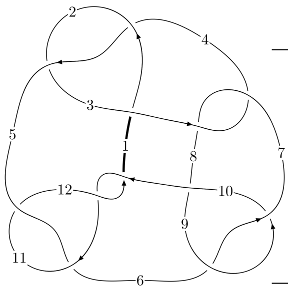
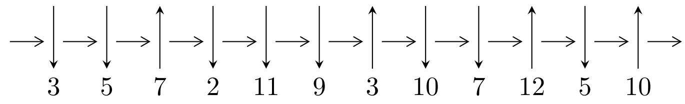
$12n_{0225}$ ($K12n_{0225}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

$$3{,}7 \underset{c_3}{\longrightarrow} 4 \underset{c_7}{\longrightarrow} 5{,}8 \underset{c_2}{\longrightarrow} 2 \underset{c_1}{\rightarrow} 1{,}10 \underset{c_9}{\rightarrow} 9 \underset{c_{12}}{\longrightarrow} 12 \underset{c_{11}}{\rightarrow} 11 \underset{c_5}{\rightarrow} 6 \longrightarrow\!\!\!\!\rightarrow c_4, c_6, c_8, c_{10}$$

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

$$I_1^u = \langle -108733460839492u^{15} + 235633173020139u^{14} + \cdots + 445687541220341 92d - 655346094957840,$$
$$- 5.82443 \times 10^{14}u^{15} + 2.17023 \times 10^{15}u^{14} + \cdots + 8.91375 \times 10^{16}c + 4.50759 \times 10^{16},$$
$$- 2.11450 \times 10^{14}u^{15} + 6.65971 \times 10^{14}u^{14} + \cdots + 4.45688 \times 10^{16}b - 9.31909 \times 10^{15},$$
$$40959130934865u^{15} - 340344314483579u^{14} + \cdots + 89137508244068384a - 71636506057825568,$$
$$u^{16} - 3u^{15} + \cdots - 64u + 32\rangle$$
$$I_2^u = \langle -2059u^7 - 2277u^6 + \cdots + 6184d + 18886,\ 1033u^7a - 1546u^7 + \cdots - 5850a + 12368,$$
$$- 109u^7a + 121u^7 + \cdots + 2066a - 3882,\ 9443u^7a - 4639u^7 + \cdots - 14966a + 1182,$$
$$u^8 + u^7 - 7u^6 - 4u^5 + 16u^4 - 3u^3 - 9u^2 - 8u - 4\rangle$$

$$I_1^v = \langle a,\ d,\ c - v,\ b - 1,\ v^2 - v + 1\rangle$$
$$I_2^v = \langle c,\ d + v - 1,\ b,\ a - 1,\ v^2 - v + 1\rangle$$
$$I_3^v = \langle a,\ d + 1,\ c + a,\ b - 1,\ v + 1\rangle$$
$$I_4^v = \langle a,\ a^2d + c^2v - 2ca - cv + a + v,\ dv - 1,\ c^2v^2 - 2cav - v^2c + a^2 + av + v^2,\ b - 1\rangle$$

* 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. $\boldsymbol{I_1^u = \langle -1.09\times10^{14}u^{15} + 2.36\times10^{14}u^{14} + \cdots + 4.46\times10^{16}d - 6.55\times10^{14},\ -5.82\times10^{14}u^{15} + 2.17\times10^{15}u^{14} + \cdots + 8.91\times10^{16}c + 4.51\times10^{16},\ -2.11\times10^{14}u^{15} + 6.66\times10^{14}u^{14} + \cdots + 4.46\times10^{16}b - 9.32\times10^{15},\ 4.10\times10^{13}u^{15} - 3.40\times10^{14}u^{14} + \cdots + 8.91\times10^{16}a - 7.16\times10^{16},\ u^{16} - 3u^{15} + \cdots - 64u + 32\rangle}$

