

Pensieve header: Conversion to $\$H/Hp\$$ conventions.

```
In[ ]:= SetDirectory["C:\\drorbn\\AcademicPensieve\\Talks\\Waco-2203"];
```

```
In[ ]:= Once[<< KnotTheory` ; << RVK.m];
```

Loading KnotTheory` version of February 2, 2020, 10:53:45.2097.

Read more at <http://katlas.org/wiki/KnotTheory>.

```
In[ ]:= HL[ $\mathcal{E}_$ ] := Style[ $\mathcal{E}$ , Background  $\rightarrow$  If[TrueQ@ $\mathcal{E}$ ,  $\blacksquare$ ,  $\color{red}\square$ ]]];
```

```
In[ ]:=  $\rho$ [K_] := Module[{Cs, r, n, B, A, c, s, i, j,  $\Delta$ , G, g, gg,  $\rho$ 1,  $\rho\rho$ 1, BB, AA, GG},
  {Cs, r} = List@@RVK[K]; n = Length[Cs];
  BB = Table[0, {2 n, 2 n + 1}];
  Do[{s, i, j} = c;
    BB[[{i, j}, {i, j, i + 1, j + 1}]] =  $\left( \begin{array}{ccc} 1 & 0 & -1 \\ 0 & 1 & T^s \end{array} \right)$ , {c, Cs}];
  AA = BB[[All, 2 ;;]];
  A = IdentityMatrix[2 n + 1];
  Do[{s, i, j} = c; A[[{i, j}, {i + 1, j + 1}]] =  $\left( \begin{array}{cc} -1 & 0 \\ T^s & -1 \end{array} \right)$ , {c, Cs}];
  (*Echo[Simplify[Det[A]==Det[AA]]];*)
   $\Delta$  =  $T^{(\text{Total}[r]-\text{Total}[\text{First}/\text{Cs}])/2}$  Det[A];
  GG = Prepend[Table[0, {2 n}][Inverse[AA]]]; gg $_{\alpha, \beta}$  := GG[[ $\alpha$ ,  $\beta$ ]];
  G = Inverse[A]; g $_{\alpha, \beta}$  := G[[ $\alpha$ ,  $\beta$ ]];
  (*Echo[MatrixForm/@Simplify[{A, BB, G, GG-G[All, 1; 2n]}]]];*)
   $\rho\rho$ 1 =  $\Delta^2$  Sum[{s, i, j} = c;
    s
    ((1 - T $^s$ ) gg $_{ij}$  (gg $_{ij}$  - gg $_{jj}$ ) + 2 gg $_{ii}$  gg $_{ij}$  - gg $_{ij}$  gg $_{ji}$  - gg $_{ii}$  gg $_{jj}$  - gg $_{ij}$  + gg $_{jj}$  - 1 / 2), {c, Cs}];
   $\rho\rho$ 1 +=  $\Delta^2$  Sum[r[[k]] (gg $_{kk}$  - 1 / 2), {k, 2 n}];
   $\rho$ 1 =  $\Delta^2$  Sum[{s, i, j} = c;
    s
    ((1 - T $^s$ ) g $_{ij}$  (g $_{ij}$  - g $_{jj}$ ) + 2 g $_{ii}$  g $_{ij}$  - g $_{ij}$  g $_{ji}$  - g $_{ii}$  g $_{jj}$  - g $_{ij}$  + g $_{jj}$  - 1 / 2), {c, Cs}];
   $\rho$ 1 +=  $\Delta^2$  Sum[r[[k]] (g $_{kk}$  - 1 / 2), {k, 2 n}];
  Echo[HL@Simplify[ $\rho$ 1 ==  $\rho\rho$ 1]];
  Factor@{ $\Delta$ ,  $\rho\rho$ 1}];
```

```
In[ ]:= Do[Echo[K  $\rightarrow$   $\rho$ [K]], {K, AllKnots[{3, 10}]}]
```

```
» True
```

```
» Knot[3, 1]  $\rightarrow$   $\left\{ \frac{1 - T + T^2}{T}, \frac{(-1 + T)^2 (1 + T^2)}{T^2} \right\}$ 
```

```
» True
```

```
» Knot[4, 1]  $\rightarrow$   $\left\{ -\frac{1 - 3T + T^2}{T}, 0 \right\}$ 
```

