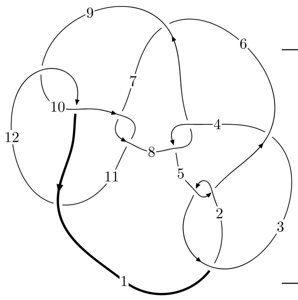
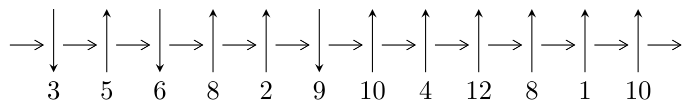
$12n_{0005}$ ($K12n_{0005}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & 2.36971 \times 10^{37} u^{58} - 2.98861 \times 10^{38} u^{57} + \cdots + 7.91576 \times 10^{35} b - 5.88078 \times 10^{37}, \\
& - 2.37843 \times 10^{37} u^{58} + 2.97918 \times 10^{38} u^{57} + \cdots + 7.91576 \times 10^{35} a + 4.16646 \times 10^{37}, \\
& u^{59} - 13u^{58} + \cdots - 10u + 1 \rangle \\
I_2^u = \langle & a^2 + b + a - 1,\ a^4 + a^3 - 2a^2 - a + 2,\ u + 1 \rangle \\
I_3^u = \langle & b,\ -u^2 a + a^2 + 2au + 3u^2 - a - 5u + 4,\ u^3 - u^2 + 1 \rangle \\
I_4^u = \langle & a^5 - 3a^4 + 4a^2 + b + a - 1,\ a^6 - 3a^5 + 5a^3 - a^2 - 2a + 1,\ u + 1 \rangle
\end{aligned}$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 75 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. $I_1^u = \langle 2.37\times10^{37}u^{58} - 2.99\times10^{38}u^{57} + \cdots + 7.92\times10^{35}b - 5.88\times10^{37},\ -2.38\times10^{37}u^{58} + 2.98\times10^{38}u^{57} + \cdots + 7.92\times10^{35}a + 4.17\times10^{37},\ u^{59} - 13u^{58} + \cdots - 10u + 1\rangle$

