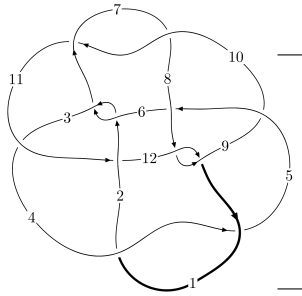
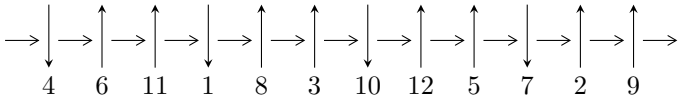
$12a_{0991}$ $(K12a_{0991})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u &= \langle 57717367134771u^{22} + 147428293136959u^{21} + \cdots + 317082965674325b + 1212919831670806, \\
&\quad - 6.90652 \times 10^{14}u^{22} - 9.73069 \times 10^{14}u^{21} + \cdots + 6.02458 \times 10^{15}a - 1.57925 \times 10^{16}, \\
&\quad u^{23} + 3u^{22} + \cdots + 23u + 19\rangle \\
I_2^u &= \langle -1.43591 \times 10^{880}u^{123} + 8.72577 \times 10^{878}u^{122} + \cdots + 1.49298 \times 10^{884}b - 1.12674 \times 10^{886}, \\
&\quad - 1.05862 \times 10^{888}u^{123} + 7.59549 \times 10^{887}u^{122} + \cdots + 1.40244 \times 10^{891}a - 1.54736 \times 10^{895}, \\
&\quad u^{124} - 28u^{122} + \cdots + 37001253u + 9393563\rangle \\
I_3^u &= \langle u^4 - 2u^3 + 2u^2 + b,\ u^4 - 2u^3 + u^2 + a + 2u - 1,\ u^5 - 3u^4 + 4u^3 - u^2 - u + 1\rangle \\
I_4^u &= \langle 3.38809 \times 10^{57}u^{37} + 1.63783 \times 10^{58}u^{36} + \cdots + 1.71599 \times 10^{58}b + 1.67567 \times 10^{58}, \\
&\quad - 6.22130 \times 10^{57}u^{37} - 2.90017 \times 10^{58}u^{36} + \cdots + 1.71599 \times 10^{58}a + 2.01014 \times 10^{58},\ u^{38} + 5u^{37} + \cdots + 3u +
\end{aligned}$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 190 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. $\boldsymbol{I_1^u = \langle 5.77 \times 10^{13} u^{22} + 1.47 \times 10^{14} u^{21} + \cdots + 3.17 \times 10^{14} b + 1.21 \times 10^{15},\ -6.91 \times 10^{14} u^{22} - 9.73 \times 10^{14} u^{21} + \cdots + 6.02 \times 10^{15} a - 1.58 \times 10^{16},\ u^{23} + 3u^{22} + \cdots + 23u + 19 \rangle}$

