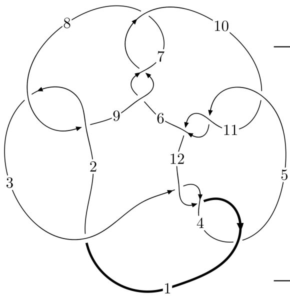
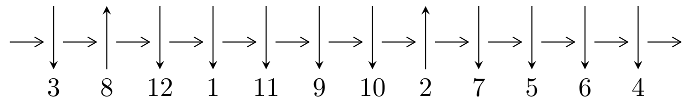
$12a_{0801}$ ($K12a_{0801}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

$$2,8 \xrightarrow[c_2]{} 3 \xrightarrow[c_8]{} 5,9,10 \xrightarrow[c_{10}]{} 11 \xrightarrow[c_1]{} 1 \xrightarrow[c_4]{} 4 \xrightarrow[c_7]{} 7 \xrightarrow[c_6]{} 6 \xrightarrow[c_{12}]{} 12 \twoheadrightarrow c_3, c_5, c_9, c_{11}$$

Ideals for irreducible components[2] of $X_{\mathbf{par}}$

[1] The image of knot diagram is generated by the software "**Draw programme**" developed by Andrew Bartholomew(`http://www.layer8.co.uk/maths/draw/index.htm#Running-draw`), where we modified some parts for our purpose(`https://github.com/CATsTAILs/LinksPainter`).

$$
\begin{aligned}
I_1^u = \langle & -23u^{10} + 17u^9 + u^8 + 31u^7 - 65u^6 - 55u^5 + 74u^4 - 34u^3 + 84u^2 + 356d - 316u + 56, \\
& - 25u^{10} + 3u^9 - 26u^8 - 5u^7 - 90u^6 - 83u^5 - 55u^4 - 6u^3 - 48u^2 + 356c - 328u - 32, \\
& - 21u^{10} + 31u^9 - 61u^8 + 67u^7 + 49u^6 - 27u^5 + 114u^4 - 240u^3 + 216u^2 + 356b - 304u + 144, \\
& 4u^{10} + 28u^9 - 35u^8 + 72u^7 - 39u^6 + 56u^5 - 9u^4 - 234u^3 + 86u^2 + 356a + 24u + 176, \\
& u^{11} - u^{10} + 2u^9 - u^8 + 2u^7 + 3u^6 - 3u^5 + 4u^4 + 12u^2 - 4u + 4\rangle \\
I_2^u = \langle & -u^{16} - 2u^{14} - 3u^{12} - 2u^{10} - u^8 + 2u^7 - 3u^6 + 2u^5 - 2u^3 + 2u^2 + 4d - 4u, \\
& - u^{16} - 3u^{14} - 6u^{12} - 7u^{10} - 6u^8 + 2u^7 - 6u^6 + 4u^5 - 4u^4 + 4u^3 - u^2 + 4c - 2u + 2, \\
& u^{16} + 2u^{14} + 5u^{12} + 6u^{10} + 7u^8 - 2u^7 + 7u^6 - 2u^5 + 2u^4 - 6u^3 + 4u^2 + 4b - 4u, \\
& - 4u^{16} + 6u^{15} + \cdots + 4a + 6,\ u^{17} - 2u^{16} + \cdots - 2u + 2\rangle \\
I_3^u = \langle & -u^{16} - 2u^{14} - 3u^{12} - 2u^{10} - u^8 + 2u^7 - 3u^6 + 2u^5 - 2u^3 + 2u^2 + 4d - 4u, \\
& - u^{16} - 3u^{14} - 6u^{12} - 7u^{10} - 6u^8 + 2u^7 - 6u^6 + 4u^5 - 4u^4 + 4u^3 - u^2 + 4c - 2u + 2, \\
& u^{16} - 4u^{15} + \cdots + 4b - 4,\ 2u^{16} - 4u^{15} + \cdots + 4a - 2,\ u^{17} - 2u^{16} + \cdots - 2u + 2\rangle \\
I_4^u = \langle & 2u^{16} - 4u^{15} + \cdots + 4d - 8,\ u^{11} + 2u^9 + 3u^7 - u^6 + 2u^5 - u^4 + u^3 - 3u^2 + 2c + 4u - 2, \\
& u^{16} - 4u^{15} + \cdots + 4b - 4,\ 2u^{16} - 4u^{15} + \cdots + 4a - 2,\ u^{17} - 2u^{16} + \cdots - 2u + 2\rangle \\
I_5^u = \langle & -a^2c - cau - ca + d - c + a + u + 1,\ a^2cu + a^2c + cau + c^2 - au - a - u,\ a^2u + a^2 + au + b - a, \\
& a^3 + 2a^2u + 2a^2 + au - u,\ u^2 + u + 1\rangle
\end{aligned}
$$

$$
\begin{aligned}
I_1^v &= \langle a,\ d,\ c + 1,\ b - 1,\ v + 1\rangle \\
I_2^v &= \langle c,\ d + 1,\ b,\ a - 1,\ v + 1\rangle \\
I_3^v &= \langle a,\ d + 1,\ c + a,\ b - 1,\ v + 1\rangle \\
I_4^v &= \langle a,\ da + c + 1,\ dv - 1,\ cv + a + v,\ b + 1\rangle
\end{aligned}
$$

* 8 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 77 representations.
* 1 irreducible components of $\dim_{\mathbb{C}} = 1$

---

[2] All coefficients of polynomials are rational numbers. But the coefficients are sometimes approximated in decimal forms when there is not enough margin.

I.

