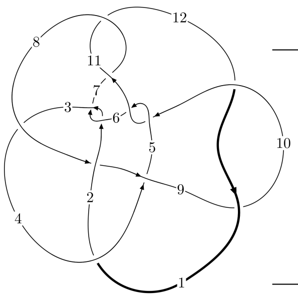
$12n_{0740}$ ($K12n_{0740}$)



A knot diagram[1]

Linearized knot diagam

$$\to \downarrow_{4} \to \uparrow_{6} \to \uparrow_{8} \to \downarrow_{9} \to \downarrow_{11} \to \uparrow_{3} \to \uparrow_{11} \to \uparrow_{2} \to \downarrow_{1} \to \downarrow_{5} \to \uparrow_{8} \to \downarrow_{10} \to$$

Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & 1.79550 \times 10^{17} u^{29} + 2.44036 \times 10^{18} u^{28} + \cdots + 5.15180 \times 10^{17} b - 1.38475 \times 10^{18}, \\
& -2.66097 \times 10^{17} u^{29} - 3.83157 \times 10^{18} u^{28} + \cdots + 5.15180 \times 10^{17} a - 5.56966 \times 10^{18}, \\
& u^{30} + 14u^{29} + \cdots + 196u + 16 \rangle \\
I_2^u = \langle & -220u^{11}a^3 - 53u^{11}a^2 + \cdots - 345a + 469,\ -54u^{11}a^3 + 45u^{11}a^2 + \cdots - 1650a - 74, \\
& u^{12} - 3u^{11} + 8u^{10} - 13u^9 + 19u^8 - 23u^7 + 25u^6 - 25u^5 + 20u^4 - 15u^3 + 10u^2 - 5u + 3 \rangle \\
I_3^u = \langle & -62145u^{17} + 526568u^{16} + \cdots + 56783b + 322467, \\
& 485418u^{17} - 4751066u^{16} + \cdots + 738179a - 8037342,\ u^{18} - 9u^{17} + \cdots - 45u + 13 \rangle \\
I_4^u = \langle & 8a^3u + 6a^3 - 7a^2u + a^2 + 35au + 50b + 45a - 23u - 61,\ a^4 + a^3u + a^3 - a^2u + 4a^2 + 5au - a - 6u - 5, \\
& u^2 + 1 \rangle
\end{aligned}$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 104 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. $I_1^u = \langle 1.80 \times 10^{17}u^{29} + 2.44 \times 10^{18}u^{28} + \cdots + 5.15 \times 10^{17}b - 1.38 \times 10^{18},\ -2.66 \times 10^{17}u^{29} - 3.83 \times 10^{18}u^{28} + \cdots + 5.15 \times 10^{17}a - 5.57 \times 10^{18},\ u^{30} + 14u^{29} + \cdots + 196u + 16\rangle$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0.516513u^{29} + 7.43735u^{28} + \cdots + 140.972u + 10.8111 \\ -0.348519u^{29} - 4.73692u^{28} + \cdots + 19.4278u + 2.68790 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0.296247u^{29} + 4.14543u^{28} + \cdots + 32.3275u + 1.56658 \\ -0.155522u^{29} - 2.01976u^{28} + \cdots + 24.7639u + 2.25160 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0.267313u^{29} + 3.75667u^{28} + \cdots + 107.255u + 8.33432 \\ -0.130864u^{29} - 1.73147u^{28} + \cdots + 25.8846u + 3.13569 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0.167994u^{29} + 2.70043u^{28} + \cdots + 160.399u + 13.4990 \\ -0.348519u^{29} - 4.73692u^{28} + \cdots + 19.4278u + 2.68790 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 0.271573u^{29} + 3.91281u^{28} + \cdots + 127.444u + 8.93601 \\ -0.110791u^{29} - 1.30944u^{28} + \cdots + 45.2923u + 4.34517 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -0.776602u^{29} - 10.6341u^{28} + \cdots - 145.532u - 10.1408 \\ 0.00330517u^{29} - 0.532040u^{28} + \cdots - 115.013u - 10.6530 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 0.416283u^{29} + 5.42329u^{28} + \cdots + 107.374u + 8.39097 \\ 0.228207u^{29} + 3.73456u^{28} + \cdots + 129.856u + 11.6598 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0.302005u^{29} + 3.74514u^{28} + \cdots + 39.4511u + 1.58179 \\ 0.410407u^{29} + 6.01738u^{28} + \cdots + 125.320u + 11.0560 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= -\frac{4925743045415160}{4441203039779213}u^{29} - \frac{63522435107648417}{4441203039779213}u^{28} + \cdots + \frac{7832809628507608000}{4441203039779213}u + \frac{10028358808743971 8}{4441203039779213}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{30} - u^{29} + \cdots + u + 1$
c_2, c_6	$u^{30} - 13u^{29} + \cdots - 46u + 4$
c_3	$u^{30} - u^{29} + \cdots - 58u + 23$
c_5, c_{10}	$u^{30} + u^{29} + \cdots - 8u^2 + 1$
c_7, c_{11}	$u^{30} + u^{29} + \cdots + 13u + 2$
c_8	$u^{30} - 23u^{29} + \cdots - 25088u + 2048$
c_9, c_{12}	$u^{30} - 14u^{29} + \cdots - 196u + 16$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{30} + 9y^{29} + \cdots + 27y + 1$
c_2, c_6	$y^{30} - 7y^{29} + \cdots - 140y + 16$
