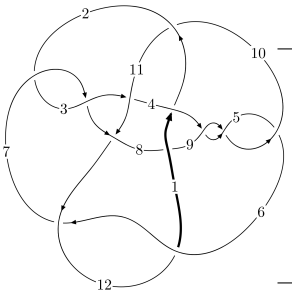
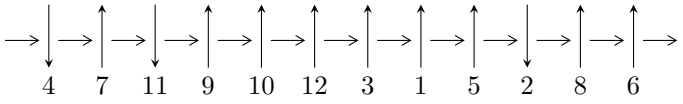
$12a_{1099}$ $(K12a_{1099})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned} I_1^u = \langle & 7.06785 \times 10^{400} u^{139} - 6.39249 \times 10^{400} u^{138} + \cdots + 5.00007 \times 10^{401} b - 3.90002 \times 10^{402}, \\ & 3.38612 \times 10^{403} u^{139} - 2.31085 \times 10^{403} u^{138} + \cdots + 2.35003 \times 10^{403} a - 1.04980 \times 10^{405}, \\ & u^{140} - 2u^{139} + \cdots - 246u + 47 \rangle \\ I_2^u = \langle & -127505400578 u^{31} - 68289128546 u^{30} + \cdots + 7817930129 b + 241878697278, \\ & 395700422218 u^{31} + 217822084997 u^{30} + \cdots + 7817930129 a - 830847543053, \\ & u^{32} + u^{31} + \cdots - 4u - 1 \rangle \end{aligned}$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 172 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. $\boldsymbol{I_1^u = \langle 7.07 \times 10^{400} u^{139} - 6.39 \times 10^{400} u^{138} + \cdots + 5.00 \times 10^{401} b - 3.90 \times 10^{402},\ 3.39 \times 10^{403} u^{139} - 2.31 \times 10^{403} u^{138} + \cdots + 2.35 \times 10^{403} a - 1.05 \times 10^{405},\ u^{140} - 2u^{139} + \cdots - 246u + 47 \rangle}$

(i) Arc colorings

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

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

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

$$a_{10} = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -1.44088u^{139} + 0.983325u^{138} + \cdots - 188.804u + 44.6719 \\ -0.141355u^{139} + 0.127848u^{138} + \cdots - 35.9278u + 7.79995 \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} 0.252221u^{139} - 0.0372281u^{138} + \cdots + 55.2224u - 14.9395 \\ -0.708542u^{139} + 0.533693u^{138} + \cdots - 129.532u + 28.6376 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -1.58224u^{139} + 1.11117u^{138} + \cdots - 224.732u + 52.4718 \\ -0.141355u^{139} + 0.127848u^{138} + \cdots - 35.9278u + 7.79995 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -1.39386u^{139} + 1.08276u^{138} + \cdots - 289.087u + 57.6497 \\ -0.368782u^{139} + 0.167318u^{138} + \cdots - 50.8918u + 14.4164 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.639687u^{139} - 0.546845u^{138} + \cdots + 104.172u - 29.0524 \\ 0.546644u^{139} - 0.394692u^{138} + \cdots + 89.2529u - 20.5778 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0.431121u^{139} - 0.397893u^{138} + \cdots + 23.7312u - 14.0691 \\ 0.295541u^{139} - 0.164193u^{138} + \cdots + 69.0106u - 12.1486 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -2.16500u^{139} + 1.50927u^{138} + \cdots - 300.819u + 69.7943 \\ -0.541777u^{139} + 0.389400u^{138} + \cdots - 99.1346u + 21.8711 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 2.64192u^{139} + 5.61201u^{138} + \cdots + 1506.14u - 276.960$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{140} - 21u^{139} + \cdots + 2161255u - 89729$
c_2, c_7	$u^{140} - 38u^{138} + \cdots + 756u + 328$
c_3	$u^{140} - 13u^{139} + \cdots - 20208u - 28951$
c_4, c_5, c_9	$u^{140} + 2u^{139} + \cdots + 246u + 47$
c_6, c_{12}	$u^{140} + 15u^{139} + \cdots - 2958456u - 205039$
c_8	$u^{140} - 7u^{138} + \cdots + 704512u - 32768$
c_{10}	$u^{140} + 3u^{139} + \cdots - 58207u + 11101$
c_{11}	$u^{140} - 3u^{139} + \cdots - 560200u + 26759$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{140} - 125y^{139} + \cdots - 1146758776985y + 8051293441$
