Pensieve header: Finding the A2 $d=1$ invariant using undetermined coefficients.

Searching for $Q + \text{pxx} + \epsilon(\text{ppx} + 1 + \text{px} + \text{ppxx})$ solutions.

Initialization

In[•]:=
```
SetDirectory["C:\\drorbn\\AcademicPensieve\\Projects\\HigherRank"];
Once[<< KnotTheory`; << Rot.m];
<< FormalGaussianIntegration.m;
i_⁺ := i + 1;
```

```
Loading KnotTheory` version of February 2, 2020, 10:53:45.2097.
Read more at http://katlas.org/wiki/KnotTheory.
```

```
Loading Rot.m from http://drorbn.net/AP/Projects/HigherRank to compute rotation numbers.
```

In[•]:=
```
Features[Knot[8, 17]]
```

```
KnotTheory: Loading precomputed data in PD4Knots`.
```

Out[•]=
$$\text{Features}[18,\ C_6[-1]\,C_{14}[-1]\,X_{1,7}[1]\,X_{3,9}[-1]\,X_{5,13}[-1]\,X_{8,16}[1]\,X_{10,4}[-1]\,X_{12,18}[1]\,X_{15,2}[-1]\,X_{17,11}[1]]$$

In[•]:=
```
T₃ = T₁ T₂;
𝒮 = {x__, p__};
q[s_, i_, j_] := Sum[
   x_{v,i} (p_{v,i⁺} - p_{v,i}) + x_{v,j} (p_{v,j⁺} - p_{v,j}) + (T_v^s - 1) x_{v,i} (p_{v,i⁺} - p_{v,j⁺}),
   {v, 3}];
ℒ[X_{i_,j_}[s_]] :=
  T_3^s 𝔼[q[s, i, j] + B^-1 r₀[s, i, j] + ϵ B r₁[s, i, j] + ϵ r₄₂[s, i, j] + O[ϵ]^2];
(*γ₁[φ_,k_]:=φ(3/2-x_{1,k}p_{1,k}-x_{2,k}p_{2,k}-x_{3,k}p_{3,k});*)
ℒ[C_k_[0]] := 𝔼[Sum[x_{v,k} (p_{v,k⁺} - p_{v,k}), {v, 3}] + O[ϵ]^2];
ℒ[C_k_[φ_]] :=
  T_3^φ 𝔼[Sum[x_{v,k} (p_{v,k⁺} - p_{v,k}), {v, 3}] + B^-1 γ₀[φ, k] + ϵ B γ₁[φ, k] + ϵ γ₄₂[φ, k] + O[ϵ]^2];
ps_i_ := Sequence[p_{1,i}, p_{2,i}, p_{3,i}];
xs_i_ := Sequence[x_{1,i}, x_{2,i}, x_{3,i}];
vs_i_ := Sequence[ps_i, xs_i];
ℱ[is___] := 𝔼[Sum[π_{v,i} p_{v,i}, {i, {is}}, {v, 3}]];
ℒ[K_] := CF[ℒ /@ Features[K][[2]]];
vs[K_] := Union @@ Table[{vs_i}, {i, Features[K][[1]]}]
```

In[•]:=
```
vs_i
```

Out[•]=
$$\text{Sequence}[p_{1,i},\ p_{2,i},\ p_{3,i},\ x_{1,i},\ x_{2,i},\ x_{3,i}]$$

The Various Terms (r_0)

The pxx Terms (r_0)

In[•]:=
```
κ = 0;
r0[1, i_, j_] := Evaluate[Sum[
    a++κ p3,k3 x1,k1 x2,k2,
    {k1, {i, j}}, {k2, {i, j}}, {k3, {i, j}}
   ]];
r0[1, i, j]
```

Out[•]=
$$a_1\, p_{3,i}\, x_{1,i}\, x_{2,i} + a_2\, p_{3,j}\, x_{1,i}\, x_{2,i} + a_5\, p_{3,i}\, x_{1,j}\, x_{2,i} + a_6\, p_{3,j}\, x_{1,j}\, x_{2,i} + a_3\, p_{3,i}\, x_{1,i}\, x_{2,j} + a_4\, p_{3,j}\, x_{1,i}\, x_{2,j} + a_7\, p_{3,i}\, x_{1,j}\, x_{2,j} + a_8\, p_{3,j}\, x_{1,j}\, x_{2,j}$$

In[•]:=
```
κ = 0;
r0[-1, i_, j_] := Evaluate[Sum[
    d++κ p3,k3 x1,k1 x2,k2,
    {k1, {i, j}}, {k2, {i, j}}, {k3, {i, j}}
   ]];
r0[-1, i, j]
```

Out[•]=
$$d_1\, p_{3,i}\, x_{1,i}\, x_{2,i} + d_2\, p_{3,j}\, x_{1,i}\, x_{2,i} + d_5\, p_{3,i}\, x_{1,j}\, x_{2,i} + d_6\, p_{3,j}\, x_{1,j}\, x_{2,i} + d_3\, p_{3,i}\, x_{1,i}\, x_{2,j} + d_4\, p_{3,j}\, x_{1,i}\, x_{2,j} + d_7\, p_{3,i}\, x_{1,j}\, x_{2,j} + d_8\, p_{3,j}\, x_{1,j}\, x_{2,j}$$

The ppx Terms (r_1)

In[•]:=
```
κ = 0;
r1[1, i_, j_] := Evaluate[Sum[
    b++κ x3,k3 p1,k1 p2,k2,
    {k1, {i, j}}, {k2, {i, j}}, {k3, {i, j}}
   ]];
r1[1, i, j]
```

Out[•]=
$$b_1\, p_{1,i}\, p_{2,i}\, x_{3,i} + b_5\, p_{1,j}\, p_{2,i}\, x_{3,i} + b_3\, p_{1,i}\, p_{2,j}\, x_{3,i} + b_7\, p_{1,j}\, p_{2,j}\, x_{3,i} + b_2\, p_{1,i}\, p_{2,i}\, x_{3,j} + b_6\, p_{1,j}\, p_{2,i}\, x_{3,j} + b_4\, p_{1,i}\, p_{2,j}\, x_{3,j} + b_8\, p_{1,j}\, p_{2,j}\, x_{3,j}$$

In[•]:=
```
κ = 0;
r1[-1, i_, j_] := Evaluate[Sum[
    e++κ x3,k3 p1,k1 p2,k2,
    {k1, {i, j}}, {k2, {i, j}}, {k3, {i, j}}
   ]];
r1[-1, i, j]
```

Out[•]=
$$e_1\, p_{1,i}\, p_{2,i}\, x_{3,i} + e_5\, p_{1,j}\, p_{2,i}\, x_{3,i} + e_3\, p_{1,i}\, p_{2,j}\, x_{3,i} + e_7\, p_{1,j}\, p_{2,j}\, x_{3,i} + e_2\, p_{1,i}\, p_{2,i}\, x_{3,j} + e_6\, p_{1,j}\, p_{2,i}\, x_{3,j} + e_4\, p_{1,i}\, p_{2,j}\, x_{3,j} + e_8\, p_{1,j}\, p_{2,j}\, x_{3,j}$$

The ppxx Terms (r_{42})

```
In[•]:= κ = 0;
Short[r42[1, i_, j_] = Evaluate[Plus[
     Sum[
      c++κ xν1,k1 pν1,k2 xν2,k3 pν2,k4,
      {k1, {i, j}}, {k2, {i, j}}, {k3, {i, j}}, {k4, {i, j}}, {ν1, 2}, {ν2, ν1, 3}
     ],
     Sum[
      c++κ xν,k1 pν,k2,
      {k1, {i, j}}, {k2, {i, j}}, {ν, 3}
     ],
     c++κ
    ]]]
```

```
Out[•]//Short=
c93 + c81 p1,i x1,i + c84 p1,j x1,i + c1 p1,i^2 x1,i^2 + <<86>> +
 c75 p2,j p3,i x2,j x3,j + c60 p2,i p3,j x2,j x3,j + c80 p2,j p3,j x2,j x3,j
```

```
In[•]:= κ = 0;
Short[r42[-1, i_, j_] = Evaluate[Plus[
     Sum[
      f++κ xν1,k1 pν1,k2 xν2,k3 pν2,k4,
      {k1, {i, j}}, {k2, {i, j}}, {k3, {i, j}}, {k4, {i, j}}, {ν1, 2}, {ν2, ν1, 3}
     ],
     Sum[
      f++κ xν,k1 pν,k2,
      {k1, {i, j}}, {k2, {i, j}}, {ν, 3}
     ],
     f++κ
    ]]]
```

```
Out[•]//Short=
f93 + f81 p1,i x1,i + f84 p1,j x1,i + f1 p1,i^2 x1,i^2 + <<86>> +
 f75 p2,j p3,i x2,j x3,j + f60 p2,i p3,j x2,j x3,j + f80 p2,j p3,j x2,j x3,j
```

The γ Terms (γ_0, γ_1, γ_{42})

```
In[•]:= κ = 0;
        γ0[1, k_] := Evaluate[g++κ p3,k x1,k x2,k];
        γ1[1, k_] := Evaluate[g++κ x3,k p1,k p2,k];
        γ42[1, k_] := Evaluate[Plus[
             Sum[g++κ xν,k pν,k, {ν, 3}],
             Sum[g++κ xν1,k pν1,k xν2,k pν2,k, {ν1, 2}, {ν2, ν1, 3}]
            ]];
        {γ0[1, k], γ0[1, k], γ42[1, k]}
```

Out[•]=

$$\left\{g_1\, p_{3,k}\, x_{1,k}\, x_{2,k},\ g_1\, p_{3,k}\, x_{1,k}\, x_{2,k},\ g_3\, p_{1,k}\, x_{1,k} + g_6\, p_{1,k}^2\, x_{1,k}^2 + g_4\, p_{2,k}\, x_{2,k} + g_7\, p_{1,k}\, p_{2,k}\, x_{1,k}\, x_{2,k} + g_9\, p_{2,k}^2\, x_{2,k}^2 + g_5\, p_{3,k}\, x_{3,k} + g_8\, p_{1,k}\, p_{3,k}\, x_{1,k}\, x_{3,k} + g_{10}\, p_{2,k}\, p_{3,k}\, x_{2,k}\, x_{3,k}\right\}$$

```
In[•]:= κ = 0;
        γ0[-1, k_] := Evaluate[h++κ p3,k x1,k x2,k];
        γ1[-1, k_] := Evaluate[h++κ x3,k p1,k p2,k];
        γ42[-1, k_] := Evaluate[Plus[
             Sum[h++κ xν,k pν,k, {ν, 3}],
             Sum[h++κ xν1,k pν1,k xν2,k pν2,k, {ν1, 2}, {ν2, ν1, 3}]
            ]];
        {γ0[-1, k], γ0[-1, k], γ42[-1, k]}
```

Out[•]=

$$\left\{h_1\, p_{3,k}\, x_{1,k}\, x_{2,k},\ h_1\, p_{3,k}\, x_{1,k}\, x_{2,k},\ h_3\, p_{1,k}\, x_{1,k} + h_6\, p_{1,k}^2\, x_{1,k}^2 + h_4\, p_{2,k}\, x_{2,k} + h_7\, p_{1,k}\, p_{2,k}\, x_{1,k}\, x_{2,k} + h_9\, p_{2,k}^2\, x_{2,k}^2 + h_5\, p_{3,k}\, x_{3,k} + h_8\, p_{1,k}\, p_{3,k}\, x_{1,k}\, x_{3,k} + h_{10}\, p_{2,k}\, p_{3,k}\, x_{2,k}\, x_{3,k}\right\}$$

Reidemeister 3b

```
In[•]:= Timing[{LeftR3b} =
          Cases[∫ℱ[i, j, k] × ℒ /@ (Xi,j[1] Xi*,k[1] Xj*,k*[1]) 𝕕{vsi, vsj, vsk, vsi*, vsj*, vsk*},
           𝔼[ℰ_] :↦ ℰ, ∞]]
```

Out[•]=

```
{54.3438,
 {∈Series[T1^2 p1,2+i π1,i − (−1 + T1) T1 p1,2+j π1,i + (1 − T1) p1,2+k π1,i + T1 p1,2+j π1,j + (1 − T1) p1,2+k π1,j + p1,2+k π1,k +
    T2^2 p2,2+i π2,i − (−1 + T2) T2 p2,2+j π2,i + (1 − T2) p2,2+k π2,i + ··· 33 ··· + (a3 T1 T2 p3,2+j π1,j π2,k)/B −
    ((−a3 − a4 + a3 T1 T2) p3,2+k π1,j π2,k)/B + (a7 T1 T2 p3,2+i π1,k π2,k)/B + (a7 T1 T2 p3,2+j π1,k π2,k)/B − (2 (−a7 − a8 + a7 T1 T2) p3,2+k π1,k π2,k)/B + T1^2 T2^2 p3,2+i π3,i −
    T1 T2 (−1 + T1 T2) p3,2+j π3,i + (1 − T1 T2) p3,2+k π3,i + T1 T2 p3,2+j π3,j + (1 − T1 T2) p3,2+k π3,j + p3,2+k π3,k,
   3 (a1 b1 + a2 b2 + a3 b3 + a4 b4 + a5 b5 + a6 b6 + a7 b7 + a8 b8 + 2 c1 + c2 + c3 + 2 c4 + c5 + c16 + c17 + c18 + c19 + c20 + c31 + c34 +
      c46 + c49 + c61 + c62 + c63 + c64 + c65 + 2 c76 + c77 + c78 + 2 c79 + c80 + c81 + c82 + c83 + c90 + c91 + c92 + c93) + ··· 498 ··· +
   (2 a3 b2 + 2 a4 b2 + a7 b2 + a8 b2 + 2 a3 b4 + 2 a4 b4 + a7 b4 + a8 b4 + 3 a7 b6 + 3 a8 b6 + ··· 45 ··· + a7 b2 T1^2 T2 +
      a7 b4 T1^2 T2 + 2 a3 b2 T1 T2^2 + a7 b2 T1 T2^2 + 3 a7 b6 T1 T2^2 + 2 c55 T1 T2^2 − a7 b2 T1^2 T2^2) p2, ···1··· p ···1··· π ···1··· π3,k]}}
```

Full expression not available (original memory size: 3.8 MB)

```
In[•]:= Timing[{RightR3b} =
          Cases[∫ℱ[i, j, k] × ℒ /@ (X_{j,k}[1] X_{i,k⁺}[1] X_{i⁺,j⁺}[1]) 𝕕{vs_i, vs_j, vs_k, vs_{i⁺}, vs_{j⁺}, vs_{k⁺}},
           𝔼[ℰ_] :↦ ℰ, ∞];]
```

```
Out[•]=
{43.4531, Null}
```

```
In[•]:= Short[eqn = CF[LeftR3b[[1]] - RightR3b[[1]]]]
        cvs = Union@Cases[eqn, p__ | π__, ∞]
        vars = Union@Cases[r_0[1, i, j], a_, ∞]
        Short[eqns = CoefficientRules[eqn, cvs] /. (_ → c_) :↦ (c == 0), 3]
        {sol} = Solve[eqns, vars]
```

```
Out[•]//Short=
(T1 T2 (-a1 T1 + <<20>> + a7 T1^2 T2^2) p_{3,2+j} π_{1,i} π_{2,i})/B -
 ((<<60>> + a7 T1^3 T2^3) <<1>> <<1>> <<1>> π_<<1>>)/B + <<32>> + (a7 T1 T2 (-1 + T1 T2) p_{3,2+j} π_{1,k} π_{2,k})/B
```

```
Out[•]=
{p_{3,2+i}, p_{3,2+j}, p_{3,2+k}, π_{1,i}, π_{1,j}, π_{1,k}, π_{2,i}, π_{2,j}, π_{2,k}}
```

```
Out[•]=
{a1, a2, a3, a4, a5, a6, a7, a8}
```

```
Out[•]//Short=
{-(a3 T1^2 T2^2)/B + (a3 T1^2 T2^3)/B == 0, (a3 T1^2 T2)/B - (a3 T1^2 T2^2)/B == 0,
 -(a5 T1^2 T2^2)/B + (a5 T1^3 T2^2)/B == 0, -(a7 T1^2 T2^2)/B + (a7 T1^3 T2^2)/B + (a7 T1^2 T2^3)/B - (a7 T1^3 T2^3)/B == 0,
 <<18>>, -a7/B - a8/B + (a7 T1)/B + (a8 T1)/B + (a7 T1 T2)/B - (a7 T1^2 T2)/B == 0,
 (a7 T2)/B + (a8 T2)/B - (a7 T2^2)/B - (a8 T2^2)/B - (a7 T1 T2^2)/B + (a7 T1 T2^3)/B == 0,
 -a7/B - a8/B + (a7 T2)/B + (a8 T2)/B + (a7 T1 T2)/B - (a7 T1 T2^2)/B == 0}
```

Solve: Equations may not give solutions for all "solve" variables.

```
Out[•]=
{{a1 → 0, a3 → 0, a5 → 0, a6 → -a2/T1 - (a4 T2)/T1, a7 → 0, a8 → 0}}
```

```
In[•]:= sol /. (v_ → val_) :↦ (v = CF[val]);
        r_0[1, i, j]
```

```
Out[•]=
a2 p_{3,j} x_{1,i} x_{2,i} - ((a2 + a4 T2) p_{3,j} x_{1,j} x_{2,i})/T1 + a4 p_{3,j} x_{1,i} x_{2,j}
```

```
In[•]:= Short[eqn = CF[Coefficient[
          LeftR3b[[2]] - RightR3b[[2]] /. v : (π | p)__ :> μ v,
          μ^3
        ]], 5]
        cvs = Union@Cases[eqn, p__ | π__, ∞]
        vars = Union@Cases[r1[1, i, j], b_, ∞]
        Short[eqns = CoefficientRules[eqn, cvs] /. (_ → c_) :> (c == 0), 3]
        {sol} = Solve[eqns, vars]
```

Out[•]//Short=

$$B\,b_1\,(-1+T_1)\,T_1\,T_2^2\,p_{1,2+j}\,p_{2,2+i}\,\pi_{3,i} - B\,b_1\,(-1+T_1)\,T_1\,T_2^2\,p_{1,2+k}\,p_{2,2+i}\,\pi_{3,i} + B\,b_1\,T_1^2\,(-1+T_2)\,T_2\,p_{1,2+i}\,p_{2,2+j}\,\pi_{3,i} - B\,T_1\,T_2\left(-b_1\,T_1 - b_1\,T_2 + 2\,b_1\,T_1\,T_2 - b_2\,T_1\,T_2 + b_2\,T_1^2\,T_2^2\right)p_{1,2+j}\,p_{2,2+j}\,\pi_{3,i} + \ll 23 \gg + B\,b_2\,T_1^2\,(-1+T_2)\,T_2\,p_{1,2+i}\,p_{2,2+j}\,\pi_{3,k} - B\,b_2\,(-1+T_1)\,T_1\,(-1+T_2)\,T_2\,p_{1,2+j}\,p_{2,2+j}\,\pi_{3,k} - B\,(-b_2-b_6+b_2\,T_1)\,(-1+T_2)\,T_2\,p_{1,2+k}\,p_{2,2+j}\,\pi_{3,k} + B\,(-1+T_1)\,T_1\,(-b_2-b_4+b_2\,T_2)\,p_{1,2+i}\,p_{2,2+k}\,\pi_{3,k} - B\,(-1+T_1)\,T_1\,(-b_2-b_4+b_2\,T_2)\,p_{1,2+j}\,p_{2,2+k}\,\pi_{3,k}$$

Out[•]=

$$\{p_{1,2+i},\ p_{1,2+j},\ p_{1,2+k},\ p_{2,2+i},\ p_{2,2+j},\ p_{2,2+k},\ \pi_{3,i},\ \pi_{3,j},\ \pi_{3,k}\}$$

Out[•]=

$$\{b_1,\ b_2,\ b_3,\ b_4,\ b_5,\ b_6,\ b_7,\ b_8\}$$

Out[•]//Short=

$$\{-B\,b_2\,T_1^2\,T_2^2 + B\,b_2\,T_1^3\,T_2^3 == 0,\ B\,b_2\,T_1\,T_2 - B\,b_2\,T_1^2\,T_2^2 == 0,\ \ll 22 \gg,\ -B\,b_6\,T_1 - B\,b_8\,T_1 - B\,b_4\,T_2 - B\,b_8\,T_2 + B\,b_2\,T_1\,T_2 + 2\,B\,b_4\,T_1\,T_2 + 2\,B\,b_6\,T_1\,T_2 + 2\,B\,b_8\,T_1\,T_2 - B\,b_2\,T_1^2\,T_2 - B\,b_4\,T_1^2\,T_2 - B\,b_2\,T_1\,T_2^2 - B\,b_6\,T_1\,T_2^2 + B\,b_2\,T_1^2\,T_2^2 == 0\}$$

Solve: Equations may not give solutions for all "solve" variables.

Out[•]=

$$\{\{b_1 \to 0,\ b_2 \to 0,\ b_4 \to 0,\ b_6 \to 0,\ b_7 \to -b_3 - b_5,\ b_8 \to 0\}\}$$

```
In[•]:= sol /. (v_ → val_) :> (v = CF[val]);
        r1[1, i, j]
```

Out[•]=

$$b_5\,p_{1,j}\,p_{2,i}\,x_{3,i} + b_3\,p_{1,i}\,p_{2,j}\,x_{3,i} + (-b_3 - b_5)\,p_{1,j}\,p_{2,j}\,x_{3,i}$$

```
In[•]:= Short[eqn = CF[LeftR3b[[2]] - RightR3b[[2]]], 5]
        cvs = Union@Cases[eqn, p__ | π__, ∞]
        vars = Union@Cases[r42[1, i, j], c_, ∞]
        Short[eqns = CoefficientRules[eqn, cvs] /. (_ → c_) :> (c == 0), 3]
        Short[{sol} = Solve[eqns, vars]]
```

Out[•]//Short=

$$-\left((2\,c_{11}+2\,c_{41}+c_{42}+c_{43}+2\,c_{56}+c_{57}+c_{58}+2\,c_{71}+c_{87})\,(-1+T_1)\,T_1^2\,p_{1,2+j}\,\pi_{1,i}\right)-$$
$$(-1+T_1)\,(4\,c_1+c_2+c_3+2\,c_6+c_{16}+c_{17}+c_{18}+2\,c_{21}+c_{22}+c_{23}+c_{31}+2\,c_{36}+c_{37}+c_{38}+$$
$$c_{46}+c_{61}+2\,c_{66}+c_{81}+c_{84}+2\,c_{11}\,T_1+c_{16}\,T_1+c_{31}\,T_1+2\,c_{41}\,T_1+c_{42}\,T_1+c_{43}\,T_1+c_{46}\,T_1+$$
$$2\,c_{56}\,T_1+c_{57}\,T_1+c_{58}\,T_1+c_{61}\,T_1+c_{62}\,T_1+c_{63}\,T_1+2\,c_{71}\,T_1+4\,c_{76}\,T_1+c_{77}\,T_1+c_{78}\,T_1+c_{87}\,T_1+$$
$$c_{90}\,T_1-2\,c_{11}\,T_1^2-2\,c_{41}\,T_1^2-c_{42}\,T_1^2-c_{43}\,T_1^2-2\,c_{56}\,T_1^2-c_{57}\,T_1^2-c_{58}\,T_1^2-2\,c_{71}\,T_1^2-c_{87}\,T_1^2)$$
$$p_{1,2+k}\,\pi_{1,i}+2\,c_1\,(-1+T_1)\,T_1^3\,p_{1,2+i}\,p_{1,2+j}\,\pi_{1,i}^2+\text{<<473>>}+$$
$$(-1+T_2)\,T_2\,(-c_{55}-c_{60}+c_{55}\,T_1\,T_2)\,p_{2,2+i}\,p_{3,2+k}\,\pi_{2,k}\,\pi_{3,k}-$$
$$(-1+T_2)\,T_2\,(-c_{55}-c_{60}+c_{55}\,T_1\,T_2)\,p_{2,2+j}\,p_{3,2+k}\,\pi_{2,k}\,\pi_{3,k}$$

Out[•]=

$$\{p_{1,2+i},\ p_{1,2+j},\ p_{1,2+k},\ p_{2,2+i},\ p_{2,2+j},\ p_{2,2+k},\ p_{3,2+i},$$
$$p_{3,2+j},\ p_{3,2+k},\ \pi_{1,i},\ \pi_{1,j},\ \pi_{1,k},\ \pi_{2,i},\ \pi_{2,j},\ \pi_{2,k},\ \pi_{3,i},\ \pi_{3,j},\ \pi_{3,k}\}$$

Out[•]=

$$\{c_1,\ c_2,\ c_3,\ c_4,\ c_5,\ c_6,\ c_7,\ c_8,\ c_9,\ c_{10},\ c_{11},\ c_{12},\ c_{13},\ c_{14},\ c_{15},\ c_{16},\ c_{17},\ c_{18},\ c_{19},\ c_{20},$$
$$c_{21},\ c_{22},\ c_{23},\ c_{24},\ c_{25},\ c_{26},\ c_{27},\ c_{28},\ c_{29},\ c_{30},\ c_{31},\ c_{32},\ c_{33},\ c_{34},\ c_{35},\ c_{36},\ c_{37},\ c_{38},\ c_{39},$$
$$c_{40},\ c_{41},\ c_{42},\ c_{43},\ c_{44},\ c_{45},\ c_{46},\ c_{47},\ c_{48},\ c_{49},\ c_{50},\ c_{51},\ c_{52},\ c_{53},\ c_{54},\ c_{55},\ c_{56},\ c_{57},$$
$$c_{58},\ c_{59},\ c_{60},\ c_{61},\ c_{62},\ c_{63},\ c_{64},\ c_{65},\ c_{66},\ c_{67},\ c_{68},\ c_{69},\ c_{70},\ c_{71},\ c_{72},\ c_{73},\ c_{74},\ c_{75},$$
$$c_{76},\ c_{77},\ c_{78},\ c_{79},\ c_{80},\ c_{81},\ c_{82},\ c_{83},\ c_{84},\ c_{85},\ c_{86},\ c_{87},\ c_{88},\ c_{89},\ c_{90},\ c_{91},\ c_{92},\ c_{93}\}$$

Out[•]//Short=

$$\{-c_{11}\,T_1^4-c_{41}\,T_1^4+c_{11}\,T_1^5+c_{41}\,T_1^5==0,$$
$$c_{11}\,T_1^3+c_{41}\,T_1^3-c_{11}\,T_1^4-c_{41}\,T_1^4==0,\ \text{<<315>>},\ c_{13}\,T_1\,T_2+c_{15}\,T_1\,T_2+c_{73}\,T_1\,T_2+$$
$$c_{75}\,T_1\,T_2+c_{89}\,T_1\,T_2-c_{13}\,T_1^2\,T_2^2-c_{15}\,T_1^2\,T_2^2-c_{73}\,T_1^2\,T_2^2-c_{75}\,T_1^2\,T_2^2-c_{89}\,T_1^2\,T_2^2==0\}$$

Solve: Equations may not give solutions for all "solve" variables.