(i) Arc colorings

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

$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} 0.114639u^{22} + 0.161517u^{21} + \cdots + 0.233505u + 2.62135 \\ -0.182026u^{22} - 0.464952u^{21} + \cdots - 0.670669u - 3.82524 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0.296665u^{22} + 0.626468u^{21} + \cdots + 0.904173u + 6.44659 \\ -0.182026u^{22} - 0.464952u^{21} + \cdots - 0.670669u - 3.82524 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.177816u^{22} + 0.437375u^{21} + \cdots + 1.33780u + 3.32029 \\ 0.109266u^{22} + 0.0722014u^{21} + \cdots + 1.18417u + 0.352745 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 0.297043u^{22} + 0.397846u^{21} + \cdots + 2.63301u + 2.54854 \\ -0.279180u^{22} - 0.505280u^{21} + \cdots - 2.85942u - 5.43579 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.360217u^{22} + 0.803269u^{21} + \cdots + 1.35315u + 5.49844 \\ -0.115359u^{22} - 0.359386u^{21} + \cdots + 0.479691u - 3.09211 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -0.138170u^{22} - 0.231903u^{21} + \cdots - 2.84326u - 4.43308 \\ -0.351670u^{22} - 0.533545u^{21} + \cdots - 2.92986u - 5.45456 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.107726u^{22} - 0.111365u^{21} + \cdots - 0.581699u - 0.814060 \\ 0.107088u^{22} + 0.280121u^{21} + \cdots + 2.38569u + 4.19317 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -0.0245807u^{22} + 0.151775u^{21} + \cdots - 5.03652u + 0.702173 \\ 0.576947u^{22} + 1.14786u^{21} + \cdots + 3.46469u + 6.91005 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -0.363687u^{22} - 0.514114u^{21} + \cdots - 4.11079u - 4.90011 \\ 0.231313u^{22} + 0.597069u^{21} + \cdots + 3.42987u + 5.50743 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$$= -\frac{81766888022974}{317082965674325}u^{22} - \frac{248859598527326}{317082965674325}u^{21} + \cdots + \frac{329686079723918}{317082965674325}u - \frac{784569176377574}{317082965674325}$$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4, c_7 c_{10}	$u^{23} - u^{22} + \cdots - 7u - 1$
c_2, c_6, c_8 c_{12}	$u^{23} - u^{22} + \cdots + 12u - 4$
c_3, c_9	$u^{23} - 3u^{22} + \cdots + 23u - 19$
c_5, c_{11}	$u^{23} + u^{22} + \cdots + 31u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_7 c_{10}	$y^{23} + 27y^{22} + \cdots + 25y - 1$
c_2, c_6, c_8 c_{12}	$y^{23} - 15y^{22} + \cdots + 96y - 16$
c_3, c_9	$y^{23} - 17y^{22} + \cdots + 301y - 361$
c_5, c_{11}	$y^{23} + 11y^{22} + \cdots + 957y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.918917 + 0.525926I$ $a = -0.588465 + 0.739338I$ $b = 1.177530 + 0.446851I$	$2.51017 + 8.14058I$	$6.64567 - 9.11727I$
$u = 0.918917 - 0.525926I$ $a = -0.588465 - 0.739338I$ $b = 1.177530 - 0.446851I$	$2.51017 - 8.14058I$	$6.64567 + 9.11727I$
$u = 0.773342 + 0.494667I$ $a = -1.04701 - 1.59683I$ $b = -0.957225 - 0.497796I$	$9.76931 + 4.11749I$	$5.17924 - 6.62141I$
$u = 0.773342 - 0.494667I$ $a = -1.04701 + 1.59683I$ $b = -0.957225 + 0.497796I$	$9.76931 - 4.11749I$	$5.17924 + 6.62141I$
$u = -0.871157$ $a = 0.623723$ $b = -0.717781$	1.42427	5.58020
$u = 1.054960 + 0.459775I$ $a = 0.215920 - 0.029509I$ $b = -1.042380 + 0.452100I$	$2.25624 - 3.72277I$	$3.77679 + 4.53205I$
$u = 1.054960 - 0.459775I$ $a = 0.215920 + 0.029509I$ $b = -1.042380 - 0.452100I$	$2.25624 + 3.72277I$	$3.77679 - 4.53205I$
$u = -1.197360 + 0.107009I$ $a = 0.186498 - 1.278020I$ $b = 1.223500 - 0.651345I$	$13.7533 - 3.8768I$	$14.9082 + 3.5373I$
$u = -1.197360 - 0.107009I$ $a = 0.186498 + 1.278020I$ $b = 1.223500 + 0.651345I$	$13.7533 + 3.8768I$	$14.9082 - 3.5373I$
$u = 0.271747 + 0.746918I$ $a = 0.385059 - 0.712732I$ $b = 0.402904 - 0.603471I$	$-2.39867 - 0.27896I$	$-3.60170 + 1.81372I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.271747 - 0.746918I$ $a = 0.385059 + 0.712732I$ $b = 0.402904 + 0.603471I$	$-2.39867 + 0.27896I$	$-3.60170 - 1.81372I$
$u = -1.189060 + 0.477242I$ $a = 0.268653 - 1.237180I$ $b = 1.152630 - 0.048406I$	$12.93090 - 1.19686I$	$14.2711 + 0.3658I$
$u = -1.189060 - 0.477242I$ $a = 0.268653 + 1.237180I$ $b = 1.152630 + 0.048406I$	$12.93090 + 1.19686I$	$14.2711 - 0.3658I$
$u = -1.203270 + 0.495710I$ $a = 0.175292 - 1.080310I$ $b = -0.066343 - 1.107590I$	$6.02936 - 6.98335I$	$8.21274 + 5.05079I$
$u = -1.203270 - 0.495710I$ $a = 0.175292 + 1.080310I$ $b = -0.066343 + 1.107590I$	$6.02936 + 6.98335I$	$8.21274 - 5.05079I$
$u = -0.211749 + 0.550582I$ $a = 1.008340 - 0.441111I$ $b = -0.357064 + 0.362726I$	$1.04800 - 1.12978I$	$8.64416 + 6.06289I$
$u = -0.211749 - 0.550582I$ $a = 1.008340 + 0.441111I$ $b = -0.357064 - 0.362726I$	$1.04800 + 1.12978I$	$8.64416 - 6.06289I$
$u = -0.41447 + 1.35905I$ $a = -0.698894 + 0.209343I$ $b = -1.220420 - 0.208268I$	$6.27657 + 2.79434I$	$13.30273 - 3.14397I$
$u = -0.41447 - 1.35905I$ $a = -0.698894 - 0.209343I$ $b = -1.220420 + 0.208268I$	$6.27657 - 2.79434I$	$13.30273 + 3.14397I$
$u = 1.73548 + 0.04257I$ $a = -0.126978 - 0.685204I$ $b = 0.971727 - 0.746612I$	$6.49002 - 5.81139I$	$9.27142 + 6.06710I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \quad 1.73548 - 0.04257I$ $a = -0.126978 + 0.685204I$ $b = \quad 0.971727 + 0.746612I$	$6.49002 + 5.81139I$	$9.27142 - 6.06710I$
$u = -1.60297 + 0.82134I$ $a = -0.142907 + 0.899405I$ $b = -1.42596 + 0.57620I$	$14.6447 - 19.3062I$	$11.5995 + 8.9972I$
$u = -1.60297 - 0.82134I$ $a = -0.142907 - 0.899405I$ $b = -1.42596 - 0.57620I$	$14.6447 + 19.3062I$	$11.5995 - 8.9972I$

II. $\boldsymbol{I_2^u = \langle -1.44 \times 10^{880} u^{123} + 8.73 \times 10^{878} u^{122} + \cdots + 1.49 \times 10^{884} b - 1.13 \times 10^{886},\ -1.06 \times 10^{888} u^{123} + 7.60 \times 10^{887} u^{122} + \cdots + 1.40 \times 10^{891} a - 1.55 \times 10^{895},\ u^{124} - 28 u^{122} + \cdots + 37001253 u + 9393563 \rangle}$