$\boldsymbol{I_1^u = \langle -23u^{10}+17u^9+\cdots+356d+56,\ -25u^{10}+3u^9+\cdots+356c-32,\ -21u^{10}+31u^9+\cdots+356b+144,\ 4u^{10}+28u^9+\cdots+356a+176,\ u^{11}-u^{10}+\cdots-4u+4\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -0.0112360u^{10} - 0.0786517u^9 + \cdots - 0.0674157u - 0.494382 \\ 0.0589888u^{10} - 0.0870787u^9 + \cdots + 0.853933u - 0.404494 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0.0702247u^{10} - 0.00842697u^9 + \cdots + 0.921348u + 0.0898876 \\ 0.0646067u^{10} - 0.0477528u^9 + \cdots + 0.887640u - 0.157303 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0.140449u^{10} - 0.0168539u^9 + \cdots + 0.842697u + 0.179775 \\ 0.134831u^{10} - 0.0561798u^9 + \cdots + 0.808989u - 0.0674157 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^2+1 \\ -u^4 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0.00561798u^{10} + 0.0393258u^9 + \cdots + 0.0337079u - 0.752809 \\ -0.0646067u^{10} + 0.0477528u^9 + \cdots + 0.112360u + 0.157303 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -0.00561798u^{10} - 0.0393258u^9 + \cdots - 0.0337079u - 0.247191 \\ 0.0646067u^{10} - 0.0477528u^9 + \cdots + 0.887640u - 0.157303 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -0.0112360u^{10} - 0.0786517u^9 + \cdots - 0.0674157u - 0.494382 \\ 0.0589888u^{10} - 0.0870787u^9 + \cdots + 0.853933u - 0.404494 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 0.101124u^{10} - 0.0421348u^9 + \cdots + 0.606742u + 0.449438 \\ 0.0898876u^{10} - 0.120787u^9 + \cdots + 0.539326u - 0.0449438 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= -\frac{113}{89}u^{10} + \frac{99}{89}u^9 - \frac{146}{89}u^8 + \frac{13}{89}u^7 - \frac{122}{89}u^6 - \frac{247}{89}u^5 + \frac{321}{89}u^4 - \frac{20}{89}u^3 - \frac{338}{89}u^2 - \frac{1212}{89}u - \frac{522}{89}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{11} + 3u^{10} + \cdots - 80u - 16$
c_2, c_8	$u^{11} - u^{10} + 2u^9 - u^8 + 2u^7 + 3u^6 - 3u^5 + 4u^4 + 12u^2 - 4u + 4$
c_3, c_4, c_5 c_6, c_7, c_9 c_{10}, c_{11}, c_{12}	$u^{11} - u^{10} - 6u^9 + 5u^8 + 13u^7 - 7u^6 - 10u^5 - 2u^4 - 2u^3 + 8u^2 + 4u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{11} + 3y^{10} + \cdots + 768y - 256$
c_2, c_8	$y^{11} + 3y^{10} + \cdots - 80y - 16$
c_3, c_4, c_5 c_6, c_7, c_9 c_{10}, c_{11}, c_{12}	$y^{11} - 13y^{10} + \cdots - 76y^2 - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.697658+0.849048I$ $a=\ \ 0.921136+0.783422I$ $b=\ \ 0.740581+0.864357I$ $c=-0.485430+0.499909I$ $d=-0.063398+0.826398I$	$3.70211-2.67058I$	$-3.05924+3.87935I$
$u=-0.697658-0.849048I$ $a=\ \ 0.921136-0.783422I$ $b=\ \ 0.740581-0.864357I$ $c=-0.485430-0.499909I$ $d=-0.063398-0.826398I$	$3.70211+2.67058I$	$-3.05924-3.87935I$
$u=-1.27716$ $a=\ \ 1.30381$ $b=-1.87182$ $c=\ \ 1.14011$ $d=-0.519995$	-13.3802	-18.2600
$u=\ \ 1.147220+0.649373I$ $a=-0.08285+1.84843I$ $b=\ \ 1.76297-0.05107I$ $c=-1.037550+0.312280I$ $d=\ \ 0.506365+0.204596I$	$-9.05799-8.57514I$	$-15.6343+5.1528I$
$u=\ \ 1.147220-0.649373I$ $a=-0.08285-1.84843I$ $b=\ \ 1.76297+0.05107I$ $c=-1.037550-0.312280I$ $d=\ \ 0.506365-0.204596I$	$-9.05799+8.57514I$	$-15.6343-5.1528I$
$u=\ \ 0.188962+0.548520I$ $a=-0.556629-0.158029I$ $b=-0.197361+0.297672I$ $c=\ \ 0.248124+0.521791I$ $d=\ \ 0.066277+0.455147I$	$-0.301659+0.791298I$	$-7.48686-8.65650I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.188962 - 0.548520I$ $a = -0.556629 + 0.158029I$ $b = -0.197361 - 0.297672I$ $c = 0.248124 - 0.521791I$ $d = 0.066277 - 0.455147I$	$-0.301659 - 0.791298I$	$-7.48686 + 8.65650I$
$u = 0.80937 + 1.18781I$ $a = -1.69324 - 0.30290I$ $b = -3.40094 + 1.12656I$ $c = 0.326968 - 0.969070I$ $d = 0.40614 - 2.47046I$	$-10.8529 + 15.6015I$	$-15.8571 - 8.6135I$
$u = 0.80937 - 1.18781I$ $a = -1.69324 + 0.30290I$ $b = -3.40094 - 1.12656I$ $c = 0.326968 + 0.969070I$ $d = 0.40614 + 2.47046I$	$-10.8529 - 15.6015I$	$-15.8571 + 8.6135I$
$u = -0.30932 + 1.43197I$ $a = 0.759680 + 0.558726I$ $b = 1.53066 + 2.95790I$ $c = -0.122169 - 1.042440I$ $d = -0.15539 - 2.65594I$	$-18.7453 - 5.8080I$	$-19.8325 + 3.5503I$
$u = -0.30932 - 1.43197I$ $a = 0.759680 - 0.558726I$ $b = 1.53066 - 2.95790I$ $c = -0.122169 + 1.042440I$ $d = -0.15539 + 2.65594I$	$-18.7453 + 5.8080I$	$-19.8325 - 3.5503I$

