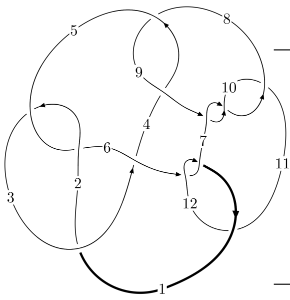
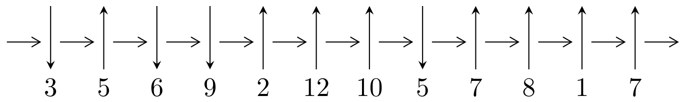
$12n_{0063}$ ($K12n_{0063}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & 211450298892949u^{15} - 665970623055347u^{14} + \cdots + 445687541220341192d + 9319091588527888,\\
& 40959130934865u^{15} - 340344314483579u^{14} + \cdots + 89137508244068384c - 71636506057825568,\\
& 1.48020 \times 10^{15}u^{15} - 5.08467 \times 10^{15}u^{14} + \cdots + 4.45688 \times 10^{16}b - 3.24669 \times 10^{16},\\
& 299188489544621u^{15} - 2300420730722931u^{14} + \cdots + 89137508244068384a + 5859054368972672,\\
& u^{16} - 3u^{15} + \cdots - 64u + 32\rangle\\
I_2^u = \langle & 109u^7c - 121u^7 + \cdots - 2066c + 3882,\ 9443u^7c - 4639u^7 + \cdots - 14966c + 1182,\\
& 165u^7 + 651u^6 - 137u^5 - 3762u^4 - 1020u^3 + 3809u^2 + 6184b - 3983u - 234,\\
& 1393u^7 + 1111u^6 - 10189u^5 - 3314u^4 + 26244u^3 - 12555u^2 + 12368a - 24219u + 1510,\\
& u^8 + u^7 - 7u^6 - 4u^5 + 16u^4 - 3u^3 - 9u^2 - 8u - 4\rangle
\end{aligned}$$

$$\begin{aligned}
I_1^v &= \langle a,\ d,\ c-1,\ b+v,\ v^2-v+1\rangle\\
I_2^v &= \langle a,\ d+1,\ av+c-a,\ b+v,\ v^2-v+1\rangle\\
I_3^v &= \langle c,\ d+1,\ b,\ a+1,\ v+1\rangle\\
I_4^v &= \langle c,\ d+1,\ -v^2ba+v^3b-v^2b+av-v^2+c-1,\ b^2v^2-bv+1\rangle
\end{aligned}$$

* 5 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 37 representations.
* 1 irreducible components of $\dim_{\mathbb{C}} = 1$

[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`).