(i) Arc colorings

$$a_9 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}1\\-u^2\end{pmatrix}$$
$$a_1 = \begin{pmatrix}u\\-u^3+u\end{pmatrix}$$
$$a_4 = \begin{pmatrix}30.0468u^{58} - 376.361u^{57} + \cdots + 458.241u - 52.6350\\-29.9366u^{58} + 377.552u^{57} + \cdots - 562.231u + 74.2920\end{pmatrix}$$
$$a_8 = \begin{pmatrix}-97.4057u^{58} + 1230.14u^{57} + \cdots - 1933.17u + 261.759\\43.2007u^{58} - 546.214u^{57} + \cdots + 862.007u - 117.674\end{pmatrix}$$
$$a_5 = \begin{pmatrix}81.4771u^{58} - 1025.89u^{57} + \cdots + 1495.08u - 200.409\\-51.6915u^{58} + 650.519u^{57} + \cdots - 976.689u + 133.016\end{pmatrix}$$
$$a_7 = \begin{pmatrix}-125.970u^{58} + 1593.18u^{57} + \cdots - 2531.21u + 343.296\\44.4332u^{58} - 561.763u^{57} + \cdots + 916.403u - 125.970\end{pmatrix}$$
$$a_6 = \begin{pmatrix}-81.5367u^{58} + 1031.41u^{57} + \cdots - 1614.81u + 217.326\\44.4332u^{58} - 561.763u^{57} + \cdots + 916.403u - 125.970\end{pmatrix}$$
$$a_3 = \begin{pmatrix}48.4210u^{58} - 610.082u^{57} + \cdots + 892.310u - 120.705\\-39.1740u^{58} + 493.545u^{57} + \cdots - 742.666u + 101.904\end{pmatrix}$$
$$a_2 = \begin{pmatrix}-39.3383u^{58} + 496.662u^{57} + \cdots - 738.577u + 96.1780\\0.368728u^{58} - 5.81774u^{57} + \cdots + 16.8281u + 0.227251\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-u^3\\u^5-u^3+u\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -147.797u^{58} + 1865.74u^{57} + \cdots - 2967.33u + 417.985$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{59} + 31u^{58} + \cdots + 42u - 1$
c_2, c_5	$u^{59} + 5u^{58} + \cdots + 2u - 1$
c_3	$u^{59} - 5u^{58} + \cdots + 4180u - 292$
c_4, c_8	$u^{59} - 2u^{58} + \cdots + 160u - 64$
c_6	$u^{59} - 4u^{58} + \cdots - u - 1$
c_7, c_{10}	$u^{59} + 3u^{58} + \cdots - 1024u - 1024$
c_9, c_{12}	$u^{59} + 13u^{58} + \cdots - 10u - 1$
c_{11}	$u^{59} - 13u^{58} + \cdots + 36u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{59} - y^{58} + \cdots + 2542y - 1$
c_2, c_5	$y^{59} + 31y^{58} + \cdots + 42y - 1$
c_3	$y^{59} - 33y^{58} + \cdots + 4654184y - 85264$
c_4, c_8	$y^{59} + 40y^{58} + \cdots - 7168y - 4096$
c_6	$y^{59} - 74y^{58} + \cdots + 5y - 1$
c_7, c_{10}	$y^{59} + 69y^{58} + \cdots - 21495808y - 1048576$
c_9, c_{12}	$y^{59} - 13y^{58} + \cdots + 36y - 1$
c_{11}	$y^{59} + 79y^{58} + \cdots + 36y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.784682 + 0.615628I$ $a = -0.577187 - 0.016841I$ $b = 0.241820 + 0.743409I$	$-3.71513 + 1.17573I$	0
$u = 0.784682 - 0.615628I$ $a = -0.577187 + 0.016841I$ $b = 0.241820 - 0.743409I$	$-3.71513 - 1.17573I$	0
$u = -0.989776 + 0.099585I$ $a = 3.21578 + 0.56260I$ $b = -0.477754 - 0.051833I$	$1.37753 - 2.34293I$	0
$u = -0.989776 - 0.099585I$ $a = 3.21578 - 0.56260I$ $b = -0.477754 + 0.051833I$	$1.37753 + 2.34293I$	0
$u = -0.510073 + 0.880995I$ $a = -0.25877 - 1.72077I$ $b = 0.43412 - 1.37809I$	$-5.44078 - 7.86618I$	0
$u = -0.510073 - 0.880995I$ $a = -0.25877 + 1.72077I$ $b = 0.43412 + 1.37809I$	$-5.44078 + 7.86618I$	0
