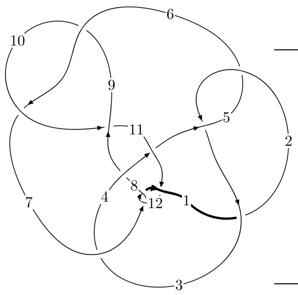
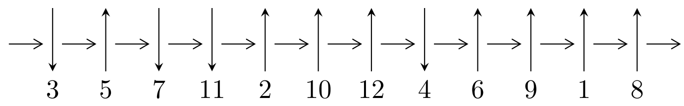
$12a_{0074}$ ($K12a_{0074}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 21u^{30} - 29u^{29} + \cdots + 128b - 34,\ -55u^{30} + 76u^{29} + \cdots + 64a - 39,\ u^{31} - 2u^{30} + \cdots + 3u^2 + 1\rangle$$
$$I_2^u = \langle 2.72739 \times 10^{139}u^{99} + 1.28011 \times 10^{140}u^{98} + \cdots + 1.15126 \times 10^{139}b + 3.66899 \times 10^{139},$$
$$- 1.38967 \times 10^{138}u^{99} - 9.46861 \times 10^{138}u^{98} + \cdots + 1.15126 \times 10^{139}a - 5.17903 \times 10^{138},$$
$$u^{100} + 5u^{99} + \cdots + 2u + 1\rangle$$
$$I_3^u = \langle -au + 2b + a + 2u,\ a^2 + au + a + u + 2,\ u^2 + u - 1\rangle$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 135 representations.