II. $\boldsymbol{I^u_2 = \langle -u^{16} - 2u^{14} + \cdots + 4d - 4u,\ -u^{16} - 3u^{14} + \cdots + 4c + 2,\ u^{16} + 2u^{14} + \cdots + 4b - 4u,\ -4u^{16} + 6u^{15} + \cdots + 4a + 6,\ u^{17} - 2u^{16} + \cdots - 2u + 2\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} u^{16} - \frac{3}{2}u^{15} + \cdots + 2u - \frac{3}{2} \\ -\frac{1}{4}u^{16} - \frac{1}{2}u^{14} + \cdots - u^2 + u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} \frac{1}{4}u^{16} + \frac{3}{4}u^{14} + \cdots + \frac{1}{2}u - \frac{1}{2} \\ \frac{1}{4}u^{16} + \frac{1}{2}u^{14} + \cdots - \frac{1}{2}u^2 + u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u^{16} + \frac{3}{2}u^{15} + \cdots - \frac{3}{2}u + 1 \\ \frac{1}{2}u^{14} + u^{12} + \cdots - u^3 - 1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^2 + 1 \\ -u^4 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} u^{16} - \frac{3}{2}u^{15} + \cdots + 3u - \frac{3}{2} \\ \frac{1}{4}u^{16} + \frac{1}{2}u^{14} + \cdots - u^2 + u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -\frac{1}{4}u^{14} - \frac{3}{4}u^{12} + \cdots + \frac{1}{2}u + \frac{1}{2} \\ \frac{1}{4}u^{16} + \frac{1}{2}u^{14} + \cdots - \frac{1}{2}u^2 + u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} \frac{1}{2}u^{16} - u^{15} + \cdots + u - \frac{1}{2} \\ \frac{3}{4}u^{16} - u^{15} + \cdots + \frac{3}{2}u - 1 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -u^{16} + \frac{3}{2}u^{15} + \cdots - 2u + \frac{1}{2} \\ \frac{1}{4}u^{14} + \frac{1}{2}u^{12} + \cdots + \frac{3}{4}u^4 - 1 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -2u^{16} + 4u^{15} - 6u^{14} + 8u^{13} - 8u^{12} + 14u^{11} - 10u^{10} + 12u^9 - 4u^8 + 10u^7 - 20u^6 + 26u^5 - 16u^4 - 4u^3 + 10u^2 - 8u - 8$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{17} + 6u^{16} + \cdots + 8u - 4$
c_2, c_8	$u^{17} - 2u^{16} + \cdots - 2u + 2$
c_3, c_4, c_{12}	$u^{17} - 5u^{15} + \cdots - 3u^2 + 4$
c_5, c_6, c_7 c_9, c_{10}, c_{11}	$u^{17} - 2u^{16} + \cdots + 3u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{17} + 6y^{16} + \cdots + 376y - 16$
c_2, c_8	$y^{17} + 6y^{16} + \cdots + 8y - 4$
c_3, c_4, c_{12}	$y^{17} - 10y^{16} + \cdots + 24y - 16$
c_5, c_6, c_7 c_9, c_{10}, c_{11}	$y^{17} - 16y^{16} + \cdots + 19y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.742615 + 0.650908I$		
$a = -0.718435 + 0.821804I$		
$b = -0.566230 + 1.035510I$	$0.369365 - 1.227240I$	$-5.85153 + 0.85505I$
$c = 0.489237 + 0.474516I$		
$d = 0.197556 + 0.828548I$		
$u = 0.742615 - 0.650908I$		
$a = -0.718435 - 0.821804I$		
$b = -0.566230 - 1.035510I$	$0.369365 + 1.227240I$	$-5.85153 - 0.85505I$
$c = 0.489237 - 0.474516I$		
$d = 0.197556 - 0.828548I$		
$u = 0.834865 + 0.265014I$		
$a = -2.92918 + 3.22304I$		
$b = 1.94336 - 0.16531I$	$-5.90943 - 0.43387I$	$-14.5683 - 0.8754I$
$c = -1.39610 + 0.29715I$		
$d = 0.377294 + 0.097590I$		
$u = 0.834865 - 0.265014I$		
$a = -2.92918 - 3.22304I$		
$b = 1.94336 + 0.16531I$	$-5.90943 + 0.43387I$	$-14.5683 + 0.8754I$
$c = -1.39610 - 0.29715I$		
$d = 0.377294 - 0.097590I$		
$u = -0.976738 + 0.562668I$		
$a = 0.35073 + 2.53095I$		
$b = -1.77103 - 0.11938I$	$-3.90030 + 4.64771I$	$-11.56085 - 4.11695I$
$c = 1.124900 + 0.370279I$		
$d = -0.445879 + 0.191459I$		
$u = -0.976738 - 0.562668I$		
$a = 0.35073 - 2.53095I$		
$b = -1.77103 + 0.11938I$	$-3.90030 - 4.64771I$	$-11.56085 + 4.11695I$
$c = 1.124900 - 0.370279I$		
$d = -0.445879 - 0.191459I$		