$u = -0.270574 + 0.893509I$ $a = 0.10250 - 1.64711I$ $b = 0.067786 - 1.398240I$	$-6.44229 + 0.85012I$	0
$u = -0.270574 - 0.893509I$ $a = 0.10250 + 1.64711I$ $b = 0.067786 + 1.398240I$	$-6.44229 - 0.85012I$	0
$u = -0.425431 + 0.780931I$ $a = 0.11679 + 1.89599I$ $b = -0.291336 + 1.236710I$	$-2.39339 - 3.03762I$	$3.87633 + 3.56282I$
$u = -0.425431 - 0.780931I$ $a = 0.11679 - 1.89599I$ $b = -0.291336 - 1.236710I$	$-2.39339 + 3.03762I$	$3.87633 - 3.56282I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.116770 + 0.010437I$ $a = -1.98632 + 0.23400I$ $b = 0.470430 + 0.432140I$	$2.06662 + 1.38182I$	0
$u = -1.116770 - 0.010437I$ $a = -1.98632 - 0.23400I$ $b = 0.470430 - 0.432140I$	$2.06662 - 1.38182I$	0
$u = 0.549864 + 0.598185I$ $a = -0.916575 + 0.380349I$ $b = 0.464850 + 0.860348I$	$-3.74978 + 1.11248I$	$-1.95186 - 2.77586I$
$u = 0.549864 - 0.598185I$ $a = -0.916575 - 0.380349I$ $b = 0.464850 - 0.860348I$	$-3.74978 - 1.11248I$	$-1.95186 + 2.77586I$
$u = 0.953228 + 0.719223I$ $a = 0.184839 + 0.296714I$ $b = 0.377691 - 0.510927I$	$-3.14792 + 4.18097I$	0
$u = 0.953228 - 0.719223I$ $a = 0.184839 - 0.296714I$ $b = 0.377691 + 0.510927I$	$-3.14792 - 4.18097I$	0
$u = -0.714347 + 0.335341I$ $a = -0.654918 - 0.346050I$ $b = -0.524386 - 0.448839I$	$0.703685 + 0.029466I$	$6.19093 + 0.45904I$
$u = -0.714347 - 0.335341I$ $a = -0.654918 + 0.346050I$ $b = -0.524386 + 0.448839I$	$0.703685 - 0.029466I$	$6.19093 - 0.45904I$
$u = -1.199090 + 0.275765I$ $a = -1.074520 - 0.161421I$ $b = 0.135658 - 1.049150I$	$0.491598 - 1.220580I$	0
$u = -1.199090 - 0.275765I$ $a = -1.074520 + 0.161421I$ $b = 0.135658 + 1.049150I$	$0.491598 + 1.220580I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.695422 + 0.239788I$ $a = -1.38241 - 0.41635I$ $b = 0.572360 + 1.047320I$	$-1.66131 + 8.15293I$	$-0.65355 - 9.84045I$
$u = 0.695422 - 0.239788I$ $a = -1.38241 + 0.41635I$ $b = 0.572360 - 1.047320I$	$-1.66131 - 8.15293I$	$-0.65355 + 9.84045I$
$u = -1.205170 + 0.432461I$ $a = 0.914841 + 0.101782I$ $b = 0.127563 + 1.275290I$	$-2.87819 + 2.67724I$	0
$u = -1.205170 - 0.432461I$ $a = 0.914841 - 0.101782I$ $b = 0.127563 - 1.275290I$	$-2.87819 - 2.67724I$	0
$u = -1.321580 + 0.290312I$ $a = 1.067150 + 0.011907I$ $b = -0.293061 + 1.285920I$	$-2.52983 - 5.56373I$	0
$u = -1.321580 - 0.290312I$ $a = 1.067150 - 0.011907I$ $b = -0.293061 - 1.285920I$	$-2.52983 + 5.56373I$	0
$u = 0.600679 + 0.233224I$ $a = 1.54602 + 0.26343I$ $b = -0.576951 - 0.942414I$	$0.49550 + 3.30615I$	$3.00875 - 4.91162I$
$u = 0.600679 - 0.233224I$ $a = 1.54602 - 0.26343I$ $b = -0.576951 + 0.942414I$	$0.49550 - 3.30615I$	$3.00875 + 4.91162I$
$u = 0.974533 + 0.944343I$ $a = -0.031805 + 0.507306I$ $b = 1.139410 - 0.115232I$	$-4.99278 + 3.48527I$	0
$u = 0.974533 - 0.944343I$ $a = -0.031805 - 0.507306I$ $b = 1.139410 + 0.115232I$	$-4.99278 - 3.48527I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.951583 + 0.976048I$ $a = 0.53629 - 1.61324I$ $b = -0.007849 - 1.197600I$	$-5.80099 + 0.66681I$	0
$u = 0.951583 - 0.976048I$ $a = 0.53629 + 1.61324I$ $b = -0.007849 + 1.197600I$	$-5.80099 - 0.66681I$	0