c_2, c_7	$y^{140} - 76y^{139} + \cdots + 1115696y + 107584$
c_3	$y^{140} - 103y^{139} + \cdots + 8409358610y + 838160401$
c_4, c_5, c_9	$y^{140} - 134y^{139} + \cdots + 115264y + 2209$
c_6, c_{12}	$y^{140} - 59y^{139} + \cdots - 696264713064y + 42040991521$
c_8	$y^{140} - 14y^{139} + \cdots - 53955526656y + 1073741824$
c_{10}	$y^{140} + 23y^{139} + \cdots + 11979925329y + 123232201$
c_{11}	$y^{140} - 3y^{139} + \cdots - 121398626014y + 716044081$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.764566 + 0.614742I$ $a = -0.756728 + 0.022065I$ $b = 0.561216 + 0.948751I$	$-1.62052 - 3.93639I$	0
$u = 0.764566 - 0.614742I$ $a = -0.756728 - 0.022065I$ $b = 0.561216 - 0.948751I$	$-1.62052 + 3.93639I$	0
$u = -0.431965 + 0.875823I$ $a = -0.567012 + 0.569864I$ $b = -0.80451 - 1.18902I$	$0.4399 - 14.9244I$	0
$u = -0.431965 - 0.875823I$ $a = -0.567012 - 0.569864I$ $b = -0.80451 + 1.18902I$	$0.4399 + 14.9244I$	0
$u = 0.748211 + 0.619046I$ $a = -0.069259 + 0.194608I$ $b = 0.020130 - 0.624154I$	$-2.14756 + 1.54813I$	0
$u = 0.748211 - 0.619046I$ $a = -0.069259 - 0.194608I$ $b = 0.020130 + 0.624154I$	$-2.14756 - 1.54813I$	0
$u = -0.385614 + 0.889127I$ $a = 0.265965 - 0.185434I$ $b = 0.692995 + 0.734154I$	$-2.27888 - 6.29135I$	0
$u = -0.385614 - 0.889127I$ $a = 0.265965 + 0.185434I$ $b = 0.692995 - 0.734154I$	$-2.27888 + 6.29135I$	0
$u = -0.872790 + 0.332482I$ $a = 1.00532 - 1.77676I$ $b = -0.066478 + 0.837529I$	$1.06995 - 5.54401I$	0
$u = -0.872790 - 0.332482I$ $a = 1.00532 + 1.77676I$ $b = -0.066478 - 0.837529I$	$1.06995 + 5.54401I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.397365+0.994680I$ $a=\ \ 0.317125-0.475278I$ $b=\ \ 0.438700+0.899027I$	$-1.49936-1.78215I$	0
$u=-0.397365-0.994680I$ $a=\ \ 0.317125+0.475278I$ $b=\ \ 0.438700-0.899027I$	$-1.49936+1.78215I$	0
$u=-1.091370+0.003543I$ $a=\ \ 0.64232-2.27277I$ $b=-0.412729+1.020960I$	$0.98230-5.42919I$	0
$u=-1.091370-0.003543I$ $a=\ \ 0.64232+2.27277I$ $b=-0.412729-1.020960I$	$0.98230+5.42919I$	0
$u=-0.796420+0.757647I$ $a=\ \ 0.717716-0.118631I$ $b=-0.540809+0.975006I$	$1.48351+9.39648I$	0
$u=-0.796420-0.757647I$ $a=\ \ 0.717716+0.118631I$ $b=-0.540809-0.975006I$	$1.48351-9.39648I$	0
$u=\ \ 0.386379+0.809868I$ $a=\ \ 0.718170+0.487645I$ $b=\ \ 0.84954-1.16927I$	$-2.78464+8.86131I$	0
$u=\ \ 0.386379-0.809868I$ $a=\ \ 0.718170-0.487645I$ $b=\ \ 0.84954+1.16927I$	$-2.78464-8.86131I$	0
$u=\ \ 0.451839+0.768766I$ $a=\ \ 0.733814-0.329894I$ $b=-0.375611-0.772483I$	$4.23064-4.11996I$	0
$u=\ \ 0.451839-0.768766I$ $a=\ \ 0.733814+0.329894I$ $b=-0.375611+0.772483I$	$4.23064+4.11996I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.348614 + 0.819747I$ $a = -0.543806 + 0.001917I$ $b = -0.531445 + 0.573523I$	$-3.49569 + 2.90609I$	0
$u = 0.348614 - 0.819747I$ $a = -0.543806 - 0.001917I$ $b = -0.531445 - 0.573523I$	$-3.49569 - 2.90609I$	0
$u = 0.603418 + 0.931812I$ $a = -0.523541 - 0.679699I$ $b = -0.323025 + 0.839203I$	$-2.23852 + 3.92584I$	0
$u = 0.603418 - 0.931812I$ $a = -0.523541 + 0.679699I$ $b = -0.323025 - 0.839203I$	$-2.23852 - 3.92584I$	0
$u = 0.538014 + 0.657591I$ $a = -0.391201 - 0.633565I$ $b = -0.811753 + 1.129150I$	$4.61934 + 8.79138I$	0
$u = 0.538014 - 0.657591I$ $a = -0.391201 + 0.633565I$ $b = -0.811753 - 1.129150I$	$4.61934 - 8.79138I$	0
$u = -0.950578 + 0.670745I$ $a = -0.520489 - 0.073063I$ $b = 0.269700 - 0.464774I$	$-0.681700 + 0.808459I$	0