(i) Arc colorings

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

$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -0.000459505u^{15} + 0.00381819u^{14} + \cdots + 0.107302u + 0.803663 \\ 0.00474436u^{15} - 0.0149425u^{14} + \cdots + 0.0874996u + 0.209095 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} -0.000459505u^{15} + 0.00381819u^{14} + \cdots + 0.107302u + 0.803663 \\ -0.00677644u^{15} + 0.0186134u^{14} + \cdots - 0.258343u - 0.131025 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -0.00723595u^{15} + 0.0224316u^{14} + \cdots - 0.151041u + 0.672638 \\ -0.00677644u^{15} + 0.0186134u^{14} + \cdots - 0.258343u - 0.131025 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.00653421u^{15} - 0.0243470u^{14} + \cdots + 2.83891u - 0.505689 \\ 0.00243968u^{15} - 0.00528696u^{14} + \cdots + 0.774255u + 0.0147042 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.00653421u^{15} - 0.0243470u^{14} + \cdots + 2.83891u - 0.505689 \\ 0.00173022u^{15} - 0.00528404u^{14} + \cdots + 1.28699u - 0.137115 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -0.0137698u^{15} + 0.0405121u^{14} + \cdots + 0.840506u - 0.270168 \\ -0.00358475u^{15} + 0.0138882u^{14} + \cdots + 0.0905304u - 0.518106 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0.00162230u^{15} + 0.00210951u^{14} + \cdots + 0.961532u - 0.579761 \\ -0.00282285u^{15} + 0.0157954u^{14} + \cdots - 0.870510u + 0.171332 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0.00409453u^{15} - 0.0190600u^{14} + \cdots + 2.06466u - 0.520393 \\ -0.000723742u^{15} - 0.00139819u^{14} + \cdots - 0.209537u - 0.231550 \end{pmatrix}$$

(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, c_8	$u^{16} + u^{15} + \cdots - 9u + 1$
c_2, c_4, c_6 c_9	$u^{16} - 5u^{15} + \cdots - u + 1$
c_3, c_7	$u^{16} - 3u^{15} + \cdots - 64u + 32$
c_5, c_{11}	$u^{16} - u^{15} + \cdots + 8u + 4$
c_{10}, c_{12}	$u^{16} - 9u^{15} + \cdots + 24u + 16$

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.289911 + 0.801405I$ $a = 0.654021 + 0.248004I$ $b = 0.336785 - 0.506907I$ $c = 0.424894 + 0.573951I$ $d = -0.009143 + 0.596034I$	$-0.321814 + 1.225450I$	$-4.70206 - 4.90073I$
$u = 0.289911 - 0.801405I$ $a = 0.654021 - 0.248004I$ $b = 0.336785 + 0.506907I$ $c = 0.424894 - 0.573951I$ $d = -0.009143 - 0.596034I$	$-0.321814 - 1.225450I$	$-4.70206 + 4.90073I$
$u = -1.139570 + 0.424244I$ $a = 0.589120 - 0.792720I$ $b = -0.396064 + 0.812657I$ $c = -0.538420 + 0.512682I$ $d = -0.335035 + 1.153290I$	$0.71555 + 3.67228I$	$-1.72542 - 4.33532I$
$u = -1.139570 - 0.424244I$ $a = 0.589120 + 0.792720I$ $b = -0.396064 - 0.812657I$ $c = -0.538420 - 0.512682I$ $d = -0.335035 - 1.153290I$	$0.71555 - 3.67228I$	$-1.72542 + 4.33532I$
$u = 0.575594 + 0.321074I$ $a = 1.017480 + 0.434986I$ $b = -0.169050 - 0.355242I$ $c = 0.486567 + 0.345761I$ $d = 0.445993 + 0.577062I$	$-0.11872 + 1.44911I$	$0.36516 - 2.80335I$
$u = 0.575594 - 0.321074I$ $a = 1.017480 - 0.434986I$ $b = -0.169050 + 0.355242I$ $c = 0.486567 - 0.345761I$ $d = 0.445993 - 0.577062I$	$-0.11872 - 1.44911I$	$0.36516 + 2.80335I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.067191+0.531573I$ $a=\ \ 0.547892+0.020957I$ $b=\ \ 0.822510-0.069711I$ $c=\ \ 0.32158+1.50666I$ $d=-0.047954+0.289837I$	$-2.85279+2.27613I$	$-11.67196-3.94896I$
$u=-0.067191-0.531573I$ $a=\ \ 0.547892-0.020957I$ $b=\ \ 0.822510+0.069711I$ $c=\ \ 0.32158-1.50666I$ $d=-0.047954-0.289837I$	$-2.85279-2.27613I$	$-11.67196+3.94896I$
$u=-0.33229+1.72297I$ $a=\ \ 0.412801-0.282825I$ $b=\ \ 0.648602+1.129520I$ $c=-0.562057+0.484841I$ $d=\ \ 0.350130+0.805225I$	$4.26031-4.58330I$	$-1.71878+4.05752I$
$u=-0.33229-1.72297I$ $a=\ \ 0.412801+0.282825I$ $b=\ \ 0.648602-1.129520I$ $c=-0.562057-0.484841I$ $d=\ \ 0.350130-0.805225I$	$4.26031+4.58330I$	$-1.71878-4.05752I$
$u=-1.81588+0.68377I$ $a=-0.227904+0.980118I$ $b=-1.22507-0.96795I$ $c=-0.415075-0.689342I$ $d=-0.25632-1.93561I$	$6.64229-8.00732I$	$-6.00576+3.88395I$
$u=-1.81588-0.68377I$ $a=-0.227904-0.980118I$ $b=-1.22507+0.96795I$ $c=-0.415075+0.689342I$ $d=-0.25632+1.93561I$	$6.64229+8.00732I$	$-6.00576-3.88395I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.72439 + 0.95526I$ $a = -0.389017 - 0.972862I$ $b = -1.35436 + 0.88620I$ $c = 0.383140 - 0.726169I$ $d = 0.25852 - 2.04920I$	$9.8252 + 14.1242I$	$-4.39428 - 6.97100I$
$u = 1.72439 - 0.95526I$ $a = -0.389017 + 0.972862I$ $b = -1.35436 - 0.88620I$ $c = 0.383140 + 0.726169I$ $d = 0.25852 + 2.04920I$	$9.8252 - 14.1242I$	$-4.39428 + 6.97100I$
$u = 2.26504 + 0.41669I$ $a = -0.104392 - 0.792584I$ $b = -1.16335 + 1.24018I$ $c = 0.399366 - 0.621003I$ $d = 0.09381 - 1.83873I$	$12.28130 + 3.00558I$	$-2.14690 - 1.40998I$
$u = 2.26504 - 0.41669I$ $a = -0.104392 + 0.792584I$ $b = -1.16335 - 1.24018I$ $c = 0.399366 + 0.621003I$ $d = 0.09381 + 1.83873I$	$12.28130 - 3.00558I$	$-2.14690 + 1.40998I$