$u = -0.619938$ $a = -0.614103$ $b = -0.379392$	0.987384	10.0830
$u = 1.008230 + 0.949033I$ $a = -0.79603 + 1.60808I$ $b = 0.203594 + 1.201400I$	$-5.61803 + 6.41573I$	0
$u = 1.008230 - 0.949033I$ $a = -0.79603 - 1.60808I$ $b = 0.203594 - 1.201400I$	$-5.61803 - 6.41573I$	0
$u = 0.938768 + 1.039960I$ $a = 0.071965 - 0.567951I$ $b = -1.352110 - 0.109099I$	$-8.53769 - 0.57441I$	0
$u = 0.938768 - 1.039960I$ $a = 0.071965 + 0.567951I$ $b = -1.352110 + 0.109099I$	$-8.53769 + 0.57441I$	0
$u = 0.830681 + 1.132630I$ $a = 0.214753 - 1.117890I$ $b = 0.48779 - 1.44380I$	$-9.96117 - 2.30085I$	0
$u = 0.830681 - 1.132630I$ $a = 0.214753 + 1.117890I$ $b = 0.48779 + 1.44380I$	$-9.96117 + 2.30085I$	0
$u = 0.79029 + 1.17849I$ $a = -0.187003 + 1.000660I$ $b = -0.63460 + 1.49501I$	$-13.0111 - 7.6806I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.79029 - 1.17849I$ $a = -0.187003 - 1.000660I$ $b = -0.63460 - 1.49501I$	$-13.0111 + 7.6806I$	0
$u = 1.05544 + 0.97189I$ $a = -0.008379 - 0.550553I$ $b = -1.335610 + 0.298327I$	$-8.15213 + 7.92720I$	0
$u = 1.05544 - 0.97189I$ $a = -0.008379 + 0.550553I$ $b = -1.335610 - 0.298327I$	$-8.15213 - 7.92720I$	0
$u = 0.91193 + 1.16122I$ $a = -0.388353 + 1.105940I$ $b = -0.33596 + 1.61613I$	$-14.8409 + 1.7634I$	0
$u = 0.91193 - 1.16122I$ $a = -0.388353 - 1.105940I$ $b = -0.33596 - 1.61613I$	$-14.8409 - 1.7634I$	0
$u = 1.14928 + 0.92975I$ $a = -1.11279 + 1.27285I$ $b = 0.61505 + 1.37396I$	$-8.89854 + 9.77362I$	0
$u = 1.14928 - 0.92975I$ $a = -1.11279 - 1.27285I$ $b = 0.61505 - 1.37396I$	$-8.89854 - 9.77362I$	0
$u = -0.217989 + 0.462422I$ $a = 0.352972 + 0.713663I$ $b = 0.883278 + 0.005614I$	$-1.01117 - 2.91966I$	$2.05527 + 5.38795I$
$u = -0.217989 - 0.462422I$ $a = 0.352972 - 0.713663I$ $b = 0.883278 - 0.005614I$	$-1.01117 + 2.91966I$	$2.05527 - 5.38795I$
$u = 1.18659 + 0.91747I$ $a = 1.16646 - 1.19440I$ $b = -0.73190 - 1.40356I$	$-11.6847 + 15.2392I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.18659 - 0.91747I$ $a = 1.16646 + 1.19440I$ $b = -0.73190 + 1.40356I$	$-11.6847 - 15.2392I$	0
$u = 1.14461 + 0.99662I$ $a = 0.96601 - 1.21203I$ $b = -0.49507 - 1.54081I$	$-14.0505 + 6.0390I$	0
$u = 1.14461 - 0.99662I$ $a = 0.96601 + 1.21203I$ $b = -0.49507 + 1.54081I$	$-14.0505 - 6.0390I$	0
$u = -0.442581 + 0.164163I$ $a = 0.19222 + 4.19542I$ $b = -0.094147 + 0.587865I$	$0.76407 - 2.30945I$	$-0.54330 + 7.28911I$
$u = -0.442581 - 0.164163I$ $a = 0.19222 - 4.19542I$ $b = -0.094147 - 0.587865I$	$0.76407 + 2.30945I$	$-0.54330 - 7.28911I$
$u = 0.321626 + 0.198610I$ $a = -1.71356 + 1.09600I$ $b = 0.744198 - 0.485695I$	$-0.01800 + 3.14526I$	$2.49375 - 2.79979I$
$u = 0.321626 - 0.198610I$ $a = -1.71356 - 1.09600I$ $b = 0.744198 + 0.485695I$	$-0.01800 - 3.14526I$	$2.49375 + 2.79979I$
$u = 0.375910 + 0.027813I$ $a = 2.24708 + 0.57233I$ $b = -0.625146 - 0.663345I$	$1.37130 + 1.43610I$	$4.58545 - 3.40911I$
$u = 0.375910 - 0.027813I$ $a = 2.24708 - 0.57233I$ $b = -0.625146 + 0.663345I$	$1.37130 - 1.43610I$	$4.58545 + 3.40911I$