[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. $\boldsymbol{I_1^u = \langle 21u^{30} - 29u^{29} + \cdots + 128b - 34,\ -55u^{30} + 76u^{29} + \cdots + 64a - 39,\ u^{31} - 2u^{30} + \cdots + 3u^2 + 1\rangle}$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 0.859375u^{30} - 1.18750u^{29} + \cdots + 0.750000u + 0.609375 \\ -0.164063u^{30} + 0.226563u^{29} + \cdots + 1.42969u + 0.265625 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u^2 + 1 \\ -u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} \frac{3}{64}u^{30} + \frac{3}{16}u^{29} + \cdots - \frac{9}{8}u + \frac{59}{64} \\ -0.335938u^{30} + 0.460938u^{29} + \cdots + 1.25781u + 0.296875 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -0.0781250u^{30} + 0.187500u^{29} + \cdots + 0.375000u + 1.29688 \\ -0.914063u^{30} + 1.53906u^{29} + \cdots + 1.74219u + 0.453125 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -\frac{1}{2}u^{30} + \frac{1}{2}u^{29} + \cdots + \frac{1}{2}u + 1 \\ -\frac{1}{2}u^{30} + u^{29} + \cdots - 4u^2 - \frac{1}{2} \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0.0625000u^{30} + 0.320313u^{29} + \cdots + 0.179688u + 0.867188 \\ -0.750000u^{30} + 1.31250u^{29} + \cdots + 1.68750u + 0.437500 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} \frac{1}{2}u^{30} - \frac{3}{2}u^{29} + \cdots - \frac{1}{2}u^2 - \frac{5}{2}u \\ \frac{1}{2}u^{30} - u^{29} + \cdots - u - \frac{1}{2} \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -\frac{1}{2}u^{29} + \frac{3}{2}u^{28} + \cdots + \frac{1}{2}u + \frac{3}{2} \\ -\frac{1}{2}u^{30} + \frac{1}{2}u^{29} + \cdots - \frac{3}{2}u^2 + \frac{1}{2}u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{159}{128}u^{30} - \frac{693}{256}u^{29} + \cdots + \frac{1725}{256}u + \frac{827}{256}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{31} + 13u^{30} + \cdots + 6432u - 256$
c_2, c_5	$u^{31} - u^{30} + \cdots + 88u + 16$
c_3, c_4	$16(16u^{31} + 8u^{30} + \cdots - 4u^2 - 1)$
c_6, c_7, c_9 c_{12}	$u^{31} + 2u^{30} + \cdots - 3u^2 - 1$
c_8	$u^{31} - 5u^{30} + \cdots + 6144u - 1024$
c_{10}, c_{11}	$u^{31} - 18u^{30} + \cdots - 6u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{31} + 9y^{30} + \cdots + 52675072y - 65536$
c_2, c_5	$y^{31} + 13y^{30} + \cdots + 6432y - 256$
c_3, c_4	$256(256y^{31} + 192y^{30} + \cdots - 8y - 1)$
c_6, c_7, c_9 c_{12}	$y^{31} - 18y^{30} + \cdots - 6y - 1$
c_8	$y^{31} - 5y^{30} + \cdots - 7995392y - 1048576$
c_{10}, c_{11}	$y^{31} - 6y^{30} + \cdots + 122y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.936680 + 0.338613I$ $a = 0.582188 + 1.079190I$ $b = 0.048866 + 0.688489I$	$3.50074 - 0.90322I$	$13.05413 + 1.36085I$
$u = -0.936680 - 0.338613I$ $a = 0.582188 - 1.079190I$ $b = 0.048866 - 0.688489I$	$3.50074 + 0.90322I$	$13.05413 - 1.36085I$
$u = 0.610112 + 0.779812I$ $a = 1.106790 + 0.630784I$ $b = 2.03656 - 0.74980I$	$-7.60447 + 0.14654I$	$-4.01564 - 1.65888I$
$u = 0.610112 - 0.779812I$ $a = 1.106790 - 0.630784I$ $b = 2.03656 + 0.74980I$	$-7.60447 - 0.14654I$	$-4.01564 + 1.65888I$
$u = 0.449445 + 0.919135I$ $a = -0.743911 - 1.014000I$ $b = -1.45563 + 0.84618I$	$-4.77494 - 8.27043I$	$-1.01784 + 4.50252I$
$u = 0.449445 - 0.919135I$ $a = -0.743911 + 1.014000I$ $b = -1.45563 - 0.84618I$	$-4.77494 + 8.27043I$	$-1.01784 - 4.50252I$
$u = 0.990236 + 0.401727I$ $a = -0.892639 + 0.404991I$ $b = -0.264917 + 0.891534I$	$4.39913 + 4.26165I$	$14.5933 - 6.3356I$
$u = 0.990236 - 0.401727I$ $a = -0.892639 - 0.404991I$ $b = -0.264917 - 0.891534I$	$4.39913 - 4.26165I$	$14.5933 + 6.3356I$
$u = 0.434243 + 0.819908I$ $a = 0.738201 - 0.621086I$ $b = 0.265245 - 0.383053I$	$-2.40209 - 2.98251I$	$1.29241 + 0.67097I$
$u = 0.434243 - 0.819908I$ $a = 0.738201 + 0.621086I$ $b = 0.265245 + 0.383053I$	$-2.40209 + 2.98251I$	$1.29241 - 0.67097I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.002380 + 0.466614I$ $a = 1.155680 - 0.270045I$ $b = 1.46383 + 0.71776I$	$3.57794 - 7.81275I$	$11.7195 + 11.3359I$
$u = -1.002380 - 0.466614I$ $a = 1.155680 + 0.270045I$ $b = 1.46383 - 0.71776I$	$3.57794 + 7.81275I$	$11.7195 - 11.3359I$
$u = 1.005510 + 0.542400I$ $a = -1.054370 - 0.734239I$ $b = -2.41506 + 1.08769I$	$0.66388 + 10.41550I$	$6.1852 - 13.0772I$
$u = 1.005510 - 0.542400I$ $a = -1.054370 + 0.734239I$ $b = -2.41506 - 1.08769I$	$0.66388 - 10.41550I$	$6.1852 + 13.0772I$
$u = 0.766410 + 0.276505I$ $a = -0.25730 + 1.48498I$ $b = 0.363756 - 0.337678I$	$1.16092 - 1.09032I$	$8.12696 + 0.09273I$
$u = 0.766410 - 0.276505I$ $a = -0.25730 - 1.48498I$ $b = 0.363756 + 0.337678I$	$1.16092 + 1.09032I$	$8.12696 - 0.09273I$
$u = -1.021490 + 0.642260I$ $a = 0.582856 - 0.986168I$ $b = 2.02101 + 0.91098I$	$-5.08603 - 10.58260I$	$0.75987 + 9.57565I$
$u = -1.021490 - 0.642260I$ $a = 0.582856 + 0.986168I$ $b = 2.02101 - 0.91098I$	$-5.08603 + 10.58260I$	$0.75987 - 9.57565I$
$u = -0.579199 + 0.524845I$ $a = -0.61005 + 1.48157I$ $b = -1.56698 - 0.68703I$	$-1.92067 + 1.62049I$	$-0.67303 - 1.57224I$
$u = -0.579199 - 0.524845I$ $a = -0.61005 - 1.48157I$ $b = -1.56698 + 0.68703I$	$-1.92067 - 1.62049I$	$-0.67303 + 1.57224I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.114480 + 0.634528I$ $a = -0.496941 - 0.671776I$ $b = -0.149359 - 0.970560I$	$1.63726 - 13.87830I$	$6.56033 + 8.55323I$
$u = -1.114480 - 0.634528I$ $a = -0.496941 + 0.671776I$ $b = -0.149359 + 0.970560I$	$1.63726 + 13.87830I$	$6.56033 - 8.55323I$
$u = 1.303030 + 0.092850I$ $a = 0.555582 + 0.574307I$ $b = 1.230900 - 0.232581I$	$8.75635 + 2.55545I$	$15.7194 - 2.3286I$
$u = 1.303030 - 0.092850I$ $a = 0.555582 - 0.574307I$ $b = 1.230900 + 0.232581I$	$8.75635 - 2.55545I$	$15.7194 + 2.3286I$
$u = -0.693108$ $a = -0.270559$ $b = -0.646343$	1.19574	7.87080
$u = -1.134090 + 0.668227I$ $a = -0.893764 + 0.503768I$ $b = -2.88013 - 0.89189I$	$-0.6287 - 19.8896I$	$4.17991 + 11.79937I$
$u = -1.134090 - 0.668227I$ $a = -0.893764 - 0.503768I$ $b = -2.88013 + 0.89189I$	$-0.6287 + 19.8896I$	$4.17991 - 11.79937I$
$u = 1.60823 + 0.02683I$ $a = 0.310056 - 0.550818I$ $b = 1.162700 + 0.700629I$	$8.90816 - 2.08408I$	$29.0927 + 62.0574I$
$u = 1.60823 - 0.02683I$ $a = 0.310056 + 0.550818I$ $b = 1.162700 - 0.700629I$	$8.90816 + 2.08408I$	$29.0927 - 62.0574I$
$u = -0.032351 + 0.347236I$ $a = 2.05290 + 0.96045I$ $b = 0.212373 + 0.529053I$	$-0.093331 - 1.383200I$	$-0.26260 + 4.88905I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.032351 - 0.347236I$ $a = 2.05290 - 0.96045I$ $b = 0.212373 - 0.529053I$	$-0.093331 + 1.383200I$	$-0.26260 - 4.88905I$