Out[•]//Short=

$$\left\{\left\{c_1\to 0,\ c_2\to 0,\ c_3\to 0,\ \text{<<56>>},\ c_{90}\to -\frac{\text{<<1>>}}{\text{<<1>>}}-\text{<<1>>},\ c_{91}\to -\frac{c_{82}}{T_2}-\frac{c_{85}}{T_2},\right.\right.$$
$$\left.\left.c_{92}\to -\frac{c_{83}}{T_1\,T_2}-\frac{c_{86}}{T_1\,T_2}-\frac{-a_2\,b_5-a_2\,b_3\,T_1+a_4\,b_3\,T_1-\text{<<1>>}-a_4\,b_3\,T_1\,T_2+a_4\,b_5\,T_1\,T_2}{T_1^2\,T_2\,(-1+T_1\,T_2)}\right\}\right\}$$

```
In[•]:= sol /. (v_ → val_) :> (v = CF[val]);
```

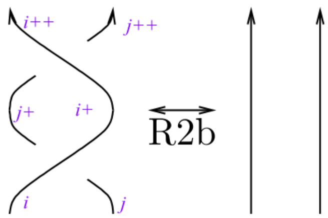
In[•]:= **Short[CF[r_{42}[1, i, j]], 20]**

Out[•]//Short=

$$c_{93} + c_{81}\, p_{1,i}\, x_{1,i} + c_{84}\, p_{1,j}\, x_{1,i} + (c_6 + c_{21})\, p_{1,i}\, p_{1,j}\, x_{1,i}^2 +$$
$$\frac{1}{2}(-1+T_1)(2c_6 + 2c_{21} + c_{16}T_1 + c_{31}T_1 + c_{46}T_1 + c_{61}T_1)\, p_{1,j}^2\, x_{1,i}^2 -$$
$$\frac{(c_{81}+c_{84})\, p_{1,j}\, x_{1,j}}{T_1} + (c_{16}+c_{31}+c_{46}+c_{61})\, p_{1,i}\, p_{1,j}\, x_{1,i}\, x_{1,j} +$$
$$\frac{1}{2}(-2c_6 - c_{16} - 2c_{21} - c_{31} - c_{46} - c_{61} - c_{16}T_1 - c_{31}T_1 - c_{46}T_1 - c_{61}T_1)\, p_{1,j}^2\, x_{1,i}\, x_{1,j} +$$
$$c_{82}\, p_{2,i}\, x_{2,i} + c_{85}\, p_{2,j}\, x_{2,i} + c_{22}\, p_{1,j}\, p_{2,i}\, x_{1,i}\, x_{2,i} + c_7\, p_{1,i}\, p_{2,j}\, x_{1,i}\, x_{2,i} +$$
$$\frac{1}{-1+T_1T_2}\Big(a_2b_3 + c_7 + c_{22} - c_7T_1 + a_4b_3T_2 + a_2b_5T_2 - a_4b_5T_2 - c_{22}T_2 -$$
$$a_4b_3T_1T_2 - c_7T_1T_2 - c_{22}T_1T_2 + c_7T_1^2T_2 + a_4b_5T_2^2 + c_{22}T_1T_2^2\Big)\, p_{1,j}\, p_{2,j}\, x_{1,i}\, x_{2,i} +$$
$$\ll 18 \gg + \frac{b_3(a_2+a_4T_2)\, p_{1,i}\, p_{3,j}\, x_{1,j}\, x_{3,i}}{T_1(-1+T_2)} - \frac{1}{(-1+T_1)T_1(-1+T_2)}$$
$$\Big(-a_2b_3 + a_2b_3T_1 + a_2b_5T_1 + c_{23}T_1 - a_4b_3T_2 + a_4b_3T_1T_2 - a_2b_5T_1T_2 + a_4b_5T_1T_2 - c_{23}T_1T_2 - c_{23}T_1^2T_2 -$$
$$a_4b_5T_1T_2^2 + c_{23}T_1^2T_2^2\Big)\, p_{1,j}\, p_{3,j}\, x_{1,j}\, x_{3,i} + c_{25}\, p_{2,j}\, p_{3,i}\, x_{2,i}\, x_{3,i} + c_{10}\, p_{2,i}\, p_{3,j}\, x_{2,i}\, x_{3,i} - \frac{1}{(-1+T_1)T_1}$$
$$\Big(-a_2b_3 + a_2b_3T_1 - c_{10}T_1 - c_{25}T_1 + c_{10}T_1^2 + c_{25}T_1^2 - a_4b_3T_2 - a_2b_5T_2 + 2a_4b_3T_1T_2 + a_2b_5T_1T_2 -$$
$$a_4b_5T_1T_2 + c_{10}T_1T_2 - a_4b_3T_1^2T_2 - c_{10}T_1^2T_2 + c_{25}T_1^2T_2 - c_{25}T_1^3T_2 - a_4b_5T_2^2 + 2a_4b_5T_1T_2^2\Big)$$
$$p_{2,j}\, p_{3,j}\, x_{2,i}\, x_{3,i} + \frac{1}{(-1+T_1)T_1(-1+T_2)(-1+T_1T_2)}$$
$$\Big(-a_2b_5 - a_2b_3T_1 + a_4b_3T_1 + a_2b_5T_1 - a_4b_5T_1 + c_{10}T_1 - c_{25}T_1 + a_2b_3T_1^2 - a_4b_3T_1^2 - c_{10}T_1^2 + c_{25}T_1^2 +$$
$$a_2b_5T_2 - a_4b_5T_2 - a_4b_3T_1T_2 - a_2b_5T_1T_2 + 3a_4b_5T_1T_2 - c_{10}T_1T_2 + a_4b_3T_1^2T_2 + c_{10}T_1^2T_2 +$$
$$c_{25}T_1^2T_2 - c_{25}T_1^3T_2 + a_4b_5T_2^2 - 2a_4b_5T_1T_2^2\Big)\, p_{2,j}\, p_{3,i}\, x_{2,j}\, x_{3,i} - \frac{a_4b_5\, p_{2,i}\, p_{3,j}\, x_{2,j}\, x_{3,i}}{-1+T_1} +$$
$$\frac{\Big(-a_4b_5 - c_{25} + c_{25}T_1 + a_4b_3T_2 + a_4b_5T_2 - a_4b_3T_1T_2 + c_{25}T_1T_2 - c_{25}T_1^2T_2\Big)\, p_{2,j}\, p_{3,j}\, x_{2,j}\, x_{3,i}}{(-1+T_1)(-1+T_2)} -$$
$$\frac{1}{T_1^2T_2(-1+T_1T_2)}$$
$$\Big(-a_2b_5 - a_2b_3T_1 + a_4b_3T_1 - c_{83}T_1 - c_{86}T_1 - a_4b_5T_2 - a_4b_3T_1T_2 + a_4b_5T_1T_2 + c_{83}T_1^2T_2 + c_{86}T_1^2T_2\Big)$$
$$p_{3,j}\, x_{3,j} - \frac{(a_2b_5 - a_4b_5 - c_8 + c_{23} + c_8T_1 + a_4b_5T_2 - c_{23}T_1T_2)\, p_{1,i}\, p_{3,j}\, x_{1,i}\, x_{3,j}}{(-1+T_1)(-1+T_1T_2)} -$$
$$\frac{(-a_2b_3 + c_8 + a_2b_3T_1 - a_4b_3T_1 - c_8T_1 - a_4b_3T_2 - c_8T_2 + 2a_4b_3T_1T_2 + c_8T_1T_2)\, p_{1,j}\, p_{3,j}\, x_{1,i}\, x_{3,j}}{(-1+T_2)(-1+T_1T_2)} -$$
$$\frac{\Big(a_2b_3 - c_{10}T_1 + c_{25}T_1 + a_4b_3T_2 - a_4b_3T_1T_2 + c_{10}T_1T_2 - c_{25}T_1^2T_2\Big)\, p_{2,i}\, p_{3,j}\, x_{2,i}\, x_{3,j}}{T_1(-1+T_2)(-1+T_1T_2)} -$$
$$\frac{1}{(-1+T_1)T_1(-1+T_1T_2)}$$
$$\Big(c_{10}T_1 - c_{10}T_1^2 + a_2b_5T_2 - a_2b_5T_1T_2 + a_4b_5T_1T_2 - c_{10}T_1T_2 + c_{10}T_1^2T_2 + a_4b_5T_2^2 - 2a_4b_5T_1T_2^2\Big)$$
$$p_{2,j}\, p_{3,j}\, x_{2,i}\, x_{3,j}$$

In[•]:=
```
CF[LeftR3b - RightR3b]
```
Out[•]=
```
∊Series[0, 0]
```

Reidemeister 2b



Territory: $(x \mid p)_{(i\mid j)^+},\ x_{i\mid j}$.

In[•]:=
```
Timing[Short[LeftR2b = (∫𝓕[i, j] × ℒ /@ (X_{i,j}[1] X_{i⁺,j⁺}[-1]) ⅆ{vs_i, vs_j, vs_{i⁺}, vs_{j⁺}})〚1〛
 ]]
```
Out[•]=

$$\Big\{3.60938,\ \epsilon\text{Series}\Big[p_{1,2+i}\,\pi_{1,i}+p_{1,2+j}\,\pi_{1,j}+p_{2,2+i}\,\pi_{2,i}+\ll 10\gg+p_{3,2+i}\,\pi_{3,i}+p_{3,2+j}\,\pi_{3,j},\ \frac{\ll 352\gg+f_{93}\,T_1^3\,T_2^2}{(-1+T_1)\,T_1^2\,(-1+T_2)\,T_2}+\ll 98\gg+\frac{(\ll 1\gg)\ \ll 3\gg\ \pi_{\ll 1\gg}}{T_1\,T_2^2}\Big]\Big\}$$

In[•]:=
```
RightR2b = ∊Series[p_{1,2+i} π_{1,i} + p_{1,2+j} π_{1,j} + p_{2,2+i} π_{2,i} + p_{2,2+j} π_{2,j} + p_{3,2+i} π_{3,i} + p_{3,2+j} π_{3,j}, 0]
```
Out[•]=

$$\epsilon\text{Series}[p_{1,2+i}\,\pi_{1,i}+p_{1,2+j}\,\pi_{1,j}+p_{2,2+i}\,\pi_{2,i}+p_{2,2+j}\,\pi_{2,j}+p_{3,2+i}\,\pi_{3,i}+p_{3,2+j}\,\pi_{3,j},\ 0]$$

In[•]:=
```
Short[eqn = CF[LeftR2b[[1]] - RightR2b[[1]]]]
cvs = Union@Cases[eqn, p__ | π__, ∞]
vars = Union@Cases[r0[-1, i, j], d_, ∞]
Short[eqns = CoefficientRules[eqn, cvs] /. (_ → c_) :> (c == 0), 3]
{sol} = Solve[eqns, vars]
```

Out[•]//Short=

$$\frac{(d_7 + d_3\,T_1 - d_7\,T_1 + d_5\,T_2 - d_7\,T_2 + d_1\,T_1\,T_2 - d_3\,T_1\,T_2 - d_5\,T_1\,T_2 + d_7\,T_1\,T_2)\ \text{<<2>>}\ \pi_{\text{<<1>>}}}{B\,T_1\,T_2} +$$

$$\frac{(\text{<<1>>})\ \text{<<3>>}}{B\,T_1\,T_2} + \text{<<5>>} + \frac{\text{<<1>>}}{\text{<<1>>}} + \frac{(-d_7 + d_7\,T_1\,T_2 + d_8\,T_1\,T_2)\ \text{<<2>>}\ \pi_{\text{<<1>>}}}{B\,T_1\,T_2}$$

Out[•]=

$$\{p_{3,2+i},\ p_{3,2+j},\ \pi_{1,i},\ \pi_{1,j},\ \pi_{2,i},\ \pi_{2,j}\}$$

Out[•]=

$$\{d_1,\ d_2,\ d_3,\ d_4,\ d_5,\ d_6,\ d_7,\ d_8\}$$

Out[•]//Short=

$$\left\{\frac{d_1}{B} - \frac{d_3}{B} - \frac{d_5}{B} + \frac{d_7}{B} + \frac{d_5}{B\,T_1} - \frac{d_7}{B\,T_1} + \frac{d_3}{B\,T_2} - \frac{d_7}{B\,T_2} + \frac{d_7}{B\,T_1\,T_2} == 0,\ \frac{d_3}{B\,T_2} - \frac{d_7}{B\,T_2} + \frac{d_7}{B\,T_1\,T_2} == 0,\right.$$

$$\frac{d_5}{B\,T_1} - \frac{d_7}{B\,T_1} + \frac{d_7}{B\,T_1\,T_2} == 0,\ \frac{d_7}{B\,T_1\,T_2} == 0,\ \frac{a_2}{B} - \frac{d_1}{B} + \frac{d_3}{B} + \text{<<32>>} + \frac{d_7\,T_1\,T_2}{B} + \frac{d_8\,T_1\,T_2}{B} == 0,$$

$$\frac{a_4}{B} + \frac{d_7}{B} + \frac{d_8}{B} + \frac{d_3\,T_1}{B} + \frac{d_4\,T_1}{B} - \frac{d_7\,T_1}{B} - \frac{d_8\,T_1}{B} - \frac{d_3}{B\,T_2} + \frac{d_7}{B\,T_2} - \frac{d_7}{B\,T_1\,T_2} == 0,$$

$$\frac{d_7}{B} + \frac{d_8}{B} - \frac{a_2}{B\,T_1} - \frac{d_5}{B\,T_1} + \frac{d_7}{B\,T_1} - \frac{d_7}{B\,T_1\,T_2} + \frac{d_5\,T_2}{B} + \frac{d_6\,T_2}{B} - \frac{d_7\,T_2}{B} - \frac{d_8\,T_2}{B} - \frac{a_4\,T_2}{B\,T_1} == 0,$$

$$\left.\frac{d_7}{B} + \frac{d_8}{B} - \frac{d_7}{B\,T_1\,T_2} == 0\right\}$$

Out[•]=

$$\left\{\left\{d_1 \to 0,\ d_2 \to -\frac{a_2 - a_4\,T_1 + a_4\,T_2}{T_1^2\,T_2},\ d_3 \to 0,\ d_4 \to -\frac{a_4}{T_1},\ d_5 \to 0,\ d_6 \to -\frac{-a_2 - a_4\,T_2}{T_1\,T_2},\ d_7 \to 0,\ d_8 \to 0\right\}\right\}$$

In[•]:=
```
sol /. (v_ → val_) :> (v = CF[val]);
r0[-1, i, j]
```

Out[•]=

$$\frac{(-a_2 + a_4\,T_1 - a_4\,T_2)\ p_{3,j}\ x_{1,i}\ x_{2,i}}{T_1^2\,T_2} + \frac{(a_2 + a_4\,T_2)\ p_{3,j}\ x_{1,j}\ x_{2,i}}{T_1\,T_2} - \frac{a_4\ p_{3,j}\ x_{1,i}\ x_{2,j}}{T_1}$$

```
In[•]:= Short[eqn = CF[LeftR2b[[2]] - RightR2b[[2]]]]
        cvs = Union@Cases[eqn, p__ | π__, ∞]
        vars = Union@Cases[r1[-1, i, j] + r42[-1, i, j], e_ | f_, ∞]
        Short[eqns = CoefficientRules[eqn, cvs] /. (_ → c_) :> (c == 0), 3]
        Short[{sol} = Solve[eqns, vars]]
```

Out[•]//Short=

$$\ll 107 \gg + \frac{\ll 1 \gg}{\ll 1 \gg \ll 1 \gg} + \frac{\left(f_{55} + \ll 16 \gg + f_{80}\, T_1\, T_2^2\right) \ll 3 \gg \pi_{\ll 1 \gg}}{T_1\, T_2^2}$$

Out[•]=

$$\{p_{1,2+i},\ p_{1,2+j},\ p_{2,2+i},\ p_{2,2+j},\ p_{3,2+i},\ p_{3,2+j},\ \pi_{1,i},\ \pi_{1,j},\ \pi_{2,i},\ \pi_{2,j},\ \pi_{3,i},\ \pi_{3,j}\}$$

Out[•]=

$$\{e_1, e_2, e_3, e_4, e_5, e_6, e_7, e_8, f_1, f_2, f_3, f_4, f_5, f_6, f_7, f_8, f_9, f_{10}, f_{11}, f_{12}, f_{13}, f_{14}, f_{15}, f_{16},$$
$$f_{17}, f_{18}, f_{19}, f_{20}, f_{21}, f_{22}, f_{23}, f_{24}, f_{25}, f_{26}, f_{27}, f_{28}, f_{29}, f_{30}, f_{31}, f_{32}, f_{33}, f_{34}, f_{35}, f_{36},$$
$$f_{37}, f_{38}, f_{39}, f_{40}, f_{41}, f_{42}, f_{43}, f_{44}, f_{45}, f_{46}, f_{47}, f_{48}, f_{49}, f_{50}, f_{51}, f_{52}, f_{53}, f_{54}, f_{55},$$
$$f_{56}, f_{57}, f_{58}, f_{59}, f_{60}, f_{61}, f_{62}, f_{63}, f_{64}, f_{65}, f_{66}, f_{67}, f_{68}, f_{69}, f_{70}, f_{71}, f_{72}, f_{73}, f_{74},$$
$$f_{75}, f_{76}, f_{77}, f_{78}, f_{79}, f_{80}, f_{81}, f_{82}, f_{83}, f_{84}, f_{85}, f_{86}, f_{87}, f_{88}, f_{89}, f_{90}, f_{91}, f_{92}, f_{93}\}$$

Out[•]//Short=

$$\Big\{f_1 - f_{11} - f_{41} + f_{51} + \frac{f_{51}}{T_1^2} + \frac{f_{11}}{T_1} + \frac{f_{41}}{T_1} - \frac{2\, f_{51}}{T_1} == 0,$$

$$\frac{2\, f_{51}}{T_1^2} + \frac{f_{11}}{T_1} + \frac{\ll 1 \gg}{\ll 1 \gg} - \frac{2\, f_{51}}{T_1} == 0,\ \ll 83 \gg,\ \ll 1 \gg == 0,$$

$$\frac{2\, a_4\, b_3}{(1 - T_1)\,(1 - T_2)} + \frac{c_{16}}{(1 - T_1)\,(1 - T_2)} + \frac{c_{19}}{(1 - T_1)\,(1 - T_2)} + \frac{c_{31}}{(1 - T_1)\,(1 - T_2)} + \frac{c_{34}}{(1 - T_1)\,(1 - T_2)} +$$
$$\frac{c_{46}}{(1 - T_1)\,(1 - T_2)} + \ll 327 \gg + \frac{f_{82}\, T_1\, T_2}{(1 - T_1)\,(1 - T_2)} + \frac{f_{83}\, T_1\, T_2}{(1 - T_1)\,(1 - T_2)} +$$
$$\frac{f_{90}\, T_1\, T_2}{(1 - T_1)\,(1 - T_2)} + \frac{f_{91}\, T_1\, T_2}{(1 - T_1)\,(1 - T_2)} + \frac{f_{92}\, T_1\, T_2}{(1 - T_1)\,(1 - T_2)} + \frac{f_{93}\, T_1\, T_2}{(1 - T_1)\,(1 - T_2)} == 0\Big\}$$

Solve: Equations may not give solutions for all "solve" variables.

Out[•]//Short=

$$\{\{e_1 \to 0,\ e_2 \to 0,\ \ll 84 \gg,\ f_{93} \to -c_{93}\}\}$$

```
In[•]:= sol /. (v_ → val_) :> (v = CF[val]);
```

```
In[•]:= r1[-1, i, j]
        Short[CF[r42[-1, i, j]], 5]
```

Out[•]=

$$-\frac{b_5\, p_{1,j}\, p_{2,i}\, x_{3,i}}{T_1} - \frac{b_3\, p_{1,i}\, p_{2,j}\, x_{3,i}}{T_2} + \frac{(b_3\, T_1 + b_5\, T_2)\, p_{1,j}\, p_{2,j}\, x_{3,i}}{T_1\, T_2}$$

Out[•]//Short=

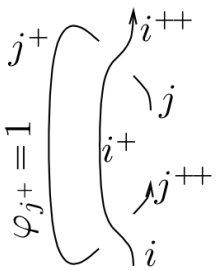
$$-c_{93} - c_{81}\, p_{1,i}\, x_{1,i} + \text{<<54>>} + \frac{\left(a_2\, b_3 - c_{10}\, T_1 + c_{25}\, T_1 + a_4\, b_3\, T_2 - a_4\, b_3\, T_1\, T_2 + c_{10}\, T_1\, T_2 - c_{25}\, T_1^2\, T_2\right) p_{2,i}\, p_{3,j}\, x_{2,i}\, x_{3,j}}{T_1\, (-1 + T_2)\, (-1 + T_1\, T_2)} +$$
$$\left(\left(a_2\, b_3 - a_2\, b_3\, T_1 + c_{25}\, T_1 - c_{25}\, T_1^2 + a_4\, b_3\, T_2 + a_2\, b_5\, T_2 - 2\, a_4\, b_3\, T_1\, T_2 - a_2\, b_5\, T_1\, T_2 + a_4\, b_5\, T_1\, T_2 + a_4\, b_3\, T_1^2\, T_2 - c_{25}\, T_1^2\, T_2 + c_{25}\, T_1^3\, T_2 + a_4\, b_5\, T_2^2 - 2\, a_4\, b_5\, T_1\, T_2^2\right) p_{2,j}\, p_{3,j}\, x_{2,i}\, x_{3,j}\right) \Big/ \left((-1 + T_1)\, T_1\, T_2\, (-1 + T_1\, T_2)\right)$$

```
In[•]:= CF[LeftR2b - RightR2b]
```

Out[•]=

$$\in \text{Series}[0, 0]$$

Reidemeister 2c




```
In[•]:= Timing[ Short[{LeftR2c} = Cases[
          ∫ℱ[i, j] × ℒ /@ (X_{i+1,j}[1] X_{i,j+2}[-1] C_{j+1}[1]) 𝕕{vs_i, vs_j, vs_{i⁺}, vs_{j⁺}, vs_{j+2}}, 𝔼[ℰ_] :> ℰ]
        ]]
```

Out[•]=

$$\Big\{4.29688,\ \Big\{\in \text{Series}\Big[p_{1,2+i}\, \pi_{1,i} + p_{1,3+j}\, \pi_{1,j} + p_{2,2+i}\, \pi_{2,i} + \frac{g_1\, (-1 + T_1)\, \text{<<3>>}\, \pi_{2,i}}{B\, T_1\, T_2} - \frac{\text{<<1>>}}{B\, \text{<<1>>}\, \text{<<1>>}} + \text{<<1>>} - \frac{g_1\, \text{<<3>>}\, \pi_{\text{<<1>>}}}{B\, T_1} + \frac{g_1\, p_{3,3+j}\, \pi_{1,j}\, \pi_{2,j}}{B} + p_{3,2+i}\, \pi_{3,i} + p_{3,3+j}\, \pi_{3,j},\ \text{<<1>>}\Big]\Big\}\Big\}$$

```
In[•]:= Timing[ Short[{RightR2c} =
          Cases[∫ℱ[i, j] × ℒ /@ (C_i[0] C_{i+1}[0] C_j[0] C_{j+1}[1] C_{j+2}[0]) d{vs_i, vs_j, vs_{i+}, vs_{j+}, vs_{j+2}},
           𝔼[ℰ_] :↦ ℰ]
         ]]
```

Out[•]=

$$\left\{0.125,\ \left\{\in \text{Series}\left[p_{1,2+i}\,\pi_{1,i} + p_{1,3+j}\,\pi_{1,j} + p_{2,2+i}\,\pi_{2,i} + p_{2,3+j}\,\pi_{2,j} + \frac{g_1\,p_{3,3+j}\,\pi_{1,j}\,\pi_{2,j}}{B} + p_{3,2+i}\,\pi_{3,i} + p_{3,3+j}\,\pi_{3,j},\ g_1\,g_2 + \text{<<16>>} + (g_1\,g_2 + g_{10})\,p_{2,\text{<<1>>}}\,p_{\text{<<1>>}}\,\pi_{2\,\text{<<1>>}}\,\pi_{\text{<<1>>}}\,\pi_{3,j}\right]\right\}\right\}$$

```
In[•]:= Short[eqn = CF[LeftR2c[[1]] - RightR2c[[1]]]]
        cvs = Union@Cases[eqn, p__ | π__, ∞]
        vars = Union@Cases[γ0[1, k], g_, ∞]
        Short[eqns = CoefficientRules[eqn, cvs] /. (_ → c_) :↦ (c == 0), 3]
        {sol} = Solve[eqns, vars]
```

Out[•]//Short=

$$\frac{g_1\,(-1+T_1)\,(-1+T_2)\,p_{3,3+j}\,\pi_{1,i}\,\pi_{2,i}}{B\,T_1\,T_2} - \frac{g_1\,(-1+T_2)\,p_{3,\text{<<1>>}}\,\pi_{1,j}\,\pi_{2,i}}{B\,T_2} - \frac{g_1\,(-1+T_1)\,p_{3,3+j}\,\pi_{1,i}\,\pi_{2,j}}{B\,T_1}$$

Out[•]=

$$\{p_{3,3+j},\ \pi_{1,i},\ \pi_{1,j},\ \pi_{2,i},\ \pi_{2,j}\}$$

Out[•]=

$$\{g_1\}$$

Out[•]//Short=

$$\left\{\frac{g_1}{B} - \frac{g_1}{B\,T_1} - \frac{g_1}{B\,T_2} + \frac{g_1}{B\,T_1\,T_2} == 0,\ -\frac{g_1}{B} + \frac{g_1}{B\,T_1} == 0,\ -\frac{g_1}{B} + \frac{g_1}{B\,T_2} == 0\right\}$$

Out[•]=

$$\{\{g_1 \to 0\}\}$$

```
In[•]:= sol /. (v_ → val_) :↦ (v = CF[val]);
        γ0[1, k]
```

Out[•]=

$$0$$

```
In[•]:= Short[eqn = CF[LeftR2c[[2]] - RightR2c[[2]]]]
        cvs = Union@Cases[eqn, p__ | π__, ∞]
        vars = Union@Cases[γ1[1, k] + γ42[1, k], g_, ∞]
        Short[eqns = CoefficientRules[eqn, cvs] /. (_ → c_) :> (c == 0), 3]
        Short[{sol} = Solve[eqns, vars]]
```

Out[•]//Short=

$$\frac{(c_{16}+c_{31}+c_{46}+c_{61}-g_3-4\,g_6-g_7-g_8)\,(-1+T_1)\,p_{1,3+j}\,\pi_{1,i}}{T_1}+\frac{g_6\,\text{<<1>>}^2\,\text{<<1>>}\,\pi^2_{\text{<<1>>}}}{T_1^2}-\frac{\text{<<1>>}}{T_1}+\text{<<22>>}$$

Out[•]=

$$\{p_{1,3+j},\ p_{2,3+j},\ p_{3,3+j},\ \pi_{1,i},\ \pi_{1,j},\ \pi_{2,i},\ \pi_{2,j},\ \pi_{3,i},\ \pi_{3,j}\}$$

Out[•]=

$$\{g_2,\ g_3,\ g_4,\ g_5,\ g_6,\ g_7,\ g_8,\ g_9,\ g_{10}\}$$

Out[•]//Short=

$$\left\{g_6+\frac{g_6}{T_1^2}-\frac{2\,g_6}{T_1}==0,\ -2\,g_6+\frac{2\,g_6}{T_1}==0,\ \text{<<13>>},\ c_{19}+\text{<<22>>}+\frac{\text{<<1>>}}{\text{<<1>>}}==0,\right.$$
$$\frac{2\,a_4\,b_3}{(1-T_1)\,(1-T_2)}+\frac{a_4\,b_3}{(1-T_1)\,T_1^2\,(1-T_2)}+\frac{a_2\,b_5}{(1-T_1)\,T_1^2\,(1-T_2)}-\frac{a_4\,b_5}{(1-T_1)\,T_1^2\,(1-T_2)}-$$
$$\frac{3\,a_4\,b_3}{(1-T_1)\,T_1\,(1-T_2)}-\frac{a_2\,b_5}{(1-T_1)\,T_1\,(1-T_2)}+\text{<<33>>}+\frac{g_{10}\,T_2}{(1-T_1)\,(1-T_2)}+\frac{a_4\,b_5\,T_2}{(1-T_1)\,T_1^2\,(1-T_2)}-$$
$$\left.\frac{2\,a_4\,b_5\,T_2}{(1-T_1)\,T_1\,(1-T_2)}-\frac{g_5\,T_1\,T_2}{(1-T_1)\,(1-T_2)}-\frac{g_8\,T_1\,T_2}{(1-T_1)\,(1-T_2)}-\frac{g_{10}\,T_1\,T_2}{(1-T_1)\,(1-T_2)}==0\right\}$$

Out[•]//Short=

$$\left\{\left\{g_2\to 0,\ g_3\to c_{16}+c_{31}+c_{46}+c_{61},\ g_4\to c_{19}+c_{34}+c_{49}+c_{64},\right.\right.$$
$$\left.\left.g_5\to-\frac{-a_2\,b_3+a_2\,b_5+\text{<<22>>}+2\,a_4\,b_5\,T_1\,T_2^2}{(-1+T_1)\,T_1\,(-1+T_2)\,(-1+T_1\,T_2)},\ g_6\to 0,\ g_7\to 0,\ g_8\to 0,\ g_9\to 0,\ g_{10}\to 0\right\}\right\}$$

```
In[•]:= sol /. (v_ → val_) :> (v = CF[val]);
```

```
In[•]:= γ1[1, k]
        Short[CF[γ42[1, k]], 5]
```

Out[•]=

$$0$$

Out[•]//Short=

$$(c_{16}+c_{31}+c_{46}+c_{61})\,p_{1,k}\,x_{1,k}+(c_{19}+c_{34}+c_{49}+c_{64})\,p_{2,k}\,x_{2,k}+\frac{(-b_3+b_5+b_3\,T_1-b_5\,T_2)\,(-a_2+a_2\,T_1-a_4\,T_1-a_4\,T_2+2\,a_4\,T_1\,T_2)\,p_{3,k}\,x_{3,k}}{(-1+T_1)\,T_1\,(-1+T_2)\,(-1+T_1\,T_2)}$$

```
In[•]:= CF[LeftR2c - RightR2c]
```

Out[•]=

$$\in\text{Series}[0,\ 0]$$

$C_k[1]$ and $C_k[-1]$ are inverses

```
In[•]:= Timing[ Short[ {LeftCC} = Cases[ {∫ℱ[k] × ℒ /@ (C_k[1] C_{k+1}[-1]) 𝕕{vs_k, vs_{k+}}}, 𝔼[ℰ_] :↦ ℰ] ]]
```

```
Out[•]=
{0.109375, {∈Series[p_{1,2+k} π_{1,k} + p_{2,2+k} π_{2,k} + (h_1 p_{3,2+k} π_{1,k} π_{2,k})/B + p_{3,2+k} π_{3,k},
  (<<177>> + h_10 T_1^3 T_2^2)/((-1+T_1) T_1 (-1+T_2) (-1+T_1 T_2)) + <<8>> + (h_1 h_2 + h_10) p_{2,<<1>>} <<1>> π_{<<1>>} π_{3,k}]}}
```

```
In[•]:= Timing[ Short[ {RightCC} = Cases[ {∫ℱ[k] × ℒ /@ (C_k[0] C_{k+1}[0]) 𝕕{vs_k, vs_{k+}}}, 𝔼[ℰ_] :↦ ℰ] ]]
```

```
Out[•]=
{0.015625, {∈Series[p_{1,2+k} π_{1,k} + p_{2,2+k} π_{2,k} + p_{3,2+k} π_{3,k}, 0]}}
```

```
In[•]:= Short[eqn = CF[LeftCC⟦1⟧ - RightCC⟦1⟧]]
cvs = Union@Cases[eqn, p__ | π__, ∞]
vars = Union@Cases[γ_0[-1, k], h_, ∞]
Short[eqns = CoefficientRules[eqn, cvs] /. (_ → c_) :↦ (c == 0), 3]
{sol} = Solve[eqns, vars]
```

```
Out[•]//Short=
(h_1 p_{3,2+k} π_{1,k} π_{2,k})/B
```

```
Out[•]=
{p_{3,2+k}, π_{1,k}, π_{2,k}}
```

```
Out[•]=
{h_1}
```

```
Out[•]//Short=
{h_1/B == 0}
```

```
Out[•]=
{{h_1 → 0}}
```

```
In[•]:= sol /. (v_ → val_) :↦ (v = CF[val]);
γ_0[-1, k]
```

```
Out[•]=
0
```

```
In[•]:= Short[eqn = CF[LeftCC[[2]] - RightCC[[2]]]]
        cvs = Union@Cases[eqn, p__ | π__, ∞]
        vars = Union@Cases[γ1[-1, k] + γ42[-1, k], h_, ∞]
        Short[eqns = CoefficientRules[eqn, cvs] /. (_ → c_) :> (c == 0), 3]
        Short[{sol} = Solve[eqns, vars]]
```

Out[•]//Short=

$$\frac{a_2\,b_3 - a_2\,b_5 - 2\,a_2\,b_3\,T_1 + \text{<<161>>} + h_8\,T_1^3\,T_2^2 + 2\,h_9\,T_1^3\,T_2^2 + h_{10}\,T_1^3\,T_2^2}{(-1+T_1)\,T_1\,(-1+T_2)\,(-1+T_1\,T_2)} + \text{<<8>>} + h_{10}\,p_{2,2+k}\,p_{3,2+k}\,\pi_{2,k}\,\pi_{3,k}$$

Out[•]=

$$\{p_{1,2+k},\ p_{2,2+k},\ p_{3,2+k},\ \pi_{1,k},\ \pi_{2,k},\ \pi_{3,k}\}$$

Out[•]=

$$\{h_2,\ h_3,\ h_4,\ h_5,\ h_6,\ h_7,\ h_8,\ h_9,\ h_{10}\}$$

Out[•]//Short=

$$\Big\{h_6 == 0,\ h_7 == 0,\ B\,h_2 == 0,\ h_8 == 0,\ c_{16} + c_{31} + \text{<<4>>} + h_7 + h_8 == 0,\ h_9 == 0,$$
$$h_{10} == 0,\ c_{19} + c_{34} + c_{49} + c_{64} + h_4 + h_7 + 4\,h_9 + h_{10} == 0,\ \frac{2\,a_2\,b_3}{(1-T_1)\,(1-T_2)\,(1-T_1\,T_2)} -$$
$$\frac{a_4\,b_3}{(1-T_1)\,(1-T_2)\,(1-T_1\,T_2)} - \frac{a_2\,b_5}{(1-T_1)\,\text{<<1>>}\,\text{<<1>>}\,(\text{<<1>>})} + \text{<<48>>} == 0,$$
$$\frac{2\,a_2\,b_3}{(1-T_1)\,(1-T_2)\,(1-T_1\,T_2)} - \frac{a_4\,b_3}{(1-T_1)\,(1-T_2)\,(1-T_1\,T_2)} - \frac{a_2\,b_5}{(1-T_1)\,(1-T_2)\,(1-T_1\,T_2)} +$$
$$\frac{a_4\,b_5}{(1-T_1)\,(1-T_2)\,(1-T_1\,T_2)} + \frac{c_{16}}{(1-T_1)\,(1-T_2)\,(1-T_1\,T_2)} + \frac{\text{<<1>>}}{\text{<<1>>}} + \text{<<162>>} == 0\Big\}$$