(i) Arc colorings

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

$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} 0.000754843 u^{123} - 0.000541592 u^{122} + \cdots + 27659.3 u + 11033.4 \\ 0.0000961780 u^{123} - 5.84455 \times 10^{-6} u^{122} + \cdots - 1187.04 u + 75.4696 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0.000658665 u^{123} - 0.000535748 u^{122} + \cdots + 28846.3 u + 10957.9 \\ 0.0000961780 u^{123} - 5.84455 \times 10^{-6} u^{122} + \cdots - 1187.04 u + 75.4696 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.000769260 u^{123} + 0.000478016 u^{122} + \cdots - 24948.3 u - 10481.1 \\ -0.0000934100 u^{123} + 0.0000559721 u^{122} + \cdots - 1937.68 u - 853.277 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -0.00286019 u^{123} + 0.00209707 u^{122} + \cdots - 102095. u - 39638.9 \\ 0.000606344 u^{123} - 0.000421349 u^{122} + \cdots + 22961.5 u + 9239.15 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -0.00119794 u^{123} + 0.000731324 u^{122} + \cdots - 37347.0 u - 15824.6 \\ 0.0000980954 u^{123} - 0.0000512982 u^{122} + \cdots + 3408.16 u + 1526.19 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -0.00205809 u^{123} + 0.00151971 u^{122} + \cdots - 72999.2 u - 28236.8 \\ 0.000533988 u^{123} - 0.000385230 u^{122} + \cdots + 20585.5 u + 8103.55 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.00179696 u^{123} - 0.00153781 u^{122} + \cdots + 64535.5 u + 22832.9 \\ -0.00121549 u^{123} + 0.000954177 u^{122} + \cdots - 46498.2 u - 17482.4 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 0.00114349 u^{123} - 0.000867960 u^{122} + \cdots + 37250.0 u + 14109.5 \\ -0.000621780 u^{123} + 0.000410335 u^{122} + \cdots - 18252.1 u - 7479.59 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -0.00197358 u^{123} + 0.00136446 u^{122} + \cdots - 71871.7 u - 28676.8 \\ 0.000155176 u^{123} - 0.0000592743 u^{122} + \cdots + 5180.54 u + 2527.54 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -0.00308181 u^{123} + 0.00229861 u^{122} + \cdots - 103573. u - 40396.6$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4, c_7 c_{10}	$u^{124} - 8u^{123} + \cdots - 19679u - 1829$
c_2, c_6, c_8 c_{12}	$u^{124} - 3u^{123} + \cdots + 13060u - 7061$
c_3, c_9	$u^{124} - 28u^{122} + \cdots - 37001253u + 9393563$
c_5, c_{11}	$u^{124} + 12u^{123} + \cdots - 23079u + 2117$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_7 c_{10}	$y^{124} + 104y^{123} + \cdots - 374690495y + 3345241$
c_2, c_6, c_8 c_{12}	$y^{124} - 85y^{123} + \cdots - 834961334y + 49857721$
c_3, c_9	$y^{124} - 56y^{123} + \cdots - 7183023354678805y + 88239025834969$
c_5, c_{11}	$y^{124} - 36y^{123} + \cdots + 1058022751y + 4481689$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.832257+0.559566I$ $a=-0.78785+1.31337I$ $b=-1.50165+0.80491I$	$11.54920-3.29623I$	0
$u=-0.832257-0.559566I$ $a=-0.78785-1.31337I$ $b=-1.50165-0.80491I$	$11.54920+3.29623I$	0
$u=-0.991089+0.153659I$ $a=-0.169531+1.156440I$ $b=-0.151031+1.398850I$	$2.48023-1.03604I$	0
$u=-0.991089-0.153659I$ $a=-0.169531-1.156440I$ $b=-0.151031-1.398850I$	$2.48023+1.03604I$	0
$u=0.898023+0.383481I$ $a=0.934050+0.338258I$ $b=-0.975376+0.111434I$	$1.73213-0.66883I$	0
$u=0.898023-0.383481I$ $a=0.934050-0.338258I$ $b=-0.975376-0.111434I$	$1.73213+0.66883I$	0
$u=-0.929923+0.254749I$ $a=0.17250+1.73396I$ $b=-1.46751+0.15284I$	$14.7335-8.0221I$	0
$u=-0.929923-0.254749I$ $a=0.17250-1.73396I$ $b=-1.46751-0.15284I$	$14.7335+8.0221I$	0
$u=-1.031240+0.210849I$ $a=0.271925-1.250820I$ $b=1.58994-0.52839I$	$15.1848+6.0579I$	0
$u=-1.031240-0.210849I$ $a=0.271925+1.250820I$ $b=1.58994+0.52839I$	$15.1848-6.0579I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \ 0.897036 + 0.586814I$ $a = -0.91039 - 1.09007I$ $b = -0.453265 - 0.603763I$	$9.66429 + 4.09208I$	0
$u = \ 0.897036 - 0.586814I$ $a = -0.91039 + 1.09007I$ $b = -0.453265 + 0.603763I$	$9.66429 - 4.09208I$	0
$u = -0.920705 + 0.549630I$ $a = \ 1.068840 + 0.794345I$ $b = -1.226030 + 0.134089I$	$9.85131 + 0.58116I$	0
$u = -0.920705 - 0.549630I$ $a = \ 1.068840 - 0.794345I$ $b = -1.226030 - 0.134089I$	$9.85131 - 0.58116I$	0
$u = -1.060230 + 0.182661I$ $a = -1.034840 + 0.100779I$ $b = \ 1.286310 - 0.336100I$	$6.30482 - 3.83713I$	0
$u = -1.060230 - 0.182661I$ $a = -1.034840 - 0.100779I$ $b = \ 1.286310 + 0.336100I$	$6.30482 + 3.83713I$	0
$u = \ 0.828661 + 0.396010I$ $a = -0.55923 - 1.82969I$ $b = -1.245570 - 0.396965I$	$9.66429 + 4.09208I$	0
$u = \ 0.828661 - 0.396010I$ $a = -0.55923 + 1.82969I$ $b = -1.245570 + 0.396965I$	$9.66429 - 4.09208I$	0
$u = \ 0.591720 + 0.675350I$ $a = \ 0.941129 - 0.041225I$ $b = \ 0.027565 - 0.660549I$	$2.35447 + 0.13282I$	0
$u = \ 0.591720 - 0.675350I$ $a = \ 0.941129 + 0.041225I$ $b = \ 0.027565 + 0.660549I$	$2.35447 - 0.13282I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.761610+0.474972I$ $a=-0.779793-0.961860I$ $b=\ \ 1.035030-0.335104I$	$-0.49565-3.43639I$	0
$u=-0.761610-0.474972I$ $a=-0.779793+0.961860I$ $b=\ \ 1.035030+0.335104I$	$-0.49565+3.43639I$	0
$u=-0.853877+0.242911I$ $a=-0.20805+1.49543I$ $b=\ \ 0.045866+1.387410I$	$3.86911-6.05067I$	0
$u=-0.853877-0.242911I$ $a=-0.20805-1.49543I$ $b=\ \ 0.045866-1.387410I$	$3.86911+6.05067I$	0