» True

$$\text{Knot}[5, 1] \rightarrow \left\{ \frac{1 - T + T^2 - T^3 + T^4}{T^2}, \frac{(-1 + T)^2 (1 + T^2) (2 + T^2 + 2 T^4)}{T^4} \right\}$$

» True

$$\text{Knot}[5, 2] \rightarrow \left\{ \frac{2 - 3 T + 2 T^2}{T}, \frac{(-1 + T)^2 (5 - 4 T + 5 T^2)}{T^2} \right\}$$

» True

$$\text{Knot}[6, 1] \rightarrow \left\{ -\frac{(-2 + T) (-1 + 2 T)}{T}, \frac{(-1 + T)^2 (1 - 4 T + T^2)}{T^2} \right\}$$

» True

$$\text{Knot}[6, 2] \rightarrow \left\{ -\frac{1 - 3 T + 3 T^2 - 3 T^3 + T^4}{T^2}, \frac{(-1 + T)^2 (1 - 4 T + 4 T^2 - 4 T^3 + 4 T^4 - 4 T^5 + T^6)}{T^4} \right\}$$

» True

$$\text{Knot}[6, 3] \rightarrow \left\{ \frac{1 - 3 T + 5 T^2 - 3 T^3 + T^4}{T^2}, \emptyset \right\}$$

» True

$$\text{Knot}[7, 1] \rightarrow \left\{ \frac{1 - T + T^2 - T^3 + T^4 - T^5 + T^6}{T^3}, \frac{(-1 + T)^2 (1 + T^2) (3 + 2 T^2 + 4 T^4 + 2 T^6 + 3 T^8)}{T^6} \right\}$$

» True

$$\text{Knot}[7, 2] \rightarrow \left\{ \frac{3 - 5 T + 3 T^2}{T}, \frac{2 (-1 + T)^2 (7 - 8 T + 7 T^2)}{T^2} \right\}$$

» True

$$\text{Knot}[7, 3] \rightarrow \left\{ \frac{2 - 3 T + 3 T^2 - 3 T^3 + 2 T^4}{T^2}, -\frac{(-1 + T)^2 (9 - 8 T + 16 T^2 - 12 T^3 + 16 T^4 - 8 T^5 + 9 T^6)}{T^4} \right\}$$

» True

$$\text{Knot}[7, 4] \rightarrow \left\{ \frac{4 - 7 T + 4 T^2}{T}, -\frac{8 (-1 + T)^2 (3 - 4 T + 3 T^2)}{T^2} \right\}$$

» True

$$\text{Knot}[7, 5] \rightarrow \left\{ \frac{2 - 4 T + 5 T^2 - 4 T^3 + 2 T^4}{T^2}, \frac{(-1 + T)^2 (9 - 16 T + 29 T^2 - 28 T^3 + 29 T^4 - 16 T^5 + 9 T^6)}{T^4} \right\}$$

» True

$$\text{Knot}[7, 6] \rightarrow \left\{ -\frac{1 - 5 T + 7 T^2 - 5 T^3 + T^4}{T^2}, \frac{(-1 + T)^2 (1 - 8 T + 19 T^2 - 20 T^3 + 19 T^4 - 8 T^5 + T^6)}{T^4} \right\}$$

» True

$$\text{Knot}[7, 7] \rightarrow \left\{ \frac{1 - 5 T + 9 T^2 - 5 T^3 + T^4}{T^2}, -\frac{(-1 + T)^2 (3 - 8 T + 3 T^2)}{T^2} \right\}$$

» True

$$\gg \text{Knot}[8, 1] \rightarrow \left\{ -\frac{3 - 7T + 3T^2}{T}, \frac{(-1 + T)^2 (5 - 16T + 5T^2)}{T^2} \right\}$$

» True

$$\gg \text{Knot}[8, 2] \rightarrow \left\{ -\frac{1 - 3T + 3T^2 - 3T^3 + 3T^4 - 3T^5 + T^6}{T^3}, \right. \\ \left. \frac{(-1 + T)^2 (2 - 8T + 10T^2 - 12T^3 + 13T^4 - 12T^5 + 13T^6 - 12T^7 + 10T^8 - 8T^9 + 2T^{10})}{T^6} \right\}$$

» True

$$\gg \text{Knot}[8, 3] \rightarrow \left\{ -\frac{4 - 9T + 4T^2}{T}, \emptyset \right\}$$