Out[•]//Short=

$$\Big\{\Big\{h_2 \to 0,\ h_3 \to -c_{16} - c_{31} - c_{46} - c_{61},\ h_4 \to -c_{19} - c_{34} - c_{49} - c_{64},$$
$$h_5 \to -\frac{\text{<<22>>} + \text{<<1>>} - 2\,a_4\,b_5\,T_1\,T_2^2}{(-1+T_1)\,T_1\,(-1+T_2)\,(-1+T_1\,T_2)},\ h_6 \to 0,\ h_7 \to 0,\ h_8 \to 0,\ h_9 \to 0,\ h_{10} \to 0\Big\}\Big\}$$

```
In[•]:= sol /. (v_ → val_) :> (v = CF[val]);
```

```
In[•]:= γ1[-1, k]
        Short[CF[γ42[-1, k]], 5]
```

Out[•]=

$$0$$

Out[•]//Short=

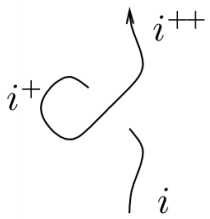
$$\frac{(-c_{16} - c_{31} - c_{46} - c_{61})\,p_{1,k}\,x_{1,k} + (-c_{19} - c_{34} - c_{49} - c_{64})\,p_{2,k}\,x_{2,k} - (-b_3 + b_5 + b_3\,T_1 - b_5\,T_2)\,(-a_2 + a_2\,T_1 - a_4\,T_1 - a_4\,T_2 + 2\,a_4\,T_1\,T_2)\,p_{3,k}\,x_{3,k}}{(-1+T_1)\,T_1\,(-1+T_2)\,(-1+T_1\,T_2)}$$

```
In[•]:= CF[LeftCC - RightCC]
```

Out[•]=

$$\in \text{Series}[0, 0]$$

Invariance Under R1l




```
In[•]:= {LeftR1l} = Cases[{∫ℱ[i] × ℒ /@ (X_{i+2,i}[1] C_{i+1}[1]) 𝕕{vs_i, vs_{i⁺}, vs_{i+2}}}, 𝔼[ℰ_] :↦ ℰ, ∞]
```

```
Out[•]=
{∈Series[p_{1,3+i} π_{1,i} + p_{2,3+i} π_{2,i} + p_{3,3+i} π_{3,i}, c_93]}
```

```
In[•]:= {RightR1l} = Cases[{∫ℱ[i] × ℒ /@ (C_i[0] C_{i+1}[0] C_{i+2}[0]) 𝕕{vs_i, vs_{i⁺}, vs_{i+2}}}, 𝔼[ℰ_] :↦ ℰ, ∞]
```

```
Out[•]=
{∈Series[p_{1,3+i} π_{1,i} + p_{2,3+i} π_{2,i} + p_{3,3+i} π_{3,i}, 0]}
```

```
In[•]:= LeftR1l[[1]] == RightR1l[[1]]
```

```
Out[•]=
True
```

```
In[•]:= Short[eqn = CF[LeftR1l[[2]] - RightR1l[[2]]]]
        cvs = Union@Cases[eqn, p__ | π__, ∞]
        vars = Union@Cases[eqn, (c | d | e | f | g | h)_, ∞]
        Short[eqns = If[cvs === {},
            {eqn == 0},
            CoefficientRules[eqn, cvs] /. (_ → c_) :↦ (c == 0)
          ], 3]
        {sol} = Solve[eqns, vars]
```

```
Out[•]//Short=
c_93
```

```
Out[•]=
{}
```

```
Out[•]=
{}
```

```
Out[•]//Short=
{c_93 == 0}
```

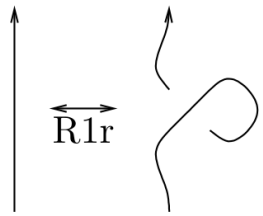
```
Out[•]=
{{c_93 → 0}}
```

```
In[•]:= sol /. (v_ → val_) :↦ (v = CF[val]);
```

```
In[•]:= CF[LeftR1l - RightR1l]
```

```
Out[•]=
∈Series[0, 0]
```

Invariance Under R1r



In[•]:=
```
{LeftR1r} = Cases[{∫ℱ[i] × ℒ /@ (X_{i,i+2}[1] C_{i+1}[-1]) 𝕕{vs_i, vs_{i⁺}, vs_{i+2}}}, 𝔼[ℰ_] :> ℰ, ∞]
```

Out[•]=

$$\left\{\in\text{Series}\left[p_{1,3+i}\,\pi_{1,i}+p_{2,3+i}\,\pi_{2,i}+p_{3,3+i}\,\pi_{3,i},\right.\right.$$
$$\frac{1}{T_1^2\,T_2\,(-1+T_1\,T_2)}\left(a_2\,b_5+a_2\,b_3\,T_1-a_4\,b_3\,T_1+c_{83}\,T_1+c_{86}\,T_1+c_{82}\,T_1^2+c_{85}\,T_1^2+a_4\,b_5\,T_2+\right.$$
$$a_4\,b_3\,T_1\,T_2-a_4\,b_5\,T_1\,T_2+c_{81}\,T_1\,T_2+c_{84}\,T_1\,T_2-c_{81}\,T_1^2\,T_2-c_{82}\,T_1^2\,T_2-2\,c_{83}\,T_1^2\,T_2-$$
$$\left.\left.\left.c_{86}\,T_1^2\,T_2-c_{82}\,T_1^3\,T_2-c_{85}\,T_1^3\,T_2-c_{81}\,T_1^2\,T_2^2-c_{84}\,T_1^2\,T_2^2+c_{81}\,T_1^3\,T_2^2+c_{82}\,T_1^3\,T_2^2+c_{83}\,T_1^3\,T_2^2\right)\right]\right\}$$

In[•]:=
```
{RightR1r} = Cases[{∫ℱ[i] × ℒ /@ (C_i[0] C_{i+1}[0] C_{i+2}[0]) 𝕕{vs_i, vs_{i⁺}, vs_{i+2}}}, 𝔼[ℰ_] :> ℰ, ∞]
```

Out[•]=

$$\{\in\text{Series}[p_{1,3+i}\,\pi_{1,i}+p_{2,3+i}\,\pi_{2,i}+p_{3,3+i}\,\pi_{3,i},\,0]\}$$

In[•]:=
```
LeftR1r[[1]] == RightR1r[[1]]
```

Out[•]=

True

```
In[•]:= Short[eqn = CF[LeftR1r[[2]] - RightR1r[[2]]]]
        cvs = Union@Cases[eqn, p__ | π__, ∞]
        vars = Union@Cases[eqn, (c | d | e | f | g | h)_, ∞]
        Short[eqns = CoefficientRules[eqn, cvs] /. (_ → c_) :↦ (c == 0), 3]
        {sol} = Solve[eqns, vars]
```

Out[•]//Short=

$$\frac{a_2\,b_5 + a_2\,b_3\,T_1 - a_4\,b_3\,T_1 + \text{<<26>>} + c_{81}\,T_1^3\,T_2^2 + c_{82}\,T_1^3\,T_2^2 + c_{83}\,T_1^3\,T_2^2}{T_1^2\,T_2\,(-1 + T_1\,T_2)}$$

Out[•]=

$$\{\}$$

Out[•]=

$$\{c_{81}, c_{82}, c_{83}, c_{84}, c_{85}, c_{86}\}$$

Out[•]//Short=

$$\left\{\frac{1}{T_1^2\,T_2\,(-1 + T_1\,T_2)}\left(a_2\,b_5 + a_2\,b_3\,T_1 - a_4\,b_3\,T_1 + c_{83}\,T_1 + c_{86}\,T_1 + c_{82}\,T_1^2 + c_{85}\,T_1^2 + a_4\,b_5\,T_2 + \text{<<21>>} + c_{81}\,T_1^3\,T_2^2 + c_{82}\,T_1^3\,T_2^2 + c_{83}\,T_1^3\,T_2^2\right) == 0\right\}$$

Solve: Equations may not give solutions for all "solve" variables.

Out[•]=

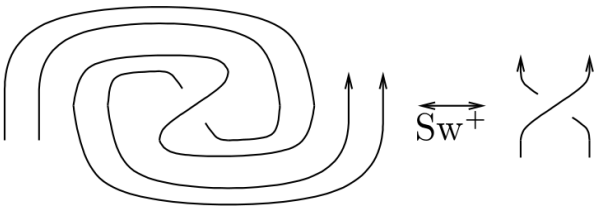
$$\left\{\left\{c_{86} \to -c_{85}\,T_1 - c_{84}\,T_2 - c_{83}\,(1 - T_1\,T_2) - c_{82}\,(T_1 - T_1\,T_2) - c_{81}\,(T_2 - T_1\,T_2) - \frac{-a_2\,b_5 - a_2\,b_3\,T_1 + a_4\,b_3\,T_1 - a_4\,b_5\,T_2 - a_4\,b_3\,T_1\,T_2 + a_4\,b_5\,T_1\,T_2}{T_1\,(-1 + T_1\,T_2)}\right\}\right\}$$

```
In[•]:= sol /. (v_ → val_) :↦ (v = CF[val]);

In[•]:= CF[LeftR1r - RightR1r]

Out[•]=
        ∈Series[0, 0]
```

Invariance Under Sw



```
In[•]:= Timing[ Short[{LeftSw} = Cases[{∫ℱ[i, j] × ℒ /@ (X_{i+1,j+1}[1] C_i[-1] C_j[-1] C_{i+2}[1] C_{j+2}[1])
          dl{vs_i, vs_j, vs_{i⁺}, vs_{j⁺}, vs_{i+2}, vs_{j+2}}}, 𝔼[ℰ_] :↦ ℰ, ∞]
 ]]
```

```
Out[•]=
{1.32813,
 {∈Series[T1 p1,3+i π1,i + (1 - T1) p1,3+j π1,i + p1,3+j π1,j + T2 p2,3+i π2,i + <<6>> + T1 T2 p3,3+i π3,i +
     (1 - T1 T2) p3,3+j π3,i + p3,3+j π3,j, <<1>>/<<1>> + <<56>> + <<1>>/<<1>>]}}
```

```
In[•]:= Timing[ Short[{RightSw} = Cases[{∫ℱ[i, j] × ℒ /@ (X_{i+1,j+1}[1] C_i[0] C_j[0] C_{i+2}[0] C_{j+2}[0])
          dl{vs_i, vs_j, vs_{i⁺}, vs_{j⁺}, vs_{i+2}, vs_{j+2}}}, 𝔼[ℰ_] :↦ ℰ, ∞]
 ]]
```

```
Out[•]=
{1.57813,
 {∈Series[T1 p1,3+i π1,i + (1 - T1) p1,3+j π1,i + p1,3+j π1,j + T2 p2,3+i π2,i + <<6>> + T1 T2 p3,3+i π3,i +
     (1 - T1 T2) p3,3+j π3,i + p3,3+j π3,j, <<1>>/<<1>> + <<56>> + <<1>>/<<1>>]}}
```

```
In[•]:= LeftSw == RightSw
```

```
Out[•]=
True
```

The Solution

```
In[•]:= Union@Cases[ℒ@X_{i,j}[1], (a | b | c | d | e | f | g | h)_, ∞]
```

```
Out[•]=
{a2, a4, b3, b5, c6, c7, c8, c9, c10, c16, c19, c21, c22, c23,
 c24, c25, c31, c34, c36, c39, c46, c49, c61, c64, c81, c82, c83, c84, c85}
```

```
In[•]:= LeftCount@CF[ℒ@X_{i,j}[1] /. {c_{16|19|31|34|46|49|61|64|81|82|84|85} → 0, b_{3|5} → 1, a_{2|4} → 1, B → 1} //.
    {c21 → -c6, c22 → -c7, c24 → -c9, c7 → -1/T1, c_{8|10|23|25|83} → 0}]
```

```
Out[•]=
1310
```

```
In[•]:= LeafCount@CF[ℒ@X_{i,j}[1] /. {c_{16|19|31|34|46|49|61|64|81|82|84|85} → 0, b_{3|5} → 1, a_{2|4} → 1, B → 1} //.
    {c21 → -c6, c22 → -c7, c24 → -c9, c7 → 0, c_{8|10|23|25|83} → 0}]
```

```
Out[•]=
1205
```

In[•]:=
```
CF[ℒ@X_{i,j}[1] /. {c_{16|19|31|34|46|49|61|64|81|82|84|85} → 0, b_{3|5} → 1, a_{2|4} → 1, B → 1} //.
  {c_{21} → -c_6, c_{22} → -c_7, c_{24} → -c_9, c_7 → 0, c_{8|10|23|25|83} → 0}]
```

Out[•]=

$$T_1\,T_2\,\mathbb{E}\Big[\in\text{Series}\Big[-p_{1,i}\,x_{1,i}+T_1\,p_{1,1+i}\,x_{1,i}+(1-T_1)\,p_{1,1+j}\,x_{1,i}-p_{1,j}\,x_{1,j}+p_{1,1+j}\,x_{1,j}-p_{2,i}\,x_{2,i}+$$
$$T_2\,p_{2,1+i}\,x_{2,i}+(1-T_2)\,p_{2,1+j}\,x_{2,i}+p_{3,j}\,x_{1,i}\,x_{2,i}-\frac{(1+T_2)\,p_{3,j}\,x_{1,j}\,x_{2,i}}{T_1}-p_{2,j}\,x_{2,j}+p_{2,1+j}\,x_{2,j}+$$
$$p_{3,j}\,x_{1,i}\,x_{2,j}-p_{3,i}\,x_{3,i}+T_1\,T_2\,p_{3,1+i}\,x_{3,i}+(1-T_1\,T_2)\,p_{3,1+j}\,x_{3,i}-p_{3,j}\,x_{3,j}+p_{3,1+j}\,x_{3,j},$$
$$-\frac{\left(-1-T_2+T_1\,T_2-T_2^2\right)\,p_{1,j}\,p_{2,j}\,x_{1,i}\,x_{2,i}}{-1+T_1\,T_2}-\frac{(T_1-T_2)\,(-1-T_2+T_1\,T_2)\,p_{1,j}\,p_{2,i}\,x_{1,j}\,x_{2,i}}{(-1+T_1)\,T_1\,(-1+T_2)\,(-1+T_1\,T_2)}-$$
$$\frac{(1+T_2)\,p_{1,j}\,p_{2,j}\,x_{1,i}\,x_{2,i}}{(-1+T_1)\,T_1}-\frac{(T_1-T_2)\,T_2\,p_{1,i}\,p_{2,j}\,x_{1,i}\,x_{2,j}}{(-1+T_1)\,(-1+T_2)\,(-1+T_1\,T_2)}+\frac{p_{1,j}\,p_{2,j}\,x_{1,i}\,x_{2,j}}{-1+T_2}+$$
$$p_{1,j}\,p_{2,i}\,x_{3,i}+p_{1,i}\,p_{2,j}\,x_{3,i}-2\,p_{1,j}\,p_{2,j}\,x_{3,i}+\frac{(1+T_2)\,p_{3,j}\,x_{3,i}}{T_1\,(-1+T_1\,T_2)}-$$
$$\frac{\left(1-2\,T_1\,T_2+T_2^2\right)\,p_{1,j}\,p_{3,j}\,x_{1,i}\,x_{3,i}}{-1+T_2}+\frac{\left(-T_1+T_2-2\,T_1\,T_2+2\,T_1^2\,T_2+T_2^2-T_1\,T_2^2\right)\,p_{1,j}\,p_{3,i}\,x_{1,j}\,x_{3,i}}{(-1+T_1)\,T_1\,(-1+T_2)\,(-1+T_1\,T_2)}+$$
$$\frac{(1+T_2)\,p_{1,i}\,p_{3,j}\,x_{1,j}\,x_{3,i}}{T_1\,(-1+T_2)}+\frac{(1+T_2)\,(1-2\,T_1+T_1\,T_2)\,p_{1,j}\,p_{3,j}\,x_{1,j}\,x_{3,i}}{(-1+T_1)\,T_1\,(-1+T_2)}+$$
$$\frac{\left(1-T_1+2\,T_2-2\,T_1\,T_2+T_1^2\,T_2+T_2^2-2\,T_1\,T_2^2\right)\,p_{2,j}\,p_{3,j}\,x_{2,i}\,x_{3,i}}{(-1+T_1)\,T_1}+$$
$$\frac{\left(-1+T_1\,T_2+T_1^2\,T_2+T_2^2-2\,T_1\,T_2^2\right)\,p_{2,j}\,p_{3,i}\,x_{2,j}\,x_{3,i}}{(-1+T_1)\,T_1\,(-1+T_2)\,(-1+T_1\,T_2)}-$$
$$\frac{p_{2,i}\,p_{3,j}\,x_{2,j}\,x_{3,i}}{-1+T_1}-\frac{(1-2\,T_2+T_1\,T_2)\,p_{2,j}\,p_{3,j}\,x_{2,j}\,x_{3,i}}{(-1+T_1)\,(-1+T_2)}-$$
$$\frac{T_2\,p_{1,i}\,p_{3,j}\,x_{1,i}\,x_{3,j}}{(-1+T_1)\,(-1+T_1\,T_2)}-\frac{(-1-T_2+2\,T_1\,T_2)\,p_{1,j}\,p_{3,j}\,x_{1,i}\,x_{3,j}}{(-1+T_2)\,(-1+T_1\,T_2)}+$$
$$\frac{(-1-T_2+T_1\,T_2)\,p_{2,i}\,p_{3,j}\,x_{2,i}\,x_{3,j}}{T_1\,(-1+T_2)\,(-1+T_1\,T_2)}+\frac{T_2\,(-1-T_2+2\,T_1\,T_2)\,p_{2,j}\,p_{3,j}\,x_{2,i}\,x_{3,j}}{(-1+T_1)\,T_1\,(-1+T_1\,T_2)}\Big]\Big]$$

In[•]:=
```
CF[ℒ@X_{i,j}[-1] /. {c_{16|19|31|34|46|49|61|64|81|82|84|85} → 0, b_{3|5} → 1, a_{2|4} → 1, B → 1} //.
  {c_{21} → -c_6, c_{22} → -c_7, c_{24} → -c_9, c_7 → 0, c_{8|10|23|25|83} → 0}]
```

Out[•]=

$$\frac{1}{T_1\,T_2}\,\mathbb{E}\Big[$$
$$\in\text{Series}\Big[-p_{1,i}\,x_{1,i}+\frac{p_{1,1+i}\,x_{1,i}}{T_1}+\frac{(-1+T_1)\,p_{1,1+j}\,x_{1,i}}{T_1}-p_{1,j}\,x_{1,j}+p_{1,1+j}\,x_{1,j}-p_{2,i}\,x_{2,i}+\frac{p_{2,1+i}\,x_{2,i}}{T_2}+$$
$$\frac{(-1+T_2)\,p_{2,1+j}\,x_{2,i}}{T_2}+\frac{(-1+T_1-T_2)\,p_{3,j}\,x_{1,i}\,x_{2,i}}{T_1^2\,T_2}+\frac{(1+T_2)\,p_{3,j}\,x_{1,j}\,x_{2,i}}{T_1\,T_2}-p_{2,j}\,x_{2,j}+p_{2,1+j}\,x_{2,j}-$$
$$\frac{p_{3,j}\,x_{1,i}\,x_{2,j}}{T_1}-p_{3,i}\,x_{3,i}+\frac{p_{3,1+i}\,x_{3,i}}{T_1\,T_2}+\frac{(-1+T_1\,T_2)\,p_{3,1+j}\,x_{3,i}}{T_1\,T_2}-p_{3,j}\,x_{3,j}+p_{3,1+j}\,x_{3,j},$$

$$\frac{(T_1-T_2)\ (-1-T_2+T_1\,T_2)\ p_{1,j}\,p_{2,i}\,x_{1,i}\,x_{2,i}}{T_1^2\ (-1+T_2)\ (-1+T_1\,T_2)}+\frac{(T_1-T_2)\ p_{1,i}\,p_{2,j}\,x_{1,i}\,x_{2,i}}{(-1+T_1)\ (-1+T_1\,T_2)}-$$
$$\frac{\left(1-T_1+2\,T_2-T_1\,T_2+2\,T_1^2\,T_2+T_2^2-2\,T_1\,T_2^2\right)\ p_{1,j}\,p_{2,j}\,x_{1,i}\,x_{2,i}}{T_1^2\,T_2\ (-1+T_1\,T_2)}+$$
$$\frac{(T_1-T_2)\ (-1-T_2+T_1\,T_2)\ p_{1,j}\,p_{2,i}\,x_{1,j}\,x_{2,i}}{(-1+T_1)\ T_1\ (-1+T_2)\ (-1+T_1\,T_2)}-$$
$$\frac{\left(1-T_1+2\,T_2-2\,T_1\,T_2+T_1^2\,T_2+T_2^2-2\,T_1\,T_2^2\right)\ p_{1,j}\,p_{2,j}\,x_{1,j}\,x_{2,i}}{(-1+T_1)\ T_1\,T_2\ (-1+T_1\,T_2)}+\frac{(T_1-T_2)\ T_2\,p_{1,i}\,p_{2,j}\,x_{1,i}\,x_{2,j}}{(-1+T_1)\ (-1+T_2)\ (-1+T_1\,T_2)}-$$
$$\frac{\left(-1+2\,T_1\,T_2-T_2^2\right)\ p_{1,j}\,p_{2,j}\,x_{1,i}\,x_{2,j}}{T_1\ (-1+T_2)\ (-1+T_1\,T_2)}-\frac{p_{1,j}\,p_{2,i}\,x_{3,i}}{T_1}-\frac{p_{1,i}\,p_{2,j}\,x_{3,i}}{T_2}+\frac{(T_1+T_2)\ p_{1,j}\,p_{2,j}\,x_{3,i}}{T_1\,T_2}+$$
$$\frac{\left(-1-T_2+T_1\,T_2-T_2^2\right)\ p_{3,j}\,x_{3,i}}{T_1\,T_2\ (-1+T_1\,T_2)}-\frac{\left(-T_1+T_2-2\,T_1\,T_2+2\,T_1^2\,T_2+T_2^2-T_1\,T_2^2\right)\ p_{1,j}\,p_{3,i}\,x_{1,i}\,x_{3,i}}{T_1^2\ (-1+T_2)\ (-1+T_1\,T_2)}-$$
$$\frac{\left(1-T_1+T_2-2\,T_1\,T_2+2\,T_1^2\,T_2-T_1\,T_2^2\right)\ p_{1,i}\,p_{3,j}\,x_{1,i}\,x_{3,i}}{(-1+T_1)\ T_1^2\ (-1+T_2)\ T_2}+$$
$$\frac{\left(1-2\,T_1+T_2-3\,T_1\,T_2+4\,T_1^2\,T_2-T_1\,T_2^2\right)\ p_{1,j}\,p_{3,j}\,x_{1,i}\,x_{3,i}}{T_1^3\ (-1+T_2)\ T_2}-$$
$$\frac{\left(-T_1+T_2-2\,T_1\,T_2+2\,T_1^2\,T_2+T_2^2-T_1\,T_2^2\right)\ p_{1,j}\,p_{3,i}\,x_{1,j}\,x_{3,i}}{(-1+T_1)\ T_1\ (-1+T_2)\ (-1+T_1\,T_2)}-\frac{(1+T_2)\ p_{1,i}\,p_{3,j}\,x_{1,j}\,x_{3,i}}{T_1\ (-1+T_2)\ T_2}+$$
$$\frac{\left(1-2\,T_1+T_1^2+T_2-3\,T_1\,T_2+3\,T_1^2\,T_2-T_1\,T_2^2\right)\ p_{1,j}\,p_{3,j}\,x_{1,j}\,x_{3,i}}{(-1+T_1)\ T_1^2\ (-1+T_2)\ T_2}-$$
$$\frac{\left(-1+T_1\,T_2+T_1^2\,T_2+T_2^2-2\,T_1\,T_2^2\right)\ p_{2,j}\,p_{3,i}\,x_{2,i}\,x_{3,i}}{(-1+T_1)\ T_1\,T_2\ (-1+T_1\,T_2)}-$$
$$\frac{\left(-T_1+T_2+T_1^2\,T_2+T_2^2-2\,T_1\,T_2^2\right)\ p_{2,i}\,p_{3,j}\,x_{2,i}\,x_{3,i}}{(-1+T_1)\ T_1^2\ (-1+T_2)\ T_2}+$$
$$\frac{\left(-T_1+2\,T_2+T_1^2\,T_2+2\,T_2^2-4\,T_1\,T_2^2\right)\ p_{2,j}\,p_{3,j}\,x_{2,i}\,x_{3,i}}{(-1+T_1)\ T_1^2\,T_2^2}-$$
$$\frac{\left(-1+T_1\,T_2+T_1^2\,T_2+T_2^2-2\,T_1\,T_2^2\right)\ p_{2,j}\,p_{3,i}\,x_{2,j}\,x_{3,i}}{(-1+T_1)\ T_1\ (-1+T_2)\ (-1+T_1\,T_2)}+\frac{p_{2,i}\,p_{3,j}\,x_{2,j}\,x_{3,i}}{(-1+T_1)\ T_1}+$$
$$\frac{\left(-1-T_1+T_1^2+2\,T_1\,T_2+T_1^2\,T_2+T_2^2-3\,T_1\,T_2^2\right)\ p_{2,j}\,p_{3,j}\,x_{2,j}\,x_{3,i}}{(-1+T_1)\ T_1^2\ (-1+T_2)\ T_2}+\frac{T_2\,p_{1,i}\,p_{3,j}\,x_{1,i}\,x_{3,j}}{(-1+T_1)\ (-1+T_1\,T_2)}+$$
$$\frac{\left(-1+2\,T_1\,T_2-T_2^2\right)\ p_{1,j}\,p_{3,j}\,x_{1,i}\,x_{3,j}}{T_1\ (-1+T_2)\ (-1+T_1\,T_2)}-\frac{(-1-T_2+T_1\,T_2)\ p_{2,i}\,p_{3,j}\,x_{2,i}\,x_{3,j}}{T_1\ (-1+T_2)\ (-1+T_1\,T_2)}+$$
$$\frac{\left(1-T_1+2\,T_2-2\,T_1\,T_2+T_1^2\,T_2+T_2^2-2\,T_1\,T_2^2\right)\ p_{2,j}\,p_{3,j}\,x_{2,i}\,x_{3,j}}{(-1+T_1)\ T_1\,T_2\ (-1+T_1\,T_2)}\Big]\Big]$$

```
In[•]:= MatrixForm@CF[{
          {r0[1, i, j], r1[1, i, j]},
          {r0[-1, i, j], r1[-1, i, j]},
          {(-a2 + a2 T1 - a4 T1 - a4 T2 + 2 a4 T1 T2), (-b3 + b5 + b3 T1 - b5 T2)}
         } /. {b3 → 0, a4 → 0, b5 → T1, a2 → T1}]
```

Out[•]//MatrixForm=

$$\begin{pmatrix} T_1\, p_{3,j}\, x_{1,i}\, x_{2,i} - p_{3,j}\, x_{1,j}\, x_{2,i} & T_1\, p_{1,j}\, p_{2,i}\, x_{3,i} - T_1\, p_{1,j}\, p_{2,j}\, x_{3,i} \\ -\frac{p_{3,j}\, x_{1,i}\, x_{2,i}}{T_1\, T_2} + \frac{p_{3,j}\, x_{1,j}\, x_{2,i}}{T_2} & -p_{1,j}\, p_{2,i}\, x_{3,i} + p_{1,j}\, p_{2,j}\, x_{3,i} \\ (-1+T_1)\, T_1 & -T_1\, (-1+T_2) \end{pmatrix}$$

```
In[•]:= MatrixForm@CF[{
          {r0[1, i, j], r1[1, i, j]},
          {r0[-1, i, j], r1[-1, i, j]},
          {(-a2 + a2 T1 - a4 T1 - a4 T2 + 2 a4 T1 T2), (-b3 + b5 + b3 T1 - b5 T2)}
         } /. {b3 → 0, a4 → 0, b5 → 1, a2 → 1}]
```

Out[•]//MatrixForm=

$$\begin{pmatrix} p_{3,j}\, x_{1,i}\, x_{2,i} - \frac{p_{3,j}\, x_{1,j}\, x_{2,i}}{T_1} & p_{1,j}\, p_{2,i}\, x_{3,i} - p_{1,j}\, p_{2,j}\, x_{3,i} \\ -\frac{p_{3,j}\, x_{1,i}\, x_{2,i}}{T_1^2\, T_2} + \frac{p_{3,j}\, x_{1,j}\, x_{2,i}}{T_1\, T_2} & -\frac{p_{1,j}\, p_{2,i}\, x_{3,i}}{T_1} + \frac{p_{1,j}\, p_{2,j}\, x_{3,i}}{T_1} \\ -1+T_1 & 1-T_2 \end{pmatrix}$$

```
In[•]:= MatrixForm@CF[{
          {r0[1, i, j], r1[1, i, j]},
          {r0[-1, i, j], r1[-1, i, j]},
          {(-a2 + a2 T1 - a4 T1 - a4 T2 + 2 a4 T1 T2), (-b3 + b5 + b3 T1 - b5 T2)}
         } /. {b3 → T2^(1/2), b5 → -T1^(1/2), a4 → T1^(1/2), a2 → -Sqrt[T1] T2}]
```

Out[•]//MatrixForm=

$$\begin{pmatrix} -\sqrt{T_1}\, T_2\, p_{3,j}\, x_{1,i}\, x_{2,i} + \sqrt{T_1}\, p_{3,j}\, x_{1,i}\, x_{2,j} & -\sqrt{T_1}\, p_{1,j}\, p_{2,i}\, x_{3,i} + \sqrt{T_2}\, p_{1,i}\, p_{2,j}\, x_{3,i} + \left(\sqrt{T_1} - \sqrt{T_2}\right) p_{1,j}\, p_2 \\ \frac{p_{3,j}\, x_{1,i}\, x_{2,i}}{\sqrt{T_1}\, T_2} - \frac{p_{3,j}\, x_{1,i}\, x_{2,j}}{\sqrt{T_1}} & \frac{p_{1,j}\, p_{2,i}\, x_{3,i}}{\sqrt{T_1}} - \frac{p_{1,i}\, p_{2,j}\, x_{3,i}}{\sqrt{T_2}} + \frac{\left(\sqrt{T_1} - \sqrt{T_2}\right) p_{1,j}\, p_{2,j}\, x_{3,i}}{\sqrt{T_1}\, \sqrt{T_2}} \\ T_1^{3/2}\, (-1+T_2) & \left(\sqrt{T_1} + \sqrt{T_2}\right) \left(-1 + \sqrt{T_1}\, \sqrt{T_2}\right) \end{pmatrix}$$

```
In[•]:= MatrixForm@CF[{
          {r0[1, i, j], r1[1, i, j]},
          {r0[-1, i, j], r1[-1, i, j]},
          {(-a2 + a2 T1 - a4 T1 - a4 T2 + 2 a4 T1 T2), (-b3 + b5 + b3 T1 - b5 T2)}
         } /. {a2 → -T2 a4, b5 → -b3 T1} /. {b3 → T1 - 1, a4 → 1}]
```

