,[1]} + p_{3,[3]} \pi_{3,[3]} - \\ & \pi_{1,[3]} \xi_{1,[1]} + x_{1,[1]} \xi_{1,[1]} + x_{1,[3]} \xi_{1,[3]} - \pi_{2,[3]} \xi_{2,[1]} + x_{2,[1]} \xi_{2,[1]} + x_{2,[3]} \xi_{2,[3]} - \\ & \pi_{3,[3]} \xi_{3,[1]} + x_{3,[1]} \xi_{3,[1]} + x_{3,[3]} \xi_{3,[3]}, 1, p_{1,1} \pi_{1,[1]} + p_{1,1} \pi_{1,[3]} + p_{2,1} \pi_{2,[1]} + \\ & p_{2,1} \pi_{2,[3]} + p_{3,1} \pi_{3,[1]} + p_{3,1} \pi_{3,[3]} + (1 - T_1) p_{1,2} x_{1,2} + (-1 + T_1) p_{1,[1]} x_{1,2} + \frac{(-1 + T_1) p_{1,4} x_{1,4}}{T_1} + \\ & \frac{(1 - T_1) p_{1,[3]} x_{1,4}}{T_1} + x_{1,1} \xi_{1,[1]} + x_{1,1} \xi_{1,[3]} + x_{2,1} \xi_{2,[1]} + x_{2,1} \xi_{2,[3]} + x_{3,1} \xi_{3,[1]} + x_{3,1} \xi_{3,[3]}, \\ & \in \text{Series} \left[0, \frac{1}{2} (1 - 3 T_1) p_{1,2} p_{1,[1]} x_{1,2}^2 + \frac{1}{2} (-1 + T_1) p_{1,[1]}^2 x_{1,2}^2 - \frac{(-1 - T_1) p_{1,4} p_{1,[3]} x_{1,4}^2}{2 T_1^3} - \right. \\ & \left. \frac{(1 - T_1) p_{1,[3]}^2 x_{1,4}^2}{2 T_1^3} + p_{1,2} p_{1,[1]} x_{1,2} x_{1,[1]} - \frac{p_{1,4} p_{1,[3]} x_{1,4} x_{1,[3]}}{T_1^2} - \frac{(-1 + T_1) p_{1,[3]}^2 x_{1,4} x_{1,[3]}}{T_1^2} \right] \end{aligned} \right\}$$

» EZip3 called with {vs, $\mathcal{F}$, ω , Q, P} =

$$\left\{ \begin{aligned} & \{p_{1,\$[1]}, p_{1,\$[3]}, p_{2,\$[1]}, p_{2,\$[3]}, p_{3,\$[1]}, p_{3,\$[3]}, \pi_{1,\$[1]}, \pi_{1,\$[3]}, \pi_{2,\$[1]}, \pi_{2,\$[3]}, \pi_{3,\$[1]}, \pi_{3,\$[3]}, \\ & x_{1,\$[1]}, x_{1,\$[3]}, x_{2,\$[1]}, x_{2,\$[3]}, x_{3,\$[1]}, x_{3,\$[3]}, \xi_{1,\$[1]}, \xi_{1,\$[3]}, \xi_{2,\$[1]}, \xi_{2,\$[3]}, \xi_{3,\$[1]}, \xi_{3,\$[3]} \}, \\ & p_{1,\$[1]} \pi_{1,\$[1]} + p_{1,\$[3]} \pi_{1,\$[3]} + p_{2,\$[1]} \pi_{2,\$[1]} + p_{2,\$[3]} \pi_{2,\$[3]} + p_{3,\$[1]} \pi_{3,\$[1]} + \\ & p_{3,\$[3]} \pi_{3,\$[3]} - \pi_{1,\$[3]} \xi_{1,\$[1]} + x_{1,\$[1]} \xi_{1,\$[1]} + x_{1,\$[3]} \xi_{1,\$[3]} - \pi_{2,\$[3]} \xi_{2,\$[1]} + \\ & x_{2,\$[1]} \xi_{2,\$[1]} + x_{2,\$[3]} \xi_{2,\$[3]} - \pi_{3,\$[3]} \xi_{3,\$[1]} + x_{3,\$[1]} \xi_{3,\$[1]} + x_{3,\$[3]} \xi_{3,\$[3]}, \\ & 1, \frac{(-1 + T_1) p_{1,1} x_{1,2} + (1 - T_1) p_{1,2} x_{1,2} + \frac{(1 - T_1) p_{1,1} x_{1,4}}{T_1} + \frac{(-1 + T_1) p_{1,4} x_{1,4}}{T_1}}{T_1}, \\ & \in \text{Series} \left[0, p_{1,1} p_{1,2} x_{1,1} x_{1,2} + p_{1,2} p_{1,\$[1]} x_{1,1} x_{1,2} + \frac{1}{2} (-1 + T_1) p_{1,1}^2 x_{1,2}^2 + \frac{1}{2} (1 - 3 T_1) p_{1,1} p_{1,2} x_{1,2}^2 + \right. \\ & \quad (-1 + T_1) p_{1,1} p_{1,\$[1]} x_{1,2}^2 + \frac{1}{2} (1 - 3 T_1) p_{1,2} p_{1,\$[1]} x_{1,2}^2 + \frac{1}{2} (-1 + T_1) p_{1,\$[1]}^2 x_{1,2}^2 + \frac{(1 - T_1) p_{1,1}^2 x_{1,1} x_{1,4}}{T_1^2} - \\ & \quad \frac{p_{1,1} p_{1,4} x_{1,1} x_{1,4}}{T_1^2} + \frac{(2 - 2 T_1) p_{1,1} p_{1,\$[3]} x_{1,1} x_{1,4}}{T_1^2} - \frac{p_{1,4} p_{1,\$[3]} x_{1,1} x_{1,4}}{T_1^2} + \frac{(1 - T_1) p_{1,\$[3]}^2 x_{1,1} x_{1,4}}{T_1^2} + \\ & \quad \frac{(-1 + T_1) p_{1,1} p_{1,2} x_{1,2} x_{1,4}}{T_1} + \frac{(-1 + T_1) p_{1,2} p_{1,\$[1]} x_{1,2} x_{1,4}}{T_1} + \frac{(-1 + T_1) p_{1,1}^2 x_{1,4}^2}{2 T_1^3} + \\ & \quad \frac{(1 + T_1) p_{1,1} p_{1,4} x_{1,4}^2}{2 T_1^3} + \frac{(-1 + T_1) p_{1,1} p_{1,\$[3]} x_{1,4}^2}{T_1^3} + \frac{(1 + T_1) p_{1,4} p_{1,\$[3]} x_{1,4}^2}{2 T_1^3} + \frac{(-1 + T_1) p_{1,\$[3]}^2 x_{1,4}^2}{2 T_1^3} + \\ & \quad p_{1,1} p_{1,2} x_{1,2} x_{1,\$[1]} + p_{1,2} p_{1,\$[1]} x_{1,2} x_{1,\$[1]} + \frac{(1 - T_1) p_{1,1}^2 x_{1,4} x_{1,\$[3]}}{T_1^2} - \frac{p_{1,1} p_{1,4} x_{1,4} x_{1,\$[3]}}{T_1^2} + \\ & \quad \left. \left. \frac{(2 - 2 T_1) p_{1,1} p_{1,\$[3]} x_{1,4} x_{1,\$[3]}}{T_1^2} - \frac{p_{1,4} p_{1,\$[3]} x_{1,4} x_{1,\$[3]}}{T_1^2} + \frac{(1 - T_1) p_{1,\$[3]}^2 x_{1,4} x_{1,\$[3]}}{T_1^2} \right] \right\} \end{aligned} \right.$$