$u=-0.378616+0.799354I$ $a=\ \ 1.026480-0.036530I$ $b=\ \ 0.323754+0.441607I$	$1.73213-0.66883I$	0
$u=-0.378616-0.799354I$ $a=\ \ 1.026480+0.036530I$ $b=\ \ 0.323754-0.441607I$	$1.73213+0.66883I$	0
$u=-0.873073+0.016053I$ $a=\ \ 0.623181+0.019412I$ $b=-0.719342+0.035275I$	1.42426	0
$u=-0.873073-0.016053I$ $a=\ \ 0.623181-0.019412I$ $b=-0.719342-0.035275I$	1.42426	0
$u=\ \ 1.100840+0.251619I$ $a=\ \ 0.239334+1.247970I$ $b=\ \ 1.40521+0.43298I$	$10.89050-1.43238I$	0
$u=\ \ 1.100840-0.251619I$ $a=\ \ 0.239334-1.247970I$ $b=\ \ 1.40521-0.43298I$	$10.89050+1.43238I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.863941 + 0.098745I$ $a = -0.065027 - 1.127290I$ $b = -0.526831 - 1.287540I$	$2.80036 + 3.42863I$	0
$u = 0.863941 - 0.098745I$ $a = -0.065027 + 1.127290I$ $b = -0.526831 + 1.287540I$	$2.80036 - 3.42863I$	0
$u = 0.842414 + 0.194962I$ $a = -0.04701 - 1.43734I$ $b = 0.047595 - 1.090590I$	$1.03606 + 2.94499I$	0
$u = 0.842414 - 0.194962I$ $a = -0.04701 + 1.43734I$ $b = 0.047595 + 1.090590I$	$1.03606 - 2.94499I$	0
$u = -1.100520 + 0.307549I$ $a = 0.583930 - 0.874030I$ $b = -0.583330 - 0.133203I$	$4.49764 + 3.55654I$	0
$u = -1.100520 - 0.307549I$ $a = 0.583930 + 0.874030I$ $b = -0.583330 + 0.133203I$	$4.49764 - 3.55654I$	0
$u = 1.159350 + 0.196439I$ $a = -0.678596 - 0.156815I$ $b = 1.169790 + 0.264504I$	$4.49764 + 3.55654I$	0
$u = 1.159350 - 0.196439I$ $a = -0.678596 + 0.156815I$ $b = 1.169790 - 0.264504I$	$4.49764 - 3.55654I$	0
$u = 0.827945 + 0.838917I$ $a = -0.328047 + 0.701006I$ $b = 0.321299 + 0.492971I$	$5.37387 - 2.54528I$	0
$u = 0.827945 - 0.838917I$ $a = -0.328047 - 0.701006I$ $b = 0.321299 - 0.492971I$	$5.37387 + 2.54528I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.426039+0.695884I$ $a=\ 0.265031+0.619278I$ $b=\ 0.208538+0.852829I$	$-0.49565-3.43639I$	0
$u=-0.426039-0.695884I$ $a=\ 0.265031-0.619278I$ $b=\ 0.208538-0.852829I$	$-0.49565+3.43639I$	0
$u=\ 0.673227+0.448450I$ $a=\ 0.30754+1.72391I$ $b=\ 1.142750-0.092130I$	$4.72714-2.47544I$	0
$u=\ 0.673227-0.448450I$ $a=\ 0.30754-1.72391I$ $b=\ 1.142750+0.092130I$	$4.72714+2.47544I$	0
$u=-0.777970+0.911853I$ $a=-0.333951-0.593460I$ $b=-0.185475-0.437289I$	$1.03606-2.94499I$	0
$u=-0.777970-0.911853I$ $a=-0.333951+0.593460I$ $b=-0.185475+0.437289I$	$1.03606+2.94499I$	0
$u=\ 0.777489$ $a=-1.74454$ $b=\ 1.17395$	5.52857	0
$u=\ 0.832394+0.895367I$ $a=-0.387083+0.564279I$ $b=-0.173857+0.721043I$	$5.27011+8.68957I$	0
$u=\ 0.832394-0.895367I$ $a=-0.387083-0.564279I$ $b=-0.173857-0.721043I$	$5.27011-8.68957I$	0
$u=\ 1.157570+0.478481I$ $a=\ 0.169523+1.120890I$ $b=\ 0.004007+1.271680I$	$10.0846+12.8687I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.157570 - 0.478481I$ $a = 0.169523 - 1.120890I$ $b = 0.004007 - 1.271680I$	$10.0846 - 12.8687I$	0
$u = -1.239930 + 0.197630I$ $a = 0.099971 + 0.900563I$ $b = -0.842102 + 0.645976I$	$4.38491 - 3.32315I$	0
$u = -1.239930 - 0.197630I$ $a = 0.099971 - 0.900563I$ $b = -0.842102 - 0.645976I$	$4.38491 + 3.32315I$	0
$u = -0.657674 + 1.073390I$ $a = 0.752991 - 0.858738I$ $b = 1.072340 - 0.138901I$	$2.74503 - 3.72225I$	0
$u = -0.657674 - 1.073390I$ $a = 0.752991 + 0.858738I$ $b = 1.072340 + 0.138901I$	$2.74503 + 3.72225I$	0
$u = 0.733914$ $a = 0.120487$ $b = -1.40350$	5.52857	0
$u = 1.182510 + 0.452565I$ $a = -0.190383 - 1.066910I$ $b = -1.48441 - 0.65466I$	$6.84626 + 6.36165I$	0
$u = 1.182510 - 0.452565I$ $a = -0.190383 + 1.066910I$ $b = -1.48441 + 0.65466I$	$6.84626 - 6.36165I$	0
$u = 0.447520 + 1.187290I$ $a = -0.956824 + 0.107479I$ $b = 0.508576 + 0.294345I$	$7.69733 - 7.68655I$	0
$u = 0.447520 - 1.187290I$ $a = -0.956824 - 0.107479I$ $b = 0.508576 - 0.294345I$	$7.69733 + 7.68655I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.040090 + 0.741880I$ $a = 0.753011 - 0.972945I$ $b = -1.144830 - 0.301464I$	$3.86911 + 6.05067I$	0
$u = 1.040090 - 0.741880I$ $a = 0.753011 + 0.972945I$ $b = -1.144830 + 0.301464I$	$3.86911 - 6.05067I$	0
$u = -1.110730 + 0.636557I$ $a = 0.773525 + 0.806396I$ $b = -1.211970 + 0.379843I$	$8.5013 - 12.7920I$	0
$u = -1.110730 - 0.636557I$ $a = 0.773525 - 0.806396I$ $b = -1.211970 - 0.379843I$	$8.5013 + 12.7920I$	0
$u = -0.355795 + 0.607849I$ $a = -0.342355 + 0.195247I$ $b = -0.364582 + 0.557841I$	$0.46113 - 1.83615I$	0
$u = -0.355795 - 0.607849I$ $a = -0.342355 - 0.195247I$ $b = -0.364582 - 0.557841I$	$0.46113 + 1.83615I$	0
$u = -0.693140 + 0.037404I$ $a = 1.63746 + 3.03289I$ $b = -1.131760 + 0.001075I$	$11.54920 + 3.29623I$	0
$u = -0.693140 - 0.037404I$ $a = 1.63746 - 3.03289I$ $b = -1.131760 - 0.001075I$	$11.54920 - 3.29623I$	0
$u = 0.560857 + 0.407735I$ $a = -0.128777 - 0.907615I$ $b = -0.506647 - 1.007690I$	$2.74503 + 3.72225I$	0
$u = 0.560857 - 0.407735I$ $a = -0.128777 + 0.907615I$ $b = -0.506647 + 1.007690I$	$2.74503 - 3.72225I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.194730 + 0.551815I$ $a = 0.244343 + 1.061740I$ $b = 0.108657 + 0.843813I$	$10.89050 + 1.43238I$	0
$u = 1.194730 - 0.551815I$ $a = 0.244343 - 1.061740I$ $b = 0.108657 - 0.843813I$	$10.89050 - 1.43238I$	0
$u = 1.038880 + 0.815458I$ $a = -0.582293 - 0.815995I$ $b = -1.55260 - 0.36720I$	$9.85131 + 0.58116I$	0
$u = 1.038880 - 0.815458I$ $a = -0.582293 + 0.815995I$ $b = -1.55260 + 0.36720I$	$9.85131 - 0.58116I$	0