II. $I_2^u = \langle 2.73 \times 10^{139} u^{99} + 1.28 \times 10^{140} u^{98} + \cdots + 1.15 \times 10^{139} b + 3.67 \times 10^{139},\ -1.39 \times 10^{138} u^{99} - 9.47 \times 10^{138} u^{98} + \cdots + 1.15 \times 10^{139} a - 5.18 \times 10^{138},\ u^{100} + 5u^{99} + \cdots + 2u + 1 \rangle$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 0.120709u^{99} + 0.822455u^{98} + \cdots + 2.52213u + 0.449857 \\ -2.36904u^{99} - 11.1192u^{98} + \cdots - 0.977338u - 3.18693 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u^2 + 1 \\ -u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -0.488022u^{99} - 2.16943u^{98} + \cdots + 3.31259u - 0.818863 \\ -2.16817u^{99} - 9.37783u^{98} + \cdots - 0.240999u - 1.66392 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -0.373898u^{99} - 1.57574u^{98} + \cdots + 5.49285u - 0.603726 \\ -2.25516u^{99} - 9.47053u^{98} + \cdots - 0.392895u - 1.57015 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 0.0996443u^{99} - 0.000163284u^{98} + \cdots - 0.496826u - 0.698151 \\ -0.844919u^{99} - 4.49402u^{98} + \cdots - 2.62234u - 2.17334 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0.308833u^{99} + 2.43088u^{98} + \cdots + 6.45605u + 0.901556 \\ 0.332759u^{99} + 1.55082u^{98} + \cdots + 2.43896u + 0.528091 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 2.17334u^{99} + 10.0218u^{98} + \cdots + 3.43426u + 1.72433 \\ 0.498385u^{99} + 1.78125u^{98} + \cdots + 0.897440u + 0.0996443 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -0.904282u^{99} - 4.89024u^{98} + \cdots - 4.39589u - 0.802382 \\ -1.62929u^{99} - 7.37061u^{98} + \cdots - 4.26428u - 1.54217 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -5.53328u^{99} - 25.3817u^{98} + \cdots - 11.0157u - 1.28022$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^{50}+22u^{49}+\cdots-26u+1)^2$
c_2, c_5	$(u^{50}+2u^{49}+\cdots+10u+1)^2$
c_3, c_4	$u^{100}+7u^{99}+\cdots+1086100u+143123$
c_6, c_7, c_9 c_{12}	$u^{100}-5u^{99}+\cdots-2u+1$
c_8	$(u^{50}+2u^{49}+\cdots+4u+1)^2$
c_{10}, c_{11}	$u^{100}-41u^{99}+\cdots+30u^2+1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^{50} + 14y^{49} + \cdots - 1050y + 1)^2$
c_2, c_5	$(y^{50} + 22y^{49} + \cdots - 26y + 1)^2$
c_3, c_4	$y^{100} - 33y^{99} + \cdots + 855156748636y + 20484193129$
c_6, c_7, c_9 c_{12}	$y^{100} - 41y^{99} + \cdots + 30y^2 + 1$
c_8	$(y^{50} - 10y^{49} + \cdots + 10y + 1)^2$
c_{10}, c_{11}	$y^{100} + 35y^{99} + \cdots + 60y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.805392 + 0.565666I$ $a = 0.137398 + 0.910966I$ $b = 3.71411 - 1.57836I$	$-0.21807 + 2.45541I$	0
$u = 0.805392 - 0.565666I$ $a = 0.137398 - 0.910966I$ $b = 3.71411 + 1.57836I$	$-0.21807 - 2.45541I$	0
$u = 0.870372 + 0.532948I$ $a = -0.844290 - 0.471246I$ $b = -4.88150 + 8.11072I$	$-0.03678 + 1.97726I$	0
$u = 0.870372 - 0.532948I$ $a = -0.844290 + 0.471246I$ $b = -4.88150 - 8.11072I$	$-0.03678 - 1.97726I$	0
$u = 0.897882 + 0.487726I$ $a = -0.014174 + 0.965644I$ $b = -1.09023 + 8.22715I$	$-0.03678 - 1.97726I$	0
$u = 0.897882 - 0.487726I$ $a = -0.014174 - 0.965644I$ $b = -1.09023 - 8.22715I$	$-0.03678 + 1.97726I$	0
$u = -0.464448 + 0.914988I$ $a = 0.718491 - 1.066280I$ $b = 1.50650 + 0.81554I$	$-2.6715 + 14.0778I$	0
$u = -0.464448 - 0.914988I$ $a = 0.718491 + 1.066280I$ $b = 1.50650 - 0.81554I$	$-2.6715 - 14.0778I$	0
$u = 0.345540 + 0.905171I$ $a = -0.888803 - 0.791753I$ $b = -1.21930 + 0.92283I$	$-5.90869 - 3.57059I$	0
