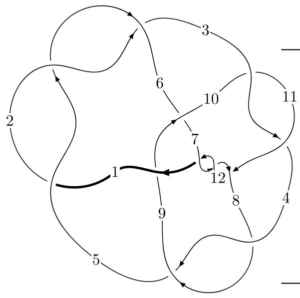
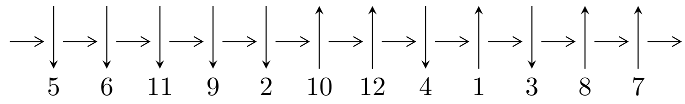
$12a_{1247}$ $(K12a_{1247})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -1931u^{31} + 20740u^{30} + \cdots + 8b - 23592,\ -7773u^{31} + 82554u^{30} + \cdots + 16a - 89232,$$
$$u^{32} - 12u^{31} + \cdots - 48u - 16\rangle$$
$$I_2^u = \langle -1.02625 \times 10^{22}a^7u^5 + 8.99106 \times 10^{21}a^6u^5 + \cdots - 4.39399 \times 10^{21}a + 3.98524 \times 10^{22},$$
$$-a^7u^5 + 8a^6u^5 + \cdots - 489a + 821,\ u^6 + u^5 - 3u^4 - 2u^3 + 2u^2 - u - 1\rangle$$
$$I_3^u = \langle u^{21} + 2u^{20} + \cdots + b + u,\ 4u^{21} + 8u^{20} + \cdots + a + 5,\ u^{22} + 3u^{21} + \cdots + 3u + 1\rangle$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 102 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. $I^u_1 = \langle -1931u^{31} + 20740u^{30} + \cdots + 8b - 23592,\ -7773u^{31} + 82554u^{30} + \cdots + 16a - 89232,\ u^{32} - 12u^{31} + \cdots - 48u - 16\rangle$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} \frac{7773}{16}u^{31} - \frac{41277}{8}u^{30} + \cdots + \frac{41415}{2}u + 5577 \\ \frac{1931}{8}u^{31} - \frac{5185}{2}u^{30} + \cdots + 11043u + 2949 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} \frac{107}{2}u^{31} - 546u^{30} + \cdots + \frac{3227}{2}u + \frac{921}{2} \\ \frac{143}{2}u^{31} - 740u^{30} + \cdots + \frac{4873}{2}u + 680 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} \frac{247}{16}u^{31} - \frac{1881}{8}u^{30} + \cdots + \frac{5429}{2}u + 656 \\ -\frac{181}{8}u^{31} + \frac{345}{2}u^{30} + \cdots + 1311u + 261 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} \frac{3911}{16}u^{31} - \frac{20537}{8}u^{30} + \cdots + \frac{19329}{2}u + 2628 \\ \frac{1931}{8}u^{31} - \frac{5185}{2}u^{30} + \cdots + 11043u + 2949 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} \frac{43}{2}u^{31} - \frac{441}{2}u^{30} + \cdots + 660u + \frac{377}{2} \\ 22u^{31} - 240u^{30} + \cdots + \frac{2169}{2}u + 288 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} \frac{2271}{8}u^{31} - \frac{24371}{8}u^{30} + \cdots + 13172u + \frac{7009}{2} \\ -\frac{1689}{8}u^{31} + \frac{8795}{4}u^{30} + \cdots - \frac{14811}{2}u - 2064 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 566u^{31} - \frac{23745}{4}u^{30} + \cdots + \frac{86833}{4}u + 5945 \\ 355u^{31} - \frac{14985}{4}u^{30} + \cdots + 14324u + 3892 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{4311}{2}u^{31} - 22730u^{30} + \cdots + 87134u + 23654$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_5	$u^{32} + 12u^{31} + \cdots + 48u - 16$
c_3, c_4, c_8 c_{10}	$u^{32} - u^{31} + \cdots + u^2 + 1$
c_6, c_9	$u^{32} + u^{31} + \cdots - 17u - 1$
