

Pensieve header: Demo of NOE-0 and NOE-1t for Toronto-1609. Follows pensieve://Projects/OneCo-1606/.

```
SetDirectory["C:\\drorbn\\AcademicPensieve\\Talks\\Toronto-1609"];
```

NOE-0

OR

$$R_{\theta, i_-, j_-}^+ := \mathbb{E} [b_i c_j + b_i^{-1} (e^{b_i} - 1) u_i w_j]; \quad R_{\theta, i_-, j_-}^- := \mathbb{E} [-b_i c_j + b_i^{-1} (e^{-b_i} - 1) u_i w_j];$$

Util

```
CF[ $\omega_-$ .  $\mathbb{E}[Q_-]$ ] := Simplify[ $\omega$ ]  $\mathbb{E}$ [Simplify[ $Q$ ]];
 $\mathbb{E}$  /:  $\mathbb{E}[Q1_-] \mathbb{E}[Q2_-]$  := CF@ $\mathbb{E}[Q1 + Q2]$ ;
 $\omega1_-$ .  $\mathbb{E}[Q1_-]$   $\equiv$   $\omega2_-$ .  $\mathbb{E}[Q2_-]$  := Simplify[ $\omega1 == \omega2 \wedge Q1 == Q2$ ];
```

ONO

```
Nu_i c_j -> k_- [ $\omega_-$ .  $\mathbb{E}[Q_-]$ ] := CF [
   $\omega \mathbb{E} [e^{-\gamma} \beta u_k + \gamma c_k + (Q / . c_j | u_i \rightarrow \theta)] / . \{\gamma \rightarrow \partial_{c_j} Q, \beta \rightarrow \partial_{u_i} Q\}$ ];
Nw_i c_j -> k_- [ $\omega_-$ .  $\mathbb{E}[Q_-]$ ] := CF [
   $\omega \mathbb{E} [e^{\gamma} \alpha w_k + \gamma c_k + (Q / . c_j | w_i \rightarrow \theta)] / . \{\gamma \rightarrow \partial_{c_j} Q, \alpha \rightarrow \partial_{w_i} Q\}$ ];
Nw_i u_j -> k_- [ $\omega_-$ .  $\mathbb{E}[Q_-]$ ] := CF [
   $v \omega \mathbb{E} [-b_k v \alpha \beta + v \beta u_k + v \delta u_k w_k + v \alpha w_k + (Q / . w_i | u_j \rightarrow \theta)] / . v \rightarrow (1 + b_k \delta)^{-1} / .$ 
   $\{\alpha \rightarrow \partial_{w_i} Q / . u_j \rightarrow \theta, \beta \rightarrow \partial_{u_j} Q / . w_i \rightarrow \theta, \delta \rightarrow \partial_{w_i, u_j} Q\}$ ];
```

Om

```
m_i, j -> k_- [ $\omega_-$ .  $\mathbb{E}[Q_-]$ ] := CF [Module[{ $x$ },
  ( $\omega \mathbb{E}[Q]$  / .  $b_i | j \rightarrow b_k // Nw_i c_j \rightarrow x // Nu_i c_x \rightarrow x // Nw_x u_j \rightarrow x$ ) / . { $c_i \rightarrow c_k, w_j \rightarrow w_k, y_x \rightarrow y_k$ }]]
```

T00

$$T_{\theta, \theta} = R_{\theta, 5, 1}^+ R_{\theta, 2, 4}^+ R_{\theta, 3, 6}^-$$

T00

$$\mathbb{E} \left[b_5 c_1 + b_2 c_4 - b_3 c_6 + \frac{(-1 + e^{b_5}) u_5 w_1}{b_5} + \frac{(-1 + e^{b_2}) u_2 w_4}{b_2} + \frac{(-1 + e^{-b_3}) u_3 w_6}{b_3} \right]$$