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

I. $\boldsymbol{I_1^u = \langle 2.11\times10^{14}u^{15} - 6.66\times10^{14}u^{14} + \cdots + 4.46\times10^{16}d + 9.32\times10^{15},\ 4.10\times10^{13}u^{15} - 3.40\times10^{14}u^{14} + \cdots + 8.91\times10^{16}c - 7.16\times10^{16},\ 1.48\times10^{15}u^{15} - 5.08\times10^{15}u^{14} + \cdots + 4.46\times10^{16}b - 3.25\times10^{16},\ 2.99\times10^{14}u^{15} - 2.30\times10^{15}u^{14} + \cdots + 8.91\times10^{16}a + 5.86\times10^{15},\ u^{16} - 3u^{15} + \cdots - 64u + 32\rangle}$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -0.000459505u^{15} + 0.00381819u^{14} + \cdots + 0.107302u + 0.803663 \\ -0.00474436u^{15} + 0.0149425u^{14} + \cdots - 0.0874996u - 0.209095 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -0.00335648u^{15} + 0.0258076u^{14} + \cdots - 1.58963u - 0.0657305 \\ -0.0332117u^{15} + 0.114086u^{14} + \cdots - 5.13514u + 0.728469 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -0.00520387u^{15} + 0.0187607u^{14} + \cdots + 0.0198025u + 0.594568 \\ -0.00474436u^{15} + 0.0149425u^{14} + \cdots - 0.0874996u - 0.209095 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -0.00335648u^{15} + 0.0258076u^{14} + \cdots - 1.58963u - 0.0657305 \\ -0.0222088u^{15} + 0.0813473u^{14} + \cdots - 4.02050u + 0.224849 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -0.0135509u^{15} + 0.0301119u^{14} + \cdots + 0.340570u - 1.37215 \\ -0.0269546u^{15} + 0.0690284u^{14} + \cdots + 1.04739u - 1.50134 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -0.0142293u^{15} + 0.0443303u^{14} + \cdots + 0.947808u - 0.466505 \\ -0.0277802u^{15} + 0.0744421u^{14} + \cdots + 1.28838u - 1.83865 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -0.000459505u^{15} + 0.00381819u^{14} + \cdots + 0.107302u + 0.803663 \\ 0.00677644u^{15} - 0.0186134u^{14} + \cdots + 0.258343u + 0.131025 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -0.0137698u^{15} + 0.0405121u^{14} + \cdots + 0.840506u - 0.270168 \\ -0.0230359u^{15} + 0.0594996u^{14} + \cdots + 1.37588u - 1.62956 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= \frac{3870228309913117}{22284377061017096}u^{15} - \frac{2739800330771103}{5571094265254274}u^{14} + \cdots + \frac{43609984858099500}{2785547132627137}u + \frac{900447030377212}{2785547132627137}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{16}+9u^{15}+\cdots-24u+16$
c_2, c_5	$u^{16}+u^{15}+\cdots-8u+4$
c_3	$u^{16}-u^{15}+\cdots-984u+612$
c_4, c_8	$u^{16}+3u^{15}+\cdots+64u+32$
c_6, c_7, c_9 c_{10}, c_{12}	$u^{16}+5u^{15}+\cdots+u+1$
c_{11}	$u^{16}-u^{15}+\cdots+9u+1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{16} - 3y^{15} + \cdots + 1248y + 256$
c_2, c_5	$y^{16} + 9y^{15} + \cdots - 24y + 16$
c_3	$y^{16} - 15y^{15} + \cdots + 193320y + 374544$
c_4, c_8	$y^{16} - 15y^{15} + \cdots + 5120y + 1024$
c_6, c_7, c_9 c_{10}, c_{12}	$y^{16} - y^{15} + \cdots + 9y + 1$