c_3	$y^{30} + 3y^{29} + \cdots + 5238y + 529$
c_5, c_{10}	$y^{30} - 29y^{29} + \cdots - 16y + 1$
c_7, c_{11}	$y^{30} + 31y^{29} + \cdots + 195y + 4$
c_8	$y^{30} + 3y^{29} + \cdots - 12845056y + 4194304$
c_9, c_{12}	$y^{30} + 16y^{29} + \cdots + 6864y + 256$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.008449 + 1.038050I$ $a = 0.19283 + 1.93584I$ $b = 0.875100 - 1.101510I$	$1.75922 + 2.08616I$	$-0.70875 - 3.66623I$
$u = -0.008449 - 1.038050I$ $a = 0.19283 - 1.93584I$ $b = 0.875100 + 1.101510I$	$1.75922 - 2.08616I$	$-0.70875 + 3.66623I$
$u = 0.100473 + 0.896678I$ $a = -0.809633 - 1.017280I$ $b = -0.085198 + 0.821995I$	$1.52091 - 2.28612I$	$0.91878 + 3.77911I$
$u = 0.100473 - 0.896678I$ $a = -0.809633 + 1.017280I$ $b = -0.085198 - 0.821995I$	$1.52091 + 2.28612I$	$0.91878 - 3.77911I$
$u = -0.521031 + 0.986835I$ $a = -0.45037 - 1.35721I$ $b = -0.84200 + 1.18633I$	$5.95512 + 6.91831I$	$3.78632 - 0.34811I$
$u = -0.521031 - 0.986835I$ $a = -0.45037 + 1.35721I$ $b = -0.84200 - 1.18633I$	$5.95512 - 6.91831I$	$3.78632 + 0.34811I$
$u = -0.178076 + 0.864147I$ $a = 0.58856 + 1.68337I$ $b = 0.774314 - 1.068170I$	$1.49951 + 2.61667I$	$1.71047 - 2.35153I$
$u = -0.178076 - 0.864147I$ $a = 0.58856 - 1.68337I$ $b = 0.774314 + 1.068170I$	$1.49951 - 2.61667I$	$1.71047 + 2.35153I$
$u = -0.083596 + 1.147820I$ $a = -0.23908 - 1.46108I$ $b = -0.639871 + 0.967627I$	$3.76134 - 0.67427I$	$6.55860 + 2.69018I$
$u = -0.083596 - 1.147820I$ $a = -0.23908 + 1.46108I$ $b = -0.639871 - 0.967627I$	$3.76134 + 0.67427I$	$6.55860 - 2.69018I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.746615 + 0.920318I$ $a = 0.617510 + 0.248273I$ $b = -0.195032 - 0.802929I$	$5.30862 - 2.03318I$	$13.21436 + 4.72317I$
$u = -0.746615 - 0.920318I$ $a = 0.617510 - 0.248273I$ $b = -0.195032 + 0.802929I$	$5.30862 + 2.03318I$	$13.21436 - 4.72317I$
$u = 0.049970 + 0.694974I$ $a = 0.545450 - 1.292250I$ $b = -0.750678 + 0.197340I$	$2.97639 + 0.56649I$	$1.66356 + 2.53022I$
$u = 0.049970 - 0.694974I$ $a = 0.545450 + 1.292250I$ $b = -0.750678 - 0.197340I$	$2.97639 - 0.56649I$	$1.66356 - 2.53022I$
$u = -1.347510 + 0.262663I$ $a = 0.360072 + 0.067366I$ $b = -0.926246 - 0.689155I$	$-9.86335 - 10.01860I$	$0. + 6.83043I$
$u = -1.347510 - 0.262663I$ $a = 0.360072 - 0.067366I$ $b = -0.926246 + 0.689155I$	$-9.86335 + 10.01860I$	$0. - 6.83043I$
$u = -1.296810 + 0.492873I$ $a = -0.447016 - 0.001247I$ $b = 0.845978 + 0.667950I$	$-9.34766 - 1.90724I$	0
$u = -1.296810 - 0.492873I$ $a = -0.447016 + 0.001247I$ $b = 0.845978 - 0.667950I$	$-9.34766 + 1.90724I$	0
$u = -0.75549 + 1.23771I$ $a = -0.011672 + 1.404000I$ $b = 1.10163 - 1.17925I$	$-6.85242 + 8.97569I$	0
$u = -0.75549 - 1.23771I$ $a = -0.011672 - 1.404000I$ $b = 1.10163 + 1.17925I$	$-6.85242 - 8.97569I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.70214 + 1.34239I$ $a = 0.07842 - 1.49511I$ $b = -1.12757 + 1.20390I$	$-6.4102 + 17.0561I$	0
$u = -0.70214 - 1.34239I$ $a = 0.07842 + 1.49511I$ $b = -1.12757 - 1.20390I$	$-6.4102 - 17.0561I$	0
$u = -1.09815 + 1.16174I$ $a = -0.221067 - 0.658397I$ $b = -0.325690 + 0.894880I$	$-4.25072 + 0.10093I$	0
$u = -1.09815 - 1.16174I$ $a = -0.221067 + 0.658397I$ $b = -0.325690 - 0.894880I$	$-4.25072 - 0.10093I$	0
$u = -0.93186 + 1.30875I$ $a = 0.236542 + 0.853013I$ $b = 0.422858 - 0.999422I$	$-3.41653 + 8.45839I$	0
$u = -0.93186 - 1.30875I$ $a = 0.236542 - 0.853013I$ $b = 0.422858 + 0.999422I$	$-3.41653 - 8.45839I$	0
$u = -0.130584 + 0.190445I$ $a = -1.68626 + 1.76732I$ $b = 0.260420 + 0.577778I$	$0.175219 - 1.183220I$	$2.13993 + 5.80206I$
$u = -0.130584 - 0.190445I$ $a = -1.68626 - 1.76732I$ $b = 0.260420 - 0.577778I$	$0.175219 + 1.183220I$	$2.13993 - 5.80206I$
$u = 0.64988 + 1.72077I$ $a = -0.004280 + 0.359831I$ $b = 0.111989 - 0.254072I$	$-0.90966 - 3.07303I$	0
$u = 0.64988 - 1.72077I$ $a = -0.004280 - 0.359831I$ $b = 0.111989 + 0.254072I$	$-0.90966 + 3.07303I$	0