» True

$$\gg \text{Knot}[8, 4] \rightarrow \left\{ -\frac{2 - 5T + 5T^2 - 5T^3 + 2T^4}{T^2}, \frac{(-1 + T)^2 (3 - 8T + 6T^2 - 4T^3 + 6T^4 - 8T^5 + 3T^6)}{T^4} \right\}$$

» True

$$\gg \text{Knot}[8, 5] \rightarrow \left\{ -\frac{(1 - T + T^2) (1 - 2T + T^2 - 2T^3 + T^4)}{T^3}, \right. \\ \left. -\frac{(-1 + T)^2 (1 + T^2) (2 - 8T + 11T^2 - 12T^3 + 11T^4 - 12T^5 + 11T^6 - 8T^7 + 2T^8)}{T^6} \right\}$$

» True

$$\gg \text{Knot}[8, 6] \rightarrow \left\{ -\frac{2 - 6T + 7T^2 - 6T^3 + 2T^4}{T^2}, \frac{(-1 + T)^2 (5 - 20T + 28T^2 - 32T^3 + 28T^4 - 20T^5 + 5T^6)}{T^4} \right\}$$

» True

$$\gg \text{Knot}[8, 7] \rightarrow \left\{ \frac{1 - 3T + 5T^2 - 5T^3 + 5T^4 - 3T^5 + T^6}{T^3}, \right. \\ \left. -\frac{(-1 + T)^2 (1 - 4T + 10T^2 - 12T^3 + 13T^4 - 12T^5 + 13T^6 - 12T^7 + 10T^8 - 4T^9 + T^{10})}{T^6} \right\}$$

» True

$$\gg \text{Knot}[8, 8] \rightarrow \left\{ \frac{(2 - 2T + T^2) (1 - 2T + 2T^2)}{T^2}, -\frac{(-1 + T)^2 (1 - 4T + 12T^2 - 16T^3 + 12T^4 - 4T^5 + T^6)}{T^4} \right\}$$

» True

$$\gg \text{Knot}[8, 9] \rightarrow \left\{ -\frac{(-1 + T - 2T^2 + T^3) (-1 + 2T - T^2 + T^3)}{T^3}, \emptyset \right\}$$

» True

$$\gg \text{Knot}[8, 10] \rightarrow \left\{ \frac{(1 - T + T^2)^3}{T^3}, -\frac{(-1 + T)^2 (1 - T + T^2)^2 (1 + T + T^2) (1 - 3T + 6T^2 - 3T^3 + T^4)}{T^6} \right\}$$

» True

$$\gg \text{Knot}[8, 11] \rightarrow \left\{ -\frac{(-2 + T) (-1 + 2T) (1 - T + T^2)}{T^2}, \frac{(-1 + T)^2 (5 - 24T + 39T^2 - 44T^3 + 39T^4 - 24T^5 + 5T^6)}{T^4} \right\}$$

» True

$$\gg \text{Knot}[8, 12] \rightarrow \left\{ \frac{1 - 7T + 13T^2 - 7T^3 + T^4}{T^2}, \emptyset \right\}$$

» True

$$\gg \text{Knot}[8, 13] \rightarrow \left\{ \frac{2 - 7T + 11T^2 - 7T^3 + 2T^4}{T^2}, -\frac{(-1+T)^2(1-4T+14T^2-20T^3+14T^4-4T^5+T^6)}{T^4} \right\}$$

» True

$$\gg \text{Knot}[8, 14] \rightarrow \left\{ -\frac{2 - 8T + 11T^2 - 8T^3 + 2T^4}{T^2}, \frac{(-1+T)^4(5-18T+16T^2-18T^3+5T^4)}{T^4} \right\}$$

» True

$$\gg \text{Knot}[8, 15] \rightarrow \left\{ \frac{(1-T+T^2)(3-5T+3T^2)}{T^2}, \frac{(-1+T)^2(3-4T+3T^2)(7-12T+17T^2-12T^3+7T^4)}{T^4} \right\}$$

» True

$$\gg \text{Knot}[8, 16] \rightarrow \left\{ \frac{1 - 4T + 8T^2 - 9T^3 + 8T^4 - 4T^5 + T^6}{T^3}, \frac{(-1+T)^2(1-T+T^2)(1-5T+11T^2-12T^3+12T^4-12T^5+11T^6-5T^7+T^8)}{T^6} \right\}$$