c_{11}	$y^{16} + 39y^{15} + \cdots + 25y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.289911 + 0.801405I$ $a = 0.044341 + 0.672495I$ $b = 0.167547 + 0.706079I$ $c = 0.654021 + 0.248004I$ $d = -0.336785 + 0.506907I$	$0.321814 - 1.225450I$	$4.70206 + 4.90073I$
$u = 0.289911 - 0.801405I$ $a = 0.044341 - 0.672495I$ $b = 0.167547 - 0.706079I$ $c = 0.654021 - 0.248004I$ $d = -0.336785 - 0.506907I$	$0.321814 + 1.225450I$	$4.70206 - 4.90073I$
$u = -1.139570 + 0.424244I$ $a = 0.835279 - 0.536067I$ $b = -0.871046 - 0.172594I$ $c = 0.589120 - 0.792720I$ $d = 0.396064 - 0.812657I$	$-0.71555 - 3.67228I$	$1.72542 + 4.33532I$
$u = -1.139570 - 0.424244I$ $a = 0.835279 + 0.536067I$ $b = -0.871046 + 0.172594I$ $c = 0.589120 + 0.792720I$ $d = 0.396064 + 0.812657I$	$-0.71555 + 3.67228I$	$1.72542 - 4.33532I$
$u = 0.575594 + 0.321074I$ $a = -0.193970 + 1.376780I$ $b = 0.333506 + 0.445900I$ $c = 1.017480 + 0.434986I$ $d = 0.169050 + 0.355242I$	$0.11872 - 1.44911I$	$-0.36516 + 2.80335I$
$u = 0.575594 - 0.321074I$ $a = -0.193970 - 1.376780I$ $b = 0.333506 - 0.445900I$ $c = 1.017480 - 0.434986I$ $d = 0.169050 - 0.355242I$	$0.11872 + 1.44911I$	$-0.36516 - 2.80335I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.067191 + 0.531573I$ $a = -1.65593 - 0.85713I$ $b = -3.05755 - 2.07892I$ $c = 0.547892 + 0.020957I$ $d = -0.822510 + 0.069711I$	$2.85279 - 2.27613I$	$11.67196 + 3.94896I$
$u = -0.067191 - 0.531573I$ $a = -1.65593 + 0.85713I$ $b = -3.05755 + 2.07892I$ $c = 0.547892 - 0.020957I$ $d = -0.822510 - 0.069711I$	$2.85279 + 2.27613I$	$11.67196 - 3.94896I$
$u = -0.33229 + 1.72297I$ $a = -0.700117 + 0.318420I$ $b = 1.01451 + 1.11512I$ $c = 0.412801 - 0.282825I$ $d = -0.648602 - 1.129520I$	$-4.26031 + 4.58330I$	$1.71878 - 4.05752I$
$u = -0.33229 - 1.72297I$ $a = -0.700117 - 0.318420I$ $b = 1.01451 - 1.11512I$ $c = 0.412801 + 0.282825I$ $d = -0.648602 + 1.129520I$	$-4.26031 - 4.58330I$	$1.71878 + 4.05752I$
$u = -1.81588 + 0.68377I$ $a = -0.560451 - 0.078372I$ $b = 0.088006 - 0.453655I$ $c = -0.227904 + 0.980118I$ $d = 1.22507 + 0.96795I$	$-6.64229 + 8.00732I$	$6.00576 - 3.88395I$
$u = -1.81588 - 0.68377I$ $a = -0.560451 + 0.078372I$ $b = 0.088006 + 0.453655I$ $c = -0.227904 - 0.980118I$ $d = 1.22507 - 0.96795I$	$-6.64229 - 8.00732I$	$6.00576 + 3.88395I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.72439 + 0.95526I$ $a = -0.028668 - 0.723076I$ $b = -0.46994 - 2.77688I$ $c = -0.389017 - 0.972862I$ $d = 1.35436 - 0.88620I$	$-9.8252 - 14.1242I$	$4.39428 + 6.97100I$
$u = 1.72439 - 0.95526I$ $a = -0.028668 + 0.723076I$ $b = -0.46994 + 2.77688I$ $c = -0.389017 + 0.972862I$ $d = 1.35436 + 0.88620I$	$-9.8252 + 14.1242I$	$4.39428 - 6.97100I$
$u = 2.26504 + 0.41669I$ $a = 0.259518 + 0.593001I$ $b = -0.70502 + 2.50841I$ $c = -0.104392 - 0.792584I$ $d = 1.16335 - 1.24018I$	$-12.28130 - 3.00558I$	$2.14690 + 1.40998I$
$u = 2.26504 - 0.41669I$ $a = 0.259518 - 0.593001I$ $b = -0.70502 - 2.50841I$ $c = -0.104392 + 0.792584I$ $d = 1.16335 + 1.24018I$	$-12.28130 + 3.00558I$	$2.14690 - 1.40998I$