$u = 0.345540 - 0.905171I$ $a = -0.888803 + 0.791753I$ $b = -1.21930 - 0.92283I$	$-5.90869 + 3.57059I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.599800 + 0.750932I$ $a = -0.150280 - 0.616290I$ $b = 0.303124 + 0.349454I$	$-1.29692 - 5.01538I$	0
$u = -0.599800 - 0.750932I$ $a = -0.150280 + 0.616290I$ $b = 0.303124 - 0.349454I$	$-1.29692 + 5.01538I$	0
$u = -0.592726 + 0.753085I$ $a = -1.139510 + 0.755454I$ $b = -2.06616 - 0.74386I$	$-6.37316 + 5.28105I$	0
$u = -0.592726 - 0.753085I$ $a = -1.139510 - 0.755454I$ $b = -2.06616 + 0.74386I$	$-6.37316 - 5.28105I$	0
$u = 0.995575 + 0.307242I$ $a = -0.329780 - 0.755301I$ $b = 0.892626 - 0.159113I$	$-0.59812 + 5.40527I$	0
$u = 0.995575 - 0.307242I$ $a = -0.329780 + 0.755301I$ $b = 0.892626 + 0.159113I$	$-0.59812 - 5.40527I$	0
$u = -0.963434 + 0.399072I$ $a = 0.512485 + 0.510292I$ $b = -0.011941 + 0.888950I$	$2.04137 - 1.36627I$	0
$u = -0.963434 - 0.399072I$ $a = 0.512485 - 0.510292I$ $b = -0.011941 - 0.888950I$	$2.04137 + 1.36627I$	0
$u = 0.975907 + 0.372400I$ $a = -0.772650 + 0.760018I$ $b = -0.069798 + 0.950611I$	$4.18629 - 1.80724I$	0
$u = 0.975907 - 0.372400I$ $a = -0.772650 - 0.760018I$ $b = -0.069798 - 0.950611I$	$4.18629 + 1.80724I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.941662 + 0.467528I$ $a = \quad 0.001522 + 0.862430I$ $b = -0.70376 + 3.30787I$	$-0.21807 - 2.45541I$	0
$u = -0.941662 - 0.467528I$ $a = \quad 0.001522 - 0.862430I$ $b = -0.70376 - 3.30787I$	$-0.21807 + 2.45541I$	0
$u = -0.438799 + 0.840334I$ $a = -0.815677 - 0.656198I$ $b = -0.308347 - 0.529533I$	$-0.38497 + 8.39332I$	0
$u = -0.438799 - 0.840334I$ $a = -0.815677 + 0.656198I$ $b = -0.308347 + 0.529533I$	$-0.38497 - 8.39332I$	0
$u = -0.895331 + 0.277953I$ $a = \quad 0.49067 + 1.34070I$ $b = -0.213926 + 0.271473I$	$2.41061 + 4.79603I$	0
$u = -0.895331 - 0.277953I$ $a = \quad 0.49067 - 1.34070I$ $b = -0.213926 - 0.271473I$	$2.41061 - 4.79603I$	0
$u = -0.452534 + 0.971496I$ $a = \quad 0.638057 - 0.904792I$ $b = \quad 1.35669 + 0.76688I$	$1.58339 + 5.46834I$	0
$u = -0.452534 - 0.971496I$ $a = \quad 0.638057 + 0.904792I$ $b = \quad 1.35669 - 0.76688I$	$1.58339 - 5.46834I$	0
$u = -0.362849 + 0.852585I$ $a = -0.821536 - 0.441844I$ $b = -0.638247 - 0.245214I$	$3.03278 + 0.55194I$	0
$u = -0.362849 - 0.852585I$ $a = -0.821536 + 0.441844I$ $b = -0.638247 + 0.245214I$	$3.03278 - 0.55194I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.972507 + 0.459567I$ $a = -0.932367 - 0.289538I$ $b = -1.320190 - 0.016880I$	$1.69220 + 4.35370I$	0
$u = 0.972507 - 0.459567I$ $a = -0.932367 + 0.289538I$ $b = -1.320190 + 0.016880I$	$1.69220 - 4.35370I$	0
$u = 0.845214 + 0.350717I$ $a = -0.269449 + 1.229150I$ $b = -0.360530 - 0.128486I$	$0.96274 - 1.04006I$	0
$u = 0.845214 - 0.350717I$ $a = -0.269449 - 1.229150I$ $b = -0.360530 + 0.128486I$	$0.96274 + 1.04006I$	0
$u = -0.996807 + 0.435728I$ $a = 1.040630 - 0.000544I$ $b = 0.811839 + 0.685261I$	$4.18629 - 1.80724I$	0
$u = -0.996807 - 0.435728I$ $a = 1.040630 + 0.000544I$ $b = 0.811839 - 0.685261I$	$4.18629 + 1.80724I$	0
$u = -0.940675 + 0.571103I$ $a = 0.797850 - 0.614339I$ $b = 2.78678 + 1.76470I$	$-0.74785 - 5.64906I$	0
$u = -0.940675 - 0.571103I$ $a = 0.797850 + 0.614339I$ $b = 2.78678 - 1.76470I$	$-0.74785 + 5.64906I$	0
$u = 0.640859 + 0.895863I$ $a = 1.012390 + 0.267051I$ $b = 1.88350 - 0.68017I$	$-5.90869 + 3.57059I$	0