$u = -0.950578 - 0.670745I$ $a = -0.520489 + 0.073063I$ $b = 0.269700 + 0.464774I$	$-0.681700 - 0.808459I$	0
$u = 1.047160 + 0.565711I$ $a = 0.256201 - 0.298067I$ $b = -0.083631 - 0.301076I$	$-1.55723 + 2.03234I$	0
$u = 1.047160 - 0.565711I$ $a = 0.256201 + 0.298067I$ $b = -0.083631 + 0.301076I$	$-1.55723 - 2.03234I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.279868 + 0.755036I$ $a = -0.162116 + 0.680090I$ $b = 0.016582 - 0.775610I$	$-2.64349 + 1.62206I$	0
$u = 0.279868 - 0.755036I$ $a = -0.162116 - 0.680090I$ $b = 0.016582 + 0.775610I$	$-2.64349 - 1.62206I$	0
$u = -0.436730 + 0.676016I$ $a = 0.404832 + 0.072224I$ $b = -0.478380 + 0.922591I$	$3.21215 + 0.02456I$	0
$u = -0.436730 - 0.676016I$ $a = 0.404832 - 0.072224I$ $b = -0.478380 - 0.922591I$	$3.21215 - 0.02456I$	0
$u = -0.481262 + 0.639159I$ $a = -0.977521 + 0.849117I$ $b = -0.773411 - 0.984020I$	$3.37238 - 4.31522I$	0
$u = -0.481262 - 0.639159I$ $a = -0.977521 - 0.849117I$ $b = -0.773411 + 0.984020I$	$3.37238 + 4.31522I$	0
$u = 0.066046 + 0.767552I$ $a = 0.146789 - 0.658664I$ $b = -0.223685 - 1.190650I$	$3.03651 + 2.65423I$	0
$u = 0.066046 - 0.767552I$ $a = 0.146789 + 0.658664I$ $b = -0.223685 + 1.190650I$	$3.03651 - 2.65423I$	0
$u = -0.391185 + 0.637606I$ $a = 0.510723 - 0.429035I$ $b = 0.701051 + 1.138780I$	$0.96317 - 4.21896I$	0
$u = -0.391185 - 0.637606I$ $a = 0.510723 + 0.429035I$ $b = 0.701051 - 1.138780I$	$0.96317 + 4.21896I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.257810 + 0.081376I$ $a = -0.677773 - 0.321111I$ $b = 1.349230 + 0.188313I$	$0.701958 + 0.447720I$	0
$u = 1.257810 - 0.081376I$ $a = -0.677773 + 0.321111I$ $b = 1.349230 - 0.188313I$	$0.701958 - 0.447720I$	0
$u = 1.263030 + 0.052168I$ $a = -0.57658 + 2.47427I$ $b = 0.81227 - 1.21735I$	$-1.242620 + 0.290981I$	0
$u = 1.263030 - 0.052168I$ $a = -0.57658 - 2.47427I$ $b = 0.81227 + 1.21735I$	$-1.242620 - 0.290981I$	0
$u = -0.507338 + 0.521785I$ $a = -1.069500 - 0.234591I$ $b = 0.210183 - 0.681237I$	$1.42544 + 0.30768I$	0
$u = -0.507338 - 0.521785I$ $a = -1.069500 + 0.234591I$ $b = 0.210183 + 0.681237I$	$1.42544 - 0.30768I$	0
$u = -0.969318 + 0.831620I$ $a = -0.256798 + 0.416270I$ $b = 0.130461 - 0.698507I$	$0.07440 - 4.47593I$	0
$u = -0.969318 - 0.831620I$ $a = -0.256798 - 0.416270I$ $b = 0.130461 + 0.698507I$	$0.07440 + 4.47593I$	0
$u = 1.279260 + 0.024096I$ $a = -0.22700 + 2.22513I$ $b = 0.604032 - 0.268504I$	$-0.92594 + 1.07464I$	0
$u = 1.279260 - 0.024096I$ $a = -0.22700 - 2.22513I$ $b = 0.604032 + 0.268504I$	$-0.92594 - 1.07464I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.320120 + 0.090882I$ $a = -0.155927 + 0.038910I$ $b = -1.142330 - 0.451766I$	$3.77848 - 5.09955I$	0
$u = 1.320120 - 0.090882I$ $a = -0.155927 - 0.038910I$ $b = -1.142330 + 0.451766I$	$3.77848 + 5.09955I$	0
$u = -0.472341 + 0.468574I$ $a = -0.33361 + 1.65744I$ $b = -0.670970 - 0.552153I$	$1.97267 - 4.24937I$	$6.00000 + 7.16583I$
$u = -0.472341 - 0.468574I$ $a = -0.33361 - 1.65744I$ $b = -0.670970 + 0.552153I$	$1.97267 + 4.24937I$	$6.00000 - 7.16583I$
$u = -1.336380 + 0.158812I$ $a = -1.42034 - 0.10646I$ $b = 1.74467 - 0.38800I$	$0.16043 - 3.77212I$	0
$u = -1.336380 - 0.158812I$ $a = -1.42034 + 0.10646I$ $b = 1.74467 + 0.38800I$	$0.16043 + 3.77212I$	0
$u = -1.346910 + 0.063646I$ $a = -0.01946 - 1.98770I$ $b = -0.53563 + 1.48218I$	$3.81519 - 0.25414I$	0