II. $\boldsymbol{I_2^u = \langle 109cu^7 - 121u^7 + \cdots - 2066c + 3882,\ 9443cu^7 - 4639u^7 + \cdots - 1.50\times 10^4 c + 1182,\ 165u^7 + 651u^6 + \cdots + 6184b - 234,\ 1393u^7 + 1111u^6 + \cdots + 1.24\times 10^4 a + 1510,\ u^8 + u^7 + \cdots - 8u - 4\rangle}$

(i) Arc colorings

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

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

$$a_9 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} c \\ -0.0352523cu^7 + 0.0391332u^7 + \cdots + 0.668176c - 1.25550 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -0.112629u^7 - 0.0898286u^6 + \cdots + 1.95820u - 0.122089 \\ -0.0266818u^7 - 0.105272u^6 + \cdots + 0.644082u + 0.0378396 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -0.0352523cu^7 + 0.0391332u^7 + \cdots + 1.66818c - 1.25550 \\ -0.0352523cu^7 + 0.0391332u^7 + \cdots + 0.668176c - 1.25550 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.112629u^7 - 0.0898286u^6 + \cdots + 1.95820u - 0.122089 \\ -0.0140686u^7 - 0.128234u^6 + \cdots + 0.375970u + 0.129043 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0.0257924u^7 - 0.0982374u^6 + \cdots + 0.310721u + 0.763422 \\ 0.0556274u^7 + 0.00129366u^6 + \cdots - 0.900388u - 0.751617 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.0133409u^7 + 0.0526358u^6 + \cdots - 0.322041u - 1.01892 \\ 0.0391332u^7 - 0.0456016u^6 + \cdots - 0.0113195u - 0.255498 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} c \\ 0.0352523cu^7 - 0.0391332u^7 + \cdots - 0.668176c + 1.25550 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -0.0391332cu^7 + 0.0133409u^7 + \cdots + 1.25550c - 2.01892 \\ -0.0595084cu^7 + 0.0430142u^7 + \cdots + 0.338939c - 0.842820 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= \frac{933}{1546}u^7 + \frac{561}{1546}u^6 - \frac{7043}{1546}u^5 - \frac{278}{773}u^4 + \frac{8922}{773}u^3 - \frac{11743}{1546}u^2 - \frac{10913}{1546}u + \frac{2838}{773}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^8+6u^7+15u^6+14u^5-9u^4-31u^3-26u^2-8u+1)^2$
c_2, c_5	$(u^8+2u^7+5u^6+6u^5+7u^4+7u^3+4u^2+4u+1)^2$
c_3	$(u^8-2u^7-7u^6+12u^5+5u^4+3u^3-2u^2+2u+1)^2$
c_4, c_8	$(u^8-u^7-7u^6+4u^5+16u^4+3u^3-9u^2+8u-4)^2$
c_6, c_7, c_9 c_{10}, c_{12}	$u^{16}+3u^{15}+\cdots-40u-16$
c_{11}	$u^{16}-3u^{15}+\cdots-2336u+256$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^8 - 6y^7 + 39y^6 - 146y^5 + 267y^4 - 239y^3 + 162y^2 - 116y + 1)^2$
c_2, c_5	$(y^8 + 6y^7 + 15y^6 + 14y^5 - 9y^4 - 31y^3 - 26y^2 - 8y + 1)^2$
c_3	$(y^8 - 18y^7 + 107y^6 - 206y^5 - 9y^4 - 91y^3 + 2y^2 - 8y + 1)^2$
c_4, c_8	$(y^8 - 15y^7 + 89y^6 - 252y^5 + 366y^4 - 305y^3 - 95y^2 + 8y + 16)^2$
c_6, c_7, c_9 c_{10}, c_{12}	$y^{16} - 3y^{15} + \cdots - 2336y + 256$
c_{11}	$y^{16} + 17y^{15} + \cdots - 2843136y + 65536$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.170290 + 0.725937I$ $a = 0.534878 + 0.687758I$ $b = -0.30552 + 1.93634I$ $c = 0.508470 + 0.631641I$ $d = 0.226676 + 0.960653I$	$-1.14222 + 1.62541I$	$1.41499 - 1.42555I$
$u = 1.170290 + 0.725937I$ $a = 0.534878 + 0.687758I$ $b = -0.30552 + 1.93634I$ $c = 0.406912 - 0.059872I$ $d = -1.40546 - 0.35393I$	$-1.14222 + 1.62541I$	$1.41499 - 1.42555I$
$u = 1.170290 - 0.725937I$ $a = 0.534878 - 0.687758I$ $b = -0.30552 - 1.93634I$ $c = 0.508470 - 0.631641I$ $d = 0.226676 - 0.960653I$	$-1.14222 - 1.62541I$	$1.41499 + 1.42555I$
$u = 1.170290 - 0.725937I$ $a = 0.534878 - 0.687758I$ $b = -0.30552 - 1.93634I$ $c = 0.406912 + 0.059872I$ $d = -1.40546 + 0.35393I$	$-1.14222 - 1.62541I$	$1.41499 + 1.42555I$
$u = -0.195492 + 0.552709I$ $a = -1.19398 + 1.11168I$ $b = 0.116024 + 0.545126I$ $c = 0.527146 + 0.046214I$ $d = -0.882537 + 0.165040I$	$2.92647 + 1.66195I$	$9.38368 - 3.48117I$
$u = -0.195492 + 0.552709I$ $a = -1.19398 + 1.11168I$ $b = 0.116024 + 0.545126I$ $c = -5.82950 + 3.76506I$ $d = 1.121050 + 0.078180I$	$2.92647 + 1.66195I$	$9.38368 - 3.48117I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.195492 - 0.552709I$ $a = -1.19398 - 1.11168I$ $b = 0.116024 - 0.545126I$ $c = 0.527146 - 0.046214I$ $d = -0.882537 - 0.165040I$	$2.92647 - 1.66195I$	$9.38368 + 3.48117I$
$u = -0.195492 - 0.552709I$ $a = -1.19398 - 1.11168I$ $b = 0.116024 - 0.545126I$ $c = -5.82950 - 3.76506I$ $d = 1.121050 - 0.078180I$	$2.92647 - 1.66195I$	$9.38368 + 3.48117I$
$u = -0.580387$ $a = -0.526601$ $b = -0.511567$ $c = 0.467644$ $d = -1.13838$	2.18625	3.21290
$u = -0.580387$ $a = -0.526601$ $b = -0.511567$ $c = 1.67123$ $d = 0.401639$	2.18625	3.21290
$u = 2.05532$ $a = 0.542487$ $b = -0.209470$ $c = 0.059530 + 0.815129I$ $d = 0.91088 + 1.22029I$	-7.78143	4.64060
$u = 2.05532$ $a = 0.542487$ $b = -0.209470$ $c = 0.059530 - 0.815129I$ $d = 0.91088 - 1.22029I$	-7.78143	4.64060