II. $\boldsymbol{I_2^u = \langle -220u^{11}a^3 - 53u^{11}a^2 + \cdots - 345a + 469,\ -54u^{11}a^3 + 45u^{11}a^2 + \cdots - 1650a - 74,\ u^{12} - 3u^{11} + \cdots - 5u + 3\rangle}$

(i) Arc colorings

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

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

$$a_5 = \begin{pmatrix} a \\ 1.29412a^3u^{11} + 0.311765a^2u^{11} + \cdots + 2.02941a - 2.75882 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0.111765a^3u^{11} + 0.323529a^2u^{11} + \cdots + 1.84118a - 2.45098 \\ -0.494118a^2u^{11} + 0.0235294u^{11} + \cdots + 1.51765a^2 + 0.0705882 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0.123529a^3u^{11} - 0.158824a^2u^{11} + \cdots - 5.01765a - 3.90588 \\ -0.852941a^3u^{11} + 1.74706a^2u^{11} + \cdots + 3.26471a - 3.03529 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 1.29412a^3u^{11} + 0.311765a^2u^{11} + \cdots + 3.02941a - 2.75882 \\ 1.29412a^3u^{11} + 0.311765a^2u^{11} + \cdots + 2.02941a - 2.75882 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.335294a^3u^{11} + 0.476471a^2u^{11} + \cdots + 2.52353a + 9.71765 \\ 0.423529a^3u^{11} - 0.0470588a^2u^{11} + \cdots + 2.08235a + 1.43529 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.200000a^3u^{11} + 0.700000a^2u^{11} + \cdots - 0.900000a + 11.5667 \\ 0.423529a^3u^{11} - 0.0470588a^2u^{11} + \cdots + 2.08235a + 0.435294 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 1.35294a^3u^{11} + 0.882353a^2u^{11} + \cdots - 9.76471a + 9.58824 \\ 0.358824a^3u^{11} + 0.288235a^2u^{11} + \cdots + 2.80588a - 0.541176 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 1.15882a^3u^{11} - 0.370588a^2u^{11} + \cdots - 2.59412a - 14.4471 \\ -0.447059a^3u^{11} + 2.10588a^2u^{11} + \cdots - 8.36471a - 0.729412 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{144}{85}u^{11}a^3 + \frac{16}{85}u^{11}a^2 + \cdots - \frac{708}{85}a - \frac{318}{85}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{48} - u^{47} + \cdots - 14u + 1$
c_2, c_6	$(u^{12} + 3u^{11} + \cdots + 3u + 1)^4$
c_3	$u^{48} - 3u^{47} + \cdots + 4712118u + 1068997$
c_5, c_{10}	$u^{48} - u^{47} + \cdots - 51466u + 6859$
c_7, c_{11}	$u^{48} - 3u^{47} + \cdots + 4752u + 121$
c_8	$(u^2 + u + 1)^{24}$
c_9, c_{12}	$(u^{12} + 3u^{11} + \cdots + 5u + 3)^4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{48} - 3y^{47} + \cdots - 48y + 1$
c_2, c_6	$(y^{12} - y^{11} + \cdots + 3y + 1)^4$
c_3	$y^{48} + 45y^{47} + \cdots + 23945168738324y + 1142754586009$
c_5, c_{10}	$y^{48} - 51y^{47} + \cdots - 1210663780y + 47045881$
c_7, c_{11}	$y^{48} + 51y^{47} + \cdots - 8371022y + 14641$
c_8	$(y^2 + y + 1)^{24}$
c_9, c_{12}	$(y^{12} + 7y^{11} + \cdots + 35y + 9)^4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.420764 + 0.913546I$ $a = 0.234639 - 0.310765I$ $b = 1.289820 + 0.174877I$	$-7.04292 + 3.63020I$	$-1.77003 - 2.67858I$
$u = -0.420764 + 0.913546I$ $a = 1.25869 + 1.01337I$ $b = -1.65916 - 1.21045I$	$-7.04292 + 7.68996I$	$-1.77003 - 9.60678I$