II. $\boldsymbol{I_2^u = \langle a^2 + b + a - 1,\ a^4 + a^3 - 2a^2 - a + 2,\ u + 1\rangle}$

(i) Arc colorings

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

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

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

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

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

$$a_8 = \begin{pmatrix} -a^3 - a^2 + a + 1 \\ a^3 + a^2 - a - 1 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -1 \\ -a^2 + 2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -a^3 - a^2 + a + 1 \\ a^3 + a^2 - a - 1 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0 \\ a^3 + a^2 - a - 1 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} a \\ a^3 + a^2 - a - 1 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -a^2 + 1 \\ a^3 + 2a^2 - 1 \end{pmatrix}$$

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -3a^3 - 2a^2 - a + 10$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_6	$y^4 + 2y^3 + 7y^2 + 5y + 1$
c_2, c_4, c_5 c_8	$y^4 + 2y^3 + 3y^2 + y + 1$
c_3	$y^4 - y^3 + 2y^2 + 7y + 4$
c_7, c_{10}	y^4
c_9, c_{11}, c_{12}	$(y-1)^4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = 0.899232 + 0.400532I$ $b = -0.547424 - 1.120870I$	$-0.98010 + 7.64338I$	$6.92132 - 4.56334I$
$u = -1.00000$ $a = 0.899232 - 0.400532I$ $b = -0.547424 + 1.120870I$	$-0.98010 - 7.64338I$	$6.92132 + 4.56334I$
$u = -1.00000$ $a = -1.39923 + 0.32564I$ $b = 0.547424 + 0.585652I$	$2.62503 + 1.39709I$	$14.5787 - 4.1375I$
$u = -1.00000$ $a = -1.39923 - 0.32564I$ $b = 0.547424 - 0.585652I$	$2.62503 - 1.39709I$	$14.5787 + 4.1375I$

III. $I_3^u = \langle b,\ -u^2a + a^2 + 2au + 3u^2 - a - 5u + 4,\ u^3 - u^2 + 1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 7u^2a - 3au + 3u^2 - 8a - 9u + 10$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.877439 + 0.744862I$ $a = -0.111778 - 0.558770I$ $b = 0$	$-3.02413 + 4.85801I$	$4.05323 - 9.17563I$
$u = 0.877439 + 0.744862I$ $a = -0.428020 + 0.376187I$ $b = 0$	$-3.02413 + 0.79824I$	$7.63258 + 1.54443I$
$u = 0.877439 - 0.744862I$ $a = -0.111778 + 0.558770I$ $b = 0$	$-3.02413 - 4.85801I$	$4.05323 + 9.17563I$
$u = 0.877439 - 0.744862I$ $a = -0.428020 - 0.376187I$ $b = 0$	$-3.02413 - 0.79824I$	$7.63258 - 1.54443I$
$u = -0.754878$ $a = 1.53980 + 2.66701I$ $b = 0$	$1.11345 - 2.02988I$	$15.8142 - 4.6579I$
$u = -0.754878$ $a = 1.53980 - 2.66701I$ $b = 0$	$1.11345 + 2.02988I$	$15.8142 + 4.6579I$

IV. $\boldsymbol{I_4^u = \langle a^5 - 3a^4 + 4a^2 + b + a - 1,\ a^6 - 3a^5 + 5a^3 - a^2 - 2a + 1,\ u + 1\rangle}$

(i) Arc colorings

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

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

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

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

$$a_4 = \begin{pmatrix} a \\ -a^5 + 3a^4 - 4a^2 - a + 1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} a^3 - 2a^2 - a + 2 \\ -a^3 + 2a^2 + a - 2 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -a^5 + 2a^4 + 2a^3 - 3a^2 - 2a + 1 \\ a^4 - 2a^3 - a^2 + 2a \end{pmatrix}$$

$$a_7 = \begin{pmatrix} a^3 - 2a^2 - a + 2 \\ -a^3 + 2a^2 + a - 2 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0 \\ -a^3 + 2a^2 + a - 2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} a \\ a^3 - a^2 - 2a \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -a^4 + a^3 + 2a^2 - 1 \\ -a^5 + 3a^4 + a^3 - 5a^2 - 2a + 1 \end{pmatrix}$$

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -5a^4 + 8a^3 + 8a^2 - 8a + 4$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_6	$y^6 - y^5 + 4y^4 - 2y^3 + 8y^2 + 1$
c_2, c_4, c_5 c_8	$y^6 + 3y^5 + 4y^4 + 2y^3 + 1$
c_3	$(y^3 - y^2 + 2y - 1)^2$
c_7, c_{10}	y^6
c_9, c_{11}, c_{12}	$(y - 1)^6$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = -0.897438 + 0.201182I$ $b = 0.498832 - 1.001300I$	$1.37919 - 2.82812I$	$10.11473 + 2.08748I$
$u = -1.00000$ $a = -0.897438 - 0.201182I$ $b = 0.498832 + 1.001300I$	$1.37919 + 2.82812I$	$10.11473 - 2.08748I$
$u = -1.00000$ $a = 0.500000 + 0.273346I$ $b = -0.284920 - 1.115140I$	-2.75839	$1.72561 + 0.99756I$
$u = -1.00000$ $a = 0.500000 - 0.273346I$ $b = -0.284920 + 1.115140I$	-2.75839	$1.72561 - 0.99756I$
$u = -1.00000$ $a = 1.89744 + 0.20118I$ $b = -0.713912 + 0.305839I$	$1.37919 + 2.82812I$	$9.65966 - 5.36114I$
$u = -1.00000$ $a = 1.89744 - 0.20118I$ $b = -0.713912 - 0.305839I$	$1.37919 - 2.82812I$	$9.65966 + 5.36114I$