$u = 0.640859 - 0.895863I$ $a = 1.012390 - 0.267051I$ $b = 1.88350 + 0.68017I$	$-5.90869 - 3.57059I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.704941 + 0.555049I$ $a = -0.390234 + 1.107560I$ $b = -1.92721 - 1.30059I$	$-1.47932 + 1.10651I$	0
$u = -0.704941 - 0.555049I$ $a = -0.390234 - 1.107560I$ $b = -1.92721 + 1.30059I$	$-1.47932 - 1.10651I$	0
$u = -0.958259 + 0.559233I$ $a = -0.136771 - 0.079819I$ $b = -1.065870 + 0.002940I$	-0.223424	0
$u = -0.958259 - 0.559233I$ $a = -0.136771 + 0.079819I$ $b = -1.065870 - 0.002940I$	-0.223424	0
$u = -0.287367 + 0.842417I$ $a = 1.009560 - 0.693922I$ $b = 1.04412 + 0.95613I$	$-4.78948 - 2.42792I$	0
$u = -0.287367 - 0.842417I$ $a = 1.009560 + 0.693922I$ $b = 1.04412 - 0.95613I$	$-4.78948 + 2.42792I$	0
$u = -0.900705 + 0.652680I$ $a = 0.520199 - 0.570395I$ $b = 1.27971 + 1.85358I$	$-0.59812 - 5.40527I$	0
$u = -0.900705 - 0.652680I$ $a = 0.520199 + 0.570395I$ $b = 1.27971 - 1.85358I$	$-0.59812 + 5.40527I$	0
$u = 0.508428 + 0.727312I$ $a = 0.383289 - 0.548299I$ $b = -0.0213567 + 0.1030520I$	-3.00190	0
$u = 0.508428 - 0.727312I$ $a = 0.383289 + 0.548299I$ $b = -0.0213567 - 0.1030520I$	-3.00190	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.992128 + 0.505162I$ $a = -1.083540 - 0.520726I$ $b = -2.20138 + 0.72198I$	$2.41061 + 4.79603I$	0
$u = 0.992128 - 0.505162I$ $a = -1.083540 + 0.520726I$ $b = -2.20138 - 0.72198I$	$2.41061 - 4.79603I$	0
$u = -0.597441 + 0.939870I$ $a = -1.052590 + 0.123829I$ $b = -1.76623 - 0.67472I$	$-3.40724 - 9.26124I$	0
$u = -0.597441 - 0.939870I$ $a = -1.052590 - 0.123829I$ $b = -1.76623 + 0.67472I$	$-3.40724 + 9.26124I$	0
$u = -0.985911 + 0.554260I$ $a = 0.941721 - 0.708633I$ $b = 2.53950 + 1.14071I$	$-0.73924 - 6.06918I$	0
$u = -0.985911 - 0.554260I$ $a = 0.941721 + 0.708633I$ $b = 2.53950 - 1.14071I$	$-0.73924 + 6.06918I$	0
$u = -0.804423 + 0.810841I$ $a = -0.683704 + 0.364209I$ $b = -2.01847 - 0.56368I$	$-0.915526 - 0.076578I$	0
$u = -0.804423 - 0.810841I$ $a = -0.683704 - 0.364209I$ $b = -2.01847 + 0.56368I$	$-0.915526 + 0.076578I$	0
$u = -1.196350 + 0.125224I$ $a = -0.604684 + 0.388170I$ $b = -1.214590 - 0.044805I$	$3.03278 + 0.55194I$	0
$u = -1.196350 - 0.125224I$ $a = -0.604684 - 0.388170I$ $b = -1.214590 + 0.044805I$	$3.03278 - 0.55194I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.205060 + 0.085428I$ $a = 0.703335 + 0.405377I$ $b = 1.157630 - 0.080797I$	$5.29694 - 5.97751I$	0
$u = 1.205060 - 0.085428I$ $a = 0.703335 - 0.405377I$ $b = 1.157630 + 0.080797I$	$5.29694 + 5.97751I$	0
$u = 1.017910 + 0.659027I$ $a = -0.511569 - 0.951740I$ $b = -1.86748 + 0.89291I$	$-6.37316 + 5.28105I$	0
$u = 1.017910 - 0.659027I$ $a = -0.511569 + 0.951740I$ $b = -1.86748 - 0.89291I$	$-6.37316 - 5.28105I$	0
$u = -1.174210 + 0.323836I$ $a = -0.016603 - 0.726219I$ $b = -0.723369 + 0.106438I$	$-0.915526 + 0.076578I$	0
$u = -1.174210 - 0.323836I$ $a = -0.016603 + 0.726219I$ $b = -0.723369 - 0.106438I$	$-0.915526 - 0.076578I$	0
$u = 1.073530 + 0.580651I$ $a = 0.298381 - 0.400600I$ $b = 0.662813 - 0.460597I$	$-1.29692 + 5.01538I$	0
$u = 1.073530 - 0.580651I$ $a = 0.298381 + 0.400600I$ $b = 0.662813 + 0.460597I$	$-1.29692 - 5.01538I$	0
$u = 1.009330 + 0.740780I$ $a = -0.306559 - 0.815188I$ $b = -1.29785 + 0.84084I$	$-4.78948 + 2.42792I$	0
$u = 1.009330 - 0.740780I$ $a = -0.306559 + 0.815188I$ $b = -1.29785 - 0.84084I$	$-4.78948 - 2.42792I$	0