Out[•]//MatrixForm=

$$\begin{pmatrix} -T_2\, p_{3,j}\, x_{1,i}\, x_{2,i} + p_{3,j}\, x_{1,i}\, x_{2,j} & -\left((-1+T_1)\, T_1\, p_{1,j}\, p_{2,i}\, x_{3,i}\right) + (-1+T_1)\, p_{1,i}\, p_{2,j}\, x_{3,i} + (-1+T_1)^2\, p_{1,j} \\ \frac{p_{3,j}\, x_{1,i}\, x_{2,i}}{T_1\, T_2} - \frac{p_{3,j}\, x_{1,i}\, x_{2,j}}{T_1} & (-1+T_1)\, p_{1,j}\, p_{2,i}\, x_{3,i} - \frac{(-1+T_1)\, p_{1,i}\, p_{2,j}\, x_{3,i}}{T_2} - \frac{(-1+T_1)\, (-1+T_2)\, p_{1,j}\, p_{2,j}\, x_{3,i}}{T_2} \\ T_1\, (-1+T_2) & (-1+T_1)\, (-1+T_1\, T_2) \end{pmatrix}$$

```
In[•]:= MatrixForm@CF[{
          {r0[1, i, j], r1[1, i, j]},
          {r0[-1, i, j], r1[-1, i, j]},
          {(-a2 + a2 T1 - a4 T1 - a4 T2 + 2 a4 T1 T2), (-b3 + b5 + b3 T1 - b5 T2)}
        } /. {a2 → -T2 a4, b5 → -b3 T1} /. {b3 → 1, a4 → 1 - T1^-1}]
```

Out[•]//MatrixForm=

$$\begin{pmatrix} -\frac{(-1+T_1)\,T_2\,p_{3,j}\,x_{1,i}\,x_{2,i}}{T_1}+\frac{(-1+T_1)\,p_{3,j}\,x_{1,i}\,x_{2,j}}{T_1} & -T_1\,p_{1,j}\,p_{2,i}\,x_{3,i}+p_{1,i}\,p_{2,j}\,x_{3,i}+(-1+T_1)\,p_{1,j}\,p_{2,j}\,x_{3,i} \\ \frac{(-1+T_1)\,p_{3,j}\,x_{1,i}\,x_{2,i}}{T_1^2\,T_2}-\frac{(-1+T_1)\,p_{3,j}\,x_{1,i}\,x_{2,j}}{T_1^2} & p_{1,j}\,p_{2,i}\,x_{3,i}-\frac{p_{1,i}\,p_{2,j}\,x_{3,i}}{T_2}-\frac{(-1+T_2)\,p_{1,j}\,p_{2,j}\,x_{3,i}}{T_2} \\ (-1+T_1)\,(-1+T_2) & -1+T_1\,T_2 \end{pmatrix}$$

```
In[•]:= ℒ[Ck[1]]
```

Out[•]=

$$T_1\,T_2\,\mathbb{E}\left[\epsilon\text{Series}\left[(-p_{1,k}+p_{1,1+k})\,x_{1,k}+(-p_{2,k}+p_{2,1+k})\,x_{2,k}+(-p_{3,k}+p_{3,1+k})\,x_{3,k},\right.\right.$$
$$(c_{16}+c_{31}+c_{46}+c_{61})\,p_{1,k}\,x_{1,k}+(c_{19}+c_{34}+c_{49}+c_{64})\,p_{2,k}\,x_{2,k}+$$
$$\left.\left.\frac{(-b_3+b_5+b_3\,T_1-b_5\,T_2)\,(-a_2+a_2\,T_1-a_4\,T_1-a_4\,T_2+2\,a_4\,T_1\,T_2)\,p_{3,k}\,x_{3,k}}{(-1+T_1)\,T_1\,(-1+T_2)\,(-1+T_1\,T_2)}\right]\right]$$

```
In[•]:= Factor[((-b3 + b5 + b3 T1 - b5 T2) (-a2 + a2 T1 - a4 T1 - a4 T2 + 2 a4 T1 T2) p3,k x3,k)/
            ((-1 + T1) T1 (-1 + T2) (-1 + T1 T2)) /.
          {a2 → -T2 a4, b5 → -b3 T1} /. {b3 → T1 - 1, a4 → 1}]
```

Out[•]=

$$p_{3,k}\,x_{3,k}$$

```
In[•]:= ℒ[Ck[1]] /. c16|19|31|34|46|49|61|64|81|82|84|85 → 0 /. T2 → 1
```

Power: Infinite expression $\frac{1}{0}$ encountered.

Out[•]=

$$T_1\,\mathbb{E}\left[\epsilon\text{Series}\left[(-p_{1,k}+p_{1,1+k})\,x_{1,k}+(-p_{2,k}+p_{2,1+k})\,x_{2,k}+(-p_{3,k}+p_{3,1+k})\,x_{3,k},\,\text{ComplexInfinity}\right]\right]$$

```
In[•]:= ℒ[Ck[-1]]
```

Out[•]=

$$\frac{1}{T_1\,T_2}\,\mathbb{E}\left[\epsilon\text{Series}\left[(-p_{1,k}+p_{1,1+k})\,x_{1,k}+(-p_{2,k}+p_{2,1+k})\,x_{2,k}+(-p_{3,k}+p_{3,1+k})\,x_{3,k},\right.\right.$$
$$(-c_{16}-c_{31}-c_{46}-c_{61})\,p_{1,k}\,x_{1,k}+(-c_{19}-c_{34}-c_{49}-c_{64})\,p_{2,k}\,x_{2,k}-$$
$$\left.\left.\frac{(-b_3+b_5+b_3\,T_1-b_5\,T_2)\,(-a_2+a_2\,T_1-a_4\,T_1-a_4\,T_2+2\,a_4\,T_1\,T_2)\,p_{3,k}\,x_{3,k}}{(-1+T_1)\,T_1\,(-1+T_2)\,(-1+T_1\,T_2)}\right]\right]$$

Some Knots

```
In[•]:= K = Knot[3, 1]; K31 = ∫ℒ[K] ×dvs[K]
```

Out[•]=

$$-\frac{1}{\left(1-T_1+T_1^2\right)\left(1-T_2+T_2^2\right)\left(1-T_1\,T_2+T_1^2\,T_2^2\right)}$$

$$
\begin{aligned}
&\mathbb{i}\, T_1^2\, T_2^2\, \mathbb{E}\Big[\epsilon \text{Series}\Big[0,\ -\Big(\Big(-c_{81}-c_{82}-c_{84}-c_{85}+c_{16}\,T_1+c_{31}\,T_1+c_{46}\,T_1+c_{61}\,T_1+5\,c_{81}\,T_1+4\,c_{82}\,T_1+\\
&\quad 4\,c_{84}\,T_1+4\,c_{85}\,T_1-3\,c_{16}\,T_1^2-3\,c_{31}\,T_1^2-3\,c_{46}\,T_1^2-3\,c_{61}\,T_1^2-10\,c_{81}\,T_1^2-8\,c_{82}\,T_1^2-6\,c_{84}\,T_1^2-\\
&\quad 8\,c_{85}\,T_1^2+5\,c_{16}\,T_1^3+5\,c_{31}\,T_1^3+5\,c_{46}\,T_1^3+5\,c_{61}\,T_1^3+11\,c_{81}\,T_1^3+10\,c_{82}\,T_1^3+5\,c_{84}\,T_1^3+10\,c_{85}\,T_1^3-\\
&\quad 5\,c_{16}\,T_1^4-5\,c_{31}\,T_1^4-5\,c_{46}\,T_1^4-5\,c_{61}\,T_1^4-7\,c_{81}\,T_1^4-8\,c_{82}\,T_1^4-2\,c_{84}\,T_1^4-8\,c_{85}\,T_1^4+2\,c_{16}\,T_1^5+\\
&\quad 2\,c_{31}\,T_1^5+2\,c_{46}\,T_1^5+2\,c_{61}\,T_1^5+2\,c_{81}\,T_1^5+4\,c_{82}\,T_1^5+4\,c_{85}\,T_1^5-c_{82}\,T_1^6-c_{85}\,T_1^6-a_2\,b_3\,T_2+a_2\,b_5\,T_2+\\
&\quad c_{19}\,T_2+c_{34}\,T_2+c_{49}\,T_2+c_{64}\,T_2+4\,c_{81}\,T_2+5\,c_{82}\,T_2+4\,c_{84}\,T_2+4\,c_{85}\,T_2+4\,a_2\,b_3\,T_1\,T_2-\\
&\quad a_4\,b_3\,T_1\,T_2-3\,a_2\,b_5\,T_1\,T_2+a_4\,b_5\,T_1\,T_2-3\,c_{16}\,T_1\,T_2-3\,c_{19}\,T_1\,T_2-3\,c_{31}\,T_1\,T_2-3\,c_{34}\,T_1\,T_2-\\
&\quad 3\,c_{46}\,T_1\,T_2-3\,c_{49}\,T_1\,T_2-3\,c_{61}\,T_1\,T_2-3\,c_{64}\,T_1\,T_2-17\,c_{81}\,T_1\,T_2-17\,c_{82}\,T_1\,T_2-13\,c_{84}\,T_1\,T_2-\\
&\quad 13\,c_{85}\,T_1\,T_2-8\,a_2\,b_3\,T_1^2\,T_2+3\,a_4\,b_3\,T_1^2\,T_2+5\,a_2\,b_5\,T_1^2\,T_2-2\,a_4\,b_5\,T_1^2\,T_2+7\,c_{16}\,T_1^2\,T_2+\\
&\quad 5\,c_{19}\,T_1^2\,T_2+7\,c_{31}\,T_1^2\,T_2+5\,c_{34}\,T_1^2\,T_2+7\,c_{46}\,T_1^2\,T_2+5\,c_{49}\,T_1^2\,T_2+7\,c_{61}\,T_1^2\,T_2+5\,c_{64}\,T_1^2\,T_2+\\
&\quad 28\,c_{81}\,T_1^2\,T_2+28\,c_{82}\,T_1^2\,T_2+15\,c_{84}\,T_1^2\,T_2+20\,c_{85}\,T_1^2\,T_2+10\,a_2\,b_3\,T_1^3\,T_2-5\,a_4\,b_3\,T_1^3\,T_2-\\
&\quad 5\,a_2\,b_5\,T_1^3\,T_2+3\,a_4\,b_5\,T_1^3\,T_2-9\,c_{16}\,T_1^3\,T_2-5\,c_{19}\,T_1^3\,T_2-9\,c_{31}\,T_1^3\,T_2-5\,c_{34}\,T_1^3\,T_2-9\,c_{46}\,T_1^3\,T_2-\\
&\quad 5\,c_{49}\,T_1^3\,T_2-9\,c_{61}\,T_1^3\,T_2-5\,c_{64}\,T_1^3\,T_2-23\,c_{81}\,T_1^3\,T_2-26\,c_{82}\,T_1^3\,T_2-8\,c_{84}\,T_1^3\,T_2-16\,c_{85}\,T_1^3\,T_2-\\
&\quad 8\,a_2\,b_3\,T_1^4\,T_2+5\,a_4\,b_3\,T_1^4\,T_2+3\,a_2\,b_5\,T_1^4\,T_2-2\,a_4\,b_5\,T_1^4\,T_2+5\,c_{16}\,T_1^4\,T_2+3\,c_{19}\,T_1^4\,T_2+\\
&\quad 5\,c_{31}\,T_1^4\,T_2+3\,c_{34}\,T_1^4\,T_2+5\,c_{46}\,T_1^4\,T_2+3\,c_{49}\,T_1^4\,T_2+5\,c_{61}\,T_1^4\,T_2+3\,c_{64}\,T_1^4\,T_2+7\,c_{81}\,T_1^4\,T_2+\\
&\quad 10\,c_{82}\,T_1^4\,T_2-c_{84}\,T_1^4\,T_2+2\,c_{85}\,T_1^4\,T_2+4\,a_2\,b_3\,T_1^5\,T_2-3\,a_4\,b_3\,T_1^5\,T_2-a_2\,b_5\,T_1^5\,T_2+a_4\,b_5\,T_1^5\,T_2+\\
&\quad 4\,c_{16}\,T_1^5\,T_2-c_{19}\,T_1^5\,T_2+4\,c_{31}\,T_1^5\,T_2-c_{34}\,T_1^5\,T_2+4\,c_{46}\,T_1^5\,T_2-c_{49}\,T_1^5\,T_2+4\,c_{61}\,T_1^5\,T_2-\\
&\quad c_{64}\,T_1^5\,T_2+4\,c_{81}\,T_1^5\,T_2+4\,c_{82}\,T_1^5\,T_2+3\,c_{84}\,T_1^5\,T_2+8\,c_{85}\,T_1^5\,T_2-a_2\,b_3\,T_1^6\,T_2+a_4\,b_3\,T_1^6\,T_2-\\
&\quad 4\,c_{16}\,T_1^6\,T_2-4\,c_{31}\,T_1^6\,T_2-4\,c_{46}\,T_1^6\,T_2-4\,c_{61}\,T_1^6\,T_2-3\,c_{81}\,T_1^6\,T_2-7\,c_{82}\,T_1^6\,T_2-8\,c_{85}\,T_1^6\,T_2+\\
&\quad 3\,c_{82}\,T_1^7\,T_2+3\,c_{85}\,T_1^7\,T_2+2\,a_2\,b_3\,T_2^2-a_4\,b_3\,T_2^2-3\,a_2\,b_5\,T_2^2+a_4\,b_5\,T_2^2-3\,c_{19}\,T_2^2-3\,c_{34}\,T_2^2-\\
&\quad 3\,c_{49}\,T_2^2-3\,c_{64}\,T_2^2-8\,c_{81}\,T_2^2-10\,c_{82}\,T_2^2-8\,c_{84}\,T_2^2-6\,c_{85}\,T_2^2-7\,a_2\,b_3\,T_1\,T_2^2+7\,a_4\,b_3\,T_1\,T_2^2+\\
&\quad 8\,a_2\,b_5\,T_1\,T_2^2-7\,a_4\,b_5\,T_1\,T_2^2+5\,c_{16}\,T_1\,T_2^2+7\,c_{19}\,T_1\,T_2^2+5\,c_{31}\,T_1\,T_2^2+7\,c_{34}\,T_1\,T_2^2+5\,c_{46}\,T_1\,T_2^2+\\
&\quad 7\,c_{49}\,T_1\,T_2^2+5\,c_{61}\,T_1\,T_2^2+7\,c_{64}\,T_1\,T_2^2+28\,c_{81}\,T_1\,T_2^2+28\,c_{82}\,T_1\,T_2^2+20\,c_{84}\,T_1\,T_2^2+15\,c_{85}\,T_1\,T_2^2+\\
&\quad 11\,a_2\,b_3\,T_1^2\,T_2^2-16\,a_4\,b_3\,T_1^2\,T_2^2-11\,a_2\,b_5\,T_1^2\,T_2^2+12\,a_4\,b_5\,T_1^2\,T_2^2-9\,c_{16}\,T_1^2\,T_2^2-9\,c_{19}\,T_1^2\,T_2^2-\\
&\quad 9\,c_{31}\,T_1^2\,T_2^2-9\,c_{34}\,T_1^2\,T_2^2-9\,c_{46}\,T_1^2\,T_2^2-9\,c_{49}\,T_1^2\,T_2^2-9\,c_{61}\,T_1^2\,T_2^2-9\,c_{64}\,T_1^2\,T_2^2-34\,c_{81}\,T_1^2\,T_2^2-\\
&\quad 34\,c_{82}\,T_1^2\,T_2^2-14\,c_{84}\,T_1^2\,T_2^2-14\,c_{85}\,T_1^2\,T_2^2-8\,a_2\,b_3\,T_1^3\,T_2^2+21\,a_4\,b_3\,T_1^3\,T_2^2+7\,a_2\,b_5\,T_1^3\,T_2^2-\\
&\quad 14\,a_4\,b_5\,T_1^3\,T_2^2+9\,c_{16}\,T_1^3\,T_2^2+5\,c_{19}\,T_1^3\,T_2^2+9\,c_{31}\,T_1^3\,T_2^2+5\,c_{34}\,T_1^3\,T_2^2+9\,c_{46}\,T_1^3\,T_2^2+5\,c_{49}\,T_1^3\,T_2^2+\\
&\quad 9\,c_{61}\,T_1^3\,T_2^2+5\,c_{64}\,T_1^3\,T_2^2+11\,c_{81}\,T_1^3\,T_2^2+12\,c_{82}\,T_1^3\,T_2^2-3\,c_{84}\,T_1^3\,T_2^2-4\,c_{85}\,T_1^3\,T_2^2-a_2\,b_3\,T_1^4\,T_2^2-\\
&\quad 15\,a_4\,b_3\,T_1^4\,T_2^2+6\,a_4\,b_5\,T_1^4\,T_2^2-c_{16}\,T_1^4\,T_2^2+c_{19}\,T_1^4\,T_2^2-c_{31}\,T_1^4\,T_2^2+c_{34}\,T_1^4\,T_2^2-c_{46}\,T_1^4\,T_2^2+\\
&\quad c_{49}\,T_1^4\,T_2^2-c_{61}\,T_1^4\,T_2^2+c_{64}\,T_1^4\,T_2^2+17\,c_{81}\,T_1^4\,T_2^2+24\,c_{82}\,T_1^4\,T_2^2+14\,c_{84}\,T_1^4\,T_2^2+26\,c_{85}\,T_1^4\,T_2^2+\\
&\quad 7\,a_2\,b_3\,T_1^5\,T_2^2+4\,a_4\,b_3\,T_1^5\,T_2^2-3\,a_2\,b_5\,T_1^5\,T_2^2-a_4\,b_5\,T_1^5\,T_2^2-10\,c_{16}\,T_1^5\,T_2^2-3\,c_{19}\,T_1^5\,T_2^2-\\
&\quad 10\,c_{31}\,T_1^5\,T_2^2-3\,c_{34}\,T_1^5\,T_2^2-10\,c_{46}\,T_1^5\,T_2^2-3\,c_{49}\,T_1^5\,T_2^2-10\,c_{61}\,T_1^5\,T_2^2-3\,c_{64}\,T_1^5\,T_2^2-22\,c_{81}\,T_1^5\,T_2^2-\\
&\quad 36\,c_{82}\,T_1^5\,T_2^2-8\,c_{84}\,T_1^5\,T_2^2-28\,c_{85}\,T_1^5\,T_2^2-6\,a_2\,b_3\,T_1^6\,T_2^2+2\,a_4\,b_3\,T_1^6\,T_2^2+2\,a_2\,b_5\,T_1^6\,T_2^2-\\
&\quad 2\,a_4\,b_5\,T_1^6\,T_2^2+2\,c_{16}\,T_1^6\,T_2^2+2\,c_{19}\,T_1^6\,T_2^2+2\,c_{31}\,T_1^6\,T_2^2+2\,c_{34}\,T_1^6\,T_2^2+2\,c_{46}\,T_1^6\,T_2^2+2\,c_{49}\,T_1^6\,T_2^2+\\
&\quad 2\,c_{61}\,T_1^6\,T_2^2+2\,c_{64}\,T_1^6\,T_2^2+7\,c_{81}\,T_1^6\,T_2^2+22\,c_{82}\,T_1^6\,T_2^2-c_{84}\,T_1^6\,T_2^2+14\,c_{85}\,T_1^6\,T_2^2+2\,a_2\,b_3\,T_1^7\,T_2^2-\\
&\quad 2\,a_4\,b_3\,T_1^7\,T_2^2+4\,c_{16}\,T_1^7\,T_2^2+4\,c_{31}\,T_1^7\,T_2^2+4\,c_{46}\,T_1^7\,T_2^2+4\,c_{61}\,T_1^7\,T_2^2+c_{81}\,T_1^7\,T_2^2-4\,c_{82}\,T_1^7\,T_2^2-\\
&\quad c_{85}\,T_1^7\,T_2^2-2\,c_{82}\,T_1^8\,T_2^2-2\,c_{85}\,T_1^8\,T_2^2-3\,a_2\,b_3\,T_2^3+2\,a_4\,b_3\,T_2^3+5\,a_2\,b_5\,T_2^3-3\,a_4\,b_5\,T_2^3+5\,c_{19}\,T_2^3+\\
&\quad 5\,c_{34}\,T_2^3+5\,c_{49}\,T_2^3+5\,c_{64}\,T_2^3+10\,c_{81}\,T_2^3+11\,c_{82}\,T_2^3+10\,c_{84}\,T_2^3+5\,c_{85}\,T_2^3+9\,a_2\,b_3\,T_1\,T_2^3-\\
&\quad 12\,a_4\,b_3\,T_1\,T_2^3-11\,a_2\,b_5\,T_1\,T_2^3+16\,a_4\,b_5\,T_1\,T_2^3-5\,c_{16}\,T_1\,T_2^3-9\,c_{19}\,T_1\,T_2^3-5\,c_{31}\,T_1\,T_2^3-\\
&\quad 9\,c_{34}\,T_1\,T_2^3-5\,c_{46}\,T_1\,T_2^3-9\,c_{49}\,T_1\,T_2^3-5\,c_{61}\,T_1\,T_2^3-9\,c_{64}\,T_1\,T_2^3-26\,c_{81}\,T_1\,T_2^3-23\,c_{82}\,T_1\,T_2^3-\\
&\quad 16\,c_{84}\,T_1\,T_2^3-8\,c_{85}\,T_1\,T_2^3-11\,a_2\,b_3\,T_1^2\,T_2^3+22\,a_4\,b_3\,T_1^2\,T_2^3+11\,a_2\,b_5\,T_1^2\,T_2^3-22\,a_4\,b_5\,T_1^2\,T_2^3+\\
&\quad 5\,c_{16}\,T_1^2\,T_2^3+9\,c_{19}\,T_1^2\,T_2^3+5\,c_{31}\,T_1^2\,T_2^3+9\,c_{34}\,T_1^2\,T_2^3+5\,c_{46}\,T_1^2\,T_2^3+9\,c_{49}\,T_1^2\,T_2^3+5\,c_{61}\,T_1^2\,T_2^3+\\
&\quad 9\,c_{64}\,T_1^2\,T_2^3+12\,c_{81}\,T_1^2\,T_2^3+11\,c_{82}\,T_1^2\,T_2^3-4\,c_{84}\,T_1^2\,T_2^3-3\,c_{85}\,T_1^2\,T_2^3+2\,a_2\,b_3\,T_1^3\,T_2^3-19\,a_4\,b_3\,T_1^3\,T_2^3+\\
&\quad a_2\,b_5\,T_1^3\,T_2^3+18\,a_4\,b_5\,T_1^3\,T_2^3-c_{16}\,T_1^3\,T_2^3-c_{19}\,T_1^3\,T_2^3-c_{31}\,T_1^3\,T_2^3-c_{34}\,T_1^3\,T_2^3-c_{46}\,T_1^3\,T_2^3-c_{49}\,T_1^3\,T_2^3-\\
&\quad c_{61}\,T_1^3\,T_2^3-c_{64}\,T_1^3\,T_2^3+30\,c_{81}\,T_1^3\,T_2^3+30\,c_{82}\,T_1^3\,T_2^3+26\,c_{84}\,T_1^3\,T_2^3+26\,c_{85}\,T_1^3\,T_2^3+13\,a_2\,b_3\,T_1^4\,T_2^3-\\
&\quad 2\,a_4\,b_3\,T_1^4\,T_2^3-13\,a_2\,b_5\,T_1^4\,T_2^3+5\,a_4\,b_5\,T_1^4\,T_2^3-8\,c_{16}\,T_1^4\,T_2^3-5\,c_{19}\,T_1^4\,T_2^3-8\,c_{31}\,T_1^4\,T_2^3-5\,c_{34}\,T_1^4\,T_2^3-
\end{aligned}
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$$8\,c_{46}\,T_1^4\,T_2^3 - 5\,c_{49}\,T_1^4\,T_2^3 - 8\,c_{61}\,T_1^4\,T_2^3 - 5\,c_{64}\,T_1^4\,T_2^3 - 54\,c_{81}\,T_1^4\,T_2^3 - 66\,c_{82}\,T_1^4\,T_2^3 - 28\,c_{84}\,T_1^4\,T_2^3 - 40\,c_{85}\,T_1^4\,T_2^3 - 19\,a_2\,b_3\,T_1^5\,T_2^3 + 20\,a_4\,b_3\,T_1^5\,T_2^3 + 13\,a_2\,b_5\,T_1^5\,T_2^3 - 11\,a_4\,b_5\,T_1^5\,T_2^3 + 13\,c_{16}\,T_1^5\,T_2^3 + 3\,c_{19}\,T_1^5\,T_2^3 + 13\,c_{31}\,T_1^5\,T_2^3 + 3\,c_{34}\,T_1^5\,T_2^3 + 13\,c_{46}\,T_1^5\,T_2^3 + 3\,c_{49}\,T_1^5\,T_2^3 + 13\,c_{61}\,T_1^5\,T_2^3 + 3\,c_{64}\,T_1^5\,T_2^3 + 36\,c_{81}\,T_1^5\,T_2^3 + 54\,c_{82}\,T_1^5\,T_2^3 + 8\,c_{84}\,T_1^5\,T_2^3 + 26\,c_{85}\,T_1^5\,T_2^3 + 13\,a_2\,b_3\,T_1^6\,T_2^3 - 19\,a_4\,b_3\,T_1^6\,T_2^3 - 6\,a_2\,b_5\,T_1^6\,T_2^3 + 10\,a_4\,b_5\,T_1^6\,T_2^3 + 5\,c_{16}\,T_1^6\,T_2^3 + 5\,c_{31}\,T_1^6\,T_2^3 + 5\,c_{46}\,T_1^6\,T_2^3 + 5\,c_{61}\,T_1^6\,T_2^3 - 4\,c_{81}\,T_1^6\,T_2^3 - 17\,c_{82}\,T_1^6\,T_2^3 + 4\,c_{84}\,T_1^6\,T_2^3 - 3\,c_{85}\,T_1^6\,T_2^3 - 4\,a_2\,b_3\,T_1^7\,T_2^3 + 8\,a_4\,b_3\,T_1^7\,T_2^3 - 7\,c_{16}\,T_1^7\,T_2^3 - 2\,c_{19}\,T_1^7\,T_2^3 - 7\,c_{31}\,T_1^7\,T_2^3 - 2\,c_{34}\,T_1^7\,T_2^3 - 7\,c_{46}\,T_1^7\,T_2^3 - 2\,c_{49}\,T_1^7\,T_2^3 - 7\,c_{61}\,T_1^7\,T_2^3 - 2\,c_{64}\,T_1^7\,T_2^3 - 4\,c_{81}\,T_1^7\,T_2^3 - 7\,c_{82}\,T_1^7\,T_2^3 - 8\,c_{85}\,T_1^7\,T_2^3 - 2\,c_{16}\,T_1^8\,T_2^3 - 2\,c_{31}\,T_1^8\,T_2^3 - 2\,c_{46}\,T_1^8\,T_2^3 - 2\,c_{61}\,T_1^8\,T_2^3 + 7\,c_{82}\,T_1^8\,T_2^3 + 5\,c_{85}\,T_1^8\,T_2^3 + 2\,a_2\,b_3\,T_2^4 - 3\,a_4\,b_3\,T_2^4 - 5\,a_2\,b_5\,T_2^4 + 5\,a_4\,b_5\,T_2^4 - 5\,c_{19}\,T_2^4 - 5\,c_{34}\,T_2^4 - 5\,c_{49}\,T_2^4 - 5\,c_{64}\,T_2^4 - 8\,c_{81}\,T_2^4 - 7\,c_{82}\,T_2^4 - 8\,c_{84}\,T_2^4 - 2\,c_{85}\,T_2^4 - 3\,a_2\,b_3\,T_1\,T_2^4 + 14\,a_4\,b_3\,T_1\,T_2^4 + 7\,a_2\,b_5\,T_1\,T_2^4 - 21\,a_4\,b_5\,T_1\,T_2^4 + 3\,c_{16}\,T_1\,T_2^4 + 5\,c_{19}\,T_1\,T_2^4 + 3\,c_{31}\,T_1\,T_2^4 + 5\,c_{34}\,T_1\,T_2^4 + 3\,c_{46}\,T_1\,T_2^4 + 5\,c_{49}\,T_1\,T_2^4 + 3\,c_{61}\,T_1\,T_2^4 + 5\,c_{64}\,T_1\,T_2^4 + 10\,c_{81}\,T_1\,T_2^4 + 7\,c_{82}\,T_1\,T_2^4 + 2\,c_{84}\,T_1\,T_2^4 - c_{85}\,T_1\,T_2^4 - 5\,a_2\,b_3\,T_1^2\,T_2^4 - 18\,a_4\,b_3\,T_1^2\,T_2^4 + a_2\,b_5\,T_1^2\,T_2^4 + 19\,a_4\,b_5\,T_1^2\,T_2^4 + c_{16}\,T_1^2\,T_2^4 - c_{19}\,T_1^2\,T_2^4 + c_{31}\,T_1^2\,T_2^4 - c_{34}\,T_1^2\,T_2^4 + c_{46}\,T_1^2\,T_2^4 - c_{49}\,T_1^2\,T_2^4 + c_{61}\,T_1^2\,T_2^4 - c_{64}\,T_1^2\,T_2^4 + 24\,c_{81}\,T_1^2\,T_2^4 + 17\,c_{82}\,T_1^2\,T_2^4 + 26\,c_{84}\,T_1^2\,T_2^4 + 14\,c_{85}\,T_1^2\,T_2^4 + 24\,a_2\,b_3\,T_1^3\,T_2^4 + a_4\,b_3\,T_1^3\,T_2^4 - 21\,a_2\,b_5\,T_1^3\,T_2^4 - a_4\,b_5\,T_1^3\,T_2^4 - 5\,c_{16}\,T_1^3\,T_2^4 - 8\,c_{19}\,T_1^3\,T_2^4 - 5\,c_{31}\,T_1^3\,T_2^4 - 8\,c_{34}\,T_1^3\,T_2^4 - 5\,c_{46}\,T_1^3\,T_2^4 - 8\,c_{49}\,T_1^3\,T_2^4 - 5\,c_{61}\,T_1^3\,T_2^4 - 8\,c_{64}\,T_1^3\,T_2^4 - 66\,c_{81}\,T_1^3\,T_2^4 - 54\,c_{82}\,T_1^3\,T_2^4 - 40\,c_{84}\,T_1^3\,T_2^4 - 28\,c_{85}\,T_1^3\,T_2^4 - 41\,a_2\,b_3\,T_1^4\,T_2^4 + 34\,a_4\,b_3\,T_1^4\,T_2^4 + 33\,a_2\,b_5\,T_1^4\,T_2^4 - 37\,a_4\,b_5\,T_1^4\,T_2^4 + 8\,c_{16}\,T_1^4\,T_2^4 + 8\,c_{19}\,T_1^4\,T_2^4 + 8\,c_{31}\,T_1^4\,T_2^4 + 8\,c_{34}\,T_1^4\,T_2^4 + 8\,c_{46}\,T_1^4\,T_2^4 + 8\,c_{49}\,T_1^4\,T_2^4 + 8\,c_{61}\,T_1^4\,T_2^4 + 8\,c_{64}\,T_1^4\,T_2^4 + 66\,c_{81}\,T_1^4\,T_2^4 + 66\,c_{82}\,T_1^4\,T_2^4 + 26\,c_{84}\,T_1^4\,T_2^4 + 26\,c_{85}\,T_1^4\,T_2^4 + 39\,a_2\,b_3\,T_1^5\,T_2^4 - 52\,a_4\,b_3\,T_1^5\,T_2^4 - 25\,a_2\,b_5\,T_1^5\,T_2^4 + 35\,a_4\,b_5\,T_1^5\,T_2^4 - 3\,c_{16}\,T_1^5\,T_2^4 - 3\,c_{31}\,T_1^5\,T_2^4 - 3\,c_{46}\,T_1^5\,T_2^4 - 3\,c_{61}\,T_1^5\,T_2^4 - 24\,c_{81}\,T_1^5\,T_2^4 - 30\,c_{82}\,T_1^5\,T_2^4 + 2\,c_{84}\,T_1^5\,T_2^4 - 4\,c_{85}\,T_1^5\,T_2^4 - 22\,a_2\,b_3\,T_1^6\,T_2^4 + 38\,a_4\,b_3\,T_1^6\,T_2^4 + 10\,a_2\,b_5\,T_1^6\,T_2^4 - 22\,a_4\,b_5\,T_1^6\,T_2^4 - 15\,c_{16}\,T_1^6\,T_2^4 - 3\,c_{19}\,T_1^6\,T_2^4 - 15\,c_{31}\,T_1^6\,T_2^4 - 3\,c_{34}\,T_1^6\,T_2^4 - 15\,c_{46}\,T_1^6\,T_2^4 - 3\,c_{49}\,T_1^6\,T_2^4 - 15\,c_{61}\,T_1^6\,T_2^4 - 3\,c_{64}\,T_1^6\,T_2^4 - 10\,c_{81}\,T_1^6\,T_2^4 - 11\,c_{82}\,T_1^6\,T_2^4 - 8\,c_{84}\,T_1^6\,T_2^4 - 14\,c_{85}\,T_1^6\,T_2^4 + 6\,a_2\,b_3\,T_1^7\,T_2^4 - 14\,a_4\,b_3\,T_1^7\,T_2^4 + 5\,c_{16}\,T_1^7\,T_2^4 + 3\,c_{19}\,T_1^7\,T_2^4 + 5\,c_{31}\,T_1^7\,T_2^4 + 3\,c_{34}\,T_1^7\,T_2^4 + 5\,c_{46}\,T_1^7\,T_2^4 + 3\,c_{49}\,T_1^7\,T_2^4 + 5\,c_{61}\,T_1^7\,T_2^4 + 3\,c_{64}\,T_1^7\,T_2^4 + 8\,c_{81}\,T_1^7\,T_2^4 + 23\,c_{82}\,T_1^7\,T_2^4 + 15\,c_{85}\,T_1^7\,T_2^4 + 6\,c_{16}\,T_1^8\,T_2^4 + c_{19}\,T_1^8\,T_2^4 + 6\,c_{31}\,T_1^8\,T_2^4 + c_{34}\,T_1^8\,T_2^4 + 6\,c_{46}\,T_1^8\,T_2^4 + c_{49}\,T_1^8\,T_2^4 + 6\,c_{61}\,T_1^8\,T_2^4 + c_{64}\,T_1^8\,T_2^4 - 11\,c_{82}\,T_1^8\,T_2^4 - 6\,c_{85}\,T_1^8\,T_2^4 - a_2\,b_3\,T_2^5 + 2\,a_4\,b_3\,T_2^5 + 3\,a_2\,b_5\,T_2^5 - 5\,a_4\,b_5\,T_2^5 + 2\,c_{19}\,T_2^5 + 2\,c_{34}\,T_2^5 + 2\,c_{49}\,T_2^5 + 2\,c_{64}\,T_2^5 + 4\,c_{81}\,T_2^5 + 2\,c_{82}\,T_2^5 + 4\,c_{84}\,T_2^5 - 6\,a_4\,b_3\,T_1\,T_2^5 + 15\,a_4\,b_5\,T_1\,T_2^5 - c_{16}\,T_1\,T_2^5 + 4\,c_{19}\,T_1\,T_2^5 - c_{31}\,T_1\,T_2^5 + 4\,c_{34}\,T_1\,T_2^5 - c_{46}\,T_1\,T_2^5 + 4\,c_{49}\,T_1\,T_2^5 - c_{61}\,T_1\,T_2^5 + 4\,c_{64}\,T_1\,T_2^5 + 4\,c_{81}\,T_1\,T_2^5 + 4\,c_{82}\,T_1\,T_2^5 + 8\,c_{84}\,T_1\,T_2^5 + 3\,c_{85}\,T_1\,T_2^5 + 8\,a_2\,b_3\,T_1^2\,T_2^5 - 5\,a_4\,b_3\,T_1^2\,T_2^5 - 13\,a_2\,b_5\,T_1^2\,T_2^5 + 2\,a_4\,b_5\,T_1^2\,T_2^5 - 3\,c_{16}\,T_1^2\,T_2^5 - 10\,c_{19}\,T_1^2\,T_2^5 - 3\,c_{31}\,T_1^2\,T_2^5 - 10\,c_{34}\,T_1^2\,T_2^5 - 3\,c_{46}\,T_1^2\,T_2^5 - 10\,c_{49}\,T_1^2\,T_2^5 - 3\,c_{61}\,T_1^2\,T_2^5 - 10\,c_{64}\,T_1^2\,T_2^5 - 36\,c_{81}\,T_1^2\,T_2^5 - 22\,c_{82}\,T_1^2\,T_2^5 - 28\,c_{84}\,T_1^2\,T_2^5 - 8\,c_{85}\,T_1^2\,T_2^5 - 22\,a_2\,b_3\,T_1^3\,T_2^5 + 37\,a_4\,b_3\,T_1^3\,T_2^5 + 33\,a_2\,b_5\,T_1^3\,T_2^5 - 34\,a_4\,b_5\,T_1^3\,T_2^5 + 3\,c_{16}\,T_1^3\,T_2^5 + 13\,c_{19}\,T_1^3\,T_2^5 + 3\,c_{31}\,T_1^3\,T_2^5 + 13\,c_{34}\,T_1^3\,T_2^5 + 3\,c_{46}\,T_1^3\,T_2^5 + 13\,c_{49}\,T_1^3\,T_2^5 + 3\,c_{61}\,T_1^3\,T_2^5 + 13\,c_{64}\,T_1^3\,T_2^5 + 54\,c_{81}\,T_1^3\,T_2^5 + 36\,c_{82}\,T_1^3\,T_2^5 + 26\,c_{84}\,T_1^3\,T_2^5 + 8\,c_{85}\,T_1^3\,T_2^5 + 32\,a_2\,b_3\,T_1^4\,T_2^5 - 74\,a_4\,b_3\,T_1^4\,T_2^5 - 40\,a_2\,b_5\,T_1^4\,T_2^5 + 74\,a_4\,b_5\,T_1^4\,T_2^5 - 3\,c_{19}\,T_1^4\,T_2^5 - 3\,c_{34}\,T_1^4\,T_2^5 - 3\,c_{49}\,T_1^4\,T_2^5 - 3\,c_{64}\,T_1^4\,T_2^5 - 30\,c_{81}\,T_1^4\,T_2^5 - 24\,c_{82}\,T_1^4\,T_2^5 - 4\,c_{84}\,T_1^4\,T_2^5 + 2\,c_{85}\,T_1^4\,T_2^5 - 28\,a_2\,b_3\,T_1^5\,T_2^5 + 79\,a_4\,b_3\,T_1^5\,T_2^5 + 27\,a_2\,b_5\,T_1^5\,T_2^5 - 57\,a_4\,b_5\,T_1^5\,T_2^5 - 7\,c_{16}\,T_1^5\,T_2^5 - 7\,c_{19}\,T_1^5\,T_2^5 - 7\,c_{31}\,T_1^5\,T_2^5 - 7\,c_{34}\,T_1^5\,T_2^5 - 7\,c_{46}\,T_1^5\,T_2^5 - 7\,c_{49}\,T_1^5\,T_2^5 - 7\,c_{61}\,T_1^5\,T_2^5 - 7\,c_{64}\,T_1^5\,T_2^5 - 12\,c_{81}\,T_1^5\,T_2^5 - 12\,c_{82}\,T_1^5\,T_2^5 - 16\,c_{84}\,T_1^5\,T_2^5 - 16\,c_{85}\,T_1^5\,T_2^5 + 15\,a_2\,b_3\,T_1^6\,T_2^5 - 49\,a_4\,b_3\,T_1^6\,T_2^5 - 10\,a_2\,b_5\,T_1^6\,T_2^5 + 30\,a_4\,b_5\,T_1^6\,T_2^5 + 13\,c_{16}\,T_1^6\,T_2^5 + 5\,c_{19}\,T_1^6\,T_2^5 + 13\,c_{31}\,T_1^6\,T_2^5 + 5\,c_{34}\,T_1^6\,T_2^5 + 13\,c_{46}\,T_1^6\,T_2^5 + 5\,c_{49}\,T_1^6\,T_2^5 + 13\,c_{61}\,T_1^6\,T_2^5 + 5\,c_{64}\,T_1^6\,T_2^5 + 26\,c_{81}\,T_1^6\,T_2^5 + 34\,c_{82}\,T_1^6\,T_2^5 + 10\,c_{84}\,T_1^6\,T_2^5 + 20\,c_{85}\,T_1^6\,T_2^5 - 4\,a_2\,b_3\,T_1^7\,T_2^5 + 16\,a_4\,b_3\,T_1^7\,T_2^5 + 5\,c_{16}\,T_1^7\,T_2^5 - c_{19}\,T_1^7\,T_2^5 + 5\,c_{31}\,T_1^7\,T_2^5 - c_{34}\,T_1^7\,T_2^5 + 5\,c_{46}\,T_1^7\,T_2^5 - c_{49}\,T_1^7\,T_2^5 + 5\,c_{61}\,T_1^7\,T_2^5 - c_{64}\,T_1^7\,T_2^5 - 10\,c_{81}\,T_1^7\,T_2^5 - 28\,c_{82}\,T_1^7\,T_2^5 - 13\,c_{85}\,T_1^7\,T_2^5 - 10\,c_{16}\,T_1^8\,T_2^5 - 3\,c_{19}\,T_1^8\,T_2^5 - 10\,c_{31}\,T_1^8\,T_2^5 - 3\,c_{34}\,T_1^8\,T_2^5 - 10\,c_{46}\,T_1^8\,T_2^5 - 3\,c_{49}\,T_1^8\,T_2^5 - 10\,c_{61}\,T_1^8\,T_2^5 - 3\,c_{64}\,T_1^8\,T_2^5 + 10\,c_{82}\,T_1^8\,T_2^5 + 4\,c_{85}\,T_1^8\,T_2^5 - a_4\,b_3\,T_2^6 - a_2\,b_5\,T_2^6 + 3\,a_4\,b_5\,T_2^6 -$$