$u = 1.252430 + 0.446639I$ $a = 0.272226 + 1.193810I$ $b = 0.945849 + 0.240808I$	11.6961	0
$u = 1.252430 - 0.446639I$ $a = 0.272226 - 1.193810I$ $b = 0.945849 - 0.240808I$	11.6961	0
$u = 1.365720 + 0.048836I$ $a = -0.387409 + 0.393167I$ $b = 1.005750 - 0.163454I$	$4.38491 - 3.32315I$	0
$u = 1.365720 - 0.048836I$ $a = -0.387409 - 0.393167I$ $b = 1.005750 + 0.163454I$	$4.38491 + 3.32315I$	0
$u = 0.395274 + 0.491472I$ $a = -0.804073 - 0.503520I$ $b = -0.883506 + 0.820261I$	$1.89421 - 4.17770I$	0
$u = 0.395274 - 0.491472I$ $a = -0.804073 + 0.503520I$ $b = -0.883506 - 0.820261I$	$1.89421 + 4.17770I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.312170+0.410372I$ $a=-0.383217+0.835548I$ $b=\ \ 0.353725+0.883043I$	4.72300	0
$u=-1.312170-0.410372I$ $a=-0.383217-0.835548I$ $b=\ \ 0.353725-0.883043I$	4.72300	0
$u=-0.609164+0.108178I$ $a=\ \ 0.212145-0.718470I$ $b=-1.152040-0.657544I$	$4.72714+2.47544I$	0
$u=-0.609164-0.108178I$ $a=\ \ 0.212145+0.718470I$ $b=-1.152040+0.657544I$	$4.72714-2.47544I$	0
$u=-1.260410+0.613656I$ $a=-0.142660-0.033471I$ $b=\ \ 1.336110+0.004509I$	$10.53070-6.37964I$	0
$u=-1.260410-0.613656I$ $a=-0.142660+0.033471I$ $b=\ \ 1.336110-0.004509I$	$10.53070+6.37964I$	0
$u=-1.264490+0.606359I$ $a=-0.265893+0.883404I$ $b=-1.35283+0.51966I$	$5.37387-2.54528I$	0
$u=-1.264490-0.606359I$ $a=-0.265893-0.883404I$ $b=-1.35283-0.51966I$	$5.37387+2.54528I$	0
$u=\ \ 1.21478+0.76000I$ $a=\ \ 0.233311+1.049020I$ $b=\ \ 1.381060+0.295614I$	$10.53070+6.37964I$	0
$u=\ \ 1.21478-0.76000I$ $a=\ \ 0.233311-1.049020I$ $b=\ \ 1.381060-0.295614I$	$10.53070-6.37964I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.03058+1.01783I$ $a=\ \ 0.254922-0.464416I$ $b=-0.587312-0.304164I$	$0.61204-1.27769I$	0
$u=-1.03058-1.01783I$ $a=\ \ 0.254922+0.464416I$ $b=-0.587312+0.304164I$	$0.61204+1.27769I$	0
$u=-1.30804+0.64514I$ $a=\ \ 0.056347-0.929272I$ $b=\ \ 1.56745-0.49417I$	$9.43262-9.57051I$	0
$u=-1.30804-0.64514I$ $a=\ \ 0.056347+0.929272I$ $b=\ \ 1.56745+0.49417I$	$9.43262+9.57051I$	0
$u=-0.67459+1.34386I$ $a=-0.050188+0.475727I$ $b=\ \ 0.935563+0.466105I$	$6.84626+6.36165I$	0
$u=-0.67459-1.34386I$ $a=-0.050188-0.475727I$ $b=\ \ 0.935563-0.466105I$	$6.84626-6.36165I$	0
$u=\ \ 0.32373+1.49855I$ $a=-0.434671-0.523857I$ $b=\ \ 0.750315-0.365919I$	$2.48023+1.03604I$	0
$u=\ \ 0.32373-1.49855I$ $a=-0.434671+0.523857I$ $b=\ \ 0.750315+0.365919I$	$2.48023-1.03604I$	0
$u=-1.32148+0.83303I$ $a=\ \ 0.273499-0.945568I$ $b=\ \ 1.36320-0.52292I$	$5.27011-8.68957I$	0
$u=-1.32148-0.83303I$ $a=\ \ 0.273499+0.945568I$ $b=\ \ 1.36320+0.52292I$	$5.27011+8.68957I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.414468 + 0.038270I$ $a = 1.18246 + 2.20318I$ $b = 0.202347 + 0.342219I$	$0.46113 - 1.83615I$	$3.74865 + 2.36410I$
$u = 0.414468 - 0.038270I$ $a = 1.18246 - 2.20318I$ $b = 0.202347 - 0.342219I$	$0.46113 + 1.83615I$	$3.74865 - 2.36410I$
$u = 1.46433 + 0.63376I$ $a = 0.109722 + 0.816471I$ $b = 1.45939 + 0.55383I$	$7.69733 + 7.68655I$	0
$u = 1.46433 - 0.63376I$ $a = 0.109722 - 0.816471I$ $b = 1.45939 - 0.55383I$	$7.69733 - 7.68655I$	0
$u = 1.33970 + 0.88288I$ $a = 0.324605 + 0.900983I$ $b = 1.44232 + 0.58014I$	$8.5013 + 12.7920I$	0
$u = 1.33970 - 0.88288I$ $a = 0.324605 - 0.900983I$ $b = 1.44232 - 0.58014I$	$8.5013 - 12.7920I$	0
$u = -0.271966 + 0.034484I$ $a = -0.55126 + 2.15413I$ $b = -0.539468 - 0.855139I$	$0.61204 + 1.27769I$	$3.02382 - 3.53768I$
$u = -0.271966 - 0.034484I$ $a = -0.55126 - 2.15413I$ $b = -0.539468 + 0.855139I$	$0.61204 - 1.27769I$	$3.02382 + 3.53768I$
$u = -0.33249 + 1.77179I$ $a = -0.651166 + 0.055095I$ $b = -1.066110 + 0.020085I$	$2.35447 + 0.13282I$	0
$u = -0.33249 - 1.77179I$ $a = -0.651166 - 0.055095I$ $b = -1.066110 - 0.020085I$	$2.35447 - 0.13282I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.68206 + 0.81033I$ $a = -0.110374 - 0.876797I$ $b = -1.35116 - 0.55320I$	$10.0846 + 12.8687I$	0
$u = 1.68206 - 0.81033I$ $a = -0.110374 + 0.876797I$ $b = -1.35116 + 0.55320I$	$10.0846 - 12.8687I$	0
$u = 1.92343 + 0.24866I$ $a = 0.227127 - 0.430513I$ $b = -1.018540 - 0.305792I$	$1.89421 + 4.17770I$	0
$u = 1.92343 - 0.24866I$ $a = 0.227127 + 0.430513I$ $b = -1.018540 + 0.305792I$	$1.89421 - 4.17770I$	0
$u = -1.76038 + 0.91486I$ $a = -0.103804 + 0.797328I$ $b = -1.309830 + 0.434572I$	$15.1848 - 6.0579I$	0
$u = -1.76038 - 0.91486I$ $a = -0.103804 - 0.797328I$ $b = -1.309830 - 0.434572I$	$15.1848 + 6.0579I$	0
$u = -1.42487 + 1.38597I$ $a = 0.157930 - 0.562764I$ $b = 0.962269 - 0.167441I$	$2.80036 - 3.42863I$	0
$u = -1.42487 - 1.38597I$ $a = 0.157930 + 0.562764I$ $b = 0.962269 + 0.167441I$	$2.80036 + 3.42863I$	0
$u = 0.93510 + 1.80883I$ $a = -0.584700 - 0.271456I$ $b = -1.125460 + 0.057620I$	$6.30482 - 3.83713I$	0
$u = 0.93510 - 1.80883I$ $a = -0.584700 + 0.271456I$ $b = -1.125460 - 0.057620I$	$6.30482 + 3.83713I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.89085+0.96584I$ $a=\ 0.212627-0.591082I$ $b=\ 1.345160-0.379703I$	$14.7335-8.0221I$	0
$u=-1.89085-0.96584I$ $a=\ 0.212627+0.591082I$ $b=\ 1.345160+0.379703I$	$14.7335+8.0221I$	0
$u=\ 0.25146+2.38213I$ $a=\ 0.489335+0.165665I$ $b=\ 1.101460+0.159638I$	$9.43262+9.57051I$	0
$u=\ 0.25146-2.38213I$ $a=\ 0.489335-0.165665I$ $b=\ 1.101460-0.159638I$	$9.43262-9.57051I$	0