Solutions to I_2^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.111390 + 0.627622I$ $a = 0.467225 - 0.621515I$ $b = 0.250207 - 0.878108I$	$-0.38497 + 8.39332I$	0
$u = 1.111390 - 0.627622I$ $a = 0.467225 + 0.621515I$ $b = 0.250207 + 0.878108I$	$-0.38497 - 8.39332I$	0
$u = 1.279170 + 0.025724I$ $a = 0.491611 - 0.840663I$ $b = 1.073100 + 0.269183I$	$3.73617 - 11.46140I$	0
$u = 1.279170 - 0.025724I$ $a = 0.491611 + 0.840663I$ $b = 1.073100 - 0.269183I$	$3.73617 + 11.46140I$	0
$u = -1.132260 + 0.619924I$ $a = -0.348291 - 0.675201I$ $b = -0.074295 - 0.616385I$	$5.29694 - 5.97751I$	0
$u = -1.132260 - 0.619924I$ $a = -0.348291 + 0.675201I$ $b = -0.074295 + 0.616385I$	$5.29694 + 5.97751I$	0
$u = 0.502314 + 0.490863I$ $a = 0.66915 + 1.77608I$ $b = 1.45721 - 0.37222I$	$-0.73924 - 6.06918I$	$2.41006 + 7.32858I$
$u = 0.502314 - 0.490863I$ $a = 0.66915 - 1.77608I$ $b = 1.45721 + 0.37222I$	$-0.73924 + 6.06918I$	$2.41006 - 7.32858I$
$u = -1.302470 + 0.047049I$ $a = -0.424085 - 0.805603I$ $b = -1.056750 + 0.299631I$	$1.58339 + 5.46834I$	0
$u = -1.302470 - 0.047049I$ $a = -0.424085 + 0.805603I$ $b = -1.056750 - 0.299631I$	$1.58339 - 5.46834I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.140050 + 0.665009I$ $a = 0.860159 + 0.509302I$ $b = 2.85078 - 0.81091I$	$-2.6715 + 14.0778I$	0
$u = 1.140050 - 0.665009I$ $a = 0.860159 - 0.509302I$ $b = 2.85078 + 0.81091I$	$-2.6715 - 14.0778I$	0
$u = -1.073870 + 0.793669I$ $a = 0.175427 - 0.796181I$ $b = 1.033190 + 0.651248I$	$-1.98760 + 2.97707I$	0
$u = -1.073870 - 0.793669I$ $a = 0.175427 + 0.796181I$ $b = 1.033190 - 0.651248I$	$-1.98760 - 2.97707I$	0
$u = -1.152470 + 0.680824I$ $a = -0.822217 + 0.436383I$ $b = -2.64936 - 0.82205I$	$3.73617 - 11.46140I$	0
$u = -1.152470 - 0.680824I$ $a = -0.822217 - 0.436383I$ $b = -2.64936 + 0.82205I$	$3.73617 + 11.46140I$	0
$u = 1.179930 + 0.642534I$ $a = 0.713472 + 0.512611I$ $b = 2.64710 - 0.49670I$	$-3.40724 + 9.26124I$	0
$u = 1.179930 - 0.642534I$ $a = 0.713472 - 0.512611I$ $b = 2.64710 + 0.49670I$	$-3.40724 - 9.26124I$	0
$u = -1.220660 + 0.604182I$ $a = -0.615660 + 0.509771I$ $b = -2.45269 - 0.31426I$	$-1.98760 - 2.97707I$	0
$u = -1.220660 - 0.604182I$ $a = -0.615660 - 0.509771I$ $b = -2.45269 + 0.31426I$	$-1.98760 + 2.97707I$	0