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.003992 + 0.842342I$ $a = 2.04176 + 0.02534I$ $b = 0.770137 - 0.000913I$ $c = -0.499289 + 0.745483I$ $d = 0.126546 + 0.484371I$	$-4.59969 - 1.46955I$	$-15.6358 + 4.6653I$
$u = 0.003992 - 0.842342I$ $a = 2.04176 - 0.02534I$ $b = 0.770137 + 0.000913I$ $c = -0.499289 - 0.745483I$ $d = 0.126546 - 0.484371I$	$-4.59969 + 1.46955I$	$-15.6358 - 4.6653I$
$u = 0.656745 + 1.004700I$ $a = -1.055980 + 0.795426I$ $b = -0.860931 + 0.769831I$ $c = 0.494032 + 0.511989I$ $d = -0.026089 + 0.826073I$	$-0.71009 + 6.57063I$	$-8.73995 - 6.43452I$
$u = 0.656745 - 1.004700I$ $a = -1.055980 - 0.795426I$ $b = -0.860931 - 0.769831I$ $c = 0.494032 - 0.511989I$ $d = -0.026089 - 0.826073I$	$-0.71009 - 6.57063I$	$-8.73995 + 6.43452I$
$u = 0.110097 + 1.246510I$ $a = -0.44777 + 1.36378I$ $b = -0.91154 + 4.59961I$ $c = 0.059575 - 1.151130I$ $d = 0.08505 - 2.81355I$	$-11.32450 + 2.71165I$	$-17.8424 - 3.1371I$
$u = 0.110097 - 1.246510I$ $a = -0.44777 - 1.36378I$ $b = -0.91154 - 4.59961I$ $c = 0.059575 + 1.151130I$ $d = 0.08505 + 2.81355I$	$-11.32450 - 2.71165I$	$-17.8424 + 3.1371I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.578864 + 1.116300I$ $a = -1.94591 + 0.31220I$ $b = -3.95970 + 2.40372I$ $c = 0.306410 - 1.074930I$ $d = 0.42725 - 2.64129I$	$-8.33968 + 5.51158I$	$-16.2513 - 3.8449I$
$u = 0.578864 - 1.116300I$ $a = -1.94591 - 0.31220I$ $b = -3.95970 - 2.40372I$ $c = 0.306410 + 1.074930I$ $d = 0.42725 + 2.64129I$	$-8.33968 - 5.51158I$	$-16.2513 + 3.8449I$
$u = -0.718492 + 1.129370I$ $a = 1.87724 - 0.11825I$ $b = 3.79947 + 1.50560I$ $c = -0.334233 - 1.013370I$ $d = -0.44170 - 2.53369I$	$-5.69311 - 10.83370I$	$-12.8938 + 7.4126I$
$u = -0.718492 - 1.129370I$ $a = 1.87724 + 0.11825I$ $b = 3.79947 - 1.50560I$ $c = -0.334233 + 1.013370I$ $d = -0.44170 + 2.53369I$	$-5.69311 + 10.83370I$	$-12.8938 - 7.4126I$
$u = -0.463897$ $a = -0.344922$ $b = -0.887074$ $c = -0.489071$ $d = -0.600031$	-2.03175	-3.31210

III. $\boldsymbol{I_3^u = \langle -u^{16} - 2u^{14} + \cdots + 4d - 4u,\ -u^{16} - 3u^{14} + \cdots + 4c + 2,\ u^{16} - 4u^{15} + \cdots + 4b - 4,\ 2u^{16} - 4u^{15} + \cdots + 4a - 2,\ u^{17} - 2u^{16} + \cdots - 2u + 2\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -\frac{1}{2}u^{16} + u^{15} + \cdots - \frac{11}{4}u^2 + \frac{1}{2} \\ -\frac{1}{4}u^{16} + u^{15} + \cdots - \frac{3}{2}u + 1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u \\ u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} \frac{1}{4}u^{16} + \frac{3}{4}u^{14} + \cdots + \frac{1}{2}u - \frac{1}{2} \\ \frac{1}{4}u^{16} + \frac{1}{2}u^{14} + \cdots - \frac{1}{2}u^2 + u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} \frac{1}{2}u^{16} + \frac{3}{2}u^{14} + \cdots + \frac{5}{2}u^2 - \frac{1}{2}u \\ u^{15} - u^{14} + \cdots - 2u^2 + 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^2 + 1 \\ -u^4 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} \frac{1}{4}u^{13} + \frac{1}{2}u^{11} + \cdots - u^2 - 1 \\ \frac{1}{4}u^{13} + \frac{1}{2}u^{11} + \cdots + \frac{1}{2}u^2 - \frac{1}{2}u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -\frac{1}{4}u^{14} - \frac{3}{4}u^{12} + \cdots + \frac{1}{2}u + \frac{1}{2} \\ \frac{1}{4}u^{16} + \frac{1}{2}u^{14} + \cdots - \frac{1}{2}u^2 + u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} \frac{1}{2}u^{16} - u^{15} + \cdots + u - \frac{1}{2} \\ \frac{3}{4}u^{16} - u^{15} + \cdots + \frac{3}{2}u - 1 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} \frac{1}{2}u^{16} - \frac{1}{4}u^{15} + \cdots - \frac{1}{2}u + \frac{1}{2} \\ \frac{3}{4}u^{15} - \frac{3}{4}u^{14} + \cdots - \frac{1}{2}u + 1 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -2u^{16} + 4u^{15} - 6u^{14} + 8u^{13} - 8u^{12} + 14u^{11} - 10u^{10} + 12u^9 - 4u^8 + 10u^7 - 20u^6 + 26u^5 - 16u^4 - 4u^3 + 10u^2 - 8u - 8$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{17} + 6u^{16} + \cdots + 8u - 4$
c_2, c_8	$u^{17} - 2u^{16} + \cdots - 2u + 2$
c_3, c_4, c_6 c_7, c_9, c_{12}	$u^{17} - 2u^{16} + \cdots + 3u - 1$
c_5, c_{10}, c_{11}	$u^{17} - 5u^{15} + \cdots - 3u^2 + 4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{17} + 6y^{16} + \cdots + 376y - 16$
c_2, c_8	$y^{17} + 6y^{16} + \cdots + 8y - 4$
c_3, c_4, c_6 c_7, c_9, c_{12}	$y^{17} - 16y^{16} + \cdots + 19y - 1$
c_5, c_{10}, c_{11}	$y^{17} - 10y^{16} + \cdots + 24y - 16$