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^2-u+1)^3(u^4-2u^3+3u^2-u+1)(u^6-3u^5+4u^4-2u^3+1)$ $\cdot(u^{59}+31u^{58}+\cdots+42u-1)$
c_2	$(u^2+u+1)^3(u^4+u^2+u+1)(u^6-u^5+2u^4-2u^3+2u^2-2u+1)$ $\cdot(u^{59}+5u^{58}+\cdots+2u-1)$
c_3	$(u^2-u+1)^3(u^3-u^2+1)^2(u^4+3u^3+4u^2+3u+2)$ $\cdot(u^{59}-5u^{58}+\cdots+4180u-292)$
c_4	$u^6(u^4+u^2+u+1)(u^6-u^5+2u^4-2u^3+2u^2-2u+1)$ $\cdot(u^{59}-2u^{58}+\cdots+160u-64)$
c_5	$(u^2-u+1)^3(u^4+u^2-u+1)(u^6+u^5+2u^4+2u^3+2u^2+2u+1)$ $\cdot(u^{59}+5u^{58}+\cdots+2u-1)$
c_6	$((u^3-3u^2+2u+1)^2)(u^4-2u^3+3u^2-u+1)(u^6-3u^5+\cdots-2u^3+1)$ $\cdot(u^{59}-4u^{58}+\cdots-u-1)$
c_7	$u^{10}(u^3+u^2+2u+1)^2(u^{59}+3u^{58}+\cdots-1024u-1024)$
c_8	$u^6(u^4+u^2-u+1)(u^6+u^5+2u^4+2u^3+2u^2+2u+1)$ $\cdot(u^{59}-2u^{58}+\cdots+160u-64)$
c_9	$((u+1)^{10})(u^3-u^2+1)^2(u^{59}+13u^{58}+\cdots-10u-1)$
c_{10}	$u^{10}(u^3-u^2+2u-1)^2(u^{59}+3u^{58}+\cdots-1024u-1024)$
c_{11}	$((u+1)^{10})(u^3+u^2+2u+1)^2(u^{59}-13u^{58}+\cdots+36u-1)$
c_{12}	$((u-1)^{10})(u^3+u^2-1)^2(u^{59}+13u^{58}+\cdots-10u-1)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y^2+y+1)^3)(y^4+2y^3+\cdots+5y+1)(y^6-y^5+\cdots+8y^2+1)$ $\cdot(y^{59}-y^{58}+\cdots+2542y-1)$
c_2, c_5	$(y^2+y+1)^3(y^4+2y^3+3y^2+y+1)(y^6+3y^5+4y^4+2y^3+1)$ $\cdot(y^{59}+31y^{58}+\cdots+42y-1)$
c_3	$(y^2+y+1)^3(y^3-y^2+2y-1)^2(y^4-y^3+2y^2+7y+4)$ $\cdot(y^{59}-33y^{58}+\cdots+4654184y-85264)$
c_4, c_8	$y^6(y^4+2y^3+3y^2+y+1)(y^6+3y^5+4y^4+2y^3+1)$ $\cdot(y^{59}+40y^{58}+\cdots-7168y-4096)$
c_6	$(y^3-5y^2+10y-1)^2(y^4+2y^3+7y^2+5y+1)$ $\cdot(y^6-y^5+4y^4-2y^3+8y^2+1)(y^{59}-74y^{58}+\cdots+5y-1)$
c_7, c_{10}	$y^{10}(y^3+3y^2+2y-1)^2(y^{59}+69y^{58}+\cdots-2.14958\times10^7y-1048576)$
c_9, c_{12}	$((y-1)^{10})(y^3-y^2+2y-1)^2(y^{59}-13y^{58}+\cdots+36y-1)$
c_{11}	$((y-1)^{10})(y^3+3y^2+2y-1)^2(y^{59}+79y^{58}+\cdots+36y-1)$