$u = -0.420764 + 0.913546I$ $a = 0.75156 - 2.28473I$ $b = -0.348546 + 0.282925I$	$-7.04292 + 7.68996I$	$-1.77003 - 9.60678I$
$u = -0.420764 + 0.913546I$ $a = -0.13874 + 2.68737I$ $b = 0.51730 - 1.44984I$	$-7.04292 + 3.63020I$	$-1.77003 - 2.67858I$
$u = -0.420764 - 0.913546I$ $a = 0.234639 + 0.310765I$ $b = 1.289820 - 0.174877I$	$-7.04292 - 3.63020I$	$-1.77003 + 2.67858I$
$u = -0.420764 - 0.913546I$ $a = 1.25869 - 1.01337I$ $b = -1.65916 + 1.21045I$	$-7.04292 - 7.68996I$	$-1.77003 + 9.60678I$
$u = -0.420764 - 0.913546I$ $a = 0.75156 + 2.28473I$ $b = -0.348546 - 0.282925I$	$-7.04292 - 7.68996I$	$-1.77003 + 9.60678I$
$u = -0.420764 - 0.913546I$ $a = -0.13874 - 2.68737I$ $b = 0.51730 + 1.44984I$	$-7.04292 - 3.63020I$	$-1.77003 + 2.67858I$
$u = 0.295106 + 0.923595I$ $a = -0.554428 - 1.151090I$ $b = -0.133109 - 0.080601I$	$2.77107 + 0.79988I$	$0.02056 + 1.79181I$
$u = 0.295106 + 0.923595I$ $a = 1.05566 - 1.10395I$ $b = -0.934687 + 0.998484I$	$2.77107 + 0.79988I$	$0.02056 + 1.79181I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.295106 + 0.923595I$ $a = 1.42563 - 0.84907I$ $b = 0.710142 + 0.479994I$	$2.77107 - 3.25989I$	$0.02056 + 8.72001I$
$u = 0.295106 + 0.923595I$ $a = 0.27668 + 2.41066I$ $b = -0.97115 - 1.86367I$	$2.77107 - 3.25989I$	$0.02056 + 8.72001I$
$u = 0.295106 - 0.923595I$ $a = -0.554428 + 1.151090I$ $b = -0.133109 + 0.080601I$	$2.77107 - 0.79988I$	$0.02056 - 1.79181I$
$u = 0.295106 - 0.923595I$ $a = 1.05566 + 1.10395I$ $b = -0.934687 - 0.998484I$	$2.77107 - 0.79988I$	$0.02056 - 1.79181I$
$u = 0.295106 - 0.923595I$ $a = 1.42563 + 0.84907I$ $b = 0.710142 - 0.479994I$	$2.77107 + 3.25989I$	$0.02056 - 8.72001I$
$u = 0.295106 - 0.923595I$ $a = 0.27668 - 2.41066I$ $b = -0.97115 + 1.86367I$	$2.77107 + 3.25989I$	$0.02056 - 8.72001I$
$u = 1.002840 + 0.240514I$ $a = 0.122850 - 0.710506I$ $b = 0.853211 + 0.839616I$	$-3.60424 - 3.13751I$	$-8.13937 + 9.38471I$
$u = 1.002840 + 0.240514I$ $a = -0.565247 + 0.035897I$ $b = 1.068890 - 0.471788I$	$-3.60424 + 0.92226I$	$-8.13937 + 2.45650I$
$u = 1.002840 + 0.240514I$ $a = -0.291285 + 0.370590I$ $b = -0.609909 + 0.315996I$	$-3.60424 + 0.92226I$	$-8.13937 + 2.45650I$
$u = 1.002840 + 0.240514I$ $a = -0.046613 - 0.234517I$ $b = -0.947781 - 0.364233I$	$-3.60424 - 3.13751I$	$-8.13937 + 9.38471I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.002840 - 0.240514I$ $a = 0.122850 + 0.710506I$ $b = 0.853211 - 0.839616I$	$-3.60424 + 3.13751I$	$-8.13937 - 9.38471I$
$u = 1.002840 - 0.240514I$ $a = -0.565247 - 0.035897I$ $b = 1.068890 + 0.471788I$	$-3.60424 - 0.92226I$	$-8.13937 - 2.45650I$
$u = 1.002840 - 0.240514I$ $a = -0.291285 - 0.370590I$ $b = -0.609909 - 0.315996I$	$-3.60424 - 0.92226I$	$-8.13937 - 2.45650I$
$u = 1.002840 - 0.240514I$ $a = -0.046613 + 0.234517I$ $b = -0.947781 + 0.364233I$	$-3.60424 + 3.13751I$	$-8.13937 - 9.38471I$
$u = -0.461620 + 0.763725I$ $a = -0.594654 + 0.611108I$ $b = -1.158800 - 0.235440I$	$-7.50607 - 4.01700I$	$-3.05660 + 2.18818I$