» True

$$\gg \text{Knot}[8, 17] \rightarrow \left\{ -\frac{1 - 4T + 8T^2 - 11T^3 + 8T^4 - 4T^5 + T^6}{T^3}, \emptyset \right\}$$

» True

$$\gg \text{Knot}[8, 18] \rightarrow \left\{ -\frac{(1-3T+T^2)(1-T+T^2)^2}{T^3}, \emptyset \right\}$$

» True

$$\gg \text{Knot}[8, 19] \rightarrow \left\{ \frac{(1-T+T^2)(1-T^2+T^4)}{T^3}, -\frac{(-1+T)^2(1+T^4)(3+4T^3+3T^6)}{T^6} \right\}$$

» True

$$\gg \text{Knot}[8, 20] \rightarrow \left\{ \frac{(1-T+T^2)^2}{T^2}, \frac{4(-1+T)^2(1-T+T^2)}{T^2} \right\}$$

» True

$$\gg \text{Knot}[8, 21] \rightarrow \left\{ -\frac{(1-3T+T^2)(1-T+T^2)}{T^2}, \frac{(-1+T)^2(1-8T+16T^2-20T^3+16T^4-8T^5+T^6)}{T^4} \right\}$$

» True

$$\gg \text{Knot}[9, 1] \rightarrow \left\{ \frac{(1-T+T^2)(1-T^3+T^6)}{T^4}, \frac{(-1+T)^2(1+T^2)(4+3T^2+6T^4+4T^6+6T^8+3T^{10}+4T^{12})}{T^8} \right\}$$

» True

$$\gg \text{Knot}[9, 2] \rightarrow \left\{ \frac{4-7T+4T^2}{T}, \frac{10(-1+T)^2(3-4T+3T^2)}{T^2} \right\}$$

» True

$$\text{Knot}[9, 3] \rightarrow \left\{ \frac{2 - 3T + 3T^2 - 3T^3 + 3T^4 - 3T^5 + 2T^6}{T^3}, \right. \\ \left. - \frac{(-1 + T)^2 (13 - 12T + 25T^2 - 20T^3 + 32T^4 - 24T^5 + 32T^6 - 20T^7 + 25T^8 - 12T^9 + 13T^{10})}{T^6} \right\}$$

» True

$$\text{Knot}[9, 4] \rightarrow \left\{ \frac{3 - 5T + 5T^2 - 5T^3 + 3T^4}{T^2}, \frac{(-1 + T)^2 (23 - 28T + 46T^2 - 44T^3 + 46T^4 - 28T^5 + 23T^6)}{T^4} \right\}$$

» True

$$\text{Knot}[9, 5] \rightarrow \left\{ \frac{6 - 11T + 6T^2}{T}, -\frac{5(-1 + T)^2 (13 - 20T + 13T^2)}{T^2} \right\}$$

» True

$$\text{Knot}[9, 6] \rightarrow \left\{ \frac{(1 - T + T^2) (2 - 2T + T^2 - 2T^3 + 2T^4)}{T^3}, \right. \\ \left. \frac{(-1 + T)^2 (13 - 24T + 45T^2 - 52T^3 + 68T^4 - 64T^5 + 68T^6 - 52T^7 + 45T^8 - 24T^9 + 13T^{10})}{T^6} \right\}$$

» True

$$\text{Knot}[9, 7] \rightarrow \left\{ \frac{3 - 7T + 9T^2 - 7T^3 + 3T^4}{T^2}, \frac{(-1 + T)^2 (23 - 56T + 99T^2 - 108T^3 + 99T^4 - 56T^5 + 23T^6)}{T^4} \right\}$$

» True

$$\text{Knot}[9, 8] \rightarrow \left\{ -\frac{2 - 8T + 11T^2 - 8T^3 + 2T^4}{T^2}, \frac{(-1 + T)^2 (3 - 16T + 29T^2 - 28T^3 + 29T^4 - 16T^5 + 3T^6)}{T^4} \right\}$$

» True

$$\text{Knot}[9, 9] \rightarrow \left\{ \frac{2 - 4T + 6T^2 - 7T^3 + 6T^4 - 4T^5 + 2T^6}{T^3}, \right. \\ \left. \frac{(-1 + T)^2 (1 + T^2) (13 - 24T + 42T^2 - 48T^3 + 56T^4 - 48T^5 + 42T^6 - 24T^7 + 13T^8)}{T^6} \right\}$$