c_7, c_{11}, c_{12}	$u^{32} - 14u^{31} + \cdots + 736u - 64$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_5	$y^{32} - 32y^{31} + \cdots - 1408y + 256$
c_3, c_4, c_8 c_{10}	$y^{32} - 35y^{31} + \cdots + 2y + 1$
c_6, c_9	$y^{32} + 25y^{31} + \cdots - 121y + 1$
c_7, c_{11}, c_{12}	$y^{32} + 30y^{31} + \cdots - 46080y + 4096$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.680828+0.815159I$ $a=\quad 0.589852-0.500904I$ $b=-0.68125-1.37591I$	$-15.1501+11.2353I$	$-10.12137-6.63149I$
$u=-0.680828-0.815159I$ $a=\quad 0.589852+0.500904I$ $b=-0.68125+1.37591I$	$-15.1501-11.2353I$	$-10.12137+6.63149I$
$u=-0.494831+0.951026I$ $a=-0.617680-0.176687I$ $b=-0.232561+1.197900I$	$-14.5005-5.4219I$	$-10.91537+2.28879I$
$u=-0.494831-0.951026I$ $a=-0.617680+0.176687I$ $b=-0.232561-1.197900I$	$-14.5005+5.4219I$	$-10.91537-2.28879I$
$u=-1.14307$ $a=-0.439539$ $b=-1.07672$	-1.32792	-8.36980
$u=-0.713057+0.906916I$ $a=-0.473999+0.283951I$ $b=\quad 0.435641+1.156230I$	$-7.22904+6.56235I$	0
$u=-0.713057-0.906916I$ $a=-0.473999-0.283951I$ $b=\quad 0.435641-1.156230I$	$-7.22904-6.56235I$	0
$u=-0.615956+1.004530I$ $a=\quad 0.488535-0.045297I$ $b=-0.108266-1.094690I$	$-6.84872-0.16660I$	0
$u=-0.615956-1.004530I$ $a=\quad 0.488535+0.045297I$ $b=-0.108266+1.094690I$	$-6.84872+0.16660I$	0
$u=\quad 1.157610+0.416068I$ $a=\quad 0.506893-0.188759I$ $b=\quad 0.108022+0.275619I$	$-4.34328-2.34802I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.157610 - 0.416068I$ $a = 0.506893 + 0.188759I$ $b = 0.108022 - 0.275619I$	$-4.34328 + 2.34802I$	0
$u = -1.232110 + 0.231185I$ $a = 0.300965 + 0.165464I$ $b = 0.944141 + 0.205181I$	$-4.97841 + 4.31582I$	0
$u = -1.232110 - 0.231185I$ $a = 0.300965 - 0.165464I$ $b = 0.944141 - 0.205181I$	$-4.97841 - 4.31582I$	0
$u = 0.739575$ $a = -0.445134$ $b = 0.0857344$	-0.987038	-12.9270
$u = 0.057187 + 0.603926I$ $a = -0.204724 + 0.701064I$ $b = 0.460672 - 0.183999I$	$-1.25850 - 1.44721I$	$-2.35502 + 5.22658I$
$u = 0.057187 - 0.603926I$ $a = -0.204724 - 0.701064I$ $b = 0.460672 + 0.183999I$	$-1.25850 + 1.44721I$	$-2.35502 - 5.22658I$
$u = 1.45355 + 0.03396I$ $a = -0.23567 + 1.66598I$ $b = -0.262994 + 1.081130I$	$-4.57485 - 1.68293I$	0
$u = 1.45355 - 0.03396I$ $a = -0.23567 - 1.66598I$ $b = -0.262994 - 1.081130I$	$-4.57485 + 1.68293I$	0
$u = 1.50382 + 0.05578I$ $a = 0.50318 - 1.98250I$ $b = 0.60170 - 1.43953I$	$-10.29120 - 4.14932I$	0
$u = 1.50382 - 0.05578I$ $a = 0.50318 + 1.98250I$ $b = 0.60170 + 1.43953I$	$-10.29120 + 4.14932I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.456157 + 0.188264I$ $a = 0.30670 + 1.62184I$ $b = 0.776747 + 0.909381I$	$-3.74818 + 3.21761I$	$2.70792 - 3.34583I$