II. $\boldsymbol{I^u_2 = \langle -2059u^7 - 2277u^6 + \cdots + 6184d + 1.89 \times 10^4,\ 1033au^7 - 1546u^7 + \cdots - 5850a + 1.24 \times 10^4,\ -109au^7 + 121u^7 + \cdots + 2066a - 3882,\ 9443au^7 - 4639u^7 + \cdots - 1.50 \times 10^4 a + 1182,\ u^8 + u^7 + \cdots - 8u - 4\rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} a \\ 0.0352523au^7 - 0.0391332u^7 + \cdots - 0.668176a + 1.25550 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} a \\ -0.0352523au^7 + 0.0391332u^7 + \cdots + 0.668176a - 1.25550 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -0.0352523au^7 + 0.0391332u^7 + \cdots + 1.66818a - 1.25550 \\ -0.0352523au^7 + 0.0391332u^7 + \cdots + 0.668176a - 1.25550 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -\frac{1033}{6184}u^7a + \frac{1}{4}u^7 + \cdots + \frac{2925}{3092}a - 2 \\ 0.332956u^7 + 0.368208u^6 + \cdots - 4.89796u - 3.05401 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -\frac{1033}{6184}u^7a + \frac{1}{4}u^7 + \cdots + \frac{2925}{3092}a - 2 \\ 0.150712au^7 + 0.332956u^7 + \cdots - 0.141009a - 3.05401 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -0.0391332au^7 + 0.0133409u^7 + \cdots + 1.25550a - 2.01892 \\ -0.0187581au^7 - 0.0163325u^7 + \cdots + 0.172057a - 3.19502 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -0.0163325au^7 + 0.0133409u^7 + \cdots + 0.804981a - 2.01892 \\ -0.00226391au^7 - 0.0593467u^7 + \cdots - 0.324062a - 3.35220 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -0.167044au^7 - 0.0829560u^7 + \cdots + 0.945990a + 1.05401 \\ 0.150712au^7 - 0.483668u^7 + \cdots - 0.141009a + 3.19502 \end{pmatrix}$$