$u = -1.346910 - 0.063646I$ $a = -0.01946 + 1.98770I$ $b = -0.53563 - 1.48218I$	$3.81519 + 0.25414I$	0
$u = -1.347250 + 0.191464I$ $a = -0.094366 - 0.867896I$ $b = -0.490159 + 0.321923I$	$2.07131 - 4.72897I$	0
$u = -1.347250 - 0.191464I$ $a = -0.094366 + 0.867896I$ $b = -0.490159 - 0.321923I$	$2.07131 + 4.72897I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.359690+0.078460I$ $a=\ \ 0.86928+2.66862I$ $b=-0.290907-0.569845I$	$3.90020-7.95012I$	0
$u=-1.359690-0.078460I$ $a=\ \ 0.86928-2.66862I$ $b=-0.290907+0.569845I$	$3.90020+7.95012I$	0
$u=-1.355630+0.176096I$ $a=-0.529593+0.026211I$ $b=-0.723194-0.233373I$	$1.81190-4.96064I$	0
$u=-1.355630-0.176096I$ $a=-0.529593-0.026211I$ $b=-0.723194+0.233373I$	$1.81190+4.96064I$	0
$u=\ \ 1.339880+0.281207I$ $a=-0.69407-1.23583I$ $b=-0.488787+1.290510I$	$7.09309+1.02561I$	0
$u=\ \ 1.339880-0.281207I$ $a=-0.69407+1.23583I$ $b=-0.488787-1.290510I$	$7.09309-1.02561I$	0
$u=\ \ 1.359790+0.171264I$ $a=\ \ 1.42442-0.00042I$ $b=-1.86850-0.34319I$	$3.25813+10.26040I$	0
$u=\ \ 1.359790-0.171264I$ $a=\ \ 1.42442+0.00042I$ $b=-1.86850+0.34319I$	$3.25813-10.26040I$	0
$u=\ \ 1.38509$ $a=\ \ 1.14888$ $b=-1.40322$	7.30543	0
$u=-1.378500+0.143156I$ $a=-0.144143-1.051790I$ $b=\ \ 1.338770+0.137984I$	$0.90003-2.22784I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.378500-0.143156I$ $a=-0.144143+1.051790I$ $b=\ \ 1.338770-0.137984I$	$0.90003+2.22784I$	0
$u=\ \ 0.230122+0.568325I$ $a=-1.43842+0.89829I$ $b=-0.228377+0.315269I$	$-3.11970+2.28316I$	$1.95287-6.52139I$
$u=\ \ 0.230122-0.568325I$ $a=-1.43842-0.89829I$ $b=-0.228377-0.315269I$	$-3.11970-2.28316I$	$1.95287+6.52139I$
$u=\ \ 1.386520+0.073921I$ $a=-0.14246-2.26955I$ $b=\ \ 0.64292+1.68346I$	$4.19198+1.85686I$	0
$u=\ \ 1.386520-0.073921I$ $a=-0.14246+2.26955I$ $b=\ \ 0.64292-1.68346I$	$4.19198-1.85686I$	0
$u=-1.39653$ $a=\ \ 13.0075$ $b=-13.0839$	4.90136	0
$u=\ \ 0.101041+0.592095I$ $a=\ \ 0.048183+1.296400I$ $b=\ \ 0.436184-0.371969I$	$-2.56464+1.85484I$	$1.59174-3.78732I$
$u=\ \ 0.101041-0.592095I$ $a=\ \ 0.048183-1.296400I$ $b=\ \ 0.436184+0.371969I$	$-2.56464-1.85484I$	$1.59174+3.78732I$
$u=-1.38084+0.34956I$ $a=\ \ 0.976152-1.005330I$ $b=\ \ 0.096352+1.305290I$	$7.68062-6.77804I$	0
$u=-1.38084-0.34956I$ $a=\ \ 0.976152+1.005330I$ $b=\ \ 0.096352-1.305290I$	$7.68062+6.77804I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.158680+0.535677I$ $a=-0.684704-0.545926I$ $b=-1.285490+0.580709I$	$-1.55020-7.72919I$	$1.98089+8.14294I$
$u=-0.158680-0.535677I$ $a=-0.684704+0.545926I$ $b=-1.285490-0.580709I$	$-1.55020+7.72919I$	$1.98089-8.14294I$
$u=-1.43505+0.15163I$ $a=-0.02408+2.39084I$ $b=-0.83324-1.77851I$	$10.40160-1.60147I$	0
$u=-1.43505-0.15163I$ $a=-0.02408-2.39084I$ $b=-0.83324+1.77851I$	$10.40160+1.60147I$	0
$u=-1.45789+0.16520I$ $a=-0.16580-1.74651I$ $b=\ \ 0.598179+1.209640I$	$4.59862-3.25922I$	0
$u=-1.45789-0.16520I$ $a=-0.16580+1.74651I$ $b=\ \ 0.598179-1.209640I$	$4.59862+3.25922I$	0
$u=\ \ 1.45825+0.16828I$ $a=-0.434804-1.111530I$ $b=-0.491524+0.921085I$	$7.70510+2.12527I$	0
$u=\ \ 1.45825-0.16828I$ $a=-0.434804+1.111530I$ $b=-0.491524-0.921085I$	$7.70510-2.12527I$	0
$u=\ \ 1.45138+0.22869I$ $a=\ \ 0.10823+2.08387I$ $b=\ \ 0.76679-1.62718I$	$6.89462+7.36892I$	0
$u=\ \ 1.45138-0.22869I$ $a=\ \ 0.10823-2.08387I$ $b=\ \ 0.76679+1.62718I$	$6.89462-7.36892I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.331381+0.412514I$ $a=\ \ 0.106761+0.185095I$ $b=-1.125260+0.182102I$	$1.68550+1.27489I$	$5.39804+4.01532I$