$u = -0.456157 - 0.188264I$ $a = 0.30670 - 1.62184I$ $b = 0.776747 - 0.909381I$	$-3.74818 - 3.21761I$	$2.70792 + 3.34583I$
$u = -0.247450 + 0.286515I$ $a = 0.10986 - 1.41840I$ $b = -0.582621 - 0.368449I$	$0.987106 + 0.748744I$	$5.19413 - 3.21537I$
$u = -0.247450 - 0.286515I$ $a = 0.10986 + 1.41840I$ $b = -0.582621 + 0.368449I$	$0.987106 - 0.748744I$	$5.19413 + 3.21537I$
$u = 1.60347 + 0.26376I$ $a = 0.08484 + 1.83824I$ $b = -0.99385 + 1.70026I$	$16.7864 - 15.2459I$	0
$u = 1.60347 - 0.26376I$ $a = 0.08484 - 1.83824I$ $b = -0.99385 - 1.70026I$	$16.7864 + 15.2459I$	0
$u = 1.60023 + 0.36433I$ $a = -0.567147 - 0.962796I$ $b = 0.302404 - 1.251650I$	$18.1780 + 0.4768I$	0
$u = 1.60023 - 0.36433I$ $a = -0.567147 + 0.962796I$ $b = 0.302404 + 1.251650I$	$18.1780 - 0.4768I$	0
$u = 1.62632 + 0.27751I$ $a = -0.07773 - 1.52430I$ $b = 0.87969 - 1.48385I$	$-14.9769 - 10.9327I$	0
$u = 1.62632 - 0.27751I$ $a = -0.07773 + 1.52430I$ $b = 0.87969 + 1.48385I$	$-14.9769 + 10.9327I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.63995 + 0.31827I$ $a = 0.228456 + 1.197060I$ $b = -0.65199 + 1.30081I$	$-14.3366 - 4.7680I$	0
$u = 1.63995 - 0.31827I$ $a = 0.228456 - 1.197060I$ $b = -0.65199 - 1.30081I$	$-14.3366 + 4.7680I$	0

II. $I_2^u = \langle -1.03 \times 10^{22} a^7 u^5 + 8.99 \times 10^{21} a^6 u^5 + \cdots - 4.39 \times 10^{21} a + 3.99 \times 10^{22},\ -a^7 u^5 + 8a^6 u^5 + \cdots - 489a + 821,\ u^6 + u^5 - 3u^4 - 2u^3 + 2u^2 - u - 1 \rangle$

(i) Arc colorings

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

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

$$a_2 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} -u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} a \\ 0.493774a^7u^5 - 0.432600a^6u^5 + \cdots + 0.211415a - 1.91748 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -0.0990366a^7u^5 + 0.0845549a^6u^5 + \cdots + 0.244699a + 0.622156 \\ 0.550411a^7u^5 - 1.43426a^6u^5 + \cdots - 0.965495a - 1.46874 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -1.24509a^7u^5 + 1.54783a^6u^5 + \cdots + 0.631576a + 0.985297 \\ 0.939975a^7u^5 - 1.15258a^6u^5 + \cdots - 0.412776a - 2.64976 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -0.493774a^7u^5 + 0.432600a^6u^5 + \cdots + 0.788585a + 1.91748 \\ 0.493774a^7u^5 - 0.432600a^6u^5 + \cdots + 0.211415a - 1.91748 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 1.15029a^7u^5 - 1.79608a^6u^5 + \cdots - 1.16871a - 4.70289 \\ -1.05125a^7u^5 + 1.71153a^6u^5 + \cdots + 0.924014a + 4.08073 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.634934a^7u^5 - 1.65705a^6u^5 + \cdots - 2.68099a - 1.05272 \\ -0.970106a^7u^5 + 1.96530a^6u^5 + \cdots + 1.88294a + 3.88034 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -0.590593a^7u^5 + 1.21867a^6u^5 + \cdots + 0.288049a + 1.83640 \\ 0.520280a^7u^5 - 0.621535a^6u^5 + \cdots + 0.504665a - 1.23816 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{32386428834844106415168}{20783768619782088516773}a^7u^5 + \frac{23417790588849644990728}{20783768619782088516773}a^6u^5 + \cdots + \frac{45950322676565104630412}{20783768619782088516773}a - \frac{30602199364343180915581 4}{20783768619782088516773}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_5	$(u^6 - u^5 - 3u^4 + 2u^3 + 2u^2 + u - 1)^8$
c_3, c_4, c_8 c_{10}	$u^{48} + u^{47} + \cdots - 1444u + 479$
c_6, c_9	$u^{48} - 7u^{47} + \cdots - 40272u + 71579$
c_7, c_{11}, c_{12}	$(u^4 + u^3 + 3u^2 + 2u + 1)^{12}$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_5	$(y^6 - 7y^5 + 17y^4 - 16y^3 + 6y^2 - 5y + 1)^8$
c_3, c_4, c_8 c_{10}	$y^{48} - 49y^{47} + \cdots + 10146608y + 229441$
c_6, c_9	$y^{48} + 23y^{47} + \cdots + 117241967100y + 5123553241$
c_7, c_{11}, c_{12}	$(y^4 + 5y^3 + 7y^2 + 2y + 1)^{12}$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.493180 + 0.575288I$ $a = -0.900819 + 0.089225I$ $b = 0.127208 - 0.784719I$	$-1.76355 - 0.55731I$	$-4.74899 - 1.22396I$
$u = 0.493180 + 0.575288I$ $a = -0.488061 - 1.039120I$ $b = 0.459656 - 0.638436I$	$-1.76355 - 3.38752I$	$-4.74899 + 8.59352I$
$u = 0.493180 + 0.575288I$ $a = -0.630925 - 0.290654I$ $b = 0.70939 - 1.58712I$	$-8.76530 - 5.13637I$	$-8.40246 + 6.24958I$
$u = 0.493180 + 0.575288I$ $a = 0.601944 + 0.215661I$ $b = -0.532273 + 1.115900I$	$-1.76355 - 3.38752I$	$-4.74899 + 8.59352I$
$u = 0.493180 + 0.575288I$ $a = 1.55616 - 0.32740I$ $b = 0.215809 + 1.064350I$	$-8.76530 + 1.19155I$	$-8.40246 + 1.11998I$
$u = 0.493180 + 0.575288I$ $a = 0.181370 + 0.327241I$ $b = 0.293994 + 0.548435I$	$-1.76355 - 0.55731I$	$-4.74899 - 1.22396I$
$u = 0.493180 + 0.575288I$ $a = -0.295940 + 0.035805I$ $b = -0.950173 - 0.904845I$	$-8.76530 + 1.19155I$	$-8.40246 + 1.11998I$
$u = 0.493180 + 0.575288I$ $a = 0.83692 + 1.56767I$ $b = -0.819030 + 0.843679I$	$-8.76530 - 5.13637I$	$-8.40246 + 6.24958I$
$u = 0.493180 - 0.575288I$ $a = -0.900819 - 0.089225I$ $b = 0.127208 + 0.784719I$	$-1.76355 + 0.55731I$	$-4.74899 + 1.22396I$
$u = 0.493180 - 0.575288I$ $a = -0.488061 + 1.039120I$ $b = 0.459656 + 0.638436I$	$-1.76355 + 3.38752I$	$-4.74899 - 8.59352I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.493180 - 0.575288I$ $a = -0.630925 + 0.290654I$ $b = 0.70939 + 1.58712I$	$-8.76530 + 5.13637I$	$-8.40246 - 6.24958I$
$u = 0.493180 - 0.575288I$ $a = 0.601944 - 0.215661I$ $b = -0.532273 - 1.115900I$	$-1.76355 + 3.38752I$	$-4.74899 - 8.59352I$
$u = 0.493180 - 0.575288I$ $a = 1.55616 + 0.32740I$ $b = 0.215809 - 1.064350I$	$-8.76530 - 1.19155I$	$-8.40246 - 1.11998I$