III.

$\boldsymbol{I_3^u = \langle u^4-2u^3+2u^2+b,\ u^4-2u^3+u^2+a+2u-1,\ u^5-3u^4+4u^3-u^2-u+1\rangle}$

(i) Arc colorings

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

$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} -u^4+2u^3-u^2-2u+1 \\ -u^4+2u^3-2u^2 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} u^2-2u+1 \\ -u^4+2u^3-2u^2 \end{pmatrix}$$

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

$$a_{12} = \begin{pmatrix} -u^2+2u-1 \\ u^4-2u^3+2u^2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^4-2u^3+u^2+2u-1 \\ u^4-2u^3+2u^2 \end{pmatrix}$$

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

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

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

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -8u^4+16u^3-16u^2-8u+12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.561306 + 0.557752I$ $a = -0.428550 - 1.039280I$ $b = -0.309916 - 0.549911I$	$0.65820 + 3.06116I$	$5.03023 - 8.86130I$
$u = 0.561306 - 0.557752I$ $a = -0.428550 + 1.039280I$ $b = -0.309916 + 0.549911I$	$0.65820 - 3.06116I$	$5.03023 + 8.86130I$
$u = -0.588022$ $a = 1.30408$ $b = -1.21774$	4.80216	6.96230
$u = 1.23271 + 1.09381I$ $a = 0.276511 + 0.728237I$ $b = 1.41878 + 0.21917I$	$11.7451 + 8.8017I$	$13.4886 - 6.9972I$
$u = 1.23271 - 1.09381I$ $a = 0.276511 - 0.728237I$ $b = 1.41878 - 0.21917I$	$11.7451 - 8.8017I$	$13.4886 + 6.9972I$

IV.

$\boldsymbol{I_4^u = \langle 3.39\times 10^{57}u^{37}+1.64\times 10^{58}u^{36}+\cdots+1.72\times 10^{58}b+1.68\times 10^{58},\ -6.22\times 10^{57}u^{37}-2.90\times 10^{58}u^{36}+\cdots+1.72\times 10^{58}a+2.01\times 10^{58},\ u^{38}+5u^{37}+\cdots+3u+1\rangle}$