$$c_{81}\,T_2^6 - c_{84}\,T_2^6 + 2\,a_2\,b_3\,T_1\,T_2^6 + a_4\,b_3\,T_1\,T_2^6 - 3\,a_2\,b_5\,T_1\,T_2^6 - 4\,a_4\,b_5\,T_1\,T_2^6 - 4\,c_{19}\,T_1\,T_2^6 - 4\,c_{34}\,T_1\,T_2^6 - 4\,c_{49}\,T_1\,T_2^6 - 4\,c_{64}\,T_1\,T_2^6 - 7\,c_{81}\,T_1\,T_2^6 - 3\,c_{82}\,T_1\,T_2^6 - 8\,c_{84}\,T_1\,T_2^6 - 8\,a_2\,b_3\,T_1^2\,T_2^6 + 11\,a_4\,b_3\,T_1^2\,T_2^6 + 13\,a_2\,b_5\,T_1^2\,T_2^6 - 20\,a_4\,b_5\,T_1^2\,T_2^6 + 2\,c_{16}\,T_1^2\,T_2^6 + 2\,c_{19}\,T_1^2\,T_2^6 + 2\,c_{31}\,T_1^2\,T_2^6 + 2\,c_{34}\,T_1^2\,T_2^6 + 2\,c_{46}\,T_1^2\,T_2^6 + 2\,c_{49}\,T_1^2\,T_2^6 + 2\,c_{61}\,T_1^2\,T_2^6 + 2\,c_{64}\,T_1^2\,T_2^6 + 22\,c_{81}\,T_1^2\,T_2^6 + 7\,c_{82}\,T_1^2\,T_2^6 + 14\,c_{84}\,T_1^2\,T_2^6 - c_{85}\,T_1^2\,T_2^6 + 16\,a_2\,b_3\,T_1^3\,T_2^6 - 35\,a_4\,b_3\,T_1^3\,T_2^6 - 25\,a_2\,b_5\,T_1^3\,T_2^6 + 52\,a_4\,b_5\,T_1^3\,T_2^6 + 5\,c_{19}\,T_1^3\,T_2^6 + 5\,c_{34}\,T_1^3\,T_2^6 + 5\,c_{49}\,T_1^3\,T_2^6 + 5\,c_{64}\,T_1^3\,T_2^6 - 17\,c_{81}\,T_1^3\,T_2^6 - 4\,c_{82}\,T_1^3\,T_2^6 - 3\,c_{84}\,T_1^3\,T_2^6 + 4\,c_{85}\,T_1^3\,T_2^6 - 20\,a_2\,b_3\,T_1^4\,T_2^6 + 57\,a_4\,b_3\,T_1^4\,T_2^6 + 27\,a_2\,b_5\,T_1^4\,T_2^6 - 79\,a_4\,b_5\,T_1^4\,T_2^6 - 3\,c_{16}\,T_1^4\,T_2^6 - 15\,c_{19}\,T_1^4\,T_2^6 - 3\,c_{31}\,T_1^4\,T_2^6 - 15\,c_{34}\,T_1^4\,T_2^6 - 3\,c_{46}\,T_1^4\,T_2^6 - 15\,c_{49}\,T_1^4\,T_2^6 - 3\,c_{61}\,T_1^4\,T_2^6 - 15\,c_{64}\,T_1^4\,T_2^6 - 11\,c_{81}\,T_1^4\,T_2^6 - 10\,c_{82}\,T_1^4\,T_2^6 - 14\,c_{84}\,T_1^4\,T_2^6 - 8\,c_{85}\,T_1^4\,T_2^6 + 16\,a_2\,b_3\,T_1^5\,T_2^6 - 55\,a_4\,b_3\,T_1^5\,T_2^6 - 17\,a_2\,b_5\,T_1^5\,T_2^6 + 55\,a_4\,b_5\,T_1^5\,T_2^6 + 5\,c_{16}\,T_1^5\,T_2^6 + 13\,c_{19}\,T_1^5\,T_2^6 + 5\,c_{31}\,T_1^5\,T_2^6 + 13\,c_{34}\,T_1^5\,T_2^6 + 5\,c_{46}\,T_1^5\,T_2^6 + 13\,c_{49}\,T_1^5\,T_2^6 + 5\,c_{61}\,T_1^5\,T_2^6 + 13\,c_{64}\,T_1^5\,T_2^6 + 34\,c_{81}\,T_1^5\,T_2^6 + 26\,c_{82}\,T_1^5\,T_2^6 + 20\,c_{84}\,T_1^5\,T_2^6 + 10\,c_{85}\,T_1^5\,T_2^6 - 8\,a_2\,b_3\,T_1^6\,T_2^6 + 32\,a_4\,b_3\,T_1^6\,T_2^6 + 6\,a_2\,b_5\,T_1^6\,T_2^6 - 26\,a_4\,b_5\,T_1^6\,T_2^6 - c_{16}\,T_1^6\,T_2^6 - c_{19}\,T_1^6\,T_2^6 - c_{31}\,T_1^6\,T_2^6 - c_{34}\,T_1^6\,T_2^6 - c_{46}\,T_1^6\,T_2^6 - c_{49}\,T_1^6\,T_2^6 - c_{61}\,T_1^6\,T_2^6 - c_{64}\,T_1^6\,T_2^6 - 28\,c_{81}\,T_1^6\,T_2^6 - 28\,c_{82}\,T_1^6\,T_2^6 - 8\,c_{84}\,T_1^6\,T_2^6 - 8\,c_{85}\,T_1^6\,T_2^6 + 2\,a_2\,b_3\,T_1^7\,T_2^6 - 10\,a_4\,b_3\,T_1^7\,T_2^6 - 13\,c_{16}\,T_1^7\,T_2^6 - 5\,c_{19}\,T_1^7\,T_2^6 - 13\,c_{31}\,T_1^7\,T_2^6 - 5\,c_{34}\,T_1^7\,T_2^6 - 13\,c_{46}\,T_1^7\,T_2^6 - 5\,c_{49}\,T_1^7\,T_2^6 - 13\,c_{61}\,T_1^7\,T_2^6 - 5\,c_{64}\,T_1^7\,T_2^6 + 8\,c_{81}\,T_1^7\,T_2^6 + 17\,c_{82}\,T_1^7\,T_2^6 + 4\,c_{85}\,T_1^7\,T_2^6 + 10\,c_{16}\,T_1^8\,T_2^6 + 5\,c_{19}\,T_1^8\,T_2^6 + 10\,c_{31}\,T_1^8\,T_2^6 + 5\,c_{34}\,T_1^8\,T_2^6 + 10\,c_{46}\,T_1^8\,T_2^6 + 5\,c_{49}\,T_1^8\,T_2^6 + 10\,c_{61}\,T_1^8\,T_2^6 + 5\,c_{64}\,T_1^8\,T_2^6 - 5\,c_{82}\,T_1^8\,T_2^6 - c_{85}\,T_1^8\,T_2^6 - a_4\,b_5\,T_2^7 + 2\,a_4\,b_3\,T_1\,T_2^7 + 2\,a_2\,b_5\,T_1\,T_2^7 - 2\,a_4\,b_5\,T_1\,T_2^7 + 3\,c_{81}\,T_1\,T_2^7 + 3\,c_{84}\,T_1\,T_2^7 - 10\,a_4\,b_3\,T_1^2\,T_2^7 - 6\,a_2\,b_5\,T_1^2\,T_2^7 + 19\,a_4\,b_5\,T_1^2\,T_2^7 + 4\,c_{19}\,T_1^2\,T_2^7 + 4\,c_{34}\,T_1^2\,T_2^7 + 4\,c_{49}\,T_1^2\,T_2^7 + 4\,c_{64}\,T_1^2\,T_2^7 - 4\,c_{81}\,T_1^2\,T_2^7 + c_{82}\,T_1^2\,T_2^7 - c_{84}\,T_1^2\,T_2^7 + 22\,a_4\,b_3\,T_1^3\,T_2^7 + 10\,a_2\,b_5\,T_1^3\,T_2^7 - 38\,a_4\,b_5\,T_1^3\,T_2^7 - 2\,c_{16}\,T_1^3\,T_2^7 - 7\,c_{19}\,T_1^3\,T_2^7 - 2\,c_{31}\,T_1^3\,T_2^7 - 7\,c_{34}\,T_1^3\,T_2^7 - 2\,c_{46}\,T_1^3\,T_2^7 - 7\,c_{49}\,T_1^3\,T_2^7 - 2\,c_{61}\,T_1^3\,T_2^7 - 7\,c_{64}\,T_1^3\,T_2^7 - 7\,c_{81}\,T_1^3\,T_2^7 - 4\,c_{82}\,T_1^3\,T_2^7 - 8\,c_{84}\,T_1^3\,T_2^7 - 30\,a_4\,b_3\,T_1^4\,T_2^7 - 10\,a_2\,b_5\,T_1^4\,T_2^7 + 49\,a_4\,b_5\,T_1^4\,T_2^7 + 3\,c_{16}\,T_1^4\,T_2^7 + 5\,c_{19}\,T_1^4\,T_2^7 + 3\,c_{31}\,T_1^4\,T_2^7 + 5\,c_{34}\,T_1^4\,T_2^7 + 3\,c_{46}\,T_1^4\,T_2^7 + 5\,c_{49}\,T_1^4\,T_2^7 + 3\,c_{61}\,T_1^4\,T_2^7 + 5\,c_{64}\,T_1^4\,T_2^7 + 23\,c_{81}\,T_1^4\,T_2^7 + 8\,c_{82}\,T_1^4\,T_2^7 + 15\,c_{84}\,T_1^4\,T_2^7 + 26\,a_4\,b_3\,T_1^5\,T_2^7 + 6\,a_2\,b_5\,T_1^5\,T_2^7 - 32\,a_4\,b_5\,T_1^5\,T_2^7 - c_{16}\,T_1^5\,T_2^7 + 5\,c_{19}\,T_1^5\,T_2^7 - c_{31}\,T_1^5\,T_2^7 + 5\,c_{34}\,T_1^5\,T_2^7 - c_{46}\,T_1^5\,T_2^7 + 5\,c_{49}\,T_1^5\,T_2^7 - c_{61}\,T_1^5\,T_2^7 + 5\,c_{64}\,T_1^5\,T_2^7 - 28\,c_{81}\,T_1^5\,T_2^7 - 10\,c_{82}\,T_1^5\,T_2^7 - 13\,c_{84}\,T_1^5\,T_2^7 - 14\,a_4\,b_3\,T_1^6\,T_2^7 - 2\,a_2\,b_5\,T_1^6\,T_2^7 + 14\,a_4\,b_5\,T_1^6\,T_2^7 - 5\,c_{16}\,T_1^6\,T_2^7 - 13\,c_{19}\,T_1^6\,T_2^7 - 5\,c_{31}\,T_1^6\,T_2^7 - 13\,c_{34}\,T_1^6\,T_2^7 - 5\,c_{46}\,T_1^6\,T_2^7 - 13\,c_{49}\,T_1^6\,T_2^7 - 5\,c_{61}\,T_1^6\,T_2^7 - 13\,c_{64}\,T_1^6\,T_2^7 + 17\,c_{81}\,T_1^6\,T_2^7 + 8\,c_{82}\,T_1^6\,T_2^7 + 4\,c_{84}\,T_1^6\,T_2^7 + 4\,a_4\,b_3\,T_1^7\,T_2^7 + 11\,c_{16}\,T_1^7\,T_2^7 + 11\,c_{19}\,T_1^7\,T_2^7 + 11\,c_{31}\,T_1^7\,T_2^7 + 11\,c_{34}\,T_1^7\,T_2^7 + 11\,c_{46}\,T_1^7\,T_2^7 + 11\,c_{49}\,T_1^7\,T_2^7 + 11\,c_{61}\,T_1^7\,T_2^7 + 11\,c_{64}\,T_1^7\,T_2^7 - 4\,c_{81}\,T_1^7\,T_2^7 - 4\,c_{82}\,T_1^7\,T_2^7 - 6\,c_{16}\,T_1^8\,T_2^7 - 5\,c_{19}\,T_1^8\,T_2^7 - 6\,c_{31}\,T_1^8\,T_2^7 - 5\,c_{34}\,T_1^8\,T_2^7 - 6\,c_{46}\,T_1^8\,T_2^7 - 5\,c_{49}\,T_1^8\,T_2^7 - 6\,c_{61}\,T_1^8\,T_2^7 - 5\,c_{64}\,T_1^8\,T_2^7 + c_{82}\,T_1^8\,T_2^7 + 2\,a_4\,b_5\,T_1\,T_2^8 - 8\,a_4\,b_5\,T_1^2\,T_2^8 - 2\,c_{81}\,T_1^2\,T_2^8 - 2\,c_{84}\,T_1^2\,T_2^8 + 14\,a_4\,b_5\,T_1^3\,T_2^8 - 2\,c_{19}\,T_1^3\,T_2^8 - 2\,c_{34}\,T_1^3\,T_2^8 - 2\,c_{49}\,T_1^3\,T_2^8 - 2\,c_{64}\,T_1^3\,T_2^8 + 7\,c_{81}\,T_1^3\,T_2^8 + 5\,c_{84}\,T_1^3\,T_2^8 - 16\,a_4\,b_5\,T_1^4\,T_2^8 + c_{16}\,T_1^4\,T_2^8 + 6\,c_{19}\,T_1^4\,T_2^8 + c_{31}\,T_1^4\,T_2^8 + 6\,c_{34}\,T_1^4\,T_2^8 + c_{46}\,T_1^4\,T_2^8 + 6\,c_{49}\,T_1^4\,T_2^8 + c_{61}\,T_1^4\,T_2^8 + 6\,c_{64}\,T_1^4\,T_2^8 - 11\,c_{81}\,T_1^4\,T_2^8 - 6\,c_{84}\,T_1^4\,T_2^8 + 10\,a_4\,b_5\,T_1^5\,T_2^8 - 3\,c_{16}\,T_1^5\,T_2^8 - 10\,c_{19}\,T_1^5\,T_2^8 - 3\,c_{31}\,T_1^5\,T_2^8 - 10\,c_{34}\,T_1^5\,T_2^8 - 3\,c_{46}\,T_1^5\,T_2^8 - 10\,c_{49}\,T_1^5\,T_2^8 - 3\,c_{61}\,T_1^5\,T_2^8 - 10\,c_{64}\,T_1^5\,T_2^8 + 10\,c_{81}\,T_1^5\,T_2^8 + 4\,c_{84}\,T_1^5\,T_2^8 - 4\,a_4\,b_5\,T_1^6\,T_2^8 + 5\,c_{16}\,T_1^6\,T_2^8 + 10\,c_{19}\,T_1^6\,T_2^8 + 5\,c_{31}\,T_1^6\,T_2^8 + 10\,c_{34}\,T_1^6\,T_2^8 + 5\,c_{46}\,T_1^6\,T_2^8 + 10\,c_{49}\,T_1^6\,T_2^8 + 5\,c_{61}\,T_1^6\,T_2^8 + 10\,c_{64}\,T_1^6\,T_2^8 - 5\,c_{81}\,T_1^6\,T_2^8 - c_{84}\,T_1^6\,T_2^8 - 5\,c_{16}\,T_1^7\,T_2^8 - 6\,c_{19}\,T_1^7\,T_2^8 - 5\,c_{31}\,T_1^7\,T_2^8 - 6\,c_{34}\,T_1^7\,T_2^8 - 5\,c_{46}\,T_1^7\,T_2^8 - 6\,c_{49}\,T_1^7\,T_2^8 - 5\,c_{61}\,T_1^7\,T_2^8 - 6\,c_{64}\,T_1^7\,T_2^8 + c_{81}\,T_1^7\,T_2^8 + 2\,c_{16}\,T_1^8\,T_2^8 + 2\,c_{19}\,T_1^8\,T_2^8 + 2\,c_{31}\,T_1^8\,T_2^8 + 2\,c_{34}\,T_1^8\,T_2^8 + 2\,c_{46}\,T_1^8\,T_2^8 + 2\,c_{49}\,T_1^8\,T_2^8 + 2\,c_{61}\,T_1^8\,T_2^8 + 2\,c_{64}\,T_1^8\,T_2^8\Big) \Big/ \Big((-1+T_1)\,\big(1-T_1+T_1^2\big)^2\,(-1+T_2)\,(-1+T_1\,T_2)\,\big(1-T_2+T_2^2\big)^2\,\big(1-T_1\,T_2+T_1^2\,T_2^2\big)\Big)\Big]\Big]$$

In[•]:=
```
K = Knot["K11n34"]; Conway = ∫ℒ[K] × dℂvs[K]
```

KnotTheory: Loading precomputed data in DTCode4KnotsTo11`.

KnotTheory: The GaussCode to PD conversion was written by Siddarth Sankaran at the University of Toronto in the summer of 2005.