$u = 0.493180 - 0.575288I$ $a = 0.181370 - 0.327241I$ $b = 0.293994 - 0.548435I$	$-1.76355 + 0.55731I$	$-4.74899 + 1.22396I$
$u = 0.493180 - 0.575288I$ $a = -0.295940 - 0.035805I$ $b = -0.950173 + 0.904845I$	$-8.76530 - 1.19155I$	$-8.40246 - 1.11998I$
$u = 0.493180 - 0.575288I$ $a = 0.83692 - 1.56767I$ $b = -0.819030 - 0.843679I$	$-8.76530 + 5.13637I$	$-8.40246 - 6.24958I$
$u = -0.483672$ $a = 1.243000 + 0.503165I$ $b = -1.55666 + 1.20761I$	$-12.46440 + 3.16396I$	$-17.2435 - 2.5648I$
$u = -0.483672$ $a = 1.243000 - 0.503165I$ $b = -1.55666 - 1.20761I$	$-12.46440 - 3.16396I$	$-17.2435 + 2.5648I$
$u = -0.483672$ $a = -1.68596 + 0.76343I$ $b = 0.935756 + 0.863246I$	$-5.46265 - 1.41510I$	$-13.5900 + 4.9087I$
$u = -0.483672$ $a = -1.68596 - 0.76343I$ $b = 0.935756 - 0.863246I$	$-5.46265 + 1.41510I$	$-13.5900 - 4.9087I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.483672$ $a=\ \ 2.75014+1.41553I$ $b=-0.172089+0.700395I$	$-5.46265-1.41510I$	$-13.5900+4.9087I$
$u=-0.483672$ $a=\ \ 2.75014-1.41553I$ $b=-0.172089-0.700395I$	$-5.46265+1.41510I$	$-13.5900-4.9087I$
$u=-0.483672$ $a=-3.81963+2.25339I$ $b=-0.292353+0.770523I$	$-12.46440+3.16396I$	$-17.2435-2.5648I$
$u=-0.483672$ $a=-3.81963-2.25339I$ $b=-0.292353-0.770523I$	$-12.46440-3.16396I$	$-17.2435+2.5648I$
$u=-1.52087+0.16310I$ $a=\ \ 0.782884-1.127760I$ $b=-0.343085-1.002600I$	$-15.4211+1.4282I$	$-12.40788-0.64002I$
$u=-1.52087+0.16310I$ $a=-0.200569+1.374100I$ $b=\ \ 0.675225+1.150860I$	$-8.41938+3.17702I$	$-8.75440+1.70392I$
$u=-1.52087+0.16310I$ $a=\ \ 0.439631-1.327350I$ $b=\ \ 0.265769-1.130460I$	$-8.41938+3.17702I$	$-8.75440+1.70392I$
$u=-1.52087+0.16310I$ $a=-1.15986+1.16720I$ $b=-1.06617+1.40127I$	$-15.4211+1.4282I$	$-12.40788-0.64002I$
$u=-1.52087+0.16310I$ $a=-0.04775+1.70162I$ $b=\ \ 0.327173+1.006110I$	$-8.41938+6.00723I$	$-8.75440-8.11356I$
$u=-1.52087+0.16310I$ $a=-0.06236-1.91890I$ $b=-0.88964-1.76077I$	$-8.41938+6.00723I$	$-8.75440-8.11356I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.52087 + 0.16310I$ $a = -0.07791 - 2.08226I$ $b = -0.593633 - 1.010750I$	$-15.4211 + 7.7561I$	$-12.40788 - 5.76962I$
$u = -1.52087 + 0.16310I$ $a = 0.14267 + 2.45572I$ $b = 1.08638 + 2.38993I$	$-15.4211 + 7.7561I$	$-12.40788 - 5.76962I$
$u = -1.52087 - 0.16310I$ $a = 0.782884 + 1.127760I$ $b = -0.343085 + 1.002600I$	$-15.4211 - 1.4282I$	$-12.40788 + 0.64002I$
$u = -1.52087 - 0.16310I$ $a = -0.200569 - 1.374100I$ $b = 0.675225 - 1.150860I$	$-8.41938 - 3.17702I$	$-8.75440 - 1.70392I$
$u = -1.52087 - 0.16310I$ $a = 0.439631 + 1.327350I$ $b = 0.265769 + 1.130460I$	$-8.41938 - 3.17702I$	$-8.75440 - 1.70392I$