T01

$$T_{\theta, 1} = T_{\theta, \theta} // Nu_3 c_4 \rightarrow 4$$

T01

$$\mathbb{E} \left[b_5 c_1 + b_2 c_4 - b_3 c_6 + \frac{(-1 + e^{b_5}) u_5 w_1}{b_5} + \frac{(-1 + e^{b_2}) u_2 w_4}{b_2} + \frac{e^{-b_2} (-1 + e^{-b_3}) u_4 w_6}{b_3} \right]$$

T02

$$T_{\theta, 2} = T_{\theta, 1} // Nw_4 u_5 \rightarrow 4$$

T02

$$\mathbb{E} \left[b_5 c_1 + b_2 c_4 + \frac{(-1 + e^{b_5}) (-(-1 + e^{b_2}) b_4 u_2 + b_2 u_4) w_1}{b_2 b_5} + \frac{(-1 + e^{b_2}) u_2 w_4}{b_2} - \frac{b_3^2 c_6 + e^{-b_2 - b_3} (-1 + e^{b_3}) u_4 w_6}{b_3} \right]$$

T03

$$T_{\theta, 2} // Nw_1 u_2 \rightarrow 1$$

T03

$$\frac{1}{1 - \frac{(-1 + e^{b_2}) (-1 + e^{b_5}) b_1 b_4}{b_2 b_5}} \mathbb{E} \left[\frac{1}{b_3 \left((-1 + e^{b_2}) (-1 + e^{b_5}) b_1 b_4 - b_2 b_5 \right)} \right. \\ \left. \left(b_3 b_5 \left((-1 + e^{b_2}) (-1 + e^{b_5}) b_1 b_4 - b_2 b_5 \right) c_1 + b_2 b_3 \left((-1 + e^{b_2}) (-1 + e^{b_5}) b_1 b_4 - b_2 b_5 \right) c_4 + \right. \right. \\ \left. \left. (-1 + e^{b_2}) (-1 + e^{b_5}) b_3 b_4 u_1 w_1 - (-1 + e^{b_5}) b_2 b_3 u_4 w_1 - (-1 + e^{b_2}) b_3 b_5 u_1 w_4 + \right. \right. \\ \left. \left. (-1 + e^{b_2}) (-1 + e^{b_5}) b_1 b_3 u_4 w_4 - \left((-1 + e^{b_2}) (-1 + e^{b_5}) b_1 b_4 - b_2 b_5 \right) (b_3^2 c_6 + e^{-b_2 - b_3} (-1 + e^{b_3}) u_4 w_6) \right) \right]$$

T04

 $T_{0,0} // m_{1,2 \rightarrow 1} // m_{3,4 \rightarrow 3} // m_{3,5 \rightarrow 3} // m_{3,6 \rightarrow 3}$

T04

$$\mathbb{E} \left[b_3 c_1 + b_1 c_3 - b_3 c_3 + \frac{(-1 + e^{b_1}) (-1 + e^{b_3}) u_1 w_1}{(-e^{b_1} - e^{b_3} + e^{b_1+b_3}) b_1} - \frac{e^{-b_3} (-1 + e^{b_1}) (b_3 u_1 - e^{b_3} (-1 + e^{b_3}) b_1 u_3) w_3}{(-e^{b_1} - e^{b_3} + e^{b_1+b_3}) b_1 b_3} + \frac{e^{-b_1} (-1 + e^{b_3}) u_3 (-e^{b_1+b_3} w_1 + (e^{b_1} + e^{b_3} - e^{b_1+b_3}) w_3)}{(-e^{b_1} - e^{b_3} + e^{b_1+b_3}) b_3} \right] / \left(1 - (-1 + e^{b_1}) (-1 + e^{b_3}) \right)$$

0Q0

 $Q0 = \mathbb{E} [\text{Sum}[f_i c_i, \{i, 3\}] + \text{Sum}[f_{i,j} u_i w_j, \{i, 3\}, \{j, 3\}]]$