(vi) Complex Volumes and Cusp Shapes

Solutions to I^u_3	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.742615 + 0.650908I$ $a = 0.33067 - 1.38135I$ $b = -0.289061 - 0.354565I$ $c = 0.489237 + 0.474516I$ $d = 0.197556 + 0.828548I$	$0.369365 - 1.227240I$	$-5.85153 + 0.85505I$
$u = 0.742615 - 0.650908I$ $a = 0.33067 + 1.38135I$ $b = -0.289061 + 0.354565I$ $c = 0.489237 - 0.474516I$ $d = 0.197556 - 0.828548I$	$0.369365 + 1.227240I$	$-5.85153 - 0.85505I$
$u = 0.834865 + 0.265014I$ $a = -0.007441 + 0.469677I$ $b = -0.594985 + 0.032560I$ $c = -1.39610 + 0.29715I$ $d = 0.377294 + 0.097590I$	$-5.90943 - 0.43387I$	$-14.5683 - 0.8754I$
$u = 0.834865 - 0.265014I$ $a = -0.007441 - 0.469677I$ $b = -0.594985 - 0.032560I$ $c = -1.39610 - 0.29715I$ $d = 0.377294 - 0.097590I$	$-5.90943 + 0.43387I$	$-14.5683 + 0.8754I$
$u = -0.976738 + 0.562668I$ $a = -0.220338 - 1.221990I$ $b = 0.383732 - 0.363700I$ $c = 1.124900 + 0.370279I$ $d = -0.445879 + 0.191459I$	$-3.90030 + 4.64771I$	$-11.56085 - 4.11695I$
$u = -0.976738 - 0.562668I$ $a = -0.220338 + 1.221990I$ $b = 0.383732 + 0.363700I$ $c = 1.124900 - 0.370279I$ $d = -0.445879 - 0.191459I$	$-3.90030 - 4.64771I$	$-11.56085 + 4.11695I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.003992 + 0.842342I$ $a = -0.617996 - 0.253084I$ $b = -1.11240 - 0.99360I$ $c = -0.499289 + 0.745483I$ $d = 0.126546 + 0.484371I$	$-4.59969 - 1.46955I$	$-15.6358 + 4.6653I$
$u = 0.003992 - 0.842342I$ $a = -0.617996 + 0.253084I$ $b = -1.11240 + 0.99360I$ $c = -0.499289 - 0.745483I$ $d = 0.126546 - 0.484371I$	$-4.59969 + 1.46955I$	$-15.6358 - 4.6653I$
$u = 0.656745 + 1.004700I$ $a = 1.271870 - 0.179063I$ $b = 2.14507 - 0.73367I$ $c = 0.494032 + 0.511989I$ $d = -0.026089 + 0.826073I$	$-0.71009 + 6.57063I$	$-8.73995 - 6.43452I$
$u = 0.656745 - 1.004700I$ $a = 1.271870 + 0.179063I$ $b = 2.14507 + 0.73367I$ $c = 0.494032 - 0.511989I$ $d = -0.026089 - 0.826073I$	$-0.71009 - 6.57063I$	$-8.73995 + 6.43452I$
$u = 0.110097 + 1.246510I$ $a = 0.925043 - 0.007268I$ $b = 1.55691 - 0.59036I$ $c = 0.059575 - 1.151130I$ $d = 0.08505 - 2.81355I$	$-11.32450 + 2.71165I$	$-17.8424 - 3.1371I$
$u = 0.110097 - 1.246510I$ $a = 0.925043 + 0.007268I$ $b = 1.55691 + 0.59036I$ $c = 0.059575 + 1.151130I$ $d = 0.08505 + 2.81355I$	$-11.32450 - 2.71165I$	$-17.8424 + 3.1371I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.578864 + 1.116300I$ $a = -0.594829 + 0.285325I$ $b = -1.098970 - 0.234758I$ $c = 0.306410 - 1.074930I$ $d = 0.42725 - 2.64129I$	$-8.33968 + 5.51158I$	$-16.2513 - 3.8449I$
$u = 0.578864 - 1.116300I$ $a = -0.594829 - 0.285325I$ $b = -1.098970 + 0.234758I$ $c = 0.306410 + 1.074930I$ $d = 0.42725 + 2.64129I$	$-8.33968 - 5.51158I$	$-16.2513 + 3.8449I$
$u = -0.718492 + 1.129370I$ $a = -1.276660 - 0.102756I$ $b = -2.11452 - 0.60757I$ $c = -0.334233 - 1.013370I$ $d = -0.44170 - 2.53369I$	$-5.69311 - 10.83370I$	$-12.8938 + 7.4126I$
$u = -0.718492 - 1.129370I$ $a = -1.276660 + 0.102756I$ $b = -2.11452 + 0.60757I$ $c = -0.334233 + 1.013370I$ $d = -0.44170 + 2.53369I$	$-5.69311 + 10.83370I$	$-12.8938 - 7.4126I$
$u = -0.463897$ $a = -1.62063$ $b = 0.248463$ $c = -0.489071$ $d = -0.600031$	-2.03175	-3.31210