» True

$$\text{Knot}[9, 10] \rightarrow \left\{ \frac{4 - 8T + 9T^2 - 8T^3 + 4T^4}{T^2}, -\frac{2(-1 + T)^2 (20 - 36T + 57T^2 - 60T^3 + 57T^4 - 36T^5 + 20T^6)}{T^4} \right\}$$

» True

$$\text{Knot}[9, 11] \rightarrow \left\{ -\frac{1 - 5T + 7T^2 - 7T^3 + 7T^4 - 5T^5 + T^6}{T^3}, \right. \\ \left. -\frac{(-1 + T)^2 (2 - 16T + 41T^2 - 52T^3 + 66T^4 - 64T^5 + 66T^6 - 52T^7 + 41T^8 - 16T^9 + 2T^{10})}{T^6} \right\}$$

» True

$$\text{Knot}[9, 12] \rightarrow \left\{ -\frac{(1 - 3T + T^2) (2 - 3T + 2T^2)}{T^2}, \frac{(-1 + T)^2 (5 - 36T + 84T^2 - 100T^3 + 84T^4 - 36T^5 + 5T^6)}{T^4} \right\}$$

» True

$$\gg \text{Knot}[9, 13] \rightarrow \left\{ \frac{4 - 9T + 11T^2 - 9T^3 + 4T^4}{T^2}, -\frac{2(-1+T)^2(20 - 46T + 77T^2 - 84T^3 + 77T^4 - 46T^5 + 20T^6)}{T^4} \right\}$$

» True

$$\gg \text{Knot}[9, 14] \rightarrow \left\{ \frac{2 - 9T + 15T^2 - 9T^3 + 2T^4}{T^2}, -\frac{(-1+T)^2(1 - 8T + 35T^2 - 60T^3 + 35T^4 - 8T^5 + T^6)}{T^4} \right\}$$

» True

$$\gg \text{Knot}[9, 15] \rightarrow \left\{ -\frac{2 - 10T + 15T^2 - 10T^3 + 2T^4}{T^2}, -\frac{(-1+T)^2(5 - 40T + 108T^2 - 136T^3 + 108T^4 - 40T^5 + 5T^6)}{T^4} \right\}$$

» True

$$\gg \text{Knot}[9, 16] \rightarrow \left\{ \frac{(1 - T + T^2)(2 - 3T + 3T^2 - 3T^3 + 2T^4)}{T^3}, \right. \\ \left. -\frac{(-1+T)^2(1+T^2)(13 - 36T + 67T^2 - 84T^3 + 94T^4 - 84T^5 + 67T^6 - 36T^7 + 13T^8)}{T^6} \right\}$$

» True

» Knot[9, 17] →

$$\left\{ \frac{1 - 5T + 9T^2 - 9T^3 + 9T^4 - 5T^5 + T^6}{T^3}, \frac{(-1+T)^4(1 - 6T + 10T^2 - 6T^3 + 6T^4 - 6T^5 + 10T^6 - 6T^7 + T^8)}{T^6} \right\}$$

» True

$$\gg \text{Knot}[9, 18] \rightarrow \left\{ \frac{4 - 10T + 13T^2 - 10T^3 + 4T^4}{T^2}, \frac{(-1+T)^2(40 - 108T + 193T^2 - 220T^3 + 193T^4 - 108T^5 + 40T^6)}{T^4} \right\}$$

» True

$$\gg \text{Knot}[9, 19] \rightarrow \left\{ \frac{2 - 10T + 17T^2 - 10T^3 + 2T^4}{T^2}, \frac{(-1+T)^2(1 - 8T + 20T^2 - 24T^3 + 20T^4 - 8T^5 + T^6)}{T^4} \right\}$$

» True

$$\gg \text{Knot}[9, 20] \rightarrow \left\{ -\frac{1 - 5T + 9T^2 - 11T^3 + 9T^4 - 5T^5 + T^6}{T^3}, \right. \\ \left. \frac{(-1+T)^2(2 - 16T + 47T^2 - 84T^3 + 117T^4 - 124T^5 + 117T^6 - 84T^7 + 47T^8 - 16T^9 + 2T^{10})}{T^6} \right\}$$

» True

$$\gg \text{Knot}[9, 21] \rightarrow \left\{ -\frac{2 - 11T + 17T^2 - 11T^3 + 2T^4}{T^2}, -\frac{(-1+T)^2(5 - 44T + 127T^2 - 164T^3 + 127T^4 - 44T^5 + 5T^6)}{T^4} \right\}$$