0Q0

$$\mathbb{E} [c_1 f_1 + c_2 f_2 + c_3 f_3 + u_1 w_1 f_{1,1} + u_1 w_2 f_{1,2} + u_1 w_3 f_{1,3} + u_2 w_1 f_{2,1} + u_2 w_2 f_{2,2} + u_2 w_3 f_{2,3} + u_3 w_1 f_{3,1} + u_3 w_2 f_{3,2} + u_3 w_3 f_{3,3}]$$

0NODemo

 $Q0 // N_{w_1 u_2 \rightarrow 3}$

0NODemo

$$\frac{1}{1 + b_3 f_{2,1}} \mathbb{E} [c_1 f_1 + c_2 f_2 + c_3 f_3 + u_1 w_2 f_{1,2} + u_1 w_3 f_{1,3} + \frac{u_3 w_3 f_{2,1}}{1 + b_3 f_{2,1}} + \frac{u_3 (w_2 f_{2,2} + w_3 f_{2,3})}{1 + b_3 f_{2,1}} + \frac{w_3 (u_1 f_{1,1} + u_3 f_{3,1})}{1 + b_3 f_{2,1}} - \frac{b_3 (w_2 f_{2,2} + w_3 f_{2,3}) (u_1 f_{1,1} + u_3 f_{3,1})}{1 + b_3 f_{2,1}} + u_3 w_2 f_{3,2} + u_3 w_3 f_{3,3}]$$

0mDemo

 $Q0 // m_{1,2 \rightarrow 1}$

0mDemo

$$\frac{1}{1 + e^{f_2} b_1 f_{2,1}} \mathbb{E} [c_1 f_1 + c_1 f_2 + c_3 f_3 + e^{-f_2} u_1 (w_1 f_{1,2} + w_3 f_{1,3}) + \frac{e^{f_2} u_1 w_1 f_{2,1}}{1 + e^{f_2} b_1 f_{2,1}} + \frac{u_1 (w_1 f_{2,2} + w_3 f_{2,3})}{1 + e^{f_2} b_1 f_{2,1}} + \frac{w_1 (u_1 f_{1,1} + e^{f_2} u_3 f_{3,1})}{1 + e^{f_2} b_1 f_{2,1}} - \frac{b_1 (w_1 f_{2,2} + w_3 f_{2,3}) (u_1 f_{1,1} + e^{f_2} u_3 f_{3,1})}{1 + e^{f_2} b_1 f_{2,1}} + u_3 w_1 f_{3,2} + u_3 w_3 f_{3,3}]$$

0MetaAssoc

 $(Q0 // m_{1,2 \rightarrow 1} // m_{1,3 \rightarrow 1}) \equiv (Q0 // m_{2,3 \rightarrow 2} // m_{1,2 \rightarrow 1})$

0MetaAssoc

True

0R3Left

 $t1 = R_{0,1,2}^+ R_{0,3,4}^+ R_{0,5,6}^+ // m_{3,5 \rightarrow x} // m_{1,6 \rightarrow y} // m_{2,4 \rightarrow z}$