IV. $\boldsymbol{I_4^u = \langle 2u^{16} - 4u^{15} + \cdots + 4d - 8,\ u^{11} + 2u^9 + \cdots + 2c - 2,\ u^{16} - 4u^{15} + \cdots + 4b - 4,\ 2u^{16} - 4u^{15} + \cdots + 4a - 2,\ u^{17} - 2u^{16} + \cdots - 2u + 2\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -\frac{1}{2}u^{16} + u^{15} + \cdots - \frac{11}{4}u^2 + \frac{1}{2} \\ -\frac{1}{4}u^{16} + u^{15} + \cdots - \frac{3}{2}u + 1 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -\frac{1}{2}u^{11} - u^9 + \cdots - 2u + 1 \\ -\frac{1}{2}u^{16} + u^{15} + \cdots - \frac{3}{2}u + 2 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -\frac{1}{2}u^{11} - u^9 + \cdots - \frac{3}{2}u + 1 \\ -\frac{1}{2}u^{16} + u^{15} + \cdots - u + 2 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^2 + 1 \\ -u^4 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} \frac{1}{4}u^{13} + \frac{1}{2}u^{11} + \cdots - u^2 - 1 \\ \frac{1}{4}u^{13} + \frac{1}{2}u^{11} + \cdots + \frac{1}{2}u^2 - \frac{1}{2}u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -\frac{1}{2}u^{16} + u^{15} + \cdots + \frac{1}{2}u + 1 \\ -\frac{1}{2}u^{16} + u^{15} + \cdots - \frac{3}{2}u + 2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -\frac{1}{2}u^{16} + u^{15} + \cdots + \frac{1}{2}u + 1 \\ -\frac{1}{2}u^{16} + u^{15} + \cdots - \frac{3}{2}u + 2 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} \frac{1}{2}u^{16} - \frac{1}{4}u^{15} + \cdots - \frac{1}{2}u + \frac{1}{2} \\ \frac{3}{4}u^{15} - \frac{3}{4}u^{14} + \cdots - \frac{1}{2}u + 1 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -2u^{16} + 4u^{15} - 6u^{14} + 8u^{13} - 8u^{12} + 14u^{11} - 10u^{10} + 12u^9 - 4u^8 + 10u^7 - 20u^6 + 26u^5 - 16u^4 - 4u^3 + 10u^2 - 8u - 8$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{17} + 6u^{16} + \cdots + 8u - 4$
c_2, c_8	$u^{17} - 2u^{16} + \cdots - 2u + 2$
c_3, c_4, c_5 c_{10}, c_{11}, c_{12}	$u^{17} - 2u^{16} + \cdots + 3u - 1$
c_6, c_7, c_9	$u^{17} - 5u^{15} + \cdots - 3u^2 + 4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{17}+6y^{16}+\cdots+376y-16$
c_2, c_8	$y^{17}+6y^{16}+\cdots+8y-4$
c_3, c_4, c_5 c_{10}, c_{11}, c_{12}	$y^{17}-16y^{16}+\cdots+19y-1$
c_6, c_7, c_9	$y^{17}-10y^{16}+\cdots+24y-16$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.742615 + 0.650908I$ $a = 0.33067 - 1.38135I$ $b = -0.289061 - 0.354565I$ $c = -1.108970 + 0.552270I$ $d = 0.375106 + 0.244608I$	$0.369365 - 1.227240I$	$-5.85153 + 0.85505I$
$u = 0.742615 - 0.650908I$ $a = 0.33067 + 1.38135I$ $b = -0.289061 + 0.354565I$ $c = -1.108970 - 0.552270I$ $d = 0.375106 - 0.244608I$	$0.369365 + 1.227240I$	$-5.85153 - 0.85505I$
$u = 0.834865 + 0.265014I$ $a = -0.007441 + 0.469677I$ $b = -0.594985 + 0.032560I$ $c = 0.808553 - 0.734272I$ $d = 1.21891 - 1.69522I$	$-5.90943 - 0.43387I$	$-14.5683 - 0.8754I$
$u = 0.834865 - 0.265014I$ $a = -0.007441 - 0.469677I$ $b = -0.594985 - 0.032560I$ $c = 0.808553 + 0.734272I$ $d = 1.21891 + 1.69522I$	$-5.90943 + 0.43387I$	$-14.5683 + 0.8754I$
$u = -0.976738 + 0.562668I$ $a = -0.220338 - 1.221990I$ $b = 0.383732 - 0.363700I$ $c = -0.520830 + 0.488010I$ $d = -0.267142 + 1.003160I$	$-3.90030 + 4.64771I$	$-11.56085 - 4.11695I$
$u = -0.976738 - 0.562668I$ $a = -0.220338 + 1.221990I$ $b = 0.383732 + 0.363700I$ $c = -0.520830 - 0.488010I$ $d = -0.267142 - 1.003160I$	$-3.90030 - 4.64771I$	$-11.56085 + 4.11695I$

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=0.003992+0.842342I$ $a=-0.617996-0.253084I$ $b=-1.11240-0.99360I$ $c=0.00488-1.48599I$ $d=0.00830-3.34608I$	$-4.59969-1.46955I$	$-15.6358+4.6653I$
$u=0.003992-0.842342I$ $a=-0.617996+0.253084I$ $b=-1.11240+0.99360I$ $c=0.00488+1.48599I$ $d=0.00830+3.34608I$	$-4.59969+1.46955I$	$-15.6358-4.6653I$
$u=0.656745+1.004700I$ $a=1.271870-0.179063I$ $b=2.14507-0.73367I$ $c=0.379170-1.066590I$ $d=0.53910-2.59632I$	$-0.71009+6.57063I$	$-8.73995-6.43452I$
$u=0.656745-1.004700I$ $a=1.271870+0.179063I$ $b=2.14507+0.73367I$ $c=0.379170+1.066590I$ $d=0.53910+2.59632I$	$-0.71009-6.57063I$	$-8.73995+6.43452I$
$u=0.110097+1.246510I$ $a=0.925043-0.007268I$ $b=1.55691-0.59036I$ $c=0.572289+0.568034I$ $d=-0.237606+0.645663I$	$-11.32450+2.71165I$	$-17.8424-3.1371I$
$u=0.110097-1.246510I$ $a=0.925043+0.007268I$ $b=1.55691+0.59036I$ $c=0.572289-0.568034I$ $d=-0.237606-0.645663I$	$-11.32450-2.71165I$	$-17.8424+3.1371I$