$u = -0.461620 + 0.763725I$ $a = -0.975854 - 0.793065I$ $b = 1.49076 + 1.07883I$	$-7.50607 + 0.04277I$	$-3.05660 - 4.74002I$
$u = -0.461620 + 0.763725I$ $a = -0.62642 + 2.31633I$ $b = 0.455936 - 0.261329I$	$-7.50607 + 0.04277I$	$-3.05660 - 4.74002I$
$u = -0.461620 + 0.763725I$ $a = 0.07661 - 2.76035I$ $b = -0.52252 + 1.51257I$	$-7.50607 - 4.01700I$	$-3.05660 + 2.18818I$
$u = -0.461620 - 0.763725I$ $a = -0.594654 - 0.611108I$ $b = -1.158800 + 0.235440I$	$-7.50607 + 4.01700I$	$-3.05660 - 2.18818I$
$u = -0.461620 - 0.763725I$ $a = -0.975854 + 0.793065I$ $b = 1.49076 - 1.07883I$	$-7.50607 - 0.04277I$	$-3.05660 + 4.74002I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.461620 - 0.763725I$ $a = -0.62642 - 2.31633I$ $b = 0.455936 + 0.261329I$	$-7.50607 - 0.04277I$	$-3.05660 + 4.74002I$
$u = -0.461620 - 0.763725I$ $a = 0.07661 + 2.76035I$ $b = -0.52252 - 1.51257I$	$-7.50607 + 4.01700I$	$-3.05660 - 2.18818I$
$u = 0.644336 + 1.169420I$ $a = -0.224819 + 0.865040I$ $b = -1.015020 - 0.673671I$	$-0.87149 - 6.78221I$	$-5.42450 + 9.11637I$
$u = 0.644336 + 1.169420I$ $a = -0.099676 + 0.869507I$ $b = -0.210230 - 0.380235I$	$-0.87149 - 2.72244I$	$-5.42450 + 2.18817I$
$u = 0.644336 + 1.169420I$ $a = -0.446440 - 0.047632I$ $b = 0.771850 + 0.047155I$	$-0.87149 - 2.72244I$	$-5.42450 + 2.18817I$
$u = 0.644336 + 1.169420I$ $a = -0.21389 - 1.74893I$ $b = 1.02266 + 1.32659I$	$-0.87149 - 6.78221I$	$-5.42450 + 9.11637I$
$u = 0.644336 - 1.169420I$ $a = -0.224819 - 0.865040I$ $b = -1.015020 + 0.673671I$	$-0.87149 + 6.78221I$	$-5.42450 - 9.11637I$
$u = 0.644336 - 1.169420I$ $a = -0.099676 - 0.869507I$ $b = -0.210230 + 0.380235I$	$-0.87149 + 2.72244I$	$-5.42450 - 2.18817I$
$u = 0.644336 - 1.169420I$ $a = -0.446440 + 0.047632I$ $b = 0.771850 - 0.047155I$	$-0.87149 + 2.72244I$	$-5.42450 - 2.18817I$
$u = 0.644336 - 1.169420I$ $a = -0.21389 + 1.74893I$ $b = 1.02266 - 1.32659I$	$-0.87149 + 6.78221I$	$-5.42450 - 9.11637I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.44010 + 1.37677I$ $a = -0.328049 - 0.901932I$ $b = 0.652553 + 0.752898I$	$1.44924 - 4.10454I$	$4.36993 + 6.79554I$
$u = 0.44010 + 1.37677I$ $a = -0.285622 + 0.652606I$ $b = -0.348000 - 0.381177I$	$1.44924 - 4.10454I$	$4.36993 + 6.79554I$
$u = 0.44010 + 1.37677I$ $a = 0.397056 + 1.324180I$ $b = -1.29046 - 1.01688I$	$1.44924 - 8.16430I$	$4.3699 + 13.7237I$
$u = 0.44010 + 1.37677I$ $a = 0.12570 - 1.73097I$ $b = 0.816263 + 1.094770I$	$1.44924 - 8.16430I$	$4.3699 + 13.7237I$
$u = 0.44010 - 1.37677I$ $a = -0.328049 + 0.901932I$ $b = 0.652553 - 0.752898I$	$1.44924 + 4.10454I$	$4.36993 - 6.79554I$
$u = 0.44010 - 1.37677I$ $a = -0.285622 - 0.652606I$ $b = -0.348000 + 0.381177I$	$1.44924 + 4.10454I$	$4.36993 - 6.79554I$
$u = 0.44010 - 1.37677I$ $a = 0.397056 - 1.324180I$ $b = -1.29046 + 1.01688I$	$1.44924 + 8.16430I$	$4.3699 - 13.7237I$
$u = 0.44010 - 1.37677I$ $a = 0.12570 + 1.73097I$ $b = 0.816263 - 1.094770I$	$1.44924 + 8.16430I$	$4.3699 - 13.7237I$