0R3Left

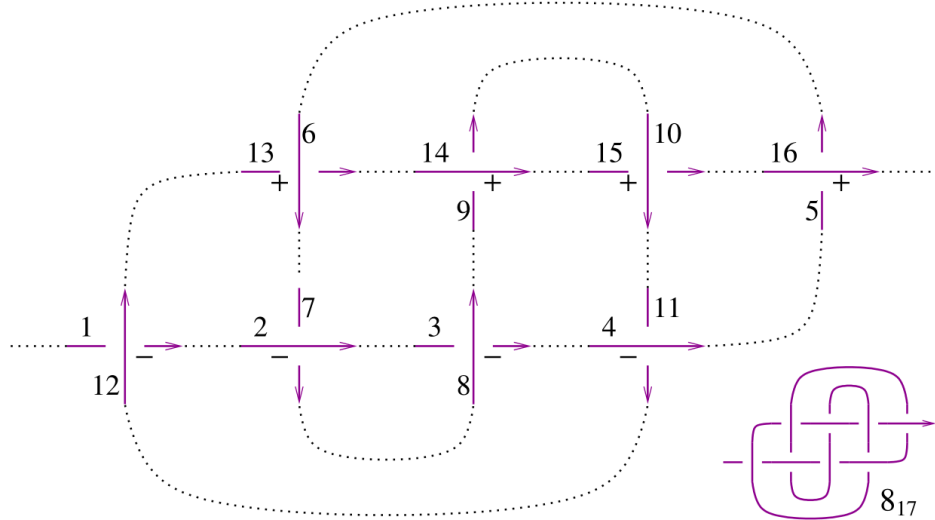
$$\mathbb{E} \left[b_x (c_y + c_z) + \frac{(-1 + e^{b_x}) u_x (w_y + w_z)}{b_x} + \frac{b_y^2 c_z + (-1 + e^{b_y}) u_y w_z}{b_y} \right]$$

0R3

 $t1 \equiv (R_{0,1,2}^+ R_{0,3,4}^+ R_{0,5,6}^+ // m_{1,3 \rightarrow x} // m_{2,5 \rightarrow y} // m_{4,6 \rightarrow z})$

0R3

True



0817

```
z1 = R0-,12,1 R0-,2,7 R0-,8,3 R0-,4,11 R0+,16,5 R0+,6,13 R0+,14,9 R0+,10,15;
Do[z1 = (z1 // m1, n-1) /. b_ -> b, {n, 2, 16}];
{CF@z1, KnotData[{8, 17}, "AlexanderPolynomial"] [t]}
```

0817

$$\left\{ -\frac{e^{3b} \mathbb{E}[\theta]}{1 - 4e^b + 8e^{2b} - 11e^{3b} + 8e^{4b} - 4e^{5b} + e^{6b}}, 11 - \frac{1}{t^3} + \frac{4}{t^2} - \frac{8}{t} - 8t + 4t^2 - t^3 \right\}$$

NOE-I t

Logos

$$\Lambda[k_-] := (1 - t_k) (\alpha^2 \beta^2 + 4 \alpha \beta \delta \mu + 2 \delta^2 \mu^2) / 2 + 2 \mu^2 (\alpha \beta + \delta \mu) c_k - \beta (2 \mu - 1) (\alpha \beta + 2 \delta \mu) u_k + 2 \beta \delta \mu^2 c_k u_k - \beta^2 \delta (3 \mu - 1) u_k^2 / 2 + \alpha (\alpha \beta + 2 \delta \mu) w_k + 2 \alpha \delta \mu^2 c_k w_k - 2 (t_k - 1) \delta^2 (\alpha \beta + \delta \mu) u_k w_k + 2 \delta^2 \mu^2 c_k u_k w_k - \beta \delta^2 (2 \mu - 1) u_k^2 w_k + \alpha^2 \delta (1 + \mu) w_k^2 / 2 + \alpha \delta^2 u_k w_k^2 - (t_k - 1) \delta^4 u_k^2 w_k^2 / 2;$$

1DP

```
DP_{x->D_alpha, y->D_beta}[P_][f_] := (* means P[\partial_alpha, \partial_beta][f] *)
Total[CoefficientRules[P, {x, y}] /. ({m_, n_} -> c_) -> c D[f, {\alpha, m}, {\beta, n}]]
```

1Util

```
CF[IE[\omega_, L_, Q_, P_]] := Expand /@ Together /@
IE[\omega / . b_L_ -> Log[t_L], L, Q / . b_L_ -> Log[t_L], P / . b_L_ -> Log[t_L]];
IE /: IE[\omega1_, L1_, Q1_, P1_] IE[\omega2_, L2_, Q2_, P2_] := CF@IE[\omega1 \omega2, L1 + L2, \omega2 Q1 + \omega1 Q2, \omega2^4 P1 + \omega1^4 P2];
```