Out[*]=

\$Aborted

In[*]:= \$k

Out[*]=

1

In[*]:= eSeries[0]

Out[*]=

eSeries[0, 0]

In[*]:= m_{1,3→1}

Out[*]=

$$\mathbb{E}_{\{1,3\} \rightarrow \{1\}} [1, p_{1,1} (\pi_{1,1} + \pi_{1,3}) + p_{2,1} (\pi_{2,1} + \pi_{2,3}) + p_{3,1} (\pi_{3,1} + \pi_{3,3}) - \pi_{1,3} \xi_{1,1} + x_{1,1} (\xi_{1,1} + \xi_{1,3}) - \pi_{2,3} \xi_{2,1} + x_{2,1} (\xi_{2,1} + \xi_{2,3}) - \pi_{3,3} \xi_{3,1} + x_{3,1} (\xi_{3,1} + \xi_{3,3}), \in \text{Series}[0, 0]]$$

In[*]:= E_{{1,3}→{1}}[1, p_{1,1} (π_{1,1} + π_{1,3}) + p_{2,1} (π_{2,1} + π_{2,3}) + p_{3,1} (π_{3,1} + π_{3,3}) - π_{1,3} ξ_{1,1} +

x_{1,1} (ξ_{1,1} + ξ_{1,3}) - π_{2,3} ξ_{2,1} + x_{2,1} (ξ_{2,1} + ξ_{2,3}) - π_{3,3} ξ_{3,1} + x_{3,1} (ξ_{3,1} + ξ_{3,3}), eSeries[0]]

Out[*]=

$$\mathbb{E}_{\{1,3\} \rightarrow \{1\}} [1, p_{1,1} (\pi_{1,1} + \pi_{1,3}) + p_{2,1} (\pi_{2,1} + \pi_{2,3}) + p_{3,1} (\pi_{3,1} + \pi_{3,3}) - \pi_{1,3} \xi_{1,1} + x_{1,1} (\xi_{1,1} + \xi_{1,3}) - \pi_{2,3} \xi_{2,1} + x_{2,1} (\xi_{2,1} + \xi_{2,3}) - \pi_{3,3} \xi_{3,1} + x_{3,1} (\xi_{3,1} + \xi_{3,3}), \in \text{Series}[0, 0]]$$

In[*]:= ? eSeries

Out[*]=

Symbol
Global`eSeries
UpValue Definitions $S1_eSeries \equiv S2_eSeries \wedge := \text{Length}[S1] == \text{Length}[S2] \ \&\& \ \text{Inner}[\text{CF}[\#1] == \text{CF}[\#2] \ \&, S1, S2, \text{And}]$ $S1_eSeries + S2_eSeries \wedge :=$ $eSeries @@ \text{Table}[S1[[k]] + S2[[k]], \{k, \text{Min}[\text{Length}[S1], \text{Length}[S2]]\}]$ $S1_eSeries S2_eSeries \wedge :=$ $eSeries @@ \text{Table}[\sum_{j=0}^k S1[[j+1]] S2[[k-j+1]], \{k, 0, \text{Min}[\text{Length}[S1], \text{Length}[S2]] - 1\}]$ $c_S_eSeries \wedge := (c \ \&\#1 \ \&) /@ S$ $\partial_{vs_} S_eSeries \wedge := \text{Function}[s, \partial_{vs} s] /@ S$ DownValue Definitions $eSeries[0] /; \\$k > 0 := eSeries @@ \text{Table}[0, \\$k + 1]$ Full Name Global`eSeries