$u=-0.331381-0.412514I$ $a=\ \ 0.106761-0.185095I$ $b=-1.125260-0.182102I$	$1.68550-1.27489I$	$5.39804-4.01532I$
$u=\ \ 1.46903+0.10252I$ $a=\ \ 0.749139-1.031270I$ $b=-1.18386+0.80664I$	$7.43535+0.31449I$	0
$u=\ \ 1.46903-0.10252I$ $a=\ \ 0.749139+1.031270I$ $b=-1.18386-0.80664I$	$7.43535-0.31449I$	0
$u=\ \ 0.344447+0.392764I$ $a=-1.094460-0.523779I$ $b=-0.71120+1.28793I$	$4.63415-0.46030I$	$12.75141-3.68087I$
$u=\ \ 0.344447-0.392764I$ $a=-1.094460+0.523779I$ $b=-0.71120-1.28793I$	$4.63415+0.46030I$	$12.75141+3.68087I$
$u=\ \ 0.323830+0.404474I$ $a=\ \ 0.070470+1.071510I$ $b=\ \ 0.715139-0.460126I$	$-1.31447+1.13084I$	$-0.31778-3.32927I$
$u=\ \ 0.323830-0.404474I$ $a=\ \ 0.070470-1.071510I$ $b=\ \ 0.715139+0.460126I$	$-1.31447-1.13084I$	$-0.31778+3.32927I$
$u=-1.48393+0.06626I$ $a=\ \ 0.65706-1.54925I$ $b=\ \ 0.429328+0.961197I$	$11.37480-3.02494I$	0
$u=-1.48393-0.06626I$ $a=\ \ 0.65706+1.54925I$ $b=\ \ 0.429328-0.961197I$	$11.37480+3.02494I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.502872$ $a=-0.643526$ $b=-0.0701397$	0.686081	15.0850
$u=-1.46965+0.30131I$ $a=-0.144511+1.194500I$ $b=-0.816774-0.899395I$	$2.38782-6.94233I$	0
$u=-1.46965-0.30131I$ $a=-0.144511-1.194500I$ $b=-0.816774+0.899395I$	$2.38782+6.94233I$	0
$u=0.135241+0.480858I$ $a=1.086020-0.081337I$ $b=1.31277+0.66588I$	$-4.47274+1.42103I$	$-2.41412-9.11310I$
$u=0.135241-0.480858I$ $a=1.086020+0.081337I$ $b=1.31277-0.66588I$	$-4.47274-1.42103I$	$-2.41412+9.11310I$
$u=-1.49947+0.10759I$ $a=-0.52445+1.32453I$ $b=-0.026468-1.118090I$	$5.99667+1.89828I$	0
$u=-1.49947-0.10759I$ $a=-0.52445-1.32453I$ $b=-0.026468+1.118090I$	$5.99667-1.89828I$	0
$u=1.48761+0.22734I$ $a=-0.14623-1.90635I$ $b=-0.94676+1.17321I$	$9.74783+7.48765I$	0
$u=1.48761-0.22734I$ $a=-0.14623+1.90635I$ $b=-0.94676-1.17321I$	$9.74783-7.48765I$	0
$u=-1.47669+0.30402I$ $a=0.21829-1.95508I$ $b=0.96722+1.42263I$	$3.21792-12.90040I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.47669-0.30402I$ $a=\ \ 0.21829+1.95508I$ $b=\ \ 0.96722-1.42263I$	$3.21792+12.90040I$	0
$u=\ \ 1.48913+0.24952I$ $a=\ \ 0.718320+1.169120I$ $b=-0.183681-1.132970I$	$9.45311+3.40508I$	0
$u=\ \ 1.48913-0.24952I$ $a=\ \ 0.718320-1.169120I$ $b=-0.183681+1.132970I$	$9.45311-3.40508I$	0
$u=\ \ 1.48845+0.32840I$ $a=-0.06535+1.41591I$ $b=\ \ 0.93809-1.11451I$	$3.76416+10.67190I$	0
$u=\ \ 1.48845-0.32840I$ $a=-0.06535-1.41591I$ $b=\ \ 0.93809+1.11451I$	$3.76416-10.67190I$	0
$u=-1.50734+0.22791I$ $a=\ \ 0.10179+2.04736I$ $b=-0.90386-1.60675I$	$11.2568-12.0279I$	0
$u=-1.50734-0.22791I$ $a=\ \ 0.10179-2.04736I$ $b=-0.90386+1.60675I$	$11.2568+12.0279I$	0
$u=\ \ 1.48191+0.36823I$ $a=\ \ 0.30711+1.62619I$ $b=\ \ 0.563294-1.265690I$	$4.48605+6.64518I$	0
$u=\ \ 1.48191-0.36823I$ $a=\ \ 0.30711-1.62619I$ $b=\ \ 0.563294+1.265690I$	$4.48605-6.64518I$	0
$u=\ \ 0.442236+0.156467I$ $a=\ \ 2.63962+1.04968I$ $b=-0.062477-0.855803I$	$4.96756+2.17337I$	$18.1390-3.6684I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.442236 - 0.156467I$ $a = 2.63962 - 1.04968I$ $b = -0.062477 + 0.855803I$	$4.96756 - 2.17337I$	$18.1390 + 3.6684I$
$u = 1.52212 + 0.18110I$ $a = 0.00857 - 1.79365I$ $b = -0.455608 + 0.968764I$	$8.63725 + 6.64928I$	0
$u = 1.52212 - 0.18110I$ $a = 0.00857 + 1.79365I$ $b = -0.455608 - 0.968764I$	$8.63725 - 6.64928I$	0
$u = 1.50454 + 0.32601I$ $a = -0.21252 - 1.92872I$ $b = -0.90560 + 1.44223I$	$6.6831 + 19.2820I$	0