(i) Arc colorings

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

$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} 0.362549u^{37} + 1.69009u^{36} + \cdots + 8.87775u - 1.17141 \\ -0.197442u^{37} - 0.954453u^{36} + \cdots - 3.82321u - 0.976500 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0.559990u^{37} + 2.64454u^{36} + \cdots + 12.7010u - 0.194914 \\ -0.197442u^{37} - 0.954453u^{36} + \cdots - 3.82321u - 0.976500 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.253953u^{37} - 1.00942u^{36} + \cdots - 1.55921u + 3.88680 \\ 0.257888u^{37} + 1.14286u^{36} + \cdots + 5.28944u + 0.165449 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 1.19955u^{37} + 6.11357u^{36} + \cdots + 17.3148u + 0.356808 \\ -0.156495u^{37} - 0.888962u^{36} + \cdots - 1.18673u - 1.03754 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -0.123807u^{37} - 0.455884u^{36} + \cdots + 3.20316u + 3.79191 \\ 0.343370u^{37} + 1.55782u^{36} + \cdots + 5.12800u + 0.0682530 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.464718u^{37} + 2.43666u^{36} + \cdots + 3.52028u + 1.64375 \\ 0.113765u^{37} + 0.494065u^{36} + \cdots + 4.04044u - 0.00393508 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.0672594u^{37} - 0.545625u^{36} + \cdots + 4.25183u - 1.25750 \\ -0.0710772u^{37} - 0.191255u^{36} + \cdots - 4.07364u - 0.533355 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 0.893464u^{37} + 4.44340u^{36} + \cdots + 15.3087u - 0.512723 \\ -0.292633u^{37} - 1.49746u^{36} + \cdots - 4.88805u - 1.26298 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 1.21387u^{37} + 6.03261u^{36} + \cdots + 19.4032u - 2.09961 \\ -0.185279u^{37} - 1.01233u^{36} + \cdots - 5.44474u - 1.23462 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -0.454829u^{37} - 2.07648u^{36} + \cdots - 6.51606u + 3.11909$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_7	$u^{38} - 3u^{37} + \cdots - 15u + 1$
c_2, c_8	$u^{38} + 4u^{37} + \cdots + 12u + 4$
c_3, c_9	$u^{38} + 5u^{37} + \cdots + 3u + 1$
c_4, c_{10}	$u^{38} + 3u^{37} + \cdots + 15u + 1$
c_5, c_{11}	$u^{38} + 7u^{37} + \cdots + 5u + 1$
c_6, c_{12}	$u^{38} - 4u^{37} + \cdots - 12u + 4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_7 c_{10}	$y^{38} + 39y^{37} + \cdots - 9y + 1$
c_2, c_6, c_8 c_{12}	$y^{38} - 20y^{37} + \cdots - 320y + 16$
c_3, c_9	$y^{38} - 13y^{37} + \cdots + 29y + 1$
c_5, c_{11}	$y^{38} + 11y^{37} + \cdots - 7y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.006020 + 0.108402I$ $a = 0.041965 - 1.124440I$ $b = -0.307816 - 1.309040I$	$2.08393 + 2.09885I$	$6.74136 - 2.24624I$
$u = 1.006020 - 0.108402I$ $a = 0.041965 + 1.124440I$ $b = -0.307816 + 1.309040I$	$2.08393 - 2.09885I$	$6.74136 + 2.24624I$
$u = -0.783199 + 0.682589I$ $a = -0.88816 + 1.20713I$ $b = -1.40886 + 0.58364I$	$11.20950 - 2.87208I$	$11.41681 - 1.93289I$
$u = -0.783199 - 0.682589I$ $a = -0.88816 - 1.20713I$ $b = -1.40886 - 0.58364I$	$11.20950 + 2.87208I$	$11.41681 + 1.93289I$
$u = 0.852981 + 0.378443I$ $a = -0.59632 - 1.58360I$ $b = -1.27852 - 0.79948I$	$10.47250 + 4.02627I$	$17.4758 - 4.9066I$
$u = 0.852981 - 0.378443I$ $a = -0.59632 + 1.58360I$ $b = -1.27852 + 0.79948I$	$10.47250 - 4.02627I$	$17.4758 + 4.9066I$
$u = -0.884234 + 0.141317I$ $a = 0.366312 - 1.241090I$ $b = -0.577770 - 1.049830I$	$3.67800 + 4.61094I$	$9.62428 - 6.11893I$
$u = -0.884234 - 0.141317I$ $a = 0.366312 + 1.241090I$ $b = -0.577770 + 1.049830I$	$3.67800 - 4.61094I$	$9.62428 + 6.11893I$
$u = -0.633213 + 0.947549I$ $a = -0.775053 + 0.760546I$ $b = -1.143930 - 0.107353I$	$4.13157 + 2.49454I$	$6.01645 - 3.26026I$
$u = -0.633213 - 0.947549I$ $a = -0.775053 - 0.760546I$ $b = -1.143930 + 0.107353I$	$4.13157 - 2.49454I$	$6.01645 + 3.26026I$

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.560678+0.642221I$ $a=2.07296-1.17339I$ $b=0.982523-0.161392I$	$10.47250-4.02627I$	$17.4758+4.9066I$
$u=-0.560678-0.642221I$ $a=2.07296+1.17339I$ $b=0.982523+0.161392I$	$10.47250+4.02627I$	$17.4758-4.9066I$
$u=0.800763+0.038049I$ $a=-1.36164-1.96464I$ $b=1.140420-0.081522I$	$11.20950+2.87208I$	$11.41681+1.93289I$
$u=0.800763-0.038049I$ $a=-1.36164+1.96464I$ $b=1.140420+0.081522I$	$11.20950-2.87208I$	$11.41681-1.93289I$
$u=-1.248030+0.006543I$ $a=-0.429882-0.103644I$ $b=1.159050+0.442736I$	$3.87460+4.46955I$	$7.99620-7.39912I$
$u=-1.248030-0.006543I$ $a=-0.429882+0.103644I$ $b=1.159050-0.442736I$	$3.87460-4.46955I$	$7.99620+7.39912I$
$u=0.324098+1.258480I$ $a=0.653026-0.073619I$ $b=-0.485333-0.101693I$	$0.557950-0.202750I$	$1.39582-1.60856I$
$u=0.324098-1.258480I$ $a=0.653026+0.073619I$ $b=-0.485333+0.101693I$	$0.557950+0.202750I$	$1.39582+1.60856I$
$u=0.431285+0.518833I$ $a=1.066950+0.240807I$ $b=0.008587-0.703353I$	$0.557950+0.202750I$	$1.39582+1.60856I$
$u=0.431285-0.518833I$ $a=1.066950-0.240807I$ $b=0.008587+0.703353I$	$0.557950-0.202750I$	$1.39582-1.60856I$