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-2.21226+0.50002I$ $a=-0.098844-0.650687I$ $b=\ 0.55002-2.74145I$ $c=-0.131998+0.812425I$ $d=\ 1.19484+1.19923I$	$-12.14610+5.90409I$	$2.27459-2.82977I$
$u=-2.21226+0.50002I$ $a=-0.098844-0.650687I$ $b=\ 0.55002-2.74145I$ $c=\ 0.140006-0.672065I$ $d=\ 0.70292-1.42606I$	$-12.14610+5.90409I$	$2.27459-2.82977I$
$u=-2.21226-0.50002I$ $a=-0.098844+0.650687I$ $b=\ 0.55002+2.74145I$ $c=-0.131998-0.812425I$ $d=\ 1.19484-1.19923I$	$-12.14610-5.90409I$	$2.27459+2.82977I$
$u=-2.21226-0.50002I$ $a=-0.098844+0.650687I$ $b=\ 0.55002+2.74145I$ $c=\ 0.140006+0.672065I$ $d=\ 0.70292+1.42606I$	$-12.14610-5.90409I$	$2.27459+2.82977I$

III. $I_1^v = \langle a,\ d,\ c-1,\ b+v,\ v^2-v+1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4v + 1$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$v = 0.500000 + 0.866025I$ $a = 0$ $b = -0.500000 - 0.866025I$ $c = 1.00000$ $d = 0$	$1.64493 - 2.02988I$	$3.00000 + 3.46410I$
$v = 0.500000 - 0.866025I$ $a = 0$ $b = -0.500000 + 0.866025I$ $c = 1.00000$ $d = 0$	$1.64493 + 2.02988I$	$3.00000 - 3.46410I$

IV. $I_2^v = \langle a,\ d+1,\ av+c-a,\ b+v,\ v^2-v+1 \rangle$

(i) Arc colorings

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

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

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

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

$$a_3 = \begin{pmatrix} 0 \\ -v \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} -1 \\ -v \end{pmatrix}$$

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

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

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

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

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4v + 1$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = 0.500000 + 0.866025I$ $a = 0$ $b = -0.500000 - 0.866025I$ $c = 0$ $d = -1.00000$	$1.64493 - 2.02988I$	$3.00000 + 3.46410I$
$v = 0.500000 - 0.866025I$ $a = 0$ $b = -0.500000 + 0.866025I$ $c = 0$ $d = -1.00000$	$1.64493 + 2.02988I$	$3.00000 - 3.46410I$

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

(i) Arc colorings

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

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

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

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

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

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

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

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

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

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

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

$a_{12} = \begin{pmatrix} -2 \\ -1 \end{pmatrix}$

(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_3 c_4, c_5, c_8	u
c_6, c_9, c_{10}	$u - 1$
c_7, c_{11}, c_{12}	$u + 1$