$u = 1.50454 - 0.32601I$ $a = -0.21252 + 1.92872I$ $b = -0.90560 - 1.44223I$	$6.6831 - 19.2820I$	0
$u = 0.182833 + 0.411901I$ $a = 3.07598 + 0.39246I$ $b = 1.073830 - 0.108830I$	$-4.10673 + 0.16996I$	$1.48081 + 1.55806I$
$u = 0.182833 - 0.411901I$ $a = 3.07598 - 0.39246I$ $b = 1.073830 + 0.108830I$	$-4.10673 - 0.16996I$	$1.48081 - 1.55806I$
$u = 1.54902 + 0.16159I$ $a = 0.80434 + 1.48787I$ $b = 0.297796 - 0.723007I$	$8.74387 + 7.61134I$	0
$u = 1.54902 - 0.16159I$ $a = 0.80434 - 1.48787I$ $b = 0.297796 + 0.723007I$	$8.74387 - 7.61134I$	0
$u = -1.53655 + 0.26458I$ $a = 0.562524 - 0.750505I$ $b = 0.219429 + 0.807514I$	$10.77960 + 0.24683I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.53655-0.26458I$ $a=\ \ 0.562524+0.750505I$ $b=\ \ 0.219429-0.807514I$	$10.77960-0.24683I$	0
$u=-1.56283+0.35482I$ $a=-0.38548+1.55368I$ $b=-0.459995-1.141710I$	$4.71757-8.71513I$	0
$u=-1.56283-0.35482I$ $a=-0.38548-1.55368I$ $b=-0.459995+1.141710I$	$4.71757+8.71513I$	0
$u=\ \ 0.396156$ $a=-1.14516$ $b=\ \ 1.75359$	-0.574805	69.3690
$u=\ \ 1.60792+0.07806I$ $a=\ \ 0.463307+1.206510I$ $b=-0.013219-0.987722I$	$10.12900-6.52347I$	0
$u=\ \ 1.60792-0.07806I$ $a=\ \ 0.463307-1.206510I$ $b=-0.013219+0.987722I$	$10.12900+6.52347I$	0
$u=-0.020186+0.324568I$ $a=-4.49024-3.15502I$ $b=-0.760796+0.341834I$	$-0.48844+6.65050I$	$-2.24841-8.24654I$
$u=-0.020186-0.324568I$ $a=-4.49024+3.15502I$ $b=-0.760796-0.341834I$	$-0.48844-6.65050I$	$-2.24841+8.24654I$
$u=-0.021447+0.226031I$ $a=-0.31917+3.85458I$ $b=\ \ 0.13511-1.45253I$	$-0.557361-0.806260I$	$20.8063-5.0107I$
$u=-0.021447-0.226031I$ $a=-0.31917-3.85458I$ $b=\ \ 0.13511+1.45253I$	$-0.557361+0.806260I$	$20.8063+5.0107I$

II.

$\boldsymbol{I_2^u = \langle -1.28\times 10^{11}u^{31} - 6.83\times 10^{10}u^{30} + \cdots + 7.82\times 10^{9}b + 2.42\times 10^{11},\ 3.96\times 10^{11}u^{31} + 2.18\times 10^{11}u^{30} + \cdots + 7.82\times 10^{9}a - 8.31\times 10^{11},\ u^{32} + u^{31} + \cdots - 4u - 1\rangle}$

(i) Arc colorings

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

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

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

$$a_{10} = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -50.6145u^{31} - 27.8619u^{30} + \cdots + 202.929u + 106.275 \\ 16.3094u^{31} + 8.73494u^{30} + \cdots - 65.0167u - 30.9390 \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} 13.3242u^{31} + 11.9195u^{30} + \cdots - 58.0000u - 47.6454 \\ -2.67974u^{31} - 0.697812u^{30} + \cdots + 11.3373u + 7.58022 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -34.3051u^{31} - 19.1269u^{30} + \cdots + 137.913u + 75.3356 \\ 16.3094u^{31} + 8.73494u^{30} + \cdots - 65.0167u - 30.9390 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -58.3776u^{31} - 19.4928u^{30} + \cdots + 262.096u + 115.704 \\ 8.30357u^{31} - 3.80411u^{30} + \cdots - 61.2216u - 20.6800 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -5.27802u^{31} - 2.67318u^{30} + \cdots + 23.9860u + 1.73624 \\ -7.63423u^{31} - 5.80439u^{30} + \cdots + 34.5962u + 20.5132 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 7.17330u^{31} - 4.86084u^{30} + \cdots - 63.4857u - 19.3973 \\ 27.2671u^{31} + 21.4103u^{30} + \cdots - 80.4673u - 44.9402 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -31.6254u^{31} - 18.4291u^{30} + \cdots + 128.575u + 67.7554 \\ 18.4166u^{31} + 8.79273u^{30} + \cdots - 71.5772u - 32.0576 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes

$$= -\frac{1530507576413}{7817930129}u^{31} - \frac{7010854641965}{7817930129}u^{30} + \cdots - \frac{18123732104345}{7817930129}u - \frac{5786401633894}{7817930129}$$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{32}+8u^{31}+\cdots+3u-1$
c_2	$u^{32}+u^{31}+\cdots-18u-9$
c_3	$u^{32}-10u^{31}+\cdots+2u-1$
c_4, c_5	$u^{32}+u^{31}+\cdots-4u-1$
c_6	$u^{32}+14u^{31}+\cdots-18u+1$
c_7	$u^{32}-u^{31}+\cdots+18u-9$
c_8	$u^{32}+u^{31}+\cdots+25u+1$
c_9	$u^{32}-u^{31}+\cdots+4u-1$
c_{10}	$u^{32}+2u^{31}+\cdots+33u+7$
c_{11}	$u^{32}+8u^{30}+\cdots+24u+1$
c_{12}	$u^{32}-14u^{31}+\cdots+18u+1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{32} - 166y^{31} + \cdots + y + 1$
c_2, c_7	$y^{32} - 13y^{31} + \cdots - 1296y + 81$
c_3	$y^{32} - 136y^{31} + \cdots + 16y + 1$
c_4, c_5, c_9	$y^{32} - 31y^{31} + \cdots - 6y + 1$
c_6, c_{12}	$y^{32} - 124y^{31} + \cdots - 114y + 1$
c_8	$y^{32} + 17y^{31} + \cdots - 179y + 1$
c_{10}	$y^{32} + 18y^{31} + \cdots + 3y + 49$
c_{11}	$y^{32} + 16y^{31} + \cdots - 168y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.486829 + 0.962852I$ $a = -0.494108 - 0.426181I$ $b = -0.292671 + 0.822136I$	$-2.27017 + 3.24651I$	$6.33110 - 2.41454I$
$u = 0.486829 - 0.962852I$ $a = -0.494108 + 0.426181I$ $b = -0.292671 - 0.822136I$	$-2.27017 - 3.24651I$	$6.33110 + 2.41454I$
$u = 0.839016 + 0.308788I$ $a = 0.336529 - 1.045110I$ $b = -0.557430 - 0.158732I$	$-3.35608 + 1.44478I$	$0.91945 - 2.31166I$
$u = 0.839016 - 0.308788I$ $a = 0.336529 + 1.045110I$ $b = -0.557430 + 0.158732I$	$-3.35608 - 1.44478I$	$0.91945 + 2.31166I$
$u = 0.921198 + 0.623200I$ $a = 0.016922 + 0.188247I$ $b = 0.159067 - 0.669111I$	$-1.16122 + 2.41944I$	$12.4713 - 6.7839I$
$u = 0.921198 - 0.623200I$ $a = 0.016922 - 0.188247I$ $b = 0.159067 + 0.669111I$	$-1.16122 - 2.41944I$	$12.4713 + 6.7839I$
$u = -0.704160 + 0.476051I$ $a = 0.477899 + 0.112566I$ $b = -0.571375 - 0.430231I$	$-0.929933 + 0.006122I$	$7.05971 - 0.92769I$
$u = -0.704160 - 0.476051I$ $a = 0.477899 - 0.112566I$ $b = -0.571375 + 0.430231I$	$-0.929933 - 0.006122I$	$7.05971 + 0.92769I$
$u = -0.851473 + 0.777153I$ $a = 0.495238 - 0.648206I$ $b = 0.095483 + 0.525198I$	$-0.28344 - 5.06571I$	$6.00000 + 9.61284I$
$u = -0.851473 - 0.777153I$ $a = 0.495238 + 0.648206I$ $b = 0.095483 - 0.525198I$	$-0.28344 + 5.06571I$	$6.00000 - 9.61284I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.282360+0.061545I$ $a=-0.03183+1.56729I$ $b=\ \ 0.829812-0.090543I$	$3.11579-7.18856I$	$0.+5.62953I$
$u=-1.282360-0.061545I$ $a=-0.03183-1.56729I$ $b=\ \ 0.829812+0.090543I$	$3.11579+7.18856I$	$0.-5.62953I$
$u=\ \ 1.301710+0.054409I$ $a=\ \ 0.56909-2.49021I$ $b=-0.869395+0.765099I$	$-0.402563+0.236518I$	0
$u=\ \ 1.301710-0.054409I$ $a=\ \ 0.56909+2.49021I$ $b=-0.869395-0.765099I$	$-0.402563-0.236518I$	0
$u=-1.372660+0.133796I$ $a=\ \ 0.447480+0.506322I$ $b=-1.374210+0.151720I$	$0.97171-2.90674I$	0
$u=-1.372660-0.133796I$ $a=\ \ 0.447480-0.506322I$ $b=-1.374210-0.151720I$	$0.97171+2.90674I$	0
$u=\ \ 1.39628$ $a=-12.8257$ $b=\ \ 12.9023$	4.90112	-15688.0
$u=-1.40694+0.16449I$ $a=\ \ 0.028907-1.376910I$ $b=\ \ 0.82990+1.22398I$	$8.76850-0.58713I$	0
$u=-1.40694-0.16449I$ $a=\ \ 0.028907+1.376910I$ $b=\ \ 0.82990-1.22398I$	$8.76850+0.58713I$	0