1NOc

```
N_{u_i c_j -> k_-}[IE[\omega_, L_, Q_, P_]] := With[{q = e^{-\gamma} \beta u_k + \gamma c_k}, CF[
IE[\omega, \gamma c_k + (L / . c_j -> \theta), \omega e^{-\gamma} \beta u_k + (Q / . u_i -> \theta), e^{-q} DP_{c_j -> D_\gamma, u_i -> D_\beta}[P][e^q]] /. {\gamma -> \partial_{c_j} L, \beta -> \omega^{-1} \partial_{u_i} Q}]];
N_{w_i c_j -> k_-}[IE[\omega_, L_, Q_, P_]] := With[{q = e^{\gamma} \alpha w_k + \gamma c_k}, CF[
IE[\omega, \gamma c_k + (L / . c_j -> \theta), \omega e^{\gamma} \alpha w_k + (Q / . w_i -> \theta), e^{-q} DP_{c_j -> D_\gamma, w_i -> D_\alpha}[P][e^q]] /. {\gamma -> \partial_{c_j} L, \alpha -> \omega^{-1} \partial_{w_i} Q}]];
```

1NOuw

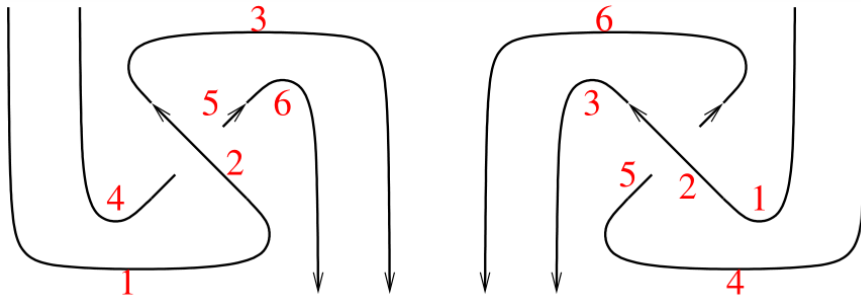
```
N_{w_i u_j -> k_-}[IE[\omega_, L_, Q_, P_]] := With[{q = (1 - t_k) \mu^{-1} \alpha \beta + \mu^{-1} \beta u_k + \mu^{-1} \delta u_k w_k + \mu^{-1} \alpha w_k}, CF[
IE[\omega, L, \mu \omega q + \mu (Q / . w_i | u_j -> \theta), \mu^4 e^{-q} DP_{w_i -> D_\alpha, u_j -> D_\beta}[P][e^q] + \omega^4 \Lambda[k]] /. \mu -> 1 + (t_k - 1) \delta / .
{\alpha -> \omega^{-1} (\partial_{w_i} Q / . u_j -> \theta), \beta -> \omega^{-1} (\partial_{u_j} Q / . w_i -> \theta), \delta -> \omega^{-1} \partial_{w_i, u_j} Q}]];
```

1m

```
m_{i_, j_-> k_-}[Z_] := Module[{x, y, z},
Z // N_{w_i c_j -> x} // N_{w_k u_j -> y} // ReplaceAll[{c_{x|y} -> c_x, w_j -> w_y}] // N_{u_i c_x -> x} // ReplaceAll[z_{-i|j|x|y} -> z_k] // CF]
```