Out[#]=

$$-\mathbb{i}\,\mathbb{E}\Big[\epsilon\text{Series}\Big[0,$$

$$-\frac{1}{(-1+T_1)\,T_1^7\,(-1+T_2)\,T_2^6\,(-1+T_1\,T_2)}\,\big(a_2\,b_3\,T_1^2-a_2\,b_5\,T_1^2-4\,a_2\,b_3\,T_1^3+a_4\,b_3\,T_1^3+3\,a_2\,b_5\,T_1^3-$$
$$a_4\,b_5\,T_1^3+6\,a_2\,b_3\,T_1^4-3\,a_4\,b_3\,T_1^4-3\,a_2\,b_5\,T_1^4+2\,a_4\,b_5\,T_1^4-4\,a_2\,b_3\,T_1^5+3\,a_4\,b_3\,T_1^5+a_2\,b_5\,T_1^5-$$
$$a_4\,b_5\,T_1^5+a_2\,b_3\,T_1^6-a_4\,b_3\,T_1^6-2\,a_2\,b_3\,T_1\,T_2+2\,a_2\,b_5\,T_1\,T_2+6\,a_2\,b_3\,T_1^2\,T_2-a_4\,b_3\,T_1^2\,T_2-$$
$$3\,a_2\,b_5\,T_1^2\,T_2+a_4\,b_5\,T_1^2\,T_2-6\,a_2\,b_3\,T_1^3\,T_2-a_4\,b_3\,T_1^3\,T_2-a_2\,b_5\,T_1^3\,T_2+3\,a_4\,b_5\,T_1^3\,T_2+2\,a_2\,b_3\,T_1^4\,T_2+$$
$$7\,a_4\,b_3\,T_1^4\,T_2+3\,a_2\,b_5\,T_1^4\,T_2-7\,a_4\,b_5\,T_1^4\,T_2+2\,a_2\,b_3\,T_1^5\,T_2-7\,a_4\,b_3\,T_1^5\,T_2-3\,a_2\,b_5\,T_1^5\,T_2+$$
$$3\,a_4\,b_5\,T_1^5\,T_2-6\,a_2\,b_3\,T_1^6\,T_2+4\,a_4\,b_3\,T_1^6\,T_2+4\,a_2\,b_5\,T_1^6\,T_2-2\,a_4\,b_5\,T_1^6\,T_2+6\,a_2\,b_3\,T_1^7\,T_2-$$
$$4\,a_4\,b_3\,T_1^7\,T_2-2\,a_2\,b_5\,T_1^7\,T_2+2\,a_4\,b_5\,T_1^7\,T_2-2\,a_2\,b_3\,T_1^8\,T_2+2\,a_4\,b_3\,T_1^8\,T_2+a_2\,b_3\,T_2^2-a_2\,b_5\,T_2^2-$$
$$a_4\,b_3\,T_1\,T_2^2-3\,a_2\,b_5\,T_1\,T_2^2+a_4\,b_5\,T_1\,T_2^2-5\,a_2\,b_3\,T_1^2\,T_2^2+9\,a_4\,b_3\,T_1^2\,T_2^2+8\,a_2\,b_5\,T_1^2\,T_2^2-9\,a_4\,b_5\,T_1^2\,T_2^2+$$
$$6\,a_2\,b_3\,T_1^3\,T_2^2-14\,a_4\,b_3\,T_1^3\,T_2^2-4\,a_2\,b_5\,T_1^3\,T_2^2+4\,a_4\,b_5\,T_1^3\,T_2^2-4\,a_2\,b_3\,T_1^4\,T_2^2+6\,a_4\,b_3\,T_1^4\,T_2^2+$$
$$2\,a_2\,b_5\,T_1^4\,T_2^2+5\,a_4\,b_5\,T_1^4\,T_2^2+4\,a_2\,b_3\,T_1^5\,T_2^2-2\,a_4\,b_5\,T_1^5\,T_2^2-4\,a_2\,b_3\,T_1^6\,T_2^2-6\,a_4\,b_3\,T_1^6\,T_2^2-$$
$$2\,a_2\,b_5\,T_1^6\,T_2^2+8\,a_4\,b_5\,T_1^6\,T_2^2+6\,a_2\,b_3\,T_1^7\,T_2^2+8\,a_4\,b_3\,T_1^7\,T_2^2-2\,a_2\,b_5\,T_1^7\,T_2^2-4\,a_4\,b_5\,T_1^7\,T_2^2-$$
$$5\,a_2\,b_3\,T_1^8\,T_2^2+a_2\,b_5\,T_1^8\,T_2^2-2\,a_4\,b_5\,T_1^8\,T_2^2-a_4\,b_3\,T_1^9\,T_2^2+a_2\,b_5\,T_1^9\,T_2^2-a_4\,b_5\,T_1^9\,T_2^2+a_2\,b_3\,T_1^{10}\,T_2^2-$$
$$a_4\,b_3\,T_1^{10}\,T_2^2-2\,a_2\,b_3\,T_2^3+a_4\,b_3\,T_2^3+3\,a_2\,b_5\,T_2^3-a_4\,b_5\,T_2^3+4\,a_2\,b_3\,T_1\,T_2^3-3\,a_4\,b_3\,T_1\,T_2^3-a_2\,b_5\,T_1\,T_2^3+$$
$$a_4\,b_5\,T_1\,T_2^3-2\,a_2\,b_3\,T_1^2\,T_2^3-4\,a_4\,b_3\,T_1^2\,T_2^3-4\,a_2\,b_5\,T_1^2\,T_2^3+14\,a_4\,b_5\,T_1^2\,T_2^3+10\,a_4\,b_3\,T_1^3\,T_2^3+$$
$$2\,a_2\,b_5\,T_1^3\,T_2^3-10\,a_4\,b_5\,T_1^3\,T_2^3+a_2\,b_3\,T_1^4\,T_2^3-6\,a_4\,b_3\,T_1^4\,T_2^3-3\,a_2\,b_5\,T_1^4\,T_2^3+2\,a_4\,b_5\,T_1^4\,T_2^3-$$
$$a_2\,b_3\,T_1^5\,T_2^3+7\,a_4\,b_3\,T_1^5\,T_2^3+2\,a_2\,b_5\,T_1^5\,T_2^3-5\,a_4\,b_5\,T_1^5\,T_2^3-a_2\,b_3\,T_1^6\,T_2^3-6\,a_4\,b_3\,T_1^6\,T_2^3-a_2\,b_5\,T_1^6\,T_2^3-$$
$$5\,a_4\,b_5\,T_1^6\,T_2^3+a_2\,b_3\,T_1^7\,T_2^3+7\,a_4\,b_3\,T_1^7\,T_2^3+4\,a_2\,b_5\,T_1^7\,T_2^3-4\,a_4\,b_5\,T_1^7\,T_2^3+2\,c_{19}\,T_1^7\,T_2^3+2\,c_{34}\,T_1^7\,T_2^3+$$
$$2\,c_{49}\,T_1^7\,T_2^3+2\,c_{64}\,T_1^7\,T_2^3-9\,a_4\,b_3\,T_1^8\,T_2^3-a_2\,b_5\,T_1^8\,T_2^3+5\,a_4\,b_5\,T_1^8\,T_2^3-2\,c_{19}\,T_1^8\,T_2^3-2\,c_{34}\,T_1^8\,T_2^3-$$
$$2\,c_{49}\,T_1^8\,T_2^3-2\,c_{64}\,T_1^8\,T_2^3-2\,a_2\,b_3\,T_1^9\,T_2^3+a_4\,b_3\,T_1^9\,T_2^3+a_2\,b_5\,T_1^9\,T_2^3+3\,a_4\,b_5\,T_1^9\,T_2^3+4\,a_2\,b_3\,T_1^{10}\,T_2^3-$$
$$2\,a_2\,b_5\,T_1^{10}\,T_2^3+2\,a_4\,b_5\,T_1^{10}\,T_2^3-2\,a_2\,b_3\,T_1^{11}\,T_2^3+2\,a_4\,b_3\,T_1^{11}\,T_2^3+a_2\,b_3\,T_2^4-2\,a_4\,b_3\,T_2^4-3\,a_2\,b_5\,T_2^4+$$
$$3\,a_4\,b_5\,T_2^4-2\,a_2\,b_3\,T_1\,T_2^4+7\,a_4\,b_3\,T_1\,T_2^4+3\,a_2\,b_5\,T_1\,T_2^4-7\,a_4\,b_5\,T_1\,T_2^4-a_2\,b_3\,T_1^2\,T_2^4-5\,a_4\,b_3\,T_1^2\,T_2^4+$$
$$2\,a_2\,b_5\,T_1^2\,T_2^4-6\,a_4\,b_5\,T_1^2\,T_2^4+5\,a_2\,b_3\,T_1^3\,T_2^4-2\,a_4\,b_3\,T_1^3\,T_2^4-3\,a_2\,b_5\,T_1^3\,T_2^4+6\,a_4\,b_5\,T_1^3\,T_2^4-$$
$$2\,a_2\,b_3\,T_1^4\,T_2^4+4\,a_4\,b_3\,T_1^4\,T_2^4-4\,a_4\,b_5\,T_1^4\,T_2^4-3\,a_2\,b_3\,T_1^5\,T_2^4-a_4\,b_3\,T_1^5\,T_2^4+2\,a_2\,b_5\,T_1^5\,T_2^4+4\,a_4\,b_5\,T_1^5\,T_2^4+$$
$$4\,a_2\,b_3\,T_1^6\,T_2^4-3\,a_4\,b_3\,T_1^6\,T_2^4-3\,a_2\,b_5\,T_1^6\,T_2^4+a_4\,b_5\,T_1^6\,T_2^4-3\,a_2\,b_3\,T_1^7\,T_2^4+4\,a_4\,b_3\,T_1^7\,T_2^4+a_2\,b_5\,T_1^7\,T_2^4+$$
$$4\,a_4\,b_5\,T_1^7\,T_2^4-6\,c_{19}\,T_1^7\,T_2^4-6\,c_{34}\,T_1^7\,T_2^4-6\,c_{49}\,T_1^7\,T_2^4-6\,c_{64}\,T_1^7\,T_2^4-2\,a_2\,b_3\,T_1^8\,T_2^4-a_4\,b_3\,T_1^8\,T_2^4+$$
$$3\,a_2\,b_5\,T_1^8\,T_2^4-4\,a_4\,b_5\,T_1^8\,T_2^4+4\,c_{19}\,T_1^8\,T_2^4+4\,c_{34}\,T_1^8\,T_2^4+4\,c_{49}\,T_1^8\,T_2^4+4\,c_{64}\,T_1^8\,T_2^4+5\,a_2\,b_3\,T_1^9\,T_2^4-$$
$$5\,a_4\,b_3\,T_1^9\,T_2^4-4\,a_2\,b_5\,T_1^9\,T_2^4+2\,a_4\,b_5\,T_1^9\,T_2^4+2\,c_{19}\,T_1^9\,T_2^4+2\,c_{34}\,T_1^9\,T_2^4+2\,c_{49}\,T_1^9\,T_2^4+2\,c_{64}\,T_1^9\,T_2^4-$$
$$a_2\,b_3\,T_1^{10}\,T_2^4+8\,a_4\,b_3\,T_1^{10}\,T_2^4+a_2\,b_5\,T_1^{10}\,T_2^4-6\,a_4\,b_5\,T_1^{10}\,T_2^4-2\,a_2\,b_3\,T_1^{11}\,T_2^4-3\,a_4\,b_3\,T_1^{11}\,T_2^4+$$
$$a_2\,b_5\,T_1^{11}\,T_2^4-a_4\,b_5\,T_1^{11}\,T_2^4+a_2\,b_3\,T_1^{12}\,T_2^4-a_4\,b_3\,T_1^{12}\,T_2^4+a_4\,b_3\,T_2^5+a_2\,b_5\,T_2^5-3\,a_4\,b_5\,T_2^5+$$
$$2\,a_2\,b_3\,T_1\,T_2^5-3\,a_4\,b_3\,T_1\,T_2^5-3\,a_2\,b_5\,T_1\,T_2^5+7\,a_4\,b_5\,T_1\,T_2^5-4\,a_2\,b_3\,T_1^2\,T_2^5+2\,a_4\,b_3\,T_1^2\,T_2^5+$$
$$3\,a_2\,b_3\,T_1^3\,T_2^5+5\,a_4\,b_3\,T_1^3\,T_2^5+2\,a_2\,b_5\,T_1^3\,T_2^5-7\,a_4\,b_5\,T_1^3\,T_2^5-2\,a_2\,b_3\,T_1^4\,T_2^5-4\,a_4\,b_3\,T_1^4\,T_2^5+$$
$$2\,a_2\,b_5\,T_1^4\,T_2^5+a_4\,b_5\,T_1^4\,T_2^5-3\,a_2\,b_3\,T_1^5\,T_2^5-5\,a_4\,b_3\,T_1^5\,T_2^5+2\,a_2\,b_5\,T_1^5\,T_2^5+5\,a_4\,b_5\,T_1^5\,T_2^5+$$
$$4\,a_2\,b_3\,T_1^6\,T_2^5+2\,a_4\,b_3\,T_1^6\,T_2^5+2\,a_2\,b_5\,T_1^6\,T_2^5+4\,a_2\,b_3\,T_1^7\,T_2^5-5\,a_4\,b_3\,T_1^7\,T_2^5-5\,a_2\,b_5\,T_1^7\,T_2^5+$$
$$9\,a_4\,b_5\,T_1^7\,T_2^5+6\,c_{19}\,T_1^7\,T_2^5+6\,c_{34}\,T_1^7\,T_2^5+6\,c_{49}\,T_1^7\,T_2^5+6\,c_{64}\,T_1^7\,T_2^5-3\,a_2\,b_3\,T_1^8\,T_2^5+3\,a_4\,b_3\,T_1^8\,T_2^5-$$
$$4\,a_2\,b_5\,T_1^8\,T_2^5+5\,a_4\,b_5\,T_1^8\,T_2^5-2\,a_2\,b_3\,T_1^9\,T_2^5+9\,a_4\,b_3\,T_1^9\,T_2^5+3\,a_2\,b_5\,T_1^9\,T_2^5-9\,a_4\,b_5\,T_1^9\,T_2^5-$$
$$6\,c_{19}\,T_1^9\,T_2^5-6\,c_{34}\,T_1^9\,T_2^5-6\,c_{49}\,T_1^9\,T_2^5-6\,c_{64}\,T_1^9\,T_2^5+3\,a_2\,b_3\,T_1^{10}\,T_2^5-4\,a_4\,b_3\,T_1^{10}\,T_2^5-a_2\,b_5\,T_1^{10}\,T_2^5+$$
$$3\,a_4\,b_5\,T_1^{10}\,T_2^5-4\,a_2\,b_3\,T_1^{11}\,T_2^5-a_4\,b_3\,T_1^{11}\,T_2^5+a_2\,b_5\,T_1^{11}\,T_2^5+a_4\,b_5\,T_1^{11}\,T_2^5+2\,a_2\,b_3\,T_1^{12}\,T_2^5+a_4\,b_5\,T_2^6-$$
$$2\,a_2\,b_3\,T_1\,T_2^6+2\,a_4\,b_3\,T_1\,T_2^6+4\,a_2\,b_5\,T_1\,T_2^6-4\,a_4\,b_5\,T_1\,T_2^6+2\,a_2\,b_3\,T_1^2\,T_2^6-8\,a_4\,b_3\,T_1^2\,T_2^6-$$
$$2\,a_2\,b_5\,T_1^2\,T_2^6+6\,a_4\,b_5\,T_1^2\,T_2^6+2\,a_2\,b_3\,T_1^3\,T_2^6+5\,a_4\,b_3\,T_1^3\,T_2^6-a_2\,b_5\,T_1^3\,T_2^6+6\,a_4\,b_5\,T_1^3\,T_2^6-a_4\,b_3\,T_1^4\,T_2^6-$$
$$3\,a_2\,b_5\,T_1^4\,T_2^6+3\,a_4\,b_5\,T_1^4\,T_2^6+2\,c_{16}\,T_1^4\,T_2^6+2\,c_{31}\,T_1^4\,T_2^6+2\,c_{46}\,T_1^4\,T_2^6+2\,c_{61}\,T_1^4\,T_2^6-8\,a_2\,b_3\,T_1^5\,T_2^6+$$
$$2\,a_2\,b_5\,T_1^5\,T_2^6-2\,a_4\,b_5\,T_1^5\,T_2^6-6\,c_{16}\,T_1^5\,T_2^6-6\,c_{31}\,T_1^5\,T_2^6-6\,c_{46}\,T_1^5\,T_2^6-6\,c_{61}\,T_1^5\,T_2^6+22\,a_2\,b_3\,T_1^6\,T_2^6+$$

$$2\,a_4\,b_3\,T_1^6\,T_2^6 - 16\,a_2\,b_5\,T_1^6\,T_2^6 - 2\,a_4\,b_5\,T_1^6\,T_2^6 + 6\,c_{16}\,T_1^6\,T_2^6 + 6\,c_{31}\,T_1^6\,T_2^6 + 6\,c_{46}\,T_1^6\,T_2^6 + 6\,c_{61}\,T_1^6\,T_2^6 -$$
$$32\,a_2\,b_3\,T_1^7\,T_2^6 + 20\,a_4\,b_3\,T_1^7\,T_2^6 + 20\,a_2\,b_5\,T_1^7\,T_2^6 - 27\,a_4\,b_5\,T_1^7\,T_2^6 - 2\,c_{16}\,T_1^7\,T_2^6 - 2\,c_{19}\,T_1^7\,T_2^6 -$$
$$2\,c_{31}\,T_1^7\,T_2^6 - 2\,c_{34}\,T_1^7\,T_2^6 - 2\,c_{46}\,T_1^7\,T_2^6 - 2\,c_{49}\,T_1^7\,T_2^6 - 2\,c_{61}\,T_1^7\,T_2^6 - 2\,c_{64}\,T_1^7\,T_2^6 + 22\,a_2\,b_3\,T_1^8\,T_2^6 -$$
$$23\,a_4\,b_3\,T_1^8\,T_2^6 - 5\,a_2\,b_5\,T_1^8\,T_2^6 - a_4\,b_5\,T_1^8\,T_2^6 + 2\,c_{16}\,T_1^8\,T_2^6 - 4\,c_{19}\,T_1^8\,T_2^6 + 2\,c_{31}\,T_1^8\,T_2^6 - 4\,c_{34}\,T_1^8\,T_2^6 +$$
$$2\,c_{46}\,T_1^8\,T_2^6 - 4\,c_{49}\,T_1^8\,T_2^6 + 2\,c_{61}\,T_1^8\,T_2^6 - 4\,c_{64}\,T_1^8\,T_2^6 - 8\,a_2\,b_3\,T_1^9\,T_2^6 + 3\,a_4\,b_3\,T_1^9\,T_2^6 + a_2\,b_5\,T_1^9\,T_2^6 +$$
$$5\,a_4\,b_5\,T_1^9\,T_2^6 - 6\,c_{16}\,T_1^9\,T_2^6 + 6\,c_{19}\,T_1^9\,T_2^6 - 6\,c_{31}\,T_1^9\,T_2^6 + 6\,c_{34}\,T_1^9\,T_2^6 - 6\,c_{46}\,T_1^9\,T_2^6 + 6\,c_{49}\,T_1^9\,T_2^6 -$$
$$6\,c_{61}\,T_1^9\,T_2^6 + 6\,c_{64}\,T_1^9\,T_2^6 + 2\,a_4\,b_3\,T_1^{10}\,T_2^6 + 4\,a_2\,b_5\,T_1^{10}\,T_2^6 - a_4\,b_5\,T_1^{10}\,T_2^6 + 6\,c_{16}\,T_1^{10}\,T_2^6 + 6\,c_{31}\,T_1^{10}\,T_2^6 +$$
$$6\,c_{46}\,T_1^{10}\,T_2^6 + 6\,c_{61}\,T_1^{10}\,T_2^6 + 2\,a_2\,b_3\,T_1^{11}\,T_2^6 - 8\,a_4\,b_3\,T_1^{11}\,T_2^6 - 2\,a_2\,b_5\,T_1^{11}\,T_2^6 + 6\,a_4\,b_5\,T_1^{11}\,T_2^6 -$$
$$2\,c_{16}\,T_1^{11}\,T_2^6 - 2\,c_{31}\,T_1^{11}\,T_2^6 - 2\,c_{46}\,T_1^{11}\,T_2^6 - 2\,c_{61}\,T_1^{11}\,T_2^6 + 2\,a_2\,b_3\,T_1^{12}\,T_2^6 + 4\,a_4\,b_3\,T_1^{12}\,T_2^6 - 2\,a_2\,b_5\,T_1^{12}\,T_2^6 +$$
$$2\,a_4\,b_5\,T_1^{12}\,T_2^6 - 2\,a_2\,b_3\,T_1^{13}\,T_2^6 + 2\,a_4\,b_3\,T_1^{13}\,T_2^6 - 2\,a_4\,b_3\,T_1\,T_2^7 - 2\,a_2\,b_5\,T_1\,T_2^7 + 4\,a_4\,b_5\,T_1\,T_2^7 +$$
$$2\,a_2\,b_3\,T_1^2\,T_2^7 + 4\,a_4\,b_3\,T_1^2\,T_2^7 - 2\,a_2\,b_5\,T_1^2\,T_2^7 - 8\,a_4\,b_5\,T_1^2\,T_2^7 - 4\,a_2\,b_3\,T_1^3\,T_2^7 + 4\,a_4\,b_3\,T_1^3\,T_2^7 +$$
$$4\,a_2\,b_5\,T_1^3\,T_2^7 - 7\,a_4\,b_5\,T_1^3\,T_2^7 + 3\,a_2\,b_3\,T_1^4\,T_2^7 - 4\,a_4\,b_3\,T_1^4\,T_2^7 + a_2\,b_5\,T_1^4\,T_2^7 - 4\,a_4\,b_5\,T_1^4\,T_2^7 - 2\,c_{16}\,T_1^4\,T_2^7 -$$
$$2\,c_{31}\,T_1^4\,T_2^7 - 2\,c_{46}\,T_1^4\,T_2^7 - 2\,c_{61}\,T_1^4\,T_2^7 - 2\,a_2\,b_3\,T_1^5\,T_2^7 - 9\,a_4\,b_3\,T_1^5\,T_2^7 - 5\,a_2\,b_5\,T_1^5\,T_2^7 + 5\,a_4\,b_5\,T_1^5\,T_2^7 +$$
$$4\,c_{16}\,T_1^5\,T_2^7 + 4\,c_{31}\,T_1^5\,T_2^7 + 4\,c_{46}\,T_1^5\,T_2^7 + 4\,c_{61}\,T_1^5\,T_2^7 - 3\,a_2\,b_3\,T_1^6\,T_2^7 + 27\,a_4\,b_3\,T_1^6\,T_2^7 + 20\,a_2\,b_5\,T_1^6\,T_2^7 -$$
$$20\,a_4\,b_5\,T_1^6\,T_2^7 + 4\,a_2\,b_3\,T_1^7\,T_2^7 - 52\,a_4\,b_3\,T_1^7\,T_2^7 - 16\,a_2\,b_5\,T_1^7\,T_2^7 + 52\,a_4\,b_5\,T_1^7\,T_2^7 - 4\,c_{16}\,T_1^7\,T_2^7 +$$
$$2\,c_{19}\,T_1^7\,T_2^7 - 4\,c_{31}\,T_1^7\,T_2^7 + 2\,c_{34}\,T_1^7\,T_2^7 - 4\,c_{46}\,T_1^7\,T_2^7 + 2\,c_{49}\,T_1^7\,T_2^7 - 4\,c_{61}\,T_1^7\,T_2^7 + 2\,c_{64}\,T_1^7\,T_2^7 +$$
$$4\,a_2\,b_3\,T_1^8\,T_2^7 + 38\,a_4\,b_3\,T_1^8\,T_2^7 + 2\,a_2\,b_5\,T_1^8\,T_2^7 - 9\,a_4\,b_5\,T_1^8\,T_2^7 - 3\,a_2\,b_3\,T_1^9\,T_2^7 - 10\,a_4\,b_3\,T_1^9\,T_2^7 -$$
$$3\,a_2\,b_5\,T_1^9\,T_2^7 + 4\,a_4\,b_5\,T_1^9\,T_2^7 + 4\,c_{16}\,T_1^9\,T_2^7 - 2\,c_{19}\,T_1^9\,T_2^7 + 4\,c_{31}\,T_1^9\,T_2^7 - 2\,c_{34}\,T_1^9\,T_2^7 + 4\,c_{46}\,T_1^9\,T_2^7 -$$
$$2\,c_{49}\,T_1^9\,T_2^7 + 4\,c_{61}\,T_1^9\,T_2^7 - 2\,c_{64}\,T_1^9\,T_2^7 - 2\,a_2\,b_3\,T_1^{10}\,T_2^7 + 3\,a_4\,b_3\,T_1^{10}\,T_2^7 - a_2\,b_5\,T_1^{10}\,T_2^7 + 3\,a_4\,b_5\,T_1^{10}\,T_2^7 +$$
$$3\,a_2\,b_3\,T_1^{11}\,T_2^7 + 3\,a_4\,b_3\,T_1^{11}\,T_2^7 - 2\,a_2\,b_5\,T_1^{11}\,T_2^7 - 8\,a_4\,b_5\,T_1^{11}\,T_2^7 - 4\,c_{16}\,T_1^{11}\,T_2^7 - 4\,c_{31}\,T_1^{11}\,T_2^7 -$$
$$4\,c_{46}\,T_1^{11}\,T_2^7 - 4\,c_{61}\,T_1^{11}\,T_2^7 - 4\,a_2\,b_3\,T_1^{12}\,T_2^7 + 4\,a_4\,b_3\,T_1^{12}\,T_2^7 + 4\,a_2\,b_5\,T_1^{12}\,T_2^7 - 8\,a_4\,b_5\,T_1^{12}\,T_2^7 +$$
$$2\,c_{16}\,T_1^{12}\,T_2^7 + 2\,c_{31}\,T_1^{12}\,T_2^7 + 2\,c_{46}\,T_1^{12}\,T_2^7 + 2\,c_{61}\,T_1^{12}\,T_2^7 + 2\,a_2\,b_3\,T_1^{13}\,T_2^7 - 6\,a_4\,b_3\,T_1^{13}\,T_2^7 - 2\,a_4\,b_5\,T_1\,T_2^8 +$$
$$a_2\,b_3\,T_1^2\,T_2^8 + 2\,a_4\,b_3\,T_1^2\,T_2^8 + a_2\,b_5\,T_1^2\,T_2^8 - 2\,a_2\,b_3\,T_1^3\,T_2^8 - 5\,a_4\,b_3\,T_1^3\,T_2^8 - a_2\,b_5\,T_1^3\,T_2^8 + 9\,a_4\,b_5\,T_1^3\,T_2^8 -$$
$$a_2\,b_3\,T_1^4\,T_2^8 + 4\,a_4\,b_3\,T_1^4\,T_2^8 + 3\,a_2\,b_5\,T_1^4\,T_2^8 + a_4\,b_5\,T_1^4\,T_2^8 + 5\,a_2\,b_3\,T_1^5\,T_2^8 - 5\,a_4\,b_3\,T_1^5\,T_2^8 - 4\,a_2\,b_5\,T_1^5\,T_2^8 -$$
$$3\,a_4\,b_5\,T_1^5\,T_2^8 + 2\,c_{16}\,T_1^5\,T_2^8 + 2\,c_{31}\,T_1^5\,T_2^8 + 2\,c_{46}\,T_1^5\,T_2^8 + 2\,c_{61}\,T_1^5\,T_2^8 - 2\,a_2\,b_3\,T_1^6\,T_2^8 + a_4\,b_3\,T_1^6\,T_2^8 -$$
$$5\,a_2\,b_5\,T_1^6\,T_2^8 + 23\,a_4\,b_5\,T_1^6\,T_2^8 - 6\,c_{16}\,T_1^6\,T_2^8 - 6\,c_{31}\,T_1^6\,T_2^8 - 6\,c_{46}\,T_1^6\,T_2^8 - 6\,c_{61}\,T_1^6\,T_2^8 - 3\,a_2\,b_3\,T_1^7\,T_2^8 +$$
$$9\,a_4\,b_3\,T_1^7\,T_2^8 + 2\,a_2\,b_5\,T_1^7\,T_2^8 - 38\,a_4\,b_5\,T_1^7\,T_2^8 + 6\,c_{16}\,T_1^7\,T_2^8 - 6\,c_{19}\,T_1^7\,T_2^8 + 6\,c_{31}\,T_1^7\,T_2^8 - 6\,c_{34}\,T_1^7\,T_2^8 +$$
$$6\,c_{46}\,T_1^7\,T_2^8 - 6\,c_{49}\,T_1^7\,T_2^8 + 6\,c_{61}\,T_1^7\,T_2^8 - 6\,c_{64}\,T_1^7\,T_2^8 + 4\,a_2\,b_3\,T_1^8\,T_2^8 + 2\,a_4\,b_3\,T_1^8\,T_2^8 + 2\,a_2\,b_5\,T_1^8\,T_2^8 -$$
$$2\,a_4\,b_5\,T_1^8\,T_2^8 - 2\,c_{16}\,T_1^8\,T_2^8 + 4\,c_{19}\,T_1^8\,T_2^8 - 2\,c_{31}\,T_1^8\,T_2^8 + 4\,c_{34}\,T_1^8\,T_2^8 - 2\,c_{46}\,T_1^8\,T_2^8 + 4\,c_{49}\,T_1^8\,T_2^8 -$$
$$2\,c_{61}\,T_1^8\,T_2^8 + 4\,c_{64}\,T_1^8\,T_2^8 - 3\,a_2\,b_3\,T_1^9\,T_2^8 - 5\,a_4\,b_3\,T_1^9\,T_2^8 + 2\,a_2\,b_5\,T_1^9\,T_2^8 - 7\,a_4\,b_5\,T_1^9\,T_2^8 + 2\,c_{16}\,T_1^9\,T_2^8 +$$
$$2\,c_{19}\,T_1^9\,T_2^8 + 2\,c_{31}\,T_1^9\,T_2^8 + 2\,c_{34}\,T_1^9\,T_2^8 + 2\,c_{46}\,T_1^9\,T_2^8 + 2\,c_{49}\,T_1^9\,T_2^8 + 2\,c_{61}\,T_1^9\,T_2^8 + 2\,c_{64}\,T_1^9\,T_2^8 -$$
$$2\,a_2\,b_3\,T_1^{10}\,T_2^8 - 4\,a_4\,b_3\,T_1^{10}\,T_2^8 + 2\,a_2\,b_5\,T_1^{10}\,T_2^8 - 6\,c_{16}\,T_1^{10}\,T_2^8 - 6\,c_{31}\,T_1^{10}\,T_2^8 - 6\,c_{46}\,T_1^{10}\,T_2^8 -$$
$$6\,c_{61}\,T_1^{10}\,T_2^8 + 5\,a_2\,b_3\,T_1^{11}\,T_2^8 + a_4\,b_3\,T_1^{11}\,T_2^8 + 2\,a_4\,b_5\,T_1^{11}\,T_2^8 + 6\,c_{16}\,T_1^{11}\,T_2^8 + 6\,c_{31}\,T_1^{11}\,T_2^8 + 6\,c_{46}\,T_1^{11}\,T_2^8 +$$
$$6\,c_{61}\,T_1^{11}\,T_2^8 - a_2\,b_3\,T_1^{12}\,T_2^8 - 4\,a_4\,b_3\,T_1^{12}\,T_2^8 - 3\,a_2\,b_5\,T_1^{12}\,T_2^8 + 10\,a_4\,b_5\,T_1^{12}\,T_2^8 - 2\,c_{16}\,T_1^{12}\,T_2^8 -$$
$$2\,c_{31}\,T_1^{12}\,T_2^8 - 2\,c_{46}\,T_1^{12}\,T_2^8 - 2\,c_{61}\,T_1^{12}\,T_2^8 - 2\,a_2\,b_3\,T_1^{13}\,T_2^8 + 5\,a_4\,b_3\,T_1^{13}\,T_2^8 + a_2\,b_5\,T_1^{13}\,T_2^8 -$$
$$a_4\,b_5\,T_1^{13}\,T_2^8 + a_2\,b_3\,T_1^{14}\,T_2^8 - a_4\,b_3\,T_1^{14}\,T_2^8 + a_4\,b_3\,T_1^2\,T_2^9 + a_2\,b_5\,T_1^2\,T_2^9 + a_4\,b_5\,T_1^2\,T_2^9 - 2\,a_2\,b_3\,T_1^3\,T_2^9 -$$
$$3\,a_4\,b_3\,T_1^3\,T_2^9 + a_2\,b_5\,T_1^3\,T_2^9 - a_4\,b_5\,T_1^3\,T_2^9 + 4\,a_2\,b_3\,T_1^4\,T_2^9 - 2\,a_4\,b_3\,T_1^4\,T_2^9 - 4\,a_2\,b_5\,T_1^4\,T_2^9 + 5\,a_4\,b_5\,T_1^4\,T_2^9 -$$
$$2\,a_2\,b_3\,T_1^5\,T_2^9 + 9\,a_4\,b_3\,T_1^5\,T_2^9 + 3\,a_2\,b_5\,T_1^5\,T_2^9 - 9\,a_4\,b_5\,T_1^5\,T_2^9 - 5\,a_4\,b_3\,T_1^6\,T_2^9 + a_2\,b_5\,T_1^6\,T_2^9 -$$
$$3\,a_4\,b_5\,T_1^6\,T_2^9 + a_2\,b_3\,T_1^7\,T_2^9 - 4\,a_4\,b_3\,T_1^7\,T_2^9 - 3\,a_2\,b_5\,T_1^7\,T_2^9 + 10\,a_4\,b_5\,T_1^7\,T_2^9 + 6\,c_{19}\,T_1^7\,T_2^9 + 6\,c_{34}\,T_1^7\,T_2^9 +$$
$$6\,c_{49}\,T_1^7\,T_2^9 + 6\,c_{64}\,T_1^7\,T_2^9 - a_2\,b_3\,T_1^8\,T_2^9 + 7\,a_4\,b_3\,T_1^8\,T_2^9 + 2\,a_2\,b_5\,T_1^8\,T_2^9 + 5\,a_4\,b_5\,T_1^8\,T_2^9 - a_2\,b_3\,T_1^9\,T_2^9 -$$
$$5\,a_4\,b_3\,T_1^9\,T_2^9 + 5\,a_4\,b_5\,T_1^9\,T_2^9 - 6\,c_{19}\,T_1^9\,T_2^9 - 6\,c_{34}\,T_1^9\,T_2^9 - 6\,c_{49}\,T_1^9\,T_2^9 - 6\,c_{64}\,T_1^9\,T_2^9 + a_2\,b_3\,T_1^{10}\,T_2^9 -$$
$$2\,a_4\,b_3\,T_1^{10}\,T_2^9 - 3\,a_2\,b_5\,T_1^{10}\,T_2^9 + 3\,a_4\,b_5\,T_1^{10}\,T_2^9 + 8\,a_4\,b_3\,T_1^{11}\,T_2^9 + 2\,a_2\,b_5\,T_1^{11}\,T_2^9 - 4\,a_4\,b_5\,T_1^{11}\,T_2^9 -$$
$$2\,a_2\,b_3\,T_1^{12}\,T_2^9 - 3\,a_4\,b_3\,T_1^{12}\,T_2^9 + 3\,a_2\,b_5\,T_1^{12}\,T_2^9 - 5\,a_4\,b_5\,T_1^{12}\,T_2^9 + 4\,a_2\,b_3\,T_1^{13}\,T_2^9 - 5\,a_4\,b_3\,T_1^{13}\,T_2^9 -$$
$$3\,a_2\,b_5\,T_1^{13}\,T_2^9 + 5\,a_4\,b_5\,T_1^{13}\,T_2^9 - 2\,a_2\,b_3\,T_1^{14}\,T_2^9 + 4\,a_4\,b_3\,T_1^{14}\,T_2^9 + a_4\,b_5\,T_1^2\,T_2^{10} - 2\,a_4\,b_3\,T_1^3\,T_2^{10} -$$
$$2\,a_2\,b_5\,T_1^3\,T_2^{10} + a_2\,b_3\,T_1^4\,T_2^{10} + 6\,a_4\,b_3\,T_1^4\,T_2^{10} + a_2\,b_5\,T_1^4\,T_2^{10} - 8\,a_4\,b_5\,T_1^4\,T_2^{10} - 3\,a_4\,b_3\,T_1^5\,T_2^{10} -$$
$$a_2\,b_5\,T_1^5\,T_2^{10} + 4\,a_4\,b_5\,T_1^5\,T_2^{10} - 5\,a_2\,b_3\,T_1^6\,T_2^{10} + a_4\,b_3\,T_1^6\,T_2^{10} + 4\,a_2\,b_5\,T_1^6\,T_2^{10} - 2\,a_4\,b_5\,T_1^6\,T_2^{10} +$$