III.

$\boldsymbol{I_3^u = \langle -6.21\times 10^4u^{17} + 5.27\times 10^5u^{16} + \cdots + 5.68\times 10^4b + 3.22\times 10^5,\ 4.85\times 10^5u^{17} - 4.75\times 10^6u^{16} + \cdots + 7.38\times 10^5a - 8.04\times 10^6,\ u^{18} - 9u^{17} + \cdots - 45u + 13\rangle}$

(i) Arc colorings

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

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

$$a_5 = \begin{pmatrix} -0.657588u^{17} + 6.43620u^{16} + \cdots - 35.6158u + 10.8881 \\ 1.09443u^{17} - 9.27334u^{16} + \cdots + 24.8670u - 5.67894 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -0.0419790u^{17} + 0.137352u^{16} + \cdots - 1.46627u + 1.30610 \\ 0.0340947u^{17} - 0.0322984u^{16} + \cdots + 0.0538013u + 0.102495 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.151814u^{17} + 1.64620u^{16} + \cdots - 9.99282u + 4.35385 \\ 0.784108u^{17} - 6.98660u^{16} + \cdots + 33.5038u - 10.4362 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 0.436841u^{17} - 2.83714u^{16} + \cdots - 10.7488u + 5.20913 \\ 1.09443u^{17} - 9.27334u^{16} + \cdots + 24.8670u - 5.67894 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.546859u^{17} + 4.48245u^{16} + \cdots - 9.54762u + 0.989853 \\ -0.439286u^{17} + 4.06903u^{16} + \cdots - 22.6188u + 7.10917 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.343180u^{17} + 2.13692u^{16} + \cdots + 12.9823u - 4.25290 \\ -0.836236u^{17} + 7.62276u^{16} + \cdots - 33.3547u + 10.1721 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -0.302452u^{17} + 2.82244u^{16} + \cdots - 14.5097u + 3.03165 \\ -0.213532u^{17} + 2.17852u^{16} + \cdots - 16.4211u + 5.64940 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -0.0660910u^{17} + 0.0173928u^{16} + \cdots + 26.3408u - 7.19948 \\ -0.387088u^{17} + 3.67661u^{16} + \cdots - 15.0344u + 3.16692 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= \frac{239665}{56783}u^{17} - \frac{1891871}{56783}u^{16} + \cdots + \frac{4159158}{56783}u - \frac{1061966}{56783}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{18} - u^{17} + \cdots + u + 1$
c_2	$u^{18} - 8u^{17} + \cdots - 7u + 1$
c_3	$u^{18} - u^{17} + \cdots - 14u + 11$
c_5	$u^{18} + u^{17} + \cdots + 4u + 1$
c_6	$u^{18} + 8u^{17} + \cdots + 7u + 1$
c_7	$u^{18} + u^{17} + \cdots + 4u + 1$
c_8	$u^{18} - 8u^{17} + \cdots - u + 1$
c_9	$u^{18} - 9u^{17} + \cdots - 45u + 13$
c_{10}	$u^{18} - u^{17} + \cdots - 4u + 1$
c_{11}	$u^{18} - u^{17} + \cdots - 4u + 1$
c_{12}	$u^{18} + 9u^{17} + \cdots + 45u + 13$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{18} - y^{17} + \cdots + 9y + 1$
c_2, c_6	$y^{18} - 8y^{17} + \cdots + 5y + 1$
c_3	$y^{18} + 5y^{17} + \cdots + 68y + 121$
c_5, c_{10}	$y^{18} - 15y^{17} + \cdots - 2y + 1$
c_7, c_{11}	$y^{18} + 17y^{17} + \cdots - 8y + 1$
c_8	$y^{18} + 2y^{17} + \cdots - 9y + 1$
c_9, c_{12}	$y^{18} + 11y^{17} + \cdots + 1147y + 169$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.298057 + 0.857334I$ $a = -0.204887 - 1.188570I$ $b = 0.917720 + 0.365951I$	$2.86873 - 1.41914I$	$-0.00227 + 5.81292I$
$u = 0.298057 - 0.857334I$ $a = -0.204887 + 1.188570I$ $b = 0.917720 - 0.365951I$	$2.86873 + 1.41914I$	$-0.00227 - 5.81292I$
$u = 1.104840 + 0.063258I$ $a = 0.0614125 + 0.0904156I$ $b = -0.872313 - 0.463543I$	$-3.53798 - 2.03888I$	$-7.34728 + 3.69480I$
$u = 1.104840 - 0.063258I$ $a = 0.0614125 - 0.0904156I$ $b = -0.872313 + 0.463543I$	$-3.53798 + 2.03888I$	$-7.34728 - 3.69480I$
$u = -0.324478 + 0.767766I$ $a = -0.43390 - 2.15456I$ $b = 0.894501 + 0.794834I$	$-6.94375 + 6.44664I$	$-0.79828 - 2.66618I$
$u = -0.324478 - 0.767766I$ $a = -0.43390 + 2.15456I$ $b = 0.894501 - 0.794834I$	$-6.94375 - 6.44664I$	$-0.79828 + 2.66618I$
$u = 0.572894 + 1.154750I$ $a = 0.264264 - 1.367920I$ $b = 0.85224 + 1.18381I$	$5.98080 - 7.72911I$	$4.36597 + 9.45283I$
$u = 0.572894 - 1.154750I$ $a = 0.264264 + 1.367920I$ $b = 0.85224 - 1.18381I$	$5.98080 + 7.72911I$	$4.36597 - 9.45283I$
$u = 0.697552 + 1.113470I$ $a = 0.012054 + 0.966995I$ $b = -0.818095 - 0.737226I$	$-0.54597 - 4.78777I$	$-3.04717 + 6.54355I$
$u = 0.697552 - 1.113470I$ $a = 0.012054 - 0.966995I$ $b = -0.818095 + 0.737226I$	$-0.54597 + 4.78777I$	$-3.04717 - 6.54355I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.323243 + 0.538024I$ $a = 0.56440 + 2.43929I$ $b = -0.841574 - 0.708571I$	$-7.29059 - 1.21516I$	$-1.54684 + 1.80912I$
$u = -0.323243 - 0.538024I$ $a = 0.56440 - 2.43929I$ $b = -0.841574 + 0.708571I$	$-7.29059 + 1.21516I$	$-1.54684 - 1.80912I$
$u = 1.058500 + 0.915875I$ $a = -0.493256 + 0.216116I$ $b = 0.292506 - 0.767500I$	$4.44840 + 1.75312I$	$3.26197 - 3.17049I$
$u = 1.058500 - 0.915875I$ $a = -0.493256 - 0.216116I$ $b = 0.292506 + 0.767500I$	$4.44840 - 1.75312I$	$3.26197 + 3.17049I$
$u = 0.48893 + 1.35129I$ $a = 0.12976 + 1.48454I$ $b = -1.05912 - 1.03702I$	$0.89547 - 7.52978I$	$-3.11582 + 5.02731I$
$u = 0.48893 - 1.35129I$ $a = 0.12976 - 1.48454I$ $b = -1.05912 + 1.03702I$	$0.89547 + 7.52978I$	$-3.11582 - 5.02731I$
$u = 0.92695 + 1.78794I$ $a = 0.061691 - 0.348186I$ $b = 0.134133 + 0.374688I$	$-0.80993 - 3.27591I$	$12.7297 + 21.5391I$
$u = 0.92695 - 1.78794I$ $a = 0.061691 + 0.348186I$ $b = 0.134133 - 0.374688I$	$-0.80993 + 3.27591I$	$12.7297 - 21.5391I$