1Gens

$$\begin{aligned}
 R_{i_-,j_-}^+ &:= \mathbb{E} \left[1, b_i c_j, u_i w_j, -c_i (t_i - 1)^2 / 2 - c_i^2 (t_i - 1)^2 / 2 + c_i c_j (t_j^2 - t_i - 2) / 2 - c_j u_i w_i / 2 + c_i (1 - t_i) u_i w_i - \right. \\
 &\quad \left. u_i^2 w_i^2 / 2 + u_i w_j + c_j t_i u_i w_j / 2 + c_i (t_i - 2) t_i u_i w_j + c_i (1 + t_j) u_j w_j / 2 + (t_i - 1) u_i^2 w_i w_j - (t_i - 2) t_i u_i^2 w_j^2 / 2 \right]; \\
 R_{i_-,j_-}^- &:= \mathbb{E} \left[1, -b_i c_j, -t_i^{-1} u_i w_j, c_i (t_i - 1)^2 / 2 + c_i^2 (t_i - 1)^2 / 2 + c_i c_j (2 + t_i - t_j^2) / 2 + c_j u_i w_i / 2 + \right. \\
 &\quad \left. c_i (t_i - 1) u_i w_i + u_i^2 w_i^2 / 2 + (1 - t_i^{-1}) u_i w_j / 2 + c_i (2 t_i - 5 + 3 t_i^{-1}) u_i w_j / 2 + c_j (t_i^{-1} + 1 - t_i^{-1} t_j^2) u_i w_j / 2 - \right. \\
 &\quad \left. c_i (t_j + 1) u_j w_j / 2 + (2 - 3 t_i^{-1}) u_i^2 w_i w_j / 2 + (1 + 2 t_i^{-2} - 3 t_i^{-1}) u_i^2 w_j^2 / 2 - t_i^{-1} (1 + t_j) u_i u_j w_j^2 / 2 \right]; \\
 ur_{i_-} &:= \mathbb{E} [t_i^{-1/4}, \theta, \theta, c_i t_i / 4 + u_i w_i / 8]; \\
 nr_{i_-} &:= \mathbb{E} [t_i^{1/4}, \theta, \theta, -c_i t_i^3 / 4 - t_i^2 u_i w_i / 8]; \\
 ul_{i_-} &:= \mathbb{E} [t_i^{1/4}, \theta, \theta, c_i t_i (4 + t_i) / 4 - t_i^2 u_i w_i / 8]; \\
 nl_{i_-} &:= \mathbb{E} [t_i^{-1/4}, \theta, \theta, -c_i (1 + 4 t_i^{-1}) / 4 + u_i w_i / 8];
 \end{aligned}$$



1SwirlLeft

$$t2 = ur_1 R_{2,5}^- nr_3 ur_4 nr_6 // m_{1,2 \rightarrow 1} // m_{1,3 \rightarrow 1} // m_{4,5 \rightarrow 4} // m_{4,6 \rightarrow 4}$$