$$6\,a_2\,b_3\,T_1^7\,T_2^{10} - 3\,a_4\,b_3\,T_1^7\,T_2^{10} - a_2\,b_5\,T_1^7\,T_2^{10} - 3\,a_4\,b_5\,T_1^7\,T_2^{10} - 2\,c_{19}\,T_1^7\,T_2^{10} - 2\,c_{34}\,T_1^7\,T_2^{10} -$$
$$2\,c_{49}\,T_1^7\,T_2^{10} - 2\,c_{64}\,T_1^7\,T_2^{10} - 4\,a_2\,b_3\,T_1^8\,T_2^{10} + 2\,a_2\,b_5\,T_1^8\,T_2^{10} + 4\,a_4\,b_5\,T_1^8\,T_2^{10} - 4\,c_{19}\,T_1^8\,T_2^{10} -$$
$$4\,c_{34}\,T_1^8\,T_2^{10} - 4\,c_{49}\,T_1^8\,T_2^{10} - 4\,c_{64}\,T_1^8\,T_2^{10} + 4\,a_2\,b_3\,T_1^9\,T_2^{10} - 3\,a_4\,b_3\,T_1^9\,T_2^{10} - 3\,a_2\,b_5\,T_1^9\,T_2^{10} +$$
$$2\,a_4\,b_5\,T_1^9\,T_2^{10} + 6\,c_{19}\,T_1^9\,T_2^{10} + 6\,c_{34}\,T_1^9\,T_2^{10} + 6\,c_{49}\,T_1^9\,T_2^{10} + 6\,c_{64}\,T_1^9\,T_2^{10} - 4\,a_2\,b_3\,T_1^{10}\,T_2^{10} +$$
$$4\,a_4\,b_3\,T_1^{10}\,T_2^{10} + 2\,a_2\,b_5\,T_1^{10}\,T_2^{10} - 4\,a_4\,b_5\,T_1^{10}\,T_2^{10} + 6\,a_2\,b_3\,T_1^{11}\,T_2^{10} - 2\,a_4\,b_3\,T_1^{11}\,T_2^{10} - 4\,a_2\,b_5\,T_1^{11}\,T_2^{10} +$$
$$6\,a_4\,b_5\,T_1^{11}\,T_2^{10} - 5\,a_2\,b_3\,T_1^{12}\,T_2^{10} + 2\,a_4\,b_3\,T_1^{12}\,T_2^{10} - a_2\,b_5\,T_1^{12}\,T_2^{10} + a_4\,b_5\,T_1^{12}\,T_2^{10} + 5\,a_4\,b_3\,T_1^{13}\,T_2^{10} +$$
$$3\,a_2\,b_5\,T_1^{13}\,T_2^{10} - 9\,a_4\,b_5\,T_1^{13}\,T_2^{10} + a_2\,b_3\,T_1^{14}\,T_2^{10} - 5\,a_4\,b_3\,T_1^{14}\,T_2^{10} - 2\,a_4\,b_5\,T_1^3\,T_2^{11} + a_4\,b_3\,T_1^4\,T_2^{11} +$$
$$a_2\,b_5\,T_1^4\,T_2^{11} + 3\,a_4\,b_5\,T_1^4\,T_2^{11} - a_4\,b_3\,T_1^5\,T_2^{11} + a_2\,b_5\,T_1^5\,T_2^{11} + a_4\,b_5\,T_1^5\,T_2^{11} - 2\,a_2\,b_3\,T_1^6\,T_2^{11} -$$
$$6\,a_4\,b_3\,T_1^6\,T_2^{11} - 2\,a_2\,b_5\,T_1^6\,T_2^{11} + 8\,a_4\,b_5\,T_1^6\,T_2^{11} + 6\,a_2\,b_3\,T_1^7\,T_2^{11} + 8\,a_4\,b_3\,T_1^7\,T_2^{11} - 2\,a_2\,b_5\,T_1^7\,T_2^{11} -$$
$$3\,a_4\,b_5\,T_1^7\,T_2^{11} - 6\,a_2\,b_3\,T_1^8\,T_2^{11} - 2\,a_4\,b_3\,T_1^8\,T_2^{11} - a_4\,b_5\,T_1^8\,T_2^{11} + 2\,c_{19}\,T_1^8\,T_2^{11} + 2\,c_{34}\,T_1^8\,T_2^{11} +$$
$$2\,c_{49}\,T_1^8\,T_2^{11} + 2\,c_{64}\,T_1^8\,T_2^{11} + 2\,a_2\,b_3\,T_1^9\,T_2^{11} + 4\,a_4\,b_3\,T_1^9\,T_2^{11} + 2\,a_2\,b_5\,T_1^9\,T_2^{11} - 8\,a_4\,b_5\,T_1^9\,T_2^{11} -$$
$$2\,c_{19}\,T_1^9\,T_2^{11} - 2\,c_{34}\,T_1^9\,T_2^{11} - 2\,c_{49}\,T_1^9\,T_2^{11} - 2\,c_{64}\,T_1^9\,T_2^{11} + 2\,a_2\,b_3\,T_1^{10}\,T_2^{11} - 6\,a_4\,b_3\,T_1^{10}\,T_2^{11} -$$
$$4\,a_2\,b_5\,T_1^{10}\,T_2^{11} + 2\,a_4\,b_5\,T_1^{10}\,T_2^{11} - 6\,a_2\,b_3\,T_1^{11}\,T_2^{11} + 10\,a_4\,b_3\,T_1^{11}\,T_2^{11} + 8\,a_2\,b_5\,T_1^{11}\,T_2^{11} -$$
$$10\,a_4\,b_5\,T_1^{11}\,T_2^{11} + 6\,a_2\,b_3\,T_1^{12}\,T_2^{11} - 13\,a_4\,b_3\,T_1^{12}\,T_2^{11} - 3\,a_2\,b_5\,T_1^{12}\,T_2^{11} + 5\,a_4\,b_5\,T_1^{12}\,T_2^{11} -$$
$$2\,a_2\,b_3\,T_1^{13}\,T_2^{11} + 3\,a_4\,b_3\,T_1^{13}\,T_2^{11} - a_2\,b_5\,T_1^{13}\,T_2^{11} + 7\,a_4\,b_5\,T_1^{13}\,T_2^{11} + 2\,a_4\,b_3\,T_1^{14}\,T_2^{11} + a_4\,b_5\,T_1^4\,T_2^{12} -$$
$$2\,a_4\,b_3\,T_1^6\,T_2^{12} - 2\,a_2\,b_5\,T_1^6\,T_2^{12} - 4\,a_4\,b_5\,T_1^6\,T_2^{12} + 8\,a_4\,b_3\,T_1^7\,T_2^{12} + 4\,a_2\,b_5\,T_1^7\,T_2^{12} - 4\,a_4\,b_5\,T_1^7\,T_2^{12} +$$
$$a_2\,b_3\,T_1^8\,T_2^{12} - 10\,a_4\,b_3\,T_1^8\,T_2^{12} - 3\,a_2\,b_5\,T_1^8\,T_2^{12} + 4\,a_4\,b_5\,T_1^8\,T_2^{12} - 4\,a_2\,b_3\,T_1^9\,T_2^{12} + 5\,a_4\,b_3\,T_1^9\,T_2^{12} +$$
$$3\,a_2\,b_5\,T_1^9\,T_2^{12} + 3\,a_4\,b_5\,T_1^9\,T_2^{12} + 6\,a_2\,b_3\,T_1^{10}\,T_2^{12} - a_4\,b_3\,T_1^{10}\,T_2^{12} - a_2\,b_5\,T_1^{10}\,T_2^{12} - 2\,a_4\,b_5\,T_1^{10}\,T_2^{12} -$$
$$4\,a_2\,b_3\,T_1^{11}\,T_2^{12} - 5\,a_4\,b_3\,T_1^{11}\,T_2^{12} - 3\,a_2\,b_5\,T_1^{11}\,T_2^{12} + 13\,a_4\,b_5\,T_1^{11}\,T_2^{12} + a_2\,b_3\,T_1^{12}\,T_2^{12} + 9\,a_4\,b_3\,T_1^{12}\,T_2^{12} +$$
$$2\,a_2\,b_5\,T_1^{12}\,T_2^{12} - 9\,a_4\,b_5\,T_1^{12}\,T_2^{12} - 4\,a_4\,b_3\,T_1^{13}\,T_2^{12} - 2\,a_4\,b_5\,T_1^{13}\,T_2^{12} - 2\,a_4\,b_5\,T_1^6\,T_2^{13} + 6\,a_4\,b_5\,T_1^7\,T_2^{13} +$$
$$a_4\,b_3\,T_1^8\,T_2^{13} + a_2\,b_5\,T_1^8\,T_2^{13} - 5\,a_4\,b_5\,T_1^8\,T_2^{13} - 5\,a_4\,b_3\,T_1^9\,T_2^{13} - 3\,a_2\,b_5\,T_1^9\,T_2^{13} + 5\,a_4\,b_5\,T_1^9\,T_2^{13} +$$
$$9\,a_4\,b_3\,T_1^{10}\,T_2^{13} + 3\,a_2\,b_5\,T_1^{10}\,T_2^{13} - 5\,a_4\,b_5\,T_1^{10}\,T_2^{13} - 7\,a_4\,b_3\,T_1^{11}\,T_2^{13} - a_2\,b_5\,T_1^{11}\,T_2^{13} - 3\,a_4\,b_5\,T_1^{11}\,T_2^{13} +$$
$$2\,a_4\,b_3\,T_1^{12}\,T_2^{13} + 4\,a_4\,b_5\,T_1^{12}\,T_2^{13} + a_4\,b_5\,T_1^8\,T_2^{14} - 4\,a_4\,b_5\,T_1^9\,T_2^{14} + 5\,a_4\,b_5\,T_1^{10}\,T_2^{14} - 2\,a_4\,b_5\,T_1^{11}\,T_2^{14}\Big)\Big]\Big]$$

In[•]:=
```
K = Knot["K11n42"]; KT = ∫ℒ[K] ×𝕕vs[K]
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Out[•]=

$$-\mathbb{i}\,\mathbb{E}\Big[\epsilon\text{Series}\Big[0,\ \frac{1}{(-1+T_1)\,T_1^4\,(-1+T_2)\,T_2^3\,(-1+T_1\,T_2)}\ \big(a_2\,b_3\,T_1 - a_2\,b_5\,T_1 - a_2\,b_3\,T_1^2 + a_4\,b_3\,T_1^2 - a_4\,b_5\,T_1^2 -$$
$$a_2\,b_3\,T_1^3 + a_2\,b_5\,T_1^3 - a_4\,b_5\,T_1^3 + a_2\,b_3\,T_1^4 - a_4\,b_3\,T_1^4 - 2\,c_{19}\,T_1^4 - 2\,c_{34}\,T_1^4 - 2\,c_{49}\,T_1^4 - 2\,c_{64}\,T_1^4 + 2\,c_{19}\,T_1^5 +$$
$$2\,c_{34}\,T_1^5 + 2\,c_{49}\,T_1^5 + 2\,c_{64}\,T_1^5 + a_2\,b_3\,T_2 - a_2\,b_5\,T_2 - 4\,a_2\,b_3\,T_1\,T_2 + 2\,a_4\,b_3\,T_1\,T_2 + 4\,a_2\,b_5\,T_1\,T_2 -$$
$$2\,a_4\,b_5\,T_1\,T_2 + 3\,a_2\,b_3\,T_1^2\,T_2 - 5\,a_4\,b_3\,T_1^2\,T_2 + 4\,a_4\,b_5\,T_1^2\,T_2 - a_4\,b_3\,T_1^3\,T_2 - a_2\,b_5\,T_1^3\,T_2 + 5\,a_4\,b_5\,T_1^3\,T_2 +$$
$$3\,a_2\,b_3\,T_1^4\,T_2 + 2\,a_4\,b_3\,T_1^4\,T_2 - 3\,a_2\,b_5\,T_1^4\,T_2 + 2\,a_4\,b_5\,T_1^4\,T_2 + 6\,c_{19}\,T_1^4\,T_2 + 6\,c_{34}\,T_1^4\,T_2 + 6\,c_{49}\,T_1^4\,T_2 +$$
$$6\,c_{64}\,T_1^4\,T_2 - 4\,a_2\,b_3\,T_1^5\,T_2 + 3\,a_4\,b_3\,T_1^5\,T_2 + a_2\,b_5\,T_1^5\,T_2 - a_4\,b_5\,T_1^5\,T_2 - 4\,c_{19}\,T_1^5\,T_2 - 4\,c_{34}\,T_1^5\,T_2 -$$
$$4\,c_{49}\,T_1^5\,T_2 - 4\,c_{64}\,T_1^5\,T_2 + a_2\,b_3\,T_1^6\,T_2 - a_4\,b_3\,T_1^6\,T_2 - 2\,c_{19}\,T_1^6\,T_2 - 2\,c_{34}\,T_1^6\,T_2 - 2\,c_{49}\,T_1^6\,T_2 -$$
$$2\,c_{64}\,T_1^6\,T_2 + a_2\,b_3\,T_2^2 + a_4\,b_3\,T_2^2 - a_4\,b_5\,T_2^2 - 4\,a_2\,b_3\,T_1\,T_2^2 - 4\,a_4\,b_3\,T_1\,T_2^2 + 5\,a_4\,b_5\,T_1\,T_2^2 + 7\,a_2\,b_3\,T_1^2\,T_2^2 +$$
$$3\,a_4\,b_3\,T_1^2\,T_2^2 - 4\,a_2\,b_5\,T_1^2\,T_2^2 - 3\,a_4\,b_5\,T_1^2\,T_2^2 - 4\,a_2\,b_3\,T_1^3\,T_2^2 + 4\,a_4\,b_3\,T_1^3\,T_2^2 - 8\,a_4\,b_5\,T_1^3\,T_2^2 - 4\,a_2\,b_3\,T_1^4\,T_2^2 +$$
$$3\,a_4\,b_3\,T_1^4\,T_2^2 + 7\,a_2\,b_5\,T_1^4\,T_2^2 - 9\,a_4\,b_5\,T_1^4\,T_2^2 - 6\,c_{19}\,T_1^4\,T_2^2 - 6\,c_{34}\,T_1^4\,T_2^2 - 6\,c_{49}\,T_1^4\,T_2^2 - 6\,c_{64}\,T_1^4\,T_2^2 +$$
$$7\,a_2\,b_3\,T_1^5\,T_2^2 - 11\,a_4\,b_3\,T_1^5\,T_2^2 - 4\,a_2\,b_5\,T_1^5\,T_2^2 + 5\,a_4\,b_5\,T_1^5\,T_2^2 - 4\,a_2\,b_3\,T_1^6\,T_2^2 + 5\,a_4\,b_3\,T_1^6\,T_2^2 + a_2\,b_5\,T_1^6\,T_2^2 -$$
$$a_4\,b_5\,T_1^6\,T_2^2 + 6\,c_{19}\,T_1^6\,T_2^2 + 6\,c_{34}\,T_1^6\,T_2^2 + 6\,c_{49}\,T_1^6\,T_2^2 + 6\,c_{64}\,T_1^6\,T_2^2 + a_2\,b_3\,T_1^7\,T_2^2 - a_4\,b_3\,T_1^7\,T_2^2 + a_4\,b_3\,T_2^3 +$$
$$a_2\,b_5\,T_2^3 - 2\,a_2\,b_3\,T_1\,T_2^3 - 5\,a_4\,b_3\,T_1\,T_2^3 - a_2\,b_5\,T_1\,T_2^3 + a_4\,b_5\,T_1\,T_2^3 - 2\,c_{16}\,T_1\,T_2^3 - 2\,c_{31}\,T_1\,T_2^3 -$$
$$2\,c_{46}\,T_1\,T_2^3 - 2\,c_{61}\,T_1\,T_2^3 + 6\,a_2\,b_3\,T_1^2\,T_2^3 + 8\,a_4\,b_3\,T_1^2\,T_2^3 - 4\,a_4\,b_5\,T_1^2\,T_2^3 + 6\,c_{16}\,T_1^2\,T_2^3 + 6\,c_{31}\,T_1^2\,T_2^3 +$$
$$6\,c_{46}\,T_1^2\,T_2^3 + 6\,c_{61}\,T_1^2\,T_2^3 - 6\,a_2\,b_3\,T_1^3\,T_2^3 - 4\,a_4\,b_3\,T_1^3\,T_2^3 + 2\,a_2\,b_5\,T_1^3\,T_2^3 + 4\,a_4\,b_5\,T_1^3\,T_2^3 - 6\,c_{16}\,T_1^3\,T_2^3 -$$
$$6\,c_{31}\,T_1^3\,T_2^3 - 6\,c_{46}\,T_1^3\,T_2^3 - 6\,c_{61}\,T_1^3\,T_2^3 + 4\,a_2\,b_3\,T_1^4\,T_2^3 - 6\,a_4\,b_3\,T_1^4\,T_2^3 - 6\,a_2\,b_5\,T_1^4\,T_2^3 + 13\,a_4\,b_5\,T_1^4\,T_2^3 +$$
$$2\,c_{16}\,T_1^4\,T_2^3 + 2\,c_{19}\,T_1^4\,T_2^3 + 2\,c_{31}\,T_1^4\,T_2^3 + 2\,c_{34}\,T_1^4\,T_2^3 + 2\,c_{46}\,T_1^4\,T_2^3 + 2\,c_{49}\,T_1^4\,T_2^3 + 2\,c_{61}\,T_1^4\,T_2^3 +$$

$$2\,c_{64}\,T_1^4\,T_2^3-6\,a_2\,b_3\,T_1^5\,T_2^3+13\,a_4\,b_3\,T_1^5\,T_2^3+7\,a_2\,b_5\,T_1^5\,T_2^3-11\,a_4\,b_5\,T_1^5\,T_2^3-2\,c_{16}\,T_1^5\,T_2^3+4\,c_{19}\,T_1^5\,T_2^3-2\,c_{31}\,T_1^5\,T_2^3+4\,c_{34}\,T_1^5\,T_2^3-2\,c_{46}\,T_1^5\,T_2^3+4\,c_{49}\,T_1^5\,T_2^3-2\,c_{61}\,T_1^5\,T_2^3+4\,c_{64}\,T_1^5\,T_2^3+6\,a_2\,b_3\,T_1^6\,T_2^3-11\,a_4\,b_3\,T_1^6\,T_2^3-3\,a_2\,b_5\,T_1^6\,T_2^3+5\,a_4\,b_5\,T_1^6\,T_2^3+6\,c_{16}\,T_1^6\,T_2^3-6\,c_{19}\,T_1^6\,T_2^3+6\,c_{31}\,T_1^6\,T_2^3-6\,c_{34}\,T_1^6\,T_2^3+6\,c_{46}\,T_1^6\,T_2^3-6\,c_{49}\,T_1^6\,T_2^3+6\,c_{61}\,T_1^6\,T_2^3-6\,c_{64}\,T_1^6\,T_2^3-2\,a_2\,b_3\,T_1^7\,T_2^3+4\,a_4\,b_3\,T_1^7\,T_2^3-6\,c_{16}\,T_1^7\,T_2^3-6\,c_{31}\,T_1^7\,T_2^3-6\,c_{46}\,T_1^7\,T_2^3-6\,c_{61}\,T_1^7\,T_2^3+2\,c_{16}\,T_1^8\,T_2^3+2\,c_{31}\,T_1^8\,T_2^3+2\,c_{46}\,T_1^8\,T_2^3+2\,c_{61}\,T_1^8\,T_2^3+a_4\,b_5\,T_2^4+a_2\,b_3\,T_1\,T_2^4-2\,a_4\,b_3\,T_1\,T_2^4-3\,a_2\,b_5\,T_1\,T_2^4-2\,a_4\,b_5\,T_1\,T_2^4+2\,c_{16}\,T_1\,T_2^4+2\,c_{31}\,T_1\,T_2^4+2\,c_{46}\,T_1\,T_2^4+2\,c_{61}\,T_1\,T_2^4-4\,a_2\,b_3\,T_1^2\,T_2^4+9\,a_4\,b_3\,T_1^2\,T_2^4+7\,a_2\,b_5\,T_1^2\,T_2^4-3\,a_4\,b_5\,T_1^2\,T_2^4-4\,c_{16}\,T_1^2\,T_2^4-4\,c_{31}\,T_1^2\,T_2^4-4\,c_{46}\,T_1^2\,T_2^4-4\,c_{61}\,T_1^2\,T_2^4+7\,a_2\,b_3\,T_1^3\,T_2^4-13\,a_4\,b_3\,T_1^3\,T_2^4-6\,a_2\,b_5\,T_1^3\,T_2^4+6\,a_4\,b_5\,T_1^3\,T_2^4-4\,a_2\,b_3\,T_1^4\,T_2^4+10\,a_4\,b_3\,T_1^4\,T_2^4+2\,a_2\,b_5\,T_1^4\,T_2^4-10\,a_4\,b_5\,T_1^4\,T_2^4+4\,c_{16}\,T_1^4\,T_2^4-2\,c_{19}\,T_1^4\,T_2^4+4\,c_{31}\,T_1^4\,T_2^4-2\,c_{34}\,T_1^4\,T_2^4+4\,c_{46}\,T_1^4\,T_2^4-2\,c_{49}\,T_1^4\,T_2^4+4\,c_{61}\,T_1^4\,T_2^4-2\,c_{64}\,T_1^4\,T_2^4-4\,a_2\,b_3\,T_1^5\,T_2^4-8\,a_4\,b_3\,T_1^5\,T_2^4+11\,a_4\,b_5\,T_1^5\,T_2^4+7\,a_2\,b_3\,T_1^6\,T_2^4+6\,a_4\,b_3\,T_1^6\,T_2^4-a_2\,b_5\,T_1^6\,T_2^4-6\,a_4\,b_5\,T_1^6\,T_2^4-4\,c_{16}\,T_1^6\,T_2^4+2\,c_{19}\,T_1^6\,T_2^4-4\,c_{31}\,T_1^6\,T_2^4+2\,c_{34}\,T_1^6\,T_2^4-4\,c_{46}\,T_1^6\,T_2^4+2\,c_{49}\,T_1^6\,T_2^4-4\,c_{61}\,T_1^6\,T_2^4+2\,c_{64}\,T_1^6\,T_2^4-4\,a_2\,b_3\,T_1^7\,T_2^4-a_4\,b_3\,T_1^7\,T_2^4+a_2\,b_5\,T_1^7\,T_2^4-a_4\,b_5\,T_1^7\,T_2^4+a_2\,b_3\,T_1^8\,T_2^4-a_4\,b_3\,T_1^8\,T_2^4+4\,c_{16}\,T_1^8\,T_2^4+4\,c_{31}\,T_1^8\,T_2^4+4\,c_{46}\,T_1^8\,T_2^4+4\,c_{61}\,T_1^8\,T_2^4-2\,c_{16}\,T_1^9\,T_2^4-2\,c_{31}\,T_1^9\,T_2^4-2\,c_{46}\,T_1^9\,T_2^4-2\,c_{61}\,T_1^9\,T_2^4+a_4\,b_3\,T_1\,T_2^5+a_2\,b_5\,T_1\,T_2^5-3\,a_4\,b_5\,T_1\,T_2^5+a_2\,b_3\,T_1^2\,T_2^5-5\,a_4\,b_3\,T_1^2\,T_2^5-4\,a_2\,b_5\,T_1^2\,T_2^5+11\,a_4\,b_5\,T_1^2\,T_2^5-2\,c_{16}\,T_1^2\,T_2^5-2\,c_{31}\,T_1^2\,T_2^5-2\,c_{46}\,T_1^2\,T_2^5-2\,c_{61}\,T_1^2\,T_2^5-4\,a_2\,b_3\,T_1^3\,T_2^5+11\,a_4\,b_3\,T_1^3\,T_2^5+7\,a_2\,b_5\,T_1^3\,T_2^5-13\,a_4\,b_5\,T_1^3\,T_2^5+6\,c_{16}\,T_1^3\,T_2^5+6\,c_{31}\,T_1^3\,T_2^5+6\,c_{46}\,T_1^3\,T_2^5+6\,c_{61}\,T_1^3\,T_2^5+3\,a_2\,b_3\,T_1^4\,T_2^5-11\,a_4\,b_3\,T_1^4\,T_2^5+8\,a_4\,b_5\,T_1^4\,T_2^5-6\,c_{16}\,T_1^4\,T_2^5+6\,c_{19}\,T_1^4\,T_2^5-6\,c_{31}\,T_1^4\,T_2^5+6\,c_{34}\,T_1^4\,T_2^5-6\,c_{46}\,T_1^4\,T_2^5+6\,c_{49}\,T_1^4\,T_2^5-6\,c_{61}\,T_1^4\,T_2^5+6\,c_{64}\,T_1^4\,T_2^5-4\,a_4\,b_3\,T_1^5\,T_2^5-4\,a_2\,b_5\,T_1^5\,T_2^5+4\,a_4\,b_5\,T_1^5\,T_2^5+2\,c_{16}\,T_1^5\,T_2^5-4\,c_{19}\,T_1^5\,T_2^5+2\,c_{31}\,T_1^5\,T_2^5-4\,c_{34}\,T_1^5\,T_2^5+2\,c_{46}\,T_1^5\,T_2^5-4\,c_{49}\,T_1^5\,T_2^5+2\,c_{61}\,T_1^5\,T_2^5-4\,c_{64}\,T_1^5\,T_2^5+3\,a_2\,b_3\,T_1^6\,T_2^5+11\,a_4\,b_3\,T_1^6\,T_2^5-a_4\,b_5\,T_1^6\,T_2^5-2\,c_{16}\,T_1^6\,T_2^5-2\,c_{19}\,T_1^6\,T_2^5-2\,c_{31}\,T_1^6\,T_2^5-2\,c_{34}\,T_1^6\,T_2^5-2\,c_{46}\,T_1^6\,T_2^5-2\,c_{49}\,T_1^6\,T_2^5-2\,c_{61}\,T_1^6\,T_2^5-2\,c_{64}\,T_1^6\,T_2^5-4\,a_2\,b_3\,T_1^7\,T_2^5-4\,a_4\,b_3\,T_1^7\,T_2^5+2\,a_4\,b_5\,T_1^7\,T_2^5+6\,c_{16}\,T_1^7\,T_2^5+6\,c_{31}\,T_1^7\,T_2^5+6\,c_{46}\,T_1^7\,T_2^5+6\,c_{61}\,T_1^7\,T_2^5+a_2\,b_3\,T_1^8\,T_2^5+a_4\,b_3\,T_1^8\,T_2^5-6\,c_{16}\,T_1^8\,T_2^5-6\,c_{31}\,T_1^8\,T_2^5-6\,c_{46}\,T_1^8\,T_2^5-6\,c_{61}\,T_1^8\,T_2^5+2\,c_{16}\,T_1^9\,T_2^5+2\,c_{31}\,T_1^9\,T_2^5+2\,c_{46}\,T_1^9\,T_2^5+2\,c_{61}\,T_1^9\,T_2^5+a_4\,b_5\,T_1\,T_2^6+a_4\,b_3\,T_1^2\,T_2^6+a_2\,b_5\,T_1^2\,T_2^6-5\,a_4\,b_5\,T_1^2\,T_2^6-5\,a_4\,b_3\,T_1^3\,T_2^6-3\,a_2\,b_5\,T_1^3\,T_2^6+11\,a_4\,b_5\,T_1^3\,T_2^6+a_2\,b_3\,T_1^4\,T_2^6+6\,a_4\,b_3\,T_1^4\,T_2^6-a_2\,b_5\,T_1^4\,T_2^6-6\,a_4\,b_5\,T_1^4\,T_2^6-6\,c_{19}\,T_1^4\,T_2^6-6\,c_{34}\,T_1^4\,T_2^6-6\,c_{49}\,T_1^4\,T_2^6-6\,c_{64}\,T_1^4\,T_2^6-a_2\,b_3\,T_1^5\,T_2^6+a_4\,b_3\,T_1^5\,T_2^6-11\,a_4\,b_5\,T_1^5\,T_2^6-a_2\,b_3\,T_1^6\,T_2^6+3\,a_4\,b_3\,T_1^6\,T_2^6+4\,a_2\,b_5\,T_1^6\,T_2^6-3\,a_4\,b_5\,T_1^6\,T_2^6+6\,c_{19}\,T_1^6\,T_2^6+6\,c_{34}\,T_1^6\,T_2^6+6\,c_{49}\,T_1^6\,T_2^6+6\,c_{64}\,T_1^6\,T_2^6+a_2\,b_3\,T_1^7\,T_2^6-8\,a_4\,b_3\,T_1^7\,T_2^6-a_2\,b_5\,T_1^7\,T_2^6+a_4\,b_5\,T_1^7\,T_2^6+2\,a_4\,b_3\,T_1^8\,T_2^6+a_4\,b_5\,T_1^2\,T_2^7-4\,a_4\,b_5\,T_1^3\,T_2^7+a_4\,b_3\,T_1^4\,T_2^7+a_2\,b_5\,T_1^4\,T_2^7+a_4\,b_5\,T_1^4\,T_2^7+2\,c_{19}\,T_1^4\,T_2^7+2\,c_{34}\,T_1^4\,T_2^7+2\,c_{49}\,T_1^4\,T_2^7+2\,c_{64}\,T_1^4\,T_2^7-2\,a_4\,b_3\,T_1^5\,T_2^7+4\,a_4\,b_5\,T_1^5\,T_2^7+4\,c_{19}\,T_1^5\,T_2^7+4\,c_{34}\,T_1^5\,T_2^7+4\,c_{49}\,T_1^5\,T_2^7+4\,c_{64}\,T_1^5\,T_2^7-a_4\,b_3\,T_1^6\,T_2^7-a_2\,b_5\,T_1^6\,T_2^7+8\,a_4\,b_5\,T_1^6\,T_2^7-6\,c_{19}\,T_1^6\,T_2^7-6\,c_{34}\,T_1^6\,T_2^7-6\,c_{49}\,T_1^6\,T_2^7-6\,c_{64}\,T_1^6\,T_2^7+2\,a_4\,b_3\,T_1^7\,T_2^7-2\,a_4\,b_5\,T_1^7\,T_2^7+a_4\,b_5\,T_1^4\,T_2^8-a_4\,b_5\,T_1^5\,T_2^8-2\,c_{19}\,T_1^5\,T_2^8-2\,c_{34}\,T_1^5\,T_2^8-2\,c_{49}\,T_1^5\,T_2^8-2\,c_{64}\,T_1^5\,T_2^8-2\,a_4\,b_5\,T_1^6\,T_2^8+2\,c_{19}\,T_1^6\,T_2^8+2\,c_{34}\,T_1^6\,T_2^8+2\,c_{49}\,T_1^6\,T_2^8+2\,c_{64}\,T_1^6\,T_2^8\Big)\Big]\Big]$$

In[•]:=
```
CKT = Factor[ (-1 + T1) (-1 + T2) (-1 + T1 T2)
  (Cases[{Conway, KT}, ϵSeries[0, ℰ_] :> ℰ, ∞] /. c16|19|31|34|46|49|61|64|81|82|84|85 → 0)
  / ((-b3 + b5 + b3 T1 - b5 T2) (-a2 + a2 T1 - a4 T1 - a4 T2 + 2 a4 T1 T2)) ]
```

Out[•]=

$$\left\{-\frac{1}{T_1^7\,T_2^6}\left(T_1^2-2\,T_1^3+T_1^4-2\,T_1\,T_2+2\,T_1^2\,T_2+2\,T_1^5\,T_2-2\,T_1^6\,T_2+T_2^2+2\,T_1\,T_2^2-2\,T_1^2\,T_2^2-2\,T_1^4\,T_2^2-2\,T_1^6\,T_2^2+2\,T_1^7\,T_2^2+T_1^8\,T_2^2-2\,T_2^3+T_1^4\,T_2^3+T_1^5\,T_2^3-2\,T_1^9\,T_2^3+T_2^4-2\,T_1^2\,T_2^4+T_1^3\,T_2^4+2\,T_1^4\,T_2^4+2\,T_1^6\,T_2^4+T_1^7\,T_2^4-2\,T_1^8\,T_2^4+T_1^{10}\,T_2^4+2\,T_1\,T_2^5+T_1^3\,T_2^5-4\,T_1^5\,T_2^5-4\,T_1^6\,T_2^5+T_1^8\,T_2^5+2\,T_1^{10}\,T_2^5-2\,T_1\,T_2^6-2\,T_1^2\,T_2^6+2\,T_1^4\,T_2^6-4\,T_1^5\,T_2^6+12\,T_1^6\,T_2^6-4\,T_1^7\,T_2^6+2\,T_1^8\,T_2^6-2\,T_1^{10}\,T_2^6-2\,T_1^{11}\,T_2^6+2\,T_1^2\,T_2^7+T_1^4\,T_2^7-4\,T_1^6\,T_2^7-4\,T_1^7\,T_2^7+T_1^9\,T_2^7+2\,T_1^{11}\,T_2^7+T_1^2\,T_2^8-2\,T_1^4\,T_2^8+T_1^5\,T_2^8+2\,T_1^6\,T_2^8+2\,T_1^8\,T_2^8+T_1^9\,T_2^8-2\,T_1^{10}\,T_2^8+T_1^{12}\,T_2^8-2\,T_1^3\,T_2^9+T_1^7\,T_2^9+T_1^8\,T_2^9-2\,T_1^{12}\,T_2^9+T_1^4\,T_2^{10}+2\,T_1^5\,T_2^{10}-2\,T_1^6\,T_2^{10}-2\,T_1^8\,T_2^{10}-2\,T_1^{10}\,T_2^{10}+2\,T_1^{11}\,T_2^{10}+T_1^{12}\,T_2^{10}-2\,T_1^6\,T_2^{11}+2\,T_1^7\,T_2^{11}+2\,T_1^{10}\,T_2^{11}-2\,T_1^{11}\,T_2^{11}+T_1^8\,T_2^{12}-2\,T_1^9\,T_2^{12}+T_1^{10}\,T_2^{12}\right),$$

$$\frac{1}{T_1^4\,T_2^3}\left(T_1+T_1^2+T_2-2\,T_1\,T_2-2\,T_1^2\,T_2-2\,T_1^3\,T_2+T_1^4\,T_2+T_2^2-2\,T_1\,T_2^2+2\,T_1^2\,T_2^2+2\,T_1^3\,T_2^2-2\,T_1^4\,T_2^2+T_1^5\,T_2^2-2\,T_1\,T_2^3+2\,T_1^2\,T_2^3+2\,T_1^4\,T_2^3-2\,T_1^5\,T_2^3+T_1\,T_2^4-2\,T_1^2\,T_2^4+2\,T_1^3\,T_2^4+2\,T_1^4\,T_2^4-2\,T_1^5\,T_2^4+T_1^6\,T_2^4+T_1^2\,T_2^5-2\,T_1^3\,T_2^5-2\,T_1^4\,T_2^5-2\,T_1^5\,T_2^5+T_1^6\,T_2^5+T_1^4\,T_2^6+T_1^5\,T_2^6\right)\Big\}$$

In[•]:=
```
Factor[(-1 + T1 T2) (Cases[{Conway, KT}, ϵSeries[0, ℰ_] :> ℰ, ∞] /.
  {c16|19|31|34|46|49|61|64|81|82|84|85 → 0, a2 → 1, a4 → 0, b3 → 0, b5 → 1})]
```

Out[•]=

$$\left\{\frac{1}{T_1^7\,T_2^6}\left(T_1^2-2\,T_1^3+T_1^4-2\,T_1\,T_2+2\,T_1^2\,T_2+2\,T_1^5\,T_2-2\,T_1^6\,T_2+T_2^2+2\,T_1\,T_2^2-2\,T_1^2\,T_2^2-2\,T_1^4\,T_2^2-2\,T_1^6\,T_2^2+2\,T_1^7\,T_2^2+T_1^8\,T_2^2-2\,T_2^3+T_1^4\,T_2^3+T_1^5\,T_2^3-2\,T_1^9\,T_2^3+T_2^4-2\,T_1^2\,T_2^4+T_1^3\,T_2^4+2\,T_1^4\,T_2^4+2\,T_1^6\,T_2^4+T_1^7\,T_2^4-2\,T_1^8\,T_2^4+T_1^{10}\,T_2^4+2\,T_1\,T_2^5+T_1^3\,T_2^5-4\,T_1^5\,T_2^5-4\,T_1^6\,T_2^5+T_1^8\,T_2^5+2\,T_1^{10}\,T_2^5-2\,T_1\,T_2^6-2\,T_1^2\,T_2^6+2\,T_1^4\,T_2^6-4\,T_1^5\,T_2^6+12\,T_1^6\,T_2^6-4\,T_1^7\,T_2^6+2\,T_1^8\,T_2^6-2\,T_1^{10}\,T_2^6-2\,T_1^{11}\,T_2^6+2\,T_1^2\,T_2^7+T_1^4\,T_2^7-4\,T_1^6\,T_2^7-4\,T_1^7\,T_2^7+T_1^9\,T_2^7+2\,T_1^{11}\,T_2^7+T_1^2\,T_2^8-2\,T_1^4\,T_2^8+T_1^5\,T_2^8+2\,T_1^6\,T_2^8+2\,T_1^8\,T_2^8+T_1^9\,T_2^8-2\,T_1^{10}\,T_2^8+T_1^{12}\,T_2^8-2\,T_1^3\,T_2^9+T_1^7\,T_2^9+T_1^8\,T_2^9-2\,T_1^{12}\,T_2^9+T_1^4\,T_2^{10}+2\,T_1^5\,T_2^{10}-2\,T_1^6\,T_2^{10}-2\,T_1^8\,T_2^{10}-2\,T_1^{10}\,T_2^{10}+2\,T_1^{11}\,T_2^{10}+T_1^{12}\,T_2^{10}-2\,T_1^6\,T_2^{11}+2\,T_1^7\,T_2^{11}+2\,T_1^{10}\,T_2^{11}-2\,T_1^{11}\,T_2^{11}+T_1^8\,T_2^{12}-2\,T_1^9\,T_2^{12}+T_1^{10}\,T_2^{12}\right),$$

$$-\frac{1}{T_1^4\,T_2^3}\left(T_1+T_1^2+T_2-2\,T_1\,T_2-2\,T_1^2\,T_2-2\,T_1^3\,T_2+T_1^4\,T_2+T_2^2-2\,T_1\,T_2^2+2\,T_1^2\,T_2^2+2\,T_1^3\,T_2^2-2\,T_1^4\,T_2^2+T_1^5\,T_2^2-2\,T_1\,T_2^3+2\,T_1^2\,T_2^3+2\,T_1^4\,T_2^3-2\,T_1^5\,T_2^3+T_1\,T_2^4-2\,T_1^2\,T_2^4+2\,T_1^3\,T_2^4+2\,T_1^4\,T_2^4-2\,T_1^5\,T_2^4+T_1^6\,T_2^4+T_1^2\,T_2^5-2\,T_1^3\,T_2^5-2\,T_1^4\,T_2^5-2\,T_1^5\,T_2^5+T_1^6\,T_2^5+T_1^4\,T_2^6+T_1^5\,T_2^6\right)\Big\}$$

In[•]:=
```
Factor[CKT /. T1 → 1]
```

Out[•]=

$$\left\{\frac{2\,(-1+T_2)^2\,\left(1+T_2^4\right)}{T_2^3},\ \frac{2\,(-1+T_2)^2\,\left(1+T_2^4\right)}{T_2^3}\right\}$$

In[•]:=
```
Factor[CKT /. T2 → 1]
```

Out[•]=

$$\left\{\frac{2\,(-1+T_1)^2\,\left(1+T_1^4\right)}{T_1^4},\ \frac{2\,(-1+T_1)^2\,\left(1+T_1^4\right)}{T_1^4}\right\}$$