$u = -1.52087 - 0.16310I$ $a = -1.15986 - 1.16720I$ $b = -1.06617 - 1.40127I$	$-15.4211 - 1.4282I$	$-12.40788 + 0.64002I$
$u = -1.52087 - 0.16310I$ $a = -0.04775 - 1.70162I$ $b = 0.327173 - 1.006110I$	$-8.41938 - 6.00723I$	$-8.75440 + 8.11356I$
$u = -1.52087 - 0.16310I$ $a = -0.06236 + 1.91890I$ $b = -0.88964 + 1.76077I$	$-8.41938 - 6.00723I$	$-8.75440 + 8.11356I$
$u = -1.52087 - 0.16310I$ $a = -0.07791 + 2.08226I$ $b = -0.593633 + 1.010750I$	$-15.4211 - 7.7561I$	$-12.40788 + 5.76962I$
$u = -1.52087 - 0.16310I$ $a = 0.14267 - 2.45572I$ $b = 1.08638 - 2.38993I$	$-15.4211 - 7.7561I$	$-12.40788 + 5.76962I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.53904$ $a = 0.244560 + 1.155160I$ $b = -0.847287 + 0.822406I$	$-12.38390 - 1.41510I$	$-12.44276 + 4.90874I$
$u = 1.53904$ $a = 0.244560 - 1.155160I$ $b = -0.847287 - 0.822406I$	$-12.38390 + 1.41510I$	$-12.44276 - 4.90874I$
$u = 1.53904$ $a = 0.92692 + 1.24349I$ $b = 1.81916 + 1.16754I$	$-12.38390 - 1.41510I$	$-12.44276 + 4.90874I$
$u = 1.53904$ $a = 0.92692 - 1.24349I$ $b = 1.81916 - 1.16754I$	$-12.38390 + 1.41510I$	$-12.44276 - 4.90874I$
$u = 1.53904$ $a = -1.03576 + 1.39658I$ $b = 0.317947 + 0.787184I$	$-19.3856 + 3.1640I$	$-16.0962 - 2.5648I$
$u = 1.53904$ $a = -1.03576 - 1.39658I$ $b = 0.317947 - 0.787184I$	$-19.3856 - 3.1640I$	$-16.0962 + 2.5648I$
$u = 1.53904$ $a = -1.80066 + 1.63792I$ $b = -2.67107 + 1.73026I$	$-19.3856 + 3.1640I$	$-16.0962 - 2.5648I$
$u = 1.53904$ $a = -1.80066 - 1.63792I$ $b = -2.67107 - 1.73026I$	$-19.3856 - 3.1640I$	$-16.0962 + 2.5648I$

III.

$$\boldsymbol{I_3^u = \langle u^{21}+2u^{20}+\cdots+b+u,\ 4u^{21}+8u^{20}+\cdots+a+5,\ u^{22}+3u^{21}+\cdots+3u+1\rangle}$$

(i) Arc colorings

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

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

$$a_2 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} -u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -4u^{21} - 8u^{20} + \cdots - 17u - 5 \\ -u^{21} - 2u^{20} + \cdots - 10u^2 - u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -7u^{21} - 13u^{20} + \cdots - 23u - 4 \\ -3u^{21} - 5u^{20} + \cdots + u - 1 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -u^{21} - 3u^{20} + \cdots - 12u - 4 \\ -2u^{21} - 3u^{20} + \cdots - 12u^2 - u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -3u^{21} - 6u^{20} + \cdots - 16u - 5 \\ -u^{21} - 2u^{20} + \cdots - 10u^2 - u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -3u^{20} - 4u^{19} + \cdots - 20u - 3 \\ 4u^{21} + 7u^{20} + \cdots + 10u + 4 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 4u^{21} + 9u^{20} + \cdots + 26u + 1 \\ 3u^{21} + 4u^{20} + \cdots + 19u^2 + 2 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 6u^{21} + 11u^{20} + \cdots + 16u + 11 \\ 2u^{21} + 2u^{20} + \cdots + 17u^2 + 6u \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes

$= -5u^{21}-12u^{20}+41u^{19}+109u^{18}-134u^{17}-397u^{16}+250u^{15}+753u^{14}-378u^{13}-815u^{12}+539u^{11}+500u^{10}-577u^9-125u^8+397u^7-16u^6-155u^5+15u^4+39u^3-7u^2-u-7$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2	$u^{22} + 3u^{21} + \cdots + 3u + 1$
c_3, c_8	$u^{22} + u^{21} + \cdots + u - 1$
c_4, c_{10}	$u^{22} - u^{21} + \cdots - u - 1$
c_5	$u^{22} - 3u^{21} + \cdots - 3u + 1$
c_6, c_9	$u^{22} + u^{21} + \cdots - 5u^2 - 1$
c_7	$u^{22} - u^{21} + \cdots + 2u - 1$
c_{11}, c_{12}	$u^{22} + u^{21} + \cdots - 2u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_5	$y^{22} - 25y^{21} + \cdots + 3y + 1$
c_3, c_4, c_8 c_{10}	$y^{22} - 25y^{21} + \cdots - 39y + 1$
c_6, c_9	$y^{22} + 7y^{21} + \cdots + 10y + 1$
c_7, c_{11}, c_{12}	$y^{22} + 25y^{21} + \cdots + 8y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.830041 + 0.372143I$ $a = 0.018859 + 0.570003I$ $b = -0.538229 + 0.805569I$	$-4.33333 - 3.17748I$	$-11.15222 + 4.56629I$
$u = 0.830041 - 0.372143I$ $a = 0.018859 - 0.570003I$ $b = -0.538229 - 0.805569I$	$-4.33333 + 3.17748I$	$-11.15222 - 4.56629I$
$u = 0.856682 + 0.292394I$ $a = -0.110513 + 0.558228I$ $b = -0.609214 + 0.752506I$	$-4.33137 - 3.17736I$	$-10.79809 + 3.65508I$
$u = 0.856682 - 0.292394I$ $a = -0.110513 - 0.558228I$ $b = -0.609214 - 0.752506I$	$-4.33137 + 3.17736I$	$-10.79809 - 3.65508I$
$u = 0.903347$ $a = 0.392353$ $b = 0.674604$	-0.339311	2.40450
$u = 0.366487 + 0.738621I$ $a = -0.651754 - 0.018325I$ $b = 0.052630 - 0.833432I$	$-2.73349 - 1.32865I$	$-11.07966 + 3.39512I$
$u = 0.366487 - 0.738621I$ $a = -0.651754 + 0.018325I$ $b = 0.052630 + 0.833432I$	$-2.73349 + 1.32865I$	$-11.07966 - 3.39512I$
$u = -1.133040 + 0.450430I$ $a = -0.837685 + 0.173018I$ $b = 0.142357 + 0.468689I$	$-6.73763 + 4.05980I$	$-12.29979 - 3.84797I$
$u = -1.133040 - 0.450430I$ $a = -0.837685 - 0.173018I$ $b = 0.142357 - 0.468689I$	$-6.73763 - 4.05980I$	$-12.29979 + 3.84797I$
$u = -0.556044 + 0.401150I$ $a = 1.062440 + 0.854118I$ $b = -0.394837 - 0.396064I$	$-4.73125 - 0.60844I$	$-6.34000 - 1.21463I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.556044 - 0.401150I$ $a = 1.062440 - 0.854118I$ $b = -0.394837 + 0.396064I$	$-4.73125 + 0.60844I$	$-6.34000 + 1.21463I$
$u = -1.404820 + 0.132257I$ $a = 1.38773 - 1.60582I$ $b = 0.380589 - 1.217270I$	$-16.0996 + 4.5307I$	$-12.95570 - 3.19344I$
$u = -1.404820 - 0.132257I$ $a = 1.38773 + 1.60582I$ $b = 0.380589 + 1.217270I$	$-16.0996 - 4.5307I$	$-12.95570 + 3.19344I$