1SwirlLeft

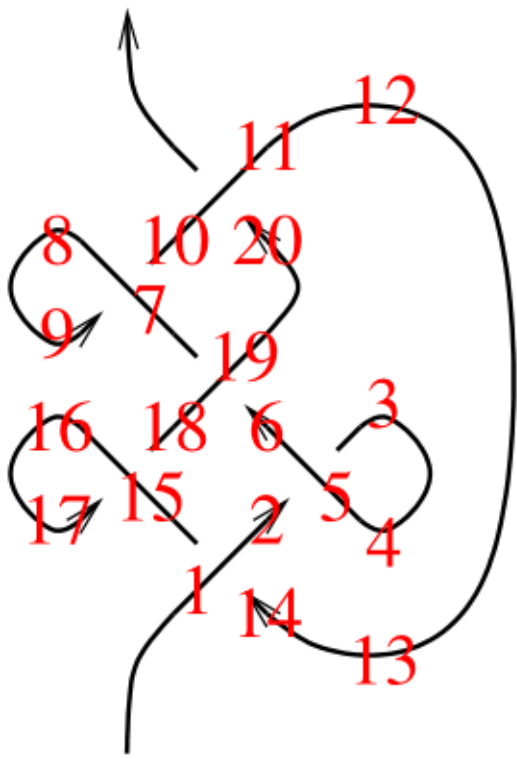
$$\begin{aligned}
 \mathbb{E} \left[1, -b_1 c_4, -\frac{u_1 w_4}{t_1}, \frac{c_1}{2} + \frac{c_1^2}{2} + c_1 c_4 - c_1 t_1 - c_1^2 t_1 + \frac{1}{2} c_1 c_4 t_1 + \frac{1}{2} c_1 t_1^2 + \frac{1}{2} c_1^2 t_1^2 - \frac{1}{2} c_1 c_4 t_4^2 - c_1 u_1 w_1 + \frac{1}{2} c_4 u_1 w_1 + \right. \\
 c_1 t_1 u_1 w_1 + \frac{1}{2} u_1^2 w_1^2 + \frac{3 u_1 w_4}{8} - \frac{5}{2} c_1 u_1 w_4 + \frac{1}{2} c_4 u_1 w_4 - \frac{u_1 w_4}{2 t_1} + \frac{3 c_1 u_1 w_4}{2 t_1} + \frac{c_4 u_1 w_4}{2 t_1} - \frac{1}{8} t_1 u_1 w_4 + c_1 t_1 u_1 w_4 + \frac{t_4 u_1 w_4}{8 t_1} + \\
 \left. \frac{t_4^2 u_1 w_4}{8 t_1} - \frac{c_4 t_4^2 u_1 w_4}{2 t_1} - \frac{1}{2} c_1 u_4 w_4 - \frac{1}{2} c_1 t_4 u_4 w_4 + u_1^2 w_1 w_4 - \frac{3 u_1^2 w_1 w_4}{2 t_1} + \frac{1}{2} u_1^2 w_4^2 + \frac{u_1^2 w_4^2}{t_1^2} - \frac{3 u_1^2 w_4^2}{2 t_1} - \frac{u_1 u_4 w_4^2}{2 t_1} - \frac{t_4 u_1 u_4 w_4^2}{2 t_1} \right]
 \end{aligned}$$

1Swirl

$$t2 == (ul_1 R_{2,5}^- nl_3 ul_4 nl_6 // m_{1,2 \rightarrow 1} // m_{1,3 \rightarrow 1} // m_{4,5 \rightarrow 4} // m_{4,6 \rightarrow 4})$$

1Swirl

True



131 $z2 = R_{1,14}^+ R_{5,2}^- nr_3 ul_4 R_{19,6}^+ R_{7,10}^- nl_8 ur_9 R_{11,20}^+ nr_{12} ul_{13} R_{15,18}^- nl_{16} ur_{17};$
 (Do[z2 = z2 // m_{1,k→1}, {k, 2, 20}]; z2 = z2 /. a₋₁ :-> a)

131
$$\mathbb{E} \left[-1 + \frac{1}{t} + t, 0, 0, -16 + \frac{9c}{2} - \frac{2c}{t^4} + \frac{1}{t^3} + \frac{11c}{2t^3} - \frac{4}{t^2} - \frac{8c}{t^2} + \frac{10}{t} + \frac{4c}{t} + 18t - 10ct - 14t^2 + 8ct^2 + 7t^3 - \frac{3ct^3}{2} - \right.$$

$$\left. 2t^4 - 2ct^4 + 2ct^5 - \frac{ct^6}{2} - 4uw + \frac{2uw}{t^4} - \frac{7uw}{2t^3} + \frac{9uw}{2t^2} + \frac{uw}{2t} + 6t uw - 2t^2 uw - \frac{1}{2}t^3 uw + \frac{3}{2}t^4 uw - \frac{1}{2}t^5 uw \right]$$

131a $\text{FromCoefficientRules}[\text{CoefficientRules}[z2[[4]], \{c, u, w\}] /. \{(e_ \rightarrow a_)\} \rightarrow (e \rightarrow \text{Simplify}[a])], \{c, u, w\}]$