```
In[•]:= Factor[ (CKT /. {T1 → T2, T2 → T1}) / CKT ]
```

Out[•]=

$$\left\{\frac{T_1}{T_2}, \frac{T_1}{T_2}\right\}$$

Tweaking γ_{42}

```
In[•]:= CF[γ42[1, k]]
```

Out[•]=

$$(c_{16}+c_{31}+c_{46}+c_{61})\,p_{1,k}\,x_{1,k}+(c_{19}+c_{34}+c_{49}+c_{64})\,p_{2,k}\,x_{2,k}+\frac{(-b_3+b_5+b_3\,T_1-b_5\,T_2)\,(-a_2+a_2\,T_1-a_4\,T_1-a_4\,T_2+2\,a_4\,T_1\,T_2)\,p_{3,k}\,x_{3,k}}{(-1+T_1)\,T_1\,(-1+T_2)\,(-1+T_1\,T_2)}$$

```
In[•]:= ℒ[Ck[1]] /. {c_ → 0, a2 → 1, a4 → 0, b3 → 0, b5 → 1}
```

Out[•]=

$$T_1\,T_2\,\mathbb{E}\left[\epsilon\text{Series}\left[(-p_{1,k}+p_{1,1+k})\,x_{1,k}+(-p_{2,k}+p_{2,1+k})\,x_{2,k}+(-p_{3,k}+p_{3,1+k})\,x_{3,k},\ \frac{(1-T_2)\,p_{3,k}\,x_{3,k}}{T_1\,(-1+T_2)\,(-1+T_1\,T_2)}\right]\right]$$

```
In[•]:= CF[γ42[-1, k]]
```

Out[•]=

$$(-c_{16}-c_{31}-c_{46}-c_{61})\,p_{1,k}\,x_{1,k}+(-c_{19}-c_{34}-c_{49}-c_{64})\,p_{2,k}\,x_{2,k}-\frac{(-b_3+b_5+b_3\,T_1-b_5\,T_2)\,(-a_2+a_2\,T_1-a_4\,T_1-a_4\,T_2+2\,a_4\,T_1\,T_2)\,p_{3,k}\,x_{3,k}}{(-1+T_1)\,T_1\,(-1+T_2)\,(-1+T_1\,T_2)}$$

```
In[•]:= ℒ[Ck[-1]] /. {c_ → 0, a2 → 1, a4 → 0, b3 → 0, b5 → 1}
```

Out[•]=

$$\frac{\mathbb{E}\left[\epsilon\text{Series}\left[(-p_{1,k}+p_{1,1+k})\,x_{1,k}+(-p_{2,k}+p_{2,1+k})\,x_{2,k}+(-p_{3,k}+p_{3,1+k})\,x_{3,k},\ -\frac{(1-T_2)\,p_{3,k}\,x_{3,k}}{T_1\,(-1+T_2)\,(-1+T_1\,T_2)}\right]\right]}{T_1\,T_2}$$

```
In[•]:= γ42[φ_, k_] := Evaluate[CF[φ γ42[1, k]]];
        γ42[φ, k]
```

Out[•]=

$$\varphi\,(c_{16}+c_{31}+c_{46}+c_{61})\,p_{1,k}\,x_{1,k}+\varphi\,(c_{19}+c_{34}+c_{49}+c_{64})\,p_{2,k}\,x_{2,k}+\frac{\varphi\,(-b_3+b_5+b_3\,T_1-b_5\,T_2)\,(-a_2+a_2\,T_1-a_4\,T_1-a_4\,T_2+2\,a_4\,T_1\,T_2)\,p_{3,k}\,x_{3,k}}{(-1+T_1)\,T_1\,(-1+T_2)\,(-1+T_1\,T_2)}$$

In[•]:=
```
(∫ℱ[k] × ℒ /@ (C_k[φ1] C_{k+1}[φ2]) 𝕕{vs_k, vs_{k'}}) /. γ_{0|1}[__] → 0
```

Out[•]=

$$T_1^{\varphi 1+\varphi 2}\, T_2^{\varphi 1+\varphi 2}$$

$$\mathbb{E}\left[\in \text{Series}\left[p_{1,2+k}\,\pi_{1,k}+p_{2,2+k}\,\pi_{2,k}+p_{3,2+k}\,\pi_{3,k},\ \frac{1}{(-1+T_1)\,T_1\,(-1+T_2)\,(-1+T_1\,T_2)}\,\left(\varphi 1\,a_2\,b_3+\right.\right.\right.$$
$$\varphi 2\,a_2\,b_3-\varphi 1\,a_2\,b_5-\varphi 2\,a_2\,b_5-2\,\varphi 1\,a_2\,b_3\,T_1-2\,\varphi 2\,a_2\,b_3\,T_1+\varphi 1\,a_4\,b_3\,T_1+\varphi 2\,a_4\,b_3\,T_1+\varphi 1\,a_2\,b_5\,T_1+$$
$$\varphi 2\,a_2\,b_5\,T_1-\varphi 1\,a_4\,b_5\,T_1-\varphi 2\,a_4\,b_5\,T_1-\varphi 1\,c_{16}\,T_1-\varphi 2\,c_{16}\,T_1-\varphi 1\,c_{19}\,T_1-\varphi 2\,c_{19}\,T_1-\varphi 1\,c_{31}\,T_1-$$
$$\varphi 2\,c_{31}\,T_1-\varphi 1\,c_{34}\,T_1-\varphi 2\,c_{34}\,T_1-\varphi 1\,c_{46}\,T_1-\varphi 2\,c_{46}\,T_1-\varphi 1\,c_{49}\,T_1-\varphi 2\,c_{49}\,T_1-\varphi 1\,c_{61}\,T_1-$$
$$\varphi 2\,c_{61}\,T_1-\varphi 1\,c_{64}\,T_1-\varphi 2\,c_{64}\,T_1+\varphi 1\,a_2\,b_3\,T_1^2+\varphi 2\,a_2\,b_3\,T_1^2-\varphi 1\,a_4\,b_3\,T_1^2-\varphi 2\,a_4\,b_3\,T_1^2+\varphi 1\,c_{16}\,T_1^2+$$
$$\varphi 2\,c_{16}\,T_1^2+\varphi 1\,c_{19}\,T_1^2+\varphi 2\,c_{19}\,T_1^2+\varphi 1\,c_{31}\,T_1^2+\varphi 2\,c_{31}\,T_1^2+\varphi 1\,c_{34}\,T_1^2+\varphi 2\,c_{34}\,T_1^2+\varphi 1\,c_{46}\,T_1^2+$$
$$\varphi 2\,c_{46}\,T_1^2+\varphi 1\,c_{49}\,T_1^2+\varphi 2\,c_{49}\,T_1^2+\varphi 1\,c_{61}\,T_1^2+\varphi 2\,c_{61}\,T_1^2+\varphi 1\,c_{64}\,T_1^2+\varphi 2\,c_{64}\,T_1^2+\varphi 1\,a_4\,b_3\,T_2+$$
$$\varphi 2\,a_4\,b_3\,T_2+\varphi 1\,a_2\,b_5\,T_2+\varphi 2\,a_2\,b_5\,T_2-\varphi 1\,a_4\,b_5\,T_2-\varphi 2\,a_4\,b_5\,T_2-3\,\varphi 1\,a_4\,b_3\,T_1\,T_2-3\,\varphi 2\,a_4\,b_3\,T_1\,T_2-$$
$$\varphi 1\,a_2\,b_5\,T_1\,T_2-\varphi 2\,a_2\,b_5\,T_1\,T_2+3\,\varphi 1\,a_4\,b_5\,T_1\,T_2+3\,\varphi 2\,a_4\,b_5\,T_1\,T_2+\varphi 1\,c_{16}\,T_1\,T_2+\varphi 2\,c_{16}\,T_1\,T_2+$$
$$\varphi 1\,c_{19}\,T_1\,T_2+\varphi 2\,c_{19}\,T_1\,T_2+\varphi 1\,c_{31}\,T_1\,T_2+\varphi 2\,c_{31}\,T_1\,T_2+\varphi 1\,c_{34}\,T_1\,T_2+\varphi 2\,c_{34}\,T_1\,T_2+\varphi 1\,c_{46}\,T_1\,T_2+$$
$$\varphi 2\,c_{46}\,T_1\,T_2+\varphi 1\,c_{49}\,T_1\,T_2+\varphi 2\,c_{49}\,T_1\,T_2+\varphi 1\,c_{61}\,T_1\,T_2+\varphi 2\,c_{61}\,T_1\,T_2+\varphi 1\,c_{64}\,T_1\,T_2+\varphi 2\,c_{64}\,T_1\,T_2+$$
$$2\,\varphi 1\,a_4\,b_3\,T_1^2\,T_2+2\,\varphi 2\,a_4\,b_3\,T_1^2\,T_2-\varphi 1\,c_{16}\,T_1^3\,T_2-\varphi 2\,c_{16}\,T_1^3\,T_2-\varphi 1\,c_{19}\,T_1^3\,T_2-\varphi 2\,c_{19}\,T_1^3\,T_2-$$
$$\varphi 1\,c_{31}\,T_1^3\,T_2-\varphi 2\,c_{31}\,T_1^3\,T_2-\varphi 1\,c_{34}\,T_1^3\,T_2-\varphi 2\,c_{34}\,T_1^3\,T_2-\varphi 1\,c_{46}\,T_1^3\,T_2-\varphi 2\,c_{46}\,T_1^3\,T_2-\varphi 1\,c_{49}\,T_1^3\,T_2-$$
$$\varphi 2\,c_{49}\,T_1^3\,T_2-\varphi 1\,c_{61}\,T_1^3\,T_2-\varphi 2\,c_{61}\,T_1^3\,T_2-\varphi 1\,c_{64}\,T_1^3\,T_2-\varphi 2\,c_{64}\,T_1^3\,T_2+\varphi 1\,a_4\,b_5\,T_2^2+\varphi 2\,a_4\,b_5\,T_2^2-$$
$$2\,\varphi 1\,a_4\,b_5\,T_1\,T_2^2-2\,\varphi 2\,a_4\,b_5\,T_1\,T_2^2-\varphi 1\,c_{16}\,T_1^2\,T_2^2-\varphi 2\,c_{16}\,T_1^2\,T_2^2-\varphi 1\,c_{19}\,T_1^2\,T_2^2-\varphi 2\,c_{19}\,T_1^2\,T_2^2-$$
$$\varphi 1\,c_{31}\,T_1^2\,T_2^2-\varphi 2\,c_{31}\,T_1^2\,T_2^2-\varphi 1\,c_{34}\,T_1^2\,T_2^2-\varphi 2\,c_{34}\,T_1^2\,T_2^2-\varphi 1\,c_{46}\,T_1^2\,T_2^2-\varphi 2\,c_{46}\,T_1^2\,T_2^2-\varphi 1\,c_{49}\,T_1^2\,T_2^2-$$
$$\varphi 2\,c_{49}\,T_1^2\,T_2^2-\varphi 1\,c_{61}\,T_1^2\,T_2^2-\varphi 2\,c_{61}\,T_1^2\,T_2^2-\varphi 1\,c_{64}\,T_1^2\,T_2^2-\varphi 2\,c_{64}\,T_1^2\,T_2^2+\varphi 1\,c_{16}\,T_1^3\,T_2^2+\varphi 2\,c_{16}\,T_1^3\,T_2^2+$$
$$\varphi 1\,c_{19}\,T_1^3\,T_2^2+\varphi 2\,c_{19}\,T_1^3\,T_2^2+\varphi 1\,c_{31}\,T_1^3\,T_2^2+\varphi 2\,c_{31}\,T_1^3\,T_2^2+\varphi 1\,c_{34}\,T_1^3\,T_2^2+\varphi 2\,c_{34}\,T_1^3\,T_2^2+\varphi 1\,c_{46}\,T_1^3\,T_2^2+$$
$$\left.\left.\left.\varphi 2\,c_{46}\,T_1^3\,T_2^2+\varphi 1\,c_{49}\,T_1^3\,T_2^2+\varphi 2\,c_{49}\,T_1^3\,T_2^2+\varphi 1\,c_{61}\,T_1^3\,T_2^2+\varphi 2\,c_{61}\,T_1^3\,T_2^2+\varphi 1\,c_{64}\,T_1^3\,T_2^2+\varphi 2\,c_{64}\,T_1^3\,T_2^2\right)+\right.\right.\right.$$
$$(\varphi 1+\varphi 2)\,(c_{16}+c_{31}+c_{46}+c_{61})\,p_{1,2+k}\,\pi_{1,k}+(\varphi 1+\varphi 2)\,(c_{19}+c_{34}+c_{49}+c_{64})\,p_{2,2+k}\,\pi_{2,k}+$$
$$\left.\left.\left.\frac{(\varphi 1+\varphi 2)\,(-b_3+b_5+b_3\,T_1-b_5\,T_2)\,(-a_2+a_2\,T_1-a_4\,T_1-a_4\,T_2+2\,a_4\,T_1\,T_2)\,p_{3,2+k}\,\pi_{3,k}}{(-1+T_1)\,T_1\,(-1+T_2)\,(-1+T_1\,T_2)}\right]\right]$$

In[•]:=
```
(∫ℱ[k] × ℒ /@ (C_k[φ1] C_{k+1}[φ2]) 𝕕{vs_k, vs_{k'}} ==
  ∫ℱ[k] × ℒ /@ (C_k[φ1 + φ2] C_{k+1}[0]) 𝕕{vs_k, vs_{k'}}) /. γ_{0|1}[__] → 0
```

Out[•]=

True

Saving the Results

In[•]:=
```
data = CF[{
    {r0[1, i, j], r0[-1, i, j]},
    {r1[1, i, j], r1[-1, i, j]},
    {r42[1, i, j], r42[-1, i, j]},
    ϒ42[φ, k]
   } /. {c_ → 0, a2 → 1, a4 → 0, b3 → 0, b5 → 1}
  ]
```

Out[•]=

$$\left\{\left\{p_{3,j}\,x_{1,j}\,x_{2,i}-\frac{p_{3,j}\,x_{1,j}\,x_{2,i}}{T_1},\ -\frac{p_{3,j}\,x_{1,i}\,x_{2,i}}{T_1^2\,T_2}+\frac{p_{3,j}\,x_{1,j}\,x_{2,i}}{T_1\,T_2}\right\},\right.$$

$$\left\{p_{1,j}\,p_{2,i}\,x_{3,i}-p_{1,j}\,p_{2,j}\,x_{3,i},\ -\frac{p_{1,j}\,p_{2,i}\,x_{3,i}}{T_1}+\frac{p_{1,j}\,p_{2,j}\,x_{3,i}}{T_1}\right\},$$

$$\left\{\frac{T_2\,p_{1,j}\,p_{2,j}\,x_{1,i}\,x_{2,i}}{-1+T_1\,T_2}-\frac{p_{1,j}\,p_{2,i}\,x_{1,j}\,x_{2,i}}{(-1+T_1)\,T_1\,(-1+T_1\,T_2)}-\frac{p_{1,j}\,p_{2,j}\,x_{1,j}\,x_{2,i}}{(-1+T_1)\,T_1}+\frac{p_{1,i}\,p_{2,j}\,x_{1,i}\,x_{2,j}}{(-1+T_1)\,(-1+T_1\,T_2)}+\right.$$
$$\frac{p_{3,j}\,x_{3,i}}{T_1\,(-1+T_1\,T_2)}-p_{1,j}\,p_{3,j}\,x_{1,i}\,x_{3,i}+\frac{p_{1,j}\,p_{3,i}\,x_{1,j}\,x_{3,i}}{(-1+T_1)\,T_1\,(-1+T_1\,T_2)}+\frac{p_{1,j}\,p_{3,j}\,x_{1,j}\,x_{3,i}}{-1+T_1}-$$
$$\left.\frac{T_2\,p_{2,j}\,p_{3,j}\,x_{2,i}\,x_{3,i}}{T_1}-\frac{p_{2,j}\,p_{3,i}\,x_{2,j}\,x_{3,i}}{T_1\,(-1+T_1\,T_2)}-\frac{p_{1,i}\,p_{3,j}\,x_{1,i}\,x_{3,j}}{(-1+T_1)\,(-1+T_1\,T_2)}+\frac{T_2\,p_{2,j}\,p_{3,j}\,x_{2,i}\,x_{3,j}}{T_1\,(-1+T_1\,T_2)}\right\},$$

$$\frac{p_{1,j}\,p_{2,i}\,x_{1,i}\,x_{2,i}}{T_1^2\,(-1+T_1\,T_2)}-\frac{(-1+T_2)\,p_{1,i}\,p_{2,j}\,x_{1,i}\,x_{2,i}}{(-1+T_1)\,T_2\,(-1+T_1\,T_2)}+\frac{(-T_1-T_2+T_1\,T_2)\,p_{1,j}\,p_{2,j}\,x_{1,i}\,x_{2,i}}{T_1^2\,T_2\,(-1+T_1\,T_2)}+$$
$$\frac{p_{1,j}\,p_{2,i}\,x_{1,j}\,x_{2,i}}{(-1+T_1)\,T_1\,(-1+T_1\,T_2)}+\frac{p_{1,j}\,p_{2,j}\,x_{1,j}\,x_{2,i}}{T_1\,(-1+T_1\,T_2)}-\frac{p_{1,i}\,p_{2,j}\,x_{1,i}\,x_{2,j}}{(-1+T_1)\,(-1+T_1\,T_2)}+$$
$$\frac{p_{1,j}\,p_{2,j}\,x_{1,i}\,x_{2,j}}{T_1\,(-1+T_1\,T_2)}-\frac{p_{3,j}\,x_{3,i}}{T_1\,(-1+T_1\,T_2)}-\frac{p_{1,j}\,p_{3,i}\,x_{1,i}\,x_{3,i}}{T_1^2\,(-1+T_1\,T_2)}+\frac{p_{1,i}\,p_{3,j}\,x_{1,i}\,x_{3,i}}{(-1+T_1)\,T_1\,T_2}-$$
$$\frac{p_{1,j}\,p_{3,j}\,x_{1,i}\,x_{3,i}}{T_1^2\,T_2}-\frac{p_{1,j}\,p_{3,i}\,x_{1,j}\,x_{3,i}}{(-1+T_1)\,T_1\,(-1+T_1\,T_2)}+\frac{(-1+T_2)\,p_{2,j}\,p_{3,i}\,x_{2,i}\,x_{3,i}}{T_1\,T_2\,(-1+T_1\,T_2)}+$$
$$\frac{p_{2,i}\,p_{3,j}\,x_{2,i}\,x_{3,i}}{T_1^2\,T_2}-\frac{(-1+2\,T_2)\,p_{2,j}\,p_{3,j}\,x_{2,i}\,x_{3,i}}{T_1^2\,T_2^2}+\frac{p_{2,j}\,p_{3,i}\,x_{2,j}\,x_{3,i}}{T_1\,(-1+T_1\,T_2)}-\frac{p_{2,j}\,p_{3,j}\,x_{2,j}\,x_{3,i}}{T_1^2\,T_2}+$$
$$\left.\frac{p_{1,i}\,p_{3,j}\,x_{1,i}\,x_{3,j}}{(-1+T_1)\,(-1+T_1\,T_2)}-\frac{p_{1,j}\,p_{3,j}\,x_{1,i}\,x_{3,j}}{T_1\,(-1+T_1\,T_2)}-\frac{p_{2,j}\,p_{3,j}\,x_{2,i}\,x_{3,j}}{T_1\,(-1+T_1\,T_2)}\right\},\ -\left.\frac{\varphi\,p_{3,k}\,x_{3,k}}{T_1\,(-1+T_1\,T_2)}\right\}$$

```
If[False, Put[data, "px-data.m"]]
```