» True

$$\gg \text{Knot}[9, 22] \rightarrow \left\{ \frac{1 - 5T + 10T^2 - 11T^3 + 10T^4 - 5T^5 + T^6}{T^3}, \right. \\ \left. -\frac{(-1+T)^2(1 - 8T + 24T^2 - 38T^3 + 40T^4 - 36T^5 + 40T^6 - 38T^7 + 24T^8 - 8T^9 + T^{10})}{T^6} \right\}$$

» True

$$\gg \text{Knot}[9, 23] \rightarrow \left\{ \frac{(1 - T + T^2)(4 - 7T + 4T^2)}{T^2}, \frac{(-1 + T)^2(40 - 128T + 243T^2 - 288T^3 + 243T^4 - 128T^5 + 40T^6)}{T^4} \right\}$$

» True

$$\gg \text{Knot}[9, 24] \rightarrow \left\{ -\frac{(1 - 3T + T^2)(1 - T + T^2)^2}{T^3}, -\frac{4(-1 + T)^2(1 - 3T + T^2)(1 - T + T^2)}{T^3} \right\}$$

» True

$$\gg \text{Knot}[9, 25] \rightarrow \left\{ -\frac{3 - 12T + 17T^2 - 12T^3 + 3T^4}{T^2}, \frac{(-1 + T)^2(12 - 70T + 153T^2 - 188T^3 + 153T^4 - 70T^5 + 12T^6)}{T^4} \right\}$$

» True

$$\gg \text{Knot}[9, 26] \rightarrow \left\{ \frac{1 - 5T + 11T^2 - 13T^3 + 11T^4 - 5T^5 + T^6}{T^3}, \right. \\ \left. -\frac{(-1 + T)^2(1 - 8T + 31T^2 - 64T^3 + 85T^4 - 92T^5 + 85T^6 - 64T^7 + 31T^8 - 8T^9 + T^{10})}{T^6} \right\}$$

» True

$$\gg \text{Knot}[9, 27] \rightarrow \left\{ -\frac{(-1 + 2T - 3T^2 + T^3)(-1 + 3T - 2T^2 + T^3)}{T^3}, \frac{(-1 + T)^2(1 - 8T + 24T^2 - 32T^3 + 24T^4 - 8T^5 + T^6)}{T^4} \right\}$$

» True

$$\gg \text{Knot}[9, 28] \rightarrow \left\{ \frac{(1 - T + T^2)(1 - 4T + 7T^2 - 4T^3 + T^4)}{T^3}, \frac{(-1 + T)^6(1 + T^2)(1 - 4T + 7T^2 - 4T^3 + T^4)}{T^6} \right\}$$

» True

$$\gg \text{Knot}[9, 29] \rightarrow \left\{ \frac{(1 - T + T^2)(1 - 4T + 7T^2 - 4T^3 + T^4)}{T^3}, \right. \\ \left. \frac{(-1 + T)^2(1 - 3T + T^2)(1 - 5T + 10T^2 - 13T^3 + 10T^4 - 13T^5 + 10T^6 - 5T^7 + T^8)}{T^6} \right\}$$

» True

$$\gg \text{Knot}[9, 30] \rightarrow \left\{ -\frac{1 - 5T + 12T^2 - 17T^3 + 12T^4 - 5T^5 + T^6}{T^3}, \frac{(-1 + T)^2(2 - 10T + 25T^2 - 32T^3 + 25T^4 - 10T^5 + 2T^6)}{T^4} \right\}$$

» True

$$\gg \text{Knot}[9, 31] \rightarrow \left\{ \frac{1 - 5T + 13T^2 - 17T^3 + 13T^4 - 5T^5 + T^6}{T^3}, \right. \\ \left. \frac{(-1 + T)^2(1 - 8T + 33T^2 - 80T^3 + 132T^4 - 152T^5 + 132T^6 - 80T^7 + 33T^8 - 8T^9 + T^{10})}{T^6} \right\}$$

» True

$$\gg \text{Knot}[9, 32] \rightarrow \left\{ \frac{1 - 6T + 14T^2 - 17T^3 + 14T^4 - 6T^5 + T^6}{T^3}, \right. \\ \left. -\frac{(-1 + T)^2(1 - 10T + 42T^2 - 94T^3 + 133T^4 - 148T^5 + 133T^6 - 94T^7 + 42T^8 - 10T^9 + T^{10})}{T^6} \right\}$$