IV. $\boldsymbol{I^u_4 = \langle 8a^3u-7a^2u+\cdots+45a-61,\ a^4+a^3u+a^3-a^2u+4a^2+5au-a-6u-5,\ u^2+1\rangle}$

(i) Arc colorings

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

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

$$a_5 = \begin{pmatrix} a \\ -0.160000a^3u + 0.140000a^2u + \cdots - 0.900000a + 1.22000 \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} 0.420000a^3u - 0.180000a^2u + \cdots + 0.300000a + 1.36000 \\ \frac{1}{25}a^3u - \frac{4}{25}a^2u + \cdots + \frac{3}{5}a - \frac{42}{25} \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 1.18000a^3u + 0.780000a^2u + \cdots - 1.30000a + 0.440000 \\ -\frac{1}{10}a^3u - \frac{1}{10}a^2u + \cdots + \frac{1}{2}a + \frac{1}{5} \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -0.160000a^3u + 0.140000a^2u + \cdots + 0.100000a + 1.22000 \\ -0.160000a^3u + 0.140000a^2u + \cdots - 0.900000a + 1.22000 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.220000a^3u - 0.620000a^2u + \cdots + 0.700000a - 1.76000 \\ -0.280000a^3u + 0.120000a^2u + \cdots - 0.200000a - 0.240000 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.480000a^3u + 0.420000a^2u + \cdots - 0.700000a + 3.66000 \\ \frac{7}{25}a^3u - \frac{3}{25}a^2u + \cdots + \frac{1}{5}a - \frac{19}{25} \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 0.960000a^3u + 0.160000a^2u + \cdots - 0.600000a - 1.32000 \\ -0.380000a^3u + 0.0200000a^2u + \cdots + 0.300000a - 0.0400000 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0.220000a^3u + 0.620000a^2u + \cdots - 0.700000a + 1.76000 \\ \frac{7}{25}a^3u - \frac{3}{25}a^2u + \cdots + \frac{1}{5}a + \frac{6}{25} \end{pmatrix}$$

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -\frac{28}{25}a^3u + \frac{4}{25}a^3 + \frac{12}{25}a^2u - \frac{16}{25}a^2 - \frac{12}{5}au - \frac{4}{5}a + \frac{168}{25}u + \frac{176}{25}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^8 + 2u^7 + 5u^6 + 2u^5 + 6u^4 + 6u^2 + 2u + 1$
c_2	$(u+1)^8$
c_3	$u^8 + 6u^7 + 19u^6 + 42u^5 + 68u^4 + 78u^3 + 62u^2 + 36u + 13$
c_5	$u^8 - 3u^6 + 2u^5 + 10u^4 + 6u^3 - 2u^2 - 2u + 1$
c_6	$(u-1)^8$
c_7, c_{11}	$(u^4 - u^2 + 1)^2$
c_8	$(u^2 + u + 1)^4$
c_9, c_{12}	$(u^2 + 1)^4$
c_{10}	$u^8 - 3u^6 - 2u^5 + 10u^4 - 6u^3 - 2u^2 + 2u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^8 + 6y^7 + 29y^6 + 68y^5 + 90y^4 + 74y^3 + 48y^2 + 8y + 1$
c_2, c_6	$(y-1)^8$
c_3	$y^8 + 2y^7 - 7y^6 + 8y^5 + 22y^4 - 182y^3 - 4y^2 + 316y + 169$
c_5, c_{10}	$y^8 - 6y^7 + 29y^6 - 68y^5 + 90y^4 - 74y^3 + 48y^2 - 8y + 1$
c_7, c_{11}	$(y^2 - y + 1)^4$
c_8	$(y^2 + y + 1)^4$
c_9, c_{12}	$(y+1)^8$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.000000I$ $a = 1.027380 + 0.057186I$ $b = 0.197915 - 0.359271I$	$3.28987 - 2.02988I$	$6.00000 + 3.46410I$
$u = 1.000000I$ $a = -0.66136 - 1.42321I$ $b = 0.302085 + 1.225300I$	$3.28987 - 2.02988I$	$6.00000 + 3.46410I$
$u = 1.000000I$ $a = -0.98594 - 1.88020I$ $b = -0.630141 + 0.750055I$	$3.28987 + 2.02988I$	$6.00000 - 3.46410I$
$u = 1.000000I$ $a = -0.38009 + 2.24622I$ $b = 1.13014 - 1.61608I$	$3.28987 + 2.02988I$	$6.00000 - 3.46410I$
$u = -1.000000I$ $a = 1.027380 - 0.057186I$ $b = 0.197915 + 0.359271I$	$3.28987 + 2.02988I$	$6.00000 - 3.46410I$
$u = -1.000000I$ $a = -0.66136 + 1.42321I$ $b = 0.302085 - 1.225300I$	$3.28987 + 2.02988I$	$6.00000 - 3.46410I$
$u = -1.000000I$ $a = -0.98594 + 1.88020I$ $b = -0.630141 - 0.750055I$	$3.28987 - 2.02988I$	$6.00000 + 3.46410I$
$u = -1.000000I$ $a = -0.38009 - 2.24622I$ $b = 1.13014 + 1.61608I$	$3.28987 - 2.02988I$	$6.00000 + 3.46410I$