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.319825+0.514057I$ $a=\ \ 0.97363-1.29962I$ $b=-0.537788-0.676595I$	0.808517	$5.82422+0.I$
$u=-0.319825-0.514057I$ $a=\ \ 0.97363+1.29962I$ $b=-0.537788+0.676595I$	0.808517	$5.82422+0.I$
$u=\ \ 0.352154+0.432621I$ $a=\ \ 0.246503-0.435869I$ $b=-1.044850+0.558798I$	$4.13157-2.49454I$	$6.01645+3.26026I$
$u=\ \ 0.352154-0.432621I$ $a=\ \ 0.246503+0.435869I$ $b=-1.044850-0.558798I$	$4.13157+2.49454I$	$6.01645-3.26026I$
$u=-1.36960+0.61864I$ $a=\ \ 0.116692-0.922690I$ $b=\ \ 1.51293-0.56099I$	$7.85609-8.71978I$	$9.85001+8.37279I$
$u=-1.36960-0.61864I$ $a=\ \ 0.116692+0.922690I$ $b=\ \ 1.51293+0.56099I$	$7.85609+8.71978I$	$9.85001-8.37279I$
$u=-1.42590+0.52437I$ $a=\ \ 0.355875-0.602665I$ $b=-0.830510-0.546601I$	$3.87460+4.46955I$	$7.99620-7.39912I$
$u=-1.42590-0.52437I$ $a=\ \ 0.355875+0.602665I$ $b=-0.830510+0.546601I$	$3.87460-4.46955I$	$7.99620+7.39912I$
$u=-0.03610+1.55410I$ $a=-0.562289+0.277128I$ $b=\ \ 0.618160-0.158533I$	$7.85609-8.71978I$	$9.85001+8.37279I$
$u=-0.03610-1.55410I$ $a=-0.562289-0.277128I$ $b=\ \ 0.618160+0.158533I$	$7.85609+8.71978I$	$9.85001-8.37279I$

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.45469 + 0.70227I$ $a = 0.061047 - 0.727679I$ $b = -0.968713 - 0.231929I$	$1.78981 + 3.24561I$	0
$u = 1.45469 - 0.70227I$ $a = 0.061047 + 0.727679I$ $b = -0.968713 + 0.231929I$	$1.78981 - 3.24561I$	0
$u = -1.60517 + 0.49422I$ $a = -0.368554 - 0.411736I$ $b = 1.100720 - 0.310316I$	$3.67800 - 4.61094I$	0
$u = -1.60517 - 0.49422I$ $a = -0.368554 + 0.411736I$ $b = 1.100720 + 0.310316I$	$3.67800 + 4.61094I$	0
$u = -0.063752 + 0.210787I$ $a = -2.38233 + 1.71092I$ $b = -0.628305 - 0.901686I$	$1.78981 + 3.24561I$	$3.57119 - 1.80994I$
$u = -0.063752 - 0.210787I$ $a = -2.38233 - 1.71092I$ $b = -0.628305 + 0.901686I$	$1.78981 - 3.24561I$	$3.57119 + 1.80994I$
$u = 1.20769 + 1.42132I$ $a = -0.090738 - 0.338975I$ $b = 0.690014 - 0.227129I$	$2.08393 + 2.09885I$	0
$u = 1.20769 - 1.42132I$ $a = -0.090738 + 0.338975I$ $b = 0.690014 + 0.227129I$	$2.08393 - 2.09885I$	0

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_7	$(u^5+u^4+2u^3+u^2+u+1)(u^{23}-u^{22}+\cdots-7u-1)$ $\cdot(u^{38}-3u^{37}+\cdots-15u+1)(u^{124}-8u^{123}+\cdots-19679u-1829)$
c_2, c_8	$(u^5-u^4-2u^3+u^2+u+1)(u^{23}-u^{22}+\cdots+12u-4)$ $\cdot(u^{38}+4u^{37}+\cdots+12u+4)(u^{124}-3u^{123}+\cdots+13060u-7061)$
c_3, c_9	$(u^5-3u^4+4u^3-u^2-u+1)(u^{23}-3u^{22}+\cdots+23u-19)$ $\cdot(u^{38}+5u^{37}+\cdots+3u+1)$ $\cdot(u^{124}-28u^{122}+\cdots-37001253u+9393563)$
c_4, c_{10}	$(u^5-u^4+2u^3-u^2+u-1)(u^{23}-u^{22}+\cdots-7u-1)$ $\cdot(u^{38}+3u^{37}+\cdots+15u+1)(u^{124}-8u^{123}+\cdots-19679u-1829)$
c_5, c_{11}	$(u^5-u^4-2u^3+u^2+u+1)(u^{23}+u^{22}+\cdots+31u-1)$ $\cdot(u^{38}+7u^{37}+\cdots+5u+1)(u^{124}+12u^{123}+\cdots-23079u+2117)$
c_6, c_{12}	$(u^5+u^4-2u^3-u^2+u-1)(u^{23}-u^{22}+\cdots+12u-4)$ $\cdot(u^{38}-4u^{37}+\cdots-12u+4)(u^{124}-3u^{123}+\cdots+13060u-7061)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_7 c_{10}	$(y^5+3y^4+4y^3+y^2-y-1)(y^{23}+27y^{22}+\cdots+25y-1)$ $\cdot(y^{38}+39y^{37}+\cdots-9y+1)$ $\cdot(y^{124}+104y^{123}+\cdots-374690495y+3345241)$
c_2, c_6, c_8 c_{12}	$(y^5-5y^4+8y^3-3y^2-y-1)(y^{23}-15y^{22}+\cdots+96y-16)$ $\cdot(y^{38}-20y^{37}+\cdots-320y+16)$ $\cdot(y^{124}-85y^{123}+\cdots-834961334y+49857721)$
c_3, c_9	$(y^5-y^4+8y^3-3y^2+3y-1)(y^{23}-17y^{22}+\cdots+301y-361)$ $\cdot(y^{38}-13y^{37}+\cdots+29y+1)$ $\cdot(y^{124}-56y^{123}+\cdots-7183023354678805y+88239025834969)$
c_5, c_{11}	$(y^5-5y^4+8y^3-3y^2-y-1)(y^{23}+11y^{22}+\cdots+957y-1)$ $\cdot(y^{38}+11y^{37}+\cdots-7y+1)$ $\cdot(y^{124}-36y^{123}+\cdots+1058022751y+4481689)$