$u = -1.50090 + 0.18006I$ $a = -0.45664 + 1.58550I$ $b = 0.243005 + 1.305180I$	$-8.89437 + 4.43912I$	$-12.33495 - 4.11395I$
$u = -1.50090 - 0.18006I$ $a = -0.45664 - 1.58550I$ $b = 0.243005 - 1.305180I$	$-8.89437 - 4.43912I$	$-12.33495 + 4.11395I$
$u = 1.51916 + 0.06554I$ $a = 0.358638 - 0.126439I$ $b = 1.40443 - 0.38841I$	$-17.6475 + 1.8704I$	$-12.10898 - 0.36759I$
$u = 1.51916 - 0.06554I$ $a = 0.358638 + 0.126439I$ $b = 1.40443 + 0.38841I$	$-17.6475 - 1.8704I$	$-12.10898 + 0.36759I$
$u = 1.55580$ $a = -0.343399$ $b = -1.36546$	-12.3748	-12.4960
$u = -1.56422 + 0.13165I$ $a = -0.14890 - 1.88832I$ $b = -0.65795 - 1.59210I$	$-11.90160 + 5.17271I$	$-12.89162 - 3.86694I$
$u = -1.56422 - 0.13165I$ $a = -0.14890 + 1.88832I$ $b = -0.65795 + 1.59210I$	$-11.90160 - 5.17271I$	$-12.89162 + 3.86694I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.142925 + 0.254512I$ $a = -0.14665 - 4.37491I$ $b = \quad 0.822645 + 0.792653I$	$-11.63890 - 3.03242I$	$-5.49334 + 0.66440I$
$u = -0.142925 - 0.254512I$ $a = -0.14665 + 4.37491I$ $b = \quad 0.822645 - 0.792653I$	$-11.63890 + 3.03242I$	$-5.49334 - 0.66440I$

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_2	$((u^6 - u^5 - 3u^4 + 2u^3 + 2u^2 + u - 1)^8)(u^{22} + 3u^{21} + \cdots + 3u + 1)$ $\cdot (u^{32} + 12u^{31} + \cdots + 48u - 16)$
c_3, c_8	$(u^{22} + u^{21} + \cdots + u - 1)(u^{32} - u^{31} + \cdots + u^2 + 1)$ $\cdot (u^{48} + u^{47} + \cdots - 1444u + 479)$
c_4, c_{10}	$(u^{22} - u^{21} + \cdots - u - 1)(u^{32} - u^{31} + \cdots + u^2 + 1)$ $\cdot (u^{48} + u^{47} + \cdots - 1444u + 479)$
c_5	$((u^6 - u^5 - 3u^4 + 2u^3 + 2u^2 + u - 1)^8)(u^{22} - 3u^{21} + \cdots - 3u + 1)$ $\cdot (u^{32} + 12u^{31} + \cdots + 48u - 16)$
c_6, c_9	$(u^{22} + u^{21} + \cdots - 5u^2 - 1)(u^{32} + u^{31} + \cdots - 17u - 1)$ $\cdot (u^{48} - 7u^{47} + \cdots - 40272u + 71579)$
c_7	$((u^4 + u^3 + 3u^2 + 2u + 1)^{12})(u^{22} - u^{21} + \cdots + 2u - 1)$ $\cdot (u^{32} - 14u^{31} + \cdots + 736u - 64)$
c_{11}, c_{12}	$((u^4 + u^3 + 3u^2 + 2u + 1)^{12})(u^{22} + u^{21} + \cdots - 2u - 1)$ $\cdot (u^{32} - 14u^{31} + \cdots + 736u - 64)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_5	$((y^6 - 7y^5 + \cdots - 5y + 1)^8)(y^{22} - 25y^{21} + \cdots + 3y + 1)$ $\cdot (y^{32} - 32y^{31} + \cdots - 1408y + 256)$
c_3, c_4, c_8 c_{10}	$(y^{22} - 25y^{21} + \cdots - 39y + 1)(y^{32} - 35y^{31} + \cdots + 2y + 1)$ $\cdot (y^{48} - 49y^{47} + \cdots + 10146608y + 229441)$
c_6, c_9	$(y^{22} + 7y^{21} + \cdots + 10y + 1)(y^{32} + 25y^{31} + \cdots - 121y + 1)$ $\cdot (y^{48} + 23y^{47} + \cdots + 117241967100y + 5123553241)$
c_7, c_{11}, c_{12}	$((y^4 + 5y^3 + 7y^2 + 2y + 1)^{12})(y^{22} + 25y^{21} + \cdots + 8y + 1)$ $\cdot (y^{32} + 30y^{31} + \cdots - 46080y + 4096)$