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.552531 + 0.276448I$ $a = -1.32704 - 1.20661I$ $b = 0.818403 + 0.846569I$	$-0.74785 + 5.64906I$	$4.57569 - 5.94359I$
$u = 0.552531 - 0.276448I$ $a = -1.32704 + 1.20661I$ $b = 0.818403 - 0.846569I$	$-0.74785 - 5.64906I$	$4.57569 + 5.94359I$
$u = -0.387777 + 0.346074I$ $a = 1.76529 - 0.99655I$ $b = -0.308640 + 0.934645I$	$-1.47932 - 1.10651I$	$1.22803 + 1.09399I$
$u = -0.387777 - 0.346074I$ $a = 1.76529 + 0.99655I$ $b = -0.308640 - 0.934645I$	$-1.47932 + 1.10651I$	$1.22803 - 1.09399I$
$u = -0.034900 + 0.411538I$ $a = -0.55000 + 1.74123I$ $b = -0.202925 + 0.724869I$	$2.04137 - 1.36627I$	$7.53684 + 1.88972I$
$u = -0.034900 - 0.411538I$ $a = -0.55000 - 1.74123I$ $b = -0.202925 - 0.724869I$	$2.04137 + 1.36627I$	$7.53684 - 1.88972I$
$u = -0.125790 + 0.375790I$ $a = -1.07942 + 2.42011I$ $b = -0.547317 + 0.575101I$	$1.69220 + 4.35370I$	$5.21676 - 6.57113I$
$u = -0.125790 - 0.375790I$ $a = -1.07942 - 2.42011I$ $b = -0.547317 - 0.575101I$	$1.69220 - 4.35370I$	$5.21676 + 6.57113I$
$u = 0.267856 + 0.279357I$ $a = 0.58318 + 2.91753I$ $b = 0.710804 + 0.143443I$	$0.96274 - 1.04006I$	$3.85927 - 1.45378I$
$u = 0.267856 - 0.279357I$ $a = 0.58318 - 2.91753I$ $b = 0.710804 - 0.143443I$	$0.96274 + 1.04006I$	$3.85927 + 1.45378I$