» True

» Knot [9, 33] → $\left\{ -\frac{1 - 6 T + 14 T^2 - 19 T^3 + 14 T^4 - 6 T^5 + T^6}{T^3}, \frac{(-1 + T)^2 (1 - 10 T + 30 T^2 - 40 T^3 + 30 T^4 - 10 T^5 + T^6)}{T^4} \right\}$

» True

» Knot [9, 34] → $\left\{ -\frac{1 - 6 T + 16 T^2 - 23 T^3 + 16 T^4 - 6 T^5 + T^6}{T^3}, \frac{(-1 + T)^4 (3 - 12 T + 16 T^2 - 12 T^3 + 3 T^4)}{T^4} \right\}$

» True

» Knot [9, 35] → $\left\{ \frac{7 - 13 T + 7 T^2}{T}, \frac{18 (-1 + T)^2 (5 - 8 T + 5 T^2)}{T^2} \right\}$

» True

» Knot [9, 36] → $\left\{ -\frac{1 - 5 T + 8 T^2 - 9 T^3 + 8 T^4 - 5 T^5 + T^6}{T^3}, \right.$
 $\left. -\frac{(-1 + T)^2 (2 - 16 T + 44 T^2 - 66 T^3 + 87 T^4 - 88 T^5 + 87 T^6 - 66 T^7 + 44 T^8 - 16 T^9 + 2 T^{10})}{T^6} \right\}$

» True

» Knot [9, 37] → $\left\{ \frac{(-2 + T) (-1 + 2 T) (1 - 3 T + T^2)}{T^2}, \frac{(-1 + T)^2 (1 - 4 T + T^2) (1 - 3 T + T^2) (1 - T + T^2)}{T^4} \right\}$

» True

» Knot [9, 38] → $\left\{ \frac{(1 - T + T^2) (5 - 9 T + 5 T^2)}{T^2}, \frac{2 (-1 + T)^2 (31 - 102 T + 191 T^2 - 226 T^3 + 191 T^4 - 102 T^5 + 31 T^6)}{T^4} \right\}$

Out[]:= \$Aborted

In[]:= Timing@ρ [EPD [X_{14,1}, X̄_{2,29}, X_{3,40}, X_{43,4}, X̄_{26,5}, X_{6,95}, X_{96,7}, X_{13,8}, X̄_{9,28}, X_{10,41}, X_{42,11}, X̄_{27,12},
 X_{30,15}, X̄_{16,61}, X̄_{17,72}, X̄_{18,83}, X_{19,34}, X̄_{89,20}, X̄_{21,92}, X̄_{79,22}, X̄_{68,23}, X̄_{57,24}, X̄_{25,56}, X_{62,31},
 X_{73,32}, X_{84,33}, X̄_{50,35}, X_{36,81}, X_{37,70}, X_{38,59}, X̄_{39,54}, X_{44,55}, X_{58,45}, X_{69,46}, X_{80,47}, X_{48,91},
 X_{90,49}, X_{51,82}, X_{52,71}, X_{53,60}, X̄_{63,74}, X̄_{64,85}, X̄_{76,65}, X̄_{87,66}, X̄_{67,94}, X̄_{75,86}, X̄_{88,77}, X̄_{78,93}]]

» True

Out[]:= $\left\{ 140.969, \left\{ -\frac{(-1 + 2 T - T^2 - T^3 + 2 T^4 - T^5 + T^8) (-1 + T^3 - 2 T^4 + T^5 + T^6 - 2 T^7 + T^8)}{T^8}, \right.$
 $\frac{1}{T^{16}} (-1 + T)^2 (5 - 18 T + 33 T^2 - 32 T^3 + 2 T^4 + 42 T^5 - 62 T^6 - 8 T^7 + 166 T^8 - 242 T^9 + 108 T^{10} +$
 $132 T^{11} - 226 T^{12} + 148 T^{13} - 11 T^{14} - 36 T^{15} - 11 T^{16} + 148 T^{17} - 226 T^{18} + 132 T^{19} + 108 T^{20} -$
 $242 T^{21} + 166 T^{22} - 8 T^{23} - 62 T^{24} + 42 T^{25} + 2 T^{26} - 32 T^{27} + 33 T^{28} - 18 T^{29} + 5 T^{30}) \right\} \right\}$