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_4	$(u^8+2u^7+\cdots+2u+1)(u^{18}-u^{17}+\cdots+u+1)$ $\cdot(u^{30}-u^{29}+\cdots+u+1)(u^{48}-u^{47}+\cdots-14u+1)$
c_2	$((u+1)^8)(u^{12}+3u^{11}+\cdots+3u+1)^4(u^{18}-8u^{17}+\cdots-7u+1)$ $\cdot(u^{30}-13u^{29}+\cdots-46u+4)$
c_3	$(u^8+6u^7+19u^6+42u^5+68u^4+78u^3+62u^2+36u+13)$ $\cdot(u^{18}-u^{17}+\cdots-14u+11)(u^{30}-u^{29}+\cdots-58u+23)$ $\cdot(u^{48}-3u^{47}+\cdots+4712118u+1068997)$
c_5	$(u^8-3u^6+\cdots-2u+1)(u^{18}+u^{17}+\cdots+4u+1)$ $\cdot(u^{30}+u^{29}+\cdots-8u^2+1)(u^{48}-u^{47}+\cdots-51466u+6859)$
c_6	$((u-1)^8)(u^{12}+3u^{11}+\cdots+3u+1)^4(u^{18}+8u^{17}+\cdots+7u+1)$ $\cdot(u^{30}-13u^{29}+\cdots-46u+4)$
c_7	$((u^4-u^2+1)^2)(u^{18}+u^{17}+\cdots+4u+1)(u^{30}+u^{29}+\cdots+13u+2)$ $\cdot(u^{48}-3u^{47}+\cdots+4752u+121)$
c_8	$((u^2+u+1)^{28})(u^{18}-8u^{17}+\cdots-u+1)$ $\cdot(u^{30}-23u^{29}+\cdots-25088u+2048)$
c_9	$((u^2+1)^4)(u^{12}+3u^{11}+\cdots+5u+3)^4(u^{18}-9u^{17}+\cdots-45u+13)$ $\cdot(u^{30}-14u^{29}+\cdots-196u+16)$
c_{10}	$(u^8-3u^6+\cdots+2u+1)(u^{18}-u^{17}+\cdots-4u+1)$ $\cdot(u^{30}+u^{29}+\cdots-8u^2+1)(u^{48}-u^{47}+\cdots-51466u+6859)$
c_{11}	$((u^4-u^2+1)^2)(u^{18}-u^{17}+\cdots-4u+1)(u^{30}+u^{29}+\cdots+13u+2)$ $\cdot(u^{48}-3u^{47}+\cdots+4752u+121)$
c_{12}	$((u^2+1)^4)(u^{12}+3u^{11}+\cdots+5u+3)^4(u^{18}+9u^{17}+\cdots+45u+13)$ $\cdot(u^{30}-14u^{29}+\cdots-196u+16)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4	$(y^8+6y^7+29y^6+68y^5+90y^4+74y^3+48y^2+8y+1)$ $\cdot(y^{18}-y^{17}+\cdots+9y+1)(y^{30}+9y^{29}+\cdots+27y+1)$ $\cdot(y^{48}-3y^{47}+\cdots-48y+1)$
c_2, c_6	$((y-1)^8)(y^{12}-y^{11}+\cdots+3y+1)^4(y^{18}-8y^{17}+\cdots+5y+1)$ $\cdot(y^{30}-7y^{29}+\cdots-140y+16)$
c_3	$(y^8+2y^7-7y^6+8y^5+22y^4-182y^3-4y^2+316y+169)$ $\cdot(y^{18}+5y^{17}+\cdots+68y+121)(y^{30}+3y^{29}+\cdots+5238y+529)$ $\cdot(y^{48}+45y^{47}+\cdots+23945168738324y+1142754586009)$
c_5, c_{10}	$(y^8-6y^7+29y^6-68y^5+90y^4-74y^3+48y^2-8y+1)$ $\cdot(y^{18}-15y^{17}+\cdots-2y+1)(y^{30}-29y^{29}+\cdots-16y+1)$ $\cdot(y^{48}-51y^{47}+\cdots-1210663780y+47045881)$
c_7, c_{11}	$((y^2-y+1)^4)(y^{18}+17y^{17}+\cdots-8y+1)$ $\cdot(y^{30}+31y^{29}+\cdots+195y+4)$ $\cdot(y^{48}+51y^{47}+\cdots-8371022y+14641)$
c_8	$((y^2+y+1)^{28})(y^{18}+2y^{17}+\cdots-9y+1)$ $\cdot(y^{30}+3y^{29}+\cdots-12845056y+4194304)$
c_9, c_{12}	$((y+1)^8)(y^{12}+7y^{11}+\cdots+35y+9)^4$ $\cdot(y^{18}+11y^{17}+\cdots+1147y+169)(y^{30}+16y^{29}+\cdots+6864y+256)$