III. $\boldsymbol{I_3^u = \langle -au + 2b + a + 2u,\ a^2 + au + a + u + 2,\ u^2 + u - 1\rangle}$

(i) Arc colorings

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

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

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

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

$$a_2 = \begin{pmatrix} a \\ \frac{1}{2}au - \frac{1}{2}a - u \end{pmatrix}$$

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

$$a_5 = \begin{pmatrix} a + u + 1 \\ -\frac{1}{2}au + \frac{1}{2}a + \frac{1}{2}u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} a + u + 1 \\ \frac{1}{2}au - \frac{1}{2}a - \frac{1}{2}u \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} \frac{1}{2}au + a + u + \frac{3}{2} \\ 0 \end{pmatrix}$$

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

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -\frac{187}{4}au + 34a + 32u - 10$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_5	$(y^2 + y + 1)^2$
c_3, c_4	$256(256y^4 + 192y^3 + 128y^2 + 12y + 1)$
c_6, c_7, c_9 c_{12}	$(y^2 - 3y + 1)^2$
c_8	y^4
c_{10}, c_{11}	$(y^2 - 7y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.618034$ $a = -0.80902 + 1.40126I$ $b = -0.463525 - 0.267617I$	$0.98696 - 2.02988I$	$5.64551 + 7.15610I$
$u = 0.618034$ $a = -0.80902 - 1.40126I$ $b = -0.463525 + 0.267617I$	$0.98696 + 2.02988I$	$5.64551 - 7.15610I$
$u = -1.61803$ $a = 0.309017 + 0.535233I$ $b = 1.213530 - 0.700629I$	$8.88264 + 2.02988I$	$-27.8955 + 58.6846I$
$u = -1.61803$ $a = 0.309017 - 0.535233I$ $b = 1.213530 + 0.700629I$	$8.88264 - 2.02988I$	$-27.8955 - 58.6846I$

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^2-u+1)^2)(u^{31}+13u^{30}+\cdots+6432u-256)$ $\cdot(u^{50}+22u^{49}+\cdots-26u+1)^2$
c_2	$((u^2+u+1)^2)(u^{31}-u^{30}+\cdots+88u+16)$ $\cdot(u^{50}+2u^{49}+\cdots+10u+1)^2$
c_3	$256(16u^4-8u^3+\cdots+2u+1)(16u^{31}+8u^{30}+\cdots-4u^2-1)$ $\cdot(u^{100}+7u^{99}+\cdots+1086100u+143123)$
c_4	$256(16u^4+8u^3+\cdots-2u+1)(16u^{31}+8u^{30}+\cdots-4u^2-1)$ $\cdot(u^{100}+7u^{99}+\cdots+1086100u+143123)$
c_5	$((u^2-u+1)^2)(u^{31}-u^{30}+\cdots+88u+16)$ $\cdot(u^{50}+2u^{49}+\cdots+10u+1)^2$
c_6, c_7	$((u^2-u-1)^2)(u^{31}+2u^{30}+\cdots-3u^2-1)(u^{100}-5u^{99}+\cdots-2u+1)$
c_8	$u^4(u^{31}-5u^{30}+\cdots+6144u-1024)(u^{50}+2u^{49}+\cdots+4u+1)^2$
c_9, c_{12}	$((u^2+u-1)^2)(u^{31}+2u^{30}+\cdots-3u^2-1)(u^{100}-5u^{99}+\cdots-2u+1)$
c_{10}	$((u^2-3u+1)^2)(u^{31}-18u^{30}+\cdots-6u-1)$ $\cdot(u^{100}-41u^{99}+\cdots+30u^2+1)$
c_{11}	$((u^2+3u+1)^2)(u^{31}-18u^{30}+\cdots-6u-1)$ $\cdot(u^{100}-41u^{99}+\cdots+30u^2+1)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y^2+y+1)^2)(y^{31}+9y^{30}+\cdots+52675072y-65536)$ $\cdot\,(y^{50}+14y^{49}+\cdots-1050y+1)^2$
c_2, c_5	$((y^2+y+1)^2)(y^{31}+13y^{30}+\cdots+6432y-256)$ $\cdot\,(y^{50}+22y^{49}+\cdots-26y+1)^2$
c_3, c_4	$65536(256y^4+192y^3+128y^2+12y+1)$ $\cdot\,(256y^{31}+192y^{30}+\cdots-8y-1)$ $\cdot\,(y^{100}-33y^{99}+\cdots+855156748636y+20484193129)$
c_6, c_7, c_9 c_{12}	$((y^2-3y+1)^2)(y^{31}-18y^{30}+\cdots-6y-1)$ $\cdot\,(y^{100}-41y^{99}+\cdots+30y^2+1)$
c_8	$y^4(y^{31}-5y^{30}+\cdots-7995392y-1048576)$ $\cdot\,(y^{50}-10y^{49}+\cdots+10y+1)^2$
c_{10}, c_{11}	$((y^2-7y+1)^2)(y^{31}-6y^{30}+\cdots+122y-1)$ $\cdot\,(y^{100}+35y^{99}+\cdots+60y+1)$