Solutions to I_4^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.578864 + 1.116300I$ $a = -0.594829 + 0.285325I$ $b = -1.098970 - 0.234758I$ $c = -0.810552 + 0.554845I$ $d = 0.395621 + 0.423926I$	$-8.33968 + 5.51158I$	$-16.2513 - 3.8449I$
$u = 0.578864 - 1.116300I$ $a = -0.594829 - 0.285325I$ $b = -1.098970 + 0.234758I$ $c = -0.810552 - 0.554845I$ $d = 0.395621 - 0.423926I$	$-8.33968 - 5.51158I$	$-16.2513 + 3.8449I$
$u = -0.718492 + 1.129370I$ $a = -1.276660 - 0.102756I$ $b = -2.11452 - 0.60757I$ $c = -0.503630 + 0.508561I$ $d = 0.078480 + 0.870974I$	$-5.69311 - 10.83370I$	$-12.8938 + 7.4126I$
$u = -0.718492 - 1.129370I$ $a = -1.276660 + 0.102756I$ $b = -2.11452 + 0.60757I$ $c = -0.503630 - 0.508561I$ $d = 0.078480 - 0.870974I$	$-5.69311 + 10.83370I$	$-12.8938 - 7.4126I$
$u = -0.463897$ $a = -1.62063$ $b = 0.248463$ $c = 2.35817$ $d = -0.221542$	-2.03175	-3.31210

V. $\boldsymbol{I^u_5 = \langle -cau + u + \cdots + a + 1,\ a^2cu + cau + \cdots + a^2c - a,\ a^2u + a^2 + au + b - a,\ a^3 + 2a^2u + 2a^2 + au - u,\ u^2 + u + 1\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 1 \\ u+1 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} a \\ -a^2u - a^2 - au + a \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u \\ u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} c \\ a^2c + cau + ca + c - a - u - 1 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -cau - a^2u - a^2 - au + c + u \\ -cau - a^2u - a^2 - au + c - 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u \\ -u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} a^2u \\ -a^2 - au \end{pmatrix}$$

$$a_7 = \begin{pmatrix} a^2c + cau + ca - a - u - 1 \\ a^2c + cau + ca + c - a - u - 1 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} a^2c + cau + ca - cu - c - a - u - 1 \\ a^2c + cau + ca - cu - a - u - 1 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -a^2u - a^2 - 2au - a \\ -a^2u - a^2 - 2au \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 4u - 10$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_8	$(u^2+u+1)^6$
c_3, c_4, c_5 c_6, c_7, c_9 c_{10}, c_{11}, c_{12}	$(u^6-2u^4-u^3+u^2+u+1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_8	$(y^2+y+1)^6$
c_3, c_4, c_5 c_6, c_7, c_9 c_{10}, c_{11}, c_{12}	$(y^6-4y^5+6y^4-3y^3-y^2+y+1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.500000 + 0.866025I$ $a = -1.209470 - 0.322370I$ $b = -2.09752 - 1.00286I$ $c = -0.420593 - 1.203220I$ $d = -0.66171 - 2.80985I$	$-3.28987 - 2.02988I$	$-12.00000 + 3.46410I$
$u = -0.500000 + 0.866025I$ $a = -1.209470 - 0.322370I$ $b = -2.09752 - 1.00286I$ $c = -0.467454 + 0.522723I$ $d = -0.016866 + 0.719678I$	$-3.28987 - 2.02988I$	$-12.00000 + 3.46410I$
$u = -0.500000 + 0.866025I$ $a = 0.450588 + 0.196955I$ $b = 0.918042 - 0.325768I$ $c = 0.888047 + 0.680493I$ $d = -0.321427 + 0.358124I$	$-3.28987 - 2.02988I$	$-12.00000 + 3.46410I$
$u = -0.500000 + 0.866025I$ $a = 0.450588 + 0.196955I$ $b = 0.918042 - 0.325768I$ $c = -0.420593 - 1.203220I$ $d = -0.66171 - 2.80985I$	$-3.28987 - 2.02988I$	$-12.00000 + 3.46410I$
$u = -0.500000 + 0.866025I$ $a = -0.24111 - 1.60664I$ $b = 0.179479 - 0.403420I$ $c = 0.888047 + 0.680493I$ $d = -0.321427 + 0.358124I$	$-3.28987 - 2.02988I$	$-12.00000 + 3.46410I$
$u = -0.500000 + 0.866025I$ $a = -0.24111 - 1.60664I$ $b = 0.179479 - 0.403420I$ $c = -0.467454 + 0.522723I$ $d = -0.016866 + 0.719678I$	$-3.28987 - 2.02988I$	$-12.00000 + 3.46410I$

Solutions to I_5^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.500000-0.866025I$ $a=-1.209470+0.322370I$ $b=-2.09752+1.00286I$ $c=-0.420593+1.203220I$ $d=-0.66171+2.80985I$	$-3.28987+2.02988I$	$-12.00000-3.46410I$
$u=-0.500000-0.866025I$ $a=-1.209470+0.322370I$ $b=-2.09752+1.00286I$ $c=-0.467454-0.522723I$ $d=-0.016866-0.719678I$	$-3.28987+2.02988I$	$-12.00000-3.46410I$
$u=-0.500000-0.866025I$ $a=\ \ 0.450588-0.196955I$ $b=\ \ 0.918042+0.325768I$ $c=\ \ 0.888047-0.680493I$ $d=-0.321427-0.358124I$	$-3.28987+2.02988I$	$-12.00000-3.46410I$
$u=-0.500000-0.866025I$ $a=\ \ 0.450588-0.196955I$ $b=\ \ 0.918042+0.325768I$ $c=-0.420593+1.203220I$ $d=-0.66171+2.80985I$	$-3.28987+2.02988I$	$-12.00000-3.46410I$
$u=-0.500000-0.866025I$ $a=-0.24111+1.60664I$ $b=\ \ 0.179479+0.403420I$ $c=\ \ 0.888047-0.680493I$ $d=-0.321427-0.358124I$	$-3.28987+2.02988I$	$-12.00000-3.46410I$
$u=-0.500000-0.866025I$ $a=-0.24111+1.60664I$ $b=\ \ 0.179479+0.403420I$ $c=-0.467454-0.522723I$ $d=-0.016866-0.719678I$	$-3.28987+2.02988I$	$-12.00000-3.46410I$