131a
$$-\frac{(1-t+t^2)^2(-1+2t-3t^2+2t^3)}{t^3} - \frac{c(1-t+t^2)^3(4+t-5t^2-t^3+t^4)}{2t^4} - \frac{(1-t+t^2)^3(-4-5t+t^3)uw}{2t^4}$$

Exporting the above as PDF files

The below is adapted from pensieve://2016-04/GaussGassner/GaussGassnerDemo.nb.

```
ConditionalExport[fname_String, rest___] := Module[{temp, exists},
  temp = "ConditionalExportTemporary" <> "." <> FileExtension[fname];
  exists = FileExistsQ[fname];
  Export[temp, rest];
  If[exists && FileByteCount[fname] === FileByteCount[temp],
    DeleteFile[temp],
    (* else *) Print["Exporting " <> fname <> "..."];
    If[exists, DeleteFile[fname]];
    RenameFile[temp, fname]
  ];
  fname
]
```

```
SetOptions[$FrontEndSession, PrintingStyleEnvironment -> "Working"];
```

```

TagProperties[_] := {};
TagProperties["ct-def"] = {PageWidth → 6/0.66};
Options[CellExport] = {
  PageWidth → 4/0.66, CellFilter → Identity, ExportDirectory → "Snips",
  ExportBaseFilename → Automatic, ExportFormat → ".pdf", ExportOptions → {}, Split → False
};
CellExport[tag_String, opts___Rule] := CellExport[
  NotebookGet[EvaluationNotebook[]],
  tag, opts
];
CellExport[nb_Notebook, tag_String] := CellExport[nb, tag, TagProperties[tag]];
CellExport[nb_Notebook, tag_String, OptionsPattern[]] := Module[
  {cells, cell, filename, format},
  filename = FileNameJoin[{
    OptionValue[ExportDirectory] /. Automatic → Directory[],
    OptionValue[ExportBaseFilename] /. Automatic → tag
  }];
  format = OptionValue[ExportFormat];
  cells = OptionValue[CellFilter][Cases[
    nb, c_Cell /; FreeQ[List@@c, Cell] && !FreeQ[c, CellTags → tag],
    Infinity
  ]];
  If[!OptionValue[Split],
    If[Length[cells] ≥ 1,
      If[Length[cells] == 1,
        cells = Join[First[cells],
          Cell[PageWidth → 1.2 × 72 OptionValue[PageWidth], Background → {White, Opacity[0]}]],
        cells = Cell[CellGroup[cells], PageWidth → 72 OptionValue[PageWidth]]
      ];
    ConditionalExport[
      filename <> format, cells,
      ImageResolution → 300,
      OptionValue[ExportOptions]
    ]
  ],
  k = 0;
  Table[
    ++k;
    ConditionalExport[
      filename <> "-" <> ToString[k] <> format,
      Append[cell, PageWidth → 72 OptionValue[PageWidth]],
      ImageResolution → 300,
      OptionValue[ExportOptions]
    ],
    {cell, cells}
  ]
];

ExportCells := (
  nb = NotebookGet[EvaluationNotebook[]];
  tags = Cases[nb, (CellTags → tag_String) ⇒ tag, Infinity] // Union;
  Print[tags];
  CellExport /@ tags;
  Print["Done."]
);

```

ExportCells

```
{0817, 0m, 0mDemo, 0MetaAssoc, 0NO, 0NODemo, 0Q0, 0R, 0R3, 0R3Left, 0Util, 131,  
 131a, 1DP, 1Gens, 1m, 1NOc, 1NOuw, 1Swirl, 1SwirlLeft, 1Util, Logos, T00, T01, T02, T03, T04}
```

Exporting Snips\0817.pdf...

Exporting Snips\0m.pdf...

Exporting Snips\0mDemo.pdf...

Exporting Snips\0MetaAssoc.pdf...

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