$u=\ \ 1.44481+0.21513I$ $a=-0.80027-1.35663I$ $b=-0.067629+1.075320I$	$9.20634+4.38657I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \quad 1.44481 - 0.21513I$ $a = -0.80027 + 1.35663I$ $b = -0.067629 - 1.075320I$	$9.20634 - 4.38657I$	0
$u = -0.531802$ $a = \quad 0.995344$ $b = -1.19870$	-0.699217	-8.54510
$u = -0.046345 + 0.480182I$ $a = -0.70552 - 1.23771I$ $b = \quad 0.287972 - 0.989813I$	$4.04787 - 1.71772I$	$10.51944 + 0.69239I$
$u = -0.046345 - 0.480182I$ $a = -0.70552 + 1.23771I$ $b = \quad 0.287972 + 0.989813I$	$4.04787 + 1.71772I$	$10.51944 - 0.69239I$
$u = -0.474328 + 0.050625I$ $a = -1.62584 + 3.16100I$ $b = \quad 0.619932 - 0.176610I$	$0.14566 + 6.63101I$	$9.96433 - 7.48434I$
$u = -0.474328 - 0.050625I$ $a = -1.62584 - 3.16100I$ $b = \quad 0.619932 + 0.176610I$	$0.14566 - 6.63101I$	$9.96433 + 7.48434I$
$u = -1.51416 + 0.36884I$ $a = -0.35727 + 1.44405I$ $b = -0.508287 - 1.162100I$	$4.12687 - 8.10422I$	0
$u = -1.51416 - 0.36884I$ $a = -0.35727 - 1.44405I$ $b = -0.508287 + 1.162100I$	$4.12687 + 8.10422I$	0
$u = \quad 1.55445 + 0.18370I$ $a = \quad 0.14721 + 1.59919I$ $b = \quad 0.611317 - 0.757512I$	$7.85305 + 8.05706I$	0
$u = \quad 1.55445 - 0.18370I$ $a = \quad 0.14721 - 1.59919I$ $b = \quad 0.611317 + 0.757512I$	$7.85305 - 8.05706I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \quad 0.172177 + 0.374297I$		
$a = -2.58928 - 0.42173I$	$-3.96944 + 0.96818I$	$4.49020 - 3.91029I$
$b = -1.044290 - 0.332124I$		
$u = \quad 0.172177 - 0.374297I$		
$a = -2.58928 + 0.42173I$	$-3.96944 - 0.96818I$	$4.49020 + 3.91029I$
$b = -1.044290 + 0.332124I$		

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^{32}+8u^{31}+\cdots+3u-1)(u^{140}-21u^{139}+\cdots+2161255u-89729)$
c_2	$(u^{32}+u^{31}+\cdots-18u-9)(u^{140}-38u^{138}+\cdots+756u+328)$
c_3	$(u^{32}-10u^{31}+\cdots+2u-1)(u^{140}-13u^{139}+\cdots-20208u-28951)$
c_4, c_5	$(u^{32}+u^{31}+\cdots-4u-1)(u^{140}+2u^{139}+\cdots+246u+47)$
c_6	$(u^{32}+14u^{31}+\cdots-18u+1)$ $\cdot(u^{140}+15u^{139}+\cdots-2958456u-205039)$
c_7	$(u^{32}-u^{31}+\cdots+18u-9)(u^{140}-38u^{138}+\cdots+756u+328)$
c_8	$(u^{32}+u^{31}+\cdots+25u+1)(u^{140}-7u^{138}+\cdots+704512u-32768)$
c_9	$(u^{32}-u^{31}+\cdots+4u-1)(u^{140}+2u^{139}+\cdots+246u+47)$
c_{10}	$(u^{32}+2u^{31}+\cdots+33u+7)(u^{140}+3u^{139}+\cdots-58207u+11101)$
c_{11}	$(u^{32}+8u^{30}+\cdots+24u+1)(u^{140}-3u^{139}+\cdots-560200u+26759)$
c_{12}	$(u^{32}-14u^{31}+\cdots+18u+1)$ $\cdot(u^{140}+15u^{139}+\cdots-2958456u-205039)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y^{32} - 166y^{31} + \cdots + y + 1)$ $\cdot (y^{140} - 125y^{139} + \cdots - 1146758776985y + 8051293441)$
c_2, c_7	$(y^{32} - 13y^{31} + \cdots - 1296y + 81)$ $\cdot (y^{140} - 76y^{139} + \cdots + 1115696y + 107584)$
c_3	$(y^{32} - 136y^{31} + \cdots + 16y + 1)$ $\cdot (y^{140} - 103y^{139} + \cdots + 8409358610y + 838160401)$
c_4, c_5, c_9	$(y^{32} - 31y^{31} + \cdots - 6y + 1)(y^{140} - 134y^{139} + \cdots + 115264y + 2209)$
c_6, c_{12}	$(y^{32} - 124y^{31} + \cdots - 114y + 1)$ $\cdot (y^{140} - 59y^{139} + \cdots - 696264713064y + 42040991521)$
c_8	$(y^{32} + 17y^{31} + \cdots - 179y + 1)$ $\cdot (y^{140} - 14y^{139} + \cdots - 53955526656y + 1073741824)$
c_{10}	$(y^{32} + 18y^{31} + \cdots + 3y + 49)$ $\cdot (y^{140} + 23y^{139} + \cdots + 11979925329y + 123232201)$
c_{11}	$(y^{32} + 16y^{31} + \cdots - 168y + 1)$ $\cdot (y^{140} - 3y^{139} + \cdots - 121398626014y + 716044081)$