VI. $I_1^v = \langle a,\ d,\ c+1,\ b-1,\ v+1 \rangle$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -1 \\ -1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -12$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_6 c_7, c_8, c_9	u
c_3, c_4, c_{10} c_{11}	$u+1$
c_5, c_{12}	$u-1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_6 c_7, c_8, c_9	y
c_3, c_4, c_5 c_{10}, c_{11}, c_{12}	$y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = -1.00000$		
$a = 0$		
$b = 1.00000$	-3.28987	-12.0000
$c = -1.00000$		
$d = 0$		

VII. $I_2^v = \langle c,\ d+1,\ b,\ a-1,\ v+1 \rangle$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 1 \\ -1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -1 \\ 1 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -12$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_3 c_4, c_8, c_{12}	u
c_5, c_9	$u + 1$
c_6, c_7, c_{10} c_{11}	$u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_3 c_4, c_8, c_{12}	y
c_5, c_6, c_7 c_9, c_{10}, c_{11}	$y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^v	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$v = -1.00000$ $a = 1.00000$ $b = 0$ $c = 0$ $d = -1.00000$	-3.28987	-12.0000

VIII. $I_3^v = \langle a,\ d+1,\ c+a,\ b-1,\ v+1 \rangle$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -1 \\ 1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -12$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_5 c_8, c_{10}, c_{11}	u
c_3, c_4, c_9	$u + 1$
c_6, c_7, c_{12}	$u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_5 c_8, c_{10}, c_{11}	y
c_3, c_4, c_6 c_7, c_9, c_{12}	$y-1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^v	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$v = -1.00000$ $a = 0$ $b = 1.00000$ $c = 0$ $d = -1.00000$	-3.28987	-12.0000

IX. $\boldsymbol{I_4^v = \langle a,\ da + c + 1,\ dv - 1,\ cv + a + v,\ b + 1\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} v \\ 0 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} v \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -1 \\ d \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -1 \\ d - 1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -1 \\ -1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} v + 1 \\ -d \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ -d \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -d^2 - v^2 - 16$

(iv) u-Polynomials at the component : It cannot be defined for a positive dimension component.

(v) Riley Polynomials at the component : It cannot be defined for a positive dimension component.

(iv) Complex Volumes and Cusp Shapes

Solution to I_4^v	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$v = \cdots$ $a = \cdots$ $b = \cdots$ $c = \cdots$ $d = \cdots$	-4.93480	$-16.4360 + 0.4903I$

X. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$u^3(u^2+u+1)^6(u^{11}+3u^{10}+\cdots-80u-16)$ $\cdot\,(u^{17}+6u^{16}+\cdots+8u-4)^3$
c_2, c_8	$u^3(u^2+u+1)^6$ $\cdot\,(u^{11}-u^{10}+2u^9-u^8+2u^7+3u^6-3u^5+4u^4+12u^2-4u+4)$ $\cdot\,(u^{17}-2u^{16}+\cdots-2u+2)^3$
c_3, c_4, c_9	$u(u+1)^2(u^6-2u^4-u^3+u^2+u+1)^2$ $\cdot\,(u^{11}-u^{10}-6u^9+5u^8+13u^7-7u^6-10u^5-2u^4-2u^3+8u^2+4u+1)$ $\cdot\,(u^{17}-5u^{15}+\cdots-3u^2+4)(u^{17}-2u^{16}+\cdots+3u-1)^2$
c_5, c_{10}, c_{11}	$u(u-1)(u+1)(u^6-2u^4-u^3+u^2+u+1)^2$ $\cdot\,(u^{11}-u^{10}-6u^9+5u^8+13u^7-7u^6-10u^5-2u^4-2u^3+8u^2+4u+1)$ $\cdot\,(u^{17}-5u^{15}+\cdots-3u^2+4)(u^{17}-2u^{16}+\cdots+3u-1)^2$
c_6, c_7, c_{12}	$u(u-1)^2(u^6-2u^4-u^3+u^2+u+1)^2$ $\cdot\,(u^{11}-u^{10}-6u^9+5u^8+13u^7-7u^6-10u^5-2u^4-2u^3+8u^2+4u+1)$ $\cdot\,(u^{17}-5u^{15}+\cdots-3u^2+4)(u^{17}-2u^{16}+\cdots+3u-1)^2$

XI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$y^3(y^2+y+1)^6(y^{11}+3y^{10}+\cdots+768y-256)$ $\cdot(y^{17}+6y^{16}+\cdots+376y-16)^3$
c_2, c_8	$y^3(y^2+y+1)^6(y^{11}+3y^{10}+\cdots-80y-16)$ $\cdot(y^{17}+6y^{16}+\cdots+8y-4)^3$
c_3, c_4, c_5 c_6, c_7, c_9 c_{10}, c_{11}, c_{12}	$y(y-1)^2(y^6-4y^5+6y^4-3y^3-y^2+y+1)^2$ $\cdot(y^{11}-13y^{10}+\cdots-76y^2-1)(y^{17}-16y^{16}+\cdots+19y-1)^2$ $\cdot(y^{17}-10y^{16}+\cdots+24y-16)$