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.170290 + 0.725937I$ $a = 0.508470 + 0.631641I$ $b = -0.226676 - 0.960653I$ $c = -1.002720 + 0.319564I$ $d = 0.519668 + 0.225325I$	$1.14222 - 1.62541I$	$-1.41499 + 1.42555I$
$u = 1.170290 + 0.725937I$ $a = 0.406912 - 0.059872I$ $b = 1.40546 + 0.35393I$ $c = 0.507576 + 0.506015I$ $d = 0.136526 + 1.108320I$	$1.14222 - 1.62541I$	$-1.41499 + 1.42555I$
$u = 1.170290 - 0.725937I$ $a = 0.508470 - 0.631641I$ $b = -0.226676 + 0.960653I$ $c = -1.002720 - 0.319564I$ $d = 0.519668 - 0.225325I$	$1.14222 + 1.62541I$	$-1.41499 - 1.42555I$
$u = 1.170290 - 0.725937I$ $a = 0.406912 + 0.059872I$ $b = 1.40546 - 0.35393I$ $c = 0.507576 - 0.506015I$ $d = 0.136526 - 1.108320I$	$1.14222 + 1.62541I$	$-1.41499 - 1.42555I$
$u = -0.195492 + 0.552709I$ $a = 0.527146 + 0.046214I$ $b = 0.882537 - 0.165040I$ $c = -0.51191 - 1.84722I$ $d = -0.94136 - 3.95806I$	$-2.92647 - 1.66195I$	$-9.38368 + 3.48117I$
$u = -0.195492 + 0.552709I$ $a = -5.82950 + 3.76506I$ $b = -1.121050 - 0.078180I$ $c = 0.76737 + 1.32533I$ $d = -0.128596 + 0.282324I$	$-2.92647 - 1.66195I$	$-9.38368 + 3.48117I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.195492 - 0.552709I$ $a = 0.527146 - 0.046214I$ $b = 0.882537 + 0.165040I$ $c = -0.51191 + 1.84722I$ $d = -0.94136 + 3.95806I$	$-2.92647 + 1.66195I$	$-9.38368 - 3.48117I$
$u = -0.195492 - 0.552709I$ $a = -5.82950 - 3.76506I$ $b = -1.121050 + 0.078180I$ $c = 0.76737 - 1.32533I$ $d = -0.128596 - 0.282324I$	$-2.92647 + 1.66195I$	$-9.38368 - 3.48117I$
$u = -0.580387$ $a = 0.467644$ $b = 1.13838$ $c = -0.692019$ $d = -0.969961$	-2.18625	-3.21290
$u = -0.580387$ $a = 1.67123$ $b = -0.401639$ $c = 1.96141$ $d = -0.271415$	-2.18625	-3.21290
$u = 2.05532$ $a = 0.059530 + 0.815129I$ $b = -0.91088 - 1.22029I$ $c = 0.443183 - 0.593724I$ $d = 0.12235 - 1.67535I$	7.78143	-4.64060
$u = 2.05532$ $a = 0.059530 - 0.815129I$ $b = -0.91088 + 1.22029I$ $c = 0.443183 + 0.593724I$ $d = 0.12235 + 1.67535I$	7.78143	-4.64060

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -2.21226 + 0.50002I$ $a = -0.131998 + 0.812425I$ $b = -1.19484 - 1.19923I$ $c = -0.440910 + 0.544962I$ $d = 0.02631 + 1.55679I$	$12.14610 - 5.90409I$	$-2.27459 + 2.82977I$
$u = -2.21226 + 0.50002I$ $a = 0.140006 - 0.672065I$ $b = -0.70292 + 1.42606I$ $c = -0.397283 - 0.631875I$ $d = -0.11421 - 1.86330I$	$12.14610 - 5.90409I$	$-2.27459 + 2.82977I$
$u = -2.21226 - 0.50002I$ $a = -0.131998 - 0.812425I$ $b = -1.19484 + 1.19923I$ $c = -0.440910 - 0.544962I$ $d = 0.02631 - 1.55679I$	$12.14610 + 5.90409I$	$-2.27459 - 2.82977I$
$u = -2.21226 - 0.50002I$ $a = 0.140006 + 0.672065I$ $b = -0.70292 - 1.42606I$ $c = -0.397283 + 0.631875I$ $d = -0.11421 + 1.86330I$	$12.14610 + 5.90409I$	$-2.27459 - 2.82977I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

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

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(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		
$b =$	1.00000	$-1.64493 + 2.02988I$	$-3.00000 - 3.46410I$
$c =$	$0.500000 + 0.866025I$		
$d =$	0		
$v =$	$0.500000 - 0.866025I$		
$a =$	0		
$b =$	1.00000	$-1.64493 - 2.02988I$	$-3.00000 + 3.46410I$
$c =$	$0.500000 - 0.866025I$		
$d =$	0		

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

(i) Arc colorings

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

$$a_7 = \begin{pmatrix} v \\ 0 \end{pmatrix}$$

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

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

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

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

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

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

$$a_9 = \begin{pmatrix} v \\ -v + 1 \end{pmatrix}$$

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

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

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4v - 5$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

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

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

(i) Arc colorings

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

(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_8	$u - 1$
c_3, c_5, c_7 c_{10}, c_{11}, c_{12}	u
c_4, c_9	$u + 1$

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

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

VI.

$\boldsymbol{I_4^v = \langle a,\ c^2v - cv + \cdots - 2ca + a,\ dv - 1,\ c^2v^2 - v^2c + \cdots + a^2 + av,\ b - 1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -d^2 - v^2 - 4c - 8$

(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
$v=\cdots$ $a=\cdots$ $b=\cdots$ $c=\cdots$ $d=\cdots$	$-3.28987+2.02988I$	$-8.06967-3.55149I$

VII. u-Polynomials

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

VIII. Riley Polynomials

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