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

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

VI. $I_4^v = \langle c,\ d+1,\ -v^2ba + v^3b + \cdots + c - 1,\ b^2v^2 - bv + 1\rangle$

(i) Arc colorings

$$a_5 = \begin{pmatrix} v \\ 0 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} a \\ b \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -1 \\ -1 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -av + v^2 - b + 2a - 2v + 1 \\ b \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -a^2v + 2v^2a - v^3 - av + v^2 - b + a - 2v \\ -a^2v + 2v^2a - v^3 - av + v^2 - b + a - 2v - 1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} a^2v - 2v^2a + v^3 + av - v^2 + b - a + 2v \\ a^2v - 2v^2a + v^3 + av - v^2 + b - a + 2v + 1 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} v \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} a^2v - 2v^2a + v^3 + av - v^2 + b - a + 2v - 1 \\ a^2v - 2v^2a + v^3 + av - v^2 + b - a + 2v \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -a^3v + 3v^3a - 2v^4 - 3v^2a + 3v^3 + 3av - 5v^2 + 4b - 7a + 5v + 5$

(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	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = \cdots$ $a = \cdots$ $b = \cdots$ $c = \cdots$ $d = \cdots$	$3.28987 - 2.02988I$	$9.78678 - 2.82138I$

VII. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$u(u^2-u+1)^2$ $\cdot(u^8+6u^7+15u^6+14u^5-9u^4-31u^3-26u^2-8u+1)^2$ $\cdot(u^{16}+9u^{15}+\cdots-24u+16)$
c_2	$u(u^2+u+1)^2(u^8+2u^7+5u^6+6u^5+7u^4+7u^3+4u^2+4u+1)^2$ $\cdot(u^{16}+u^{15}+\cdots-8u+4)$
c_3	$u(u^2-u+1)^2(u^8-2u^7-7u^6+12u^5+5u^4+3u^3-2u^2+2u+1)^2$ $\cdot(u^{16}-u^{15}+\cdots-984u+612)$
c_4, c_8	$u^5(u^8-u^7-7u^6+4u^5+16u^4+3u^3-9u^2+8u-4)^2$ $\cdot(u^{16}+3u^{15}+\cdots+64u+32)$
c_5	$u(u^2-u+1)^2(u^8+2u^7+5u^6+6u^5+7u^4+7u^3+4u^2+4u+1)^2$ $\cdot(u^{16}+u^{15}+\cdots-8u+4)$
c_6	$u^2(u-1)(u+1)^2(u^{16}+3u^{15}+\cdots-40u-16)(u^{16}+5u^{15}+\cdots+u+1)$
c_7	$u^2(u+1)^3(u^{16}+3u^{15}+\cdots-40u-16)(u^{16}+5u^{15}+\cdots+u+1)$
c_9, c_{10}	$u^2(u-1)^3(u^{16}+3u^{15}+\cdots-40u-16)(u^{16}+5u^{15}+\cdots+u+1)$
c_{11}	$u^2(u+1)^3(u^{16}-3u^{15}+\cdots-2336u+256)(u^{16}-u^{15}+\cdots+9u+1)$
c_{12}	$u^2(u-1)^2(u+1)(u^{16}+3u^{15}+\cdots-40u-16)(u^{16}+5u^{15}+\cdots+u+1)$

VIII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$y(y^2+y+1)^2$ $\cdot\,(y^8-6y^7+39y^6-146y^5+267y^4-239y^3+162y^2-116y+1)^2$ $\cdot\,(y^{16}-3y^{15}+\cdots+1248y+256)$
c_2, c_5	$y(y^2+y+1)^2$ $\cdot\,(y^8+6y^7+15y^6+14y^5-9y^4-31y^3-26y^2-8y+1)^2$ $\cdot\,(y^{16}+9y^{15}+\cdots-24y+16)$
c_3	$y(y^2+y+1)^2$ $\cdot\,(y^8-18y^7+107y^6-206y^5-9y^4-91y^3+2y^2-8y+1)^2$ $\cdot\,(y^{16}-15y^{15}+\cdots+193320y+374544)$
c_4, c_8	$y^5(y^8-15y^7+89y^6-252y^5+366y^4-305y^3-95y^2+8y+16)^2$ $\cdot\,(y^{16}-15y^{15}+\cdots+5120y+1024)$
c_6, c_7, c_9 c_{10}, c_{12}	$y^2(y-1)^3(y^{16}-3y^{15}+\cdots-2336y+256)(y^{16}-y^{15}+\cdots+9y+1)$
c_{11}	$y^2(y-1)^3(y^{16}+17y^{15}+\cdots-2843136y+65536)$ $\cdot\,(y^{16}+39y^{15}+\cdots+25y+1)$