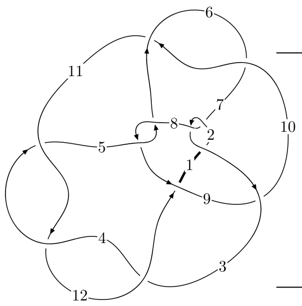
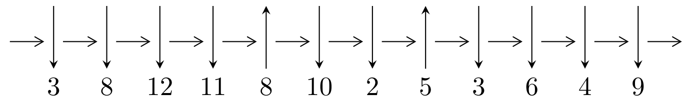
$12n_{0654}$ ($K12n_{0654}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle u^{18} - 5u^{17} + \cdots + b - 7,\ -5u^{18} + 23u^{17} + \cdots + 2a + 19,\ u^{19} - 5u^{18} + \cdots - 11u + 2\rangle$$

$$\begin{aligned} I_2^u = \langle &-u^8 - u^7 - 6u^6 - 5u^5 - 11u^4 - 7u^3 - 6u^2 + b - 2u, \\ &- u^8 - 2u^7 - 7u^6 - 11u^5 - 16u^4 - 18u^3 - 13u^2 + a - 8u - 2, \\ &u^{11} + 2u^{10} + 9u^9 + 14u^8 + 29u^7 + 34u^6 + 40u^5 + 32u^4 + 20u^3 + 7u^2 - 1\rangle \end{aligned}$$

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

$$I_4^u = \langle -u^3a - u^3 - 2au - u^2 + b - a - 2u - 1,\ -u^3a + u^3 + a^2 + 2u^2 + a + 2u,\ u^4 + u^3 + 2u^2 + 2u + 1\rangle$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 44 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. $I_1^u = \langle u^{18}-5u^{17}+\cdots+b-7,\ -5u^{18}+23u^{17}+\cdots+2a+19,\ u^{19}-5u^{18}+\cdots-11u+2\rangle$

(i) Arc colorings

$$a_5 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_4 = \begin{pmatrix}1\\-u^2\end{pmatrix}$$
$$a_9 = \begin{pmatrix}\frac{5}{2}u^{18}-\frac{23}{2}u^{17}+\cdots+30u-\frac{19}{2}\\-u^{18}+5u^{17}+\cdots-22u+7\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}-u\\u^3+u\end{pmatrix}$$
$$a_1 = \begin{pmatrix}-\frac{1}{2}u^{18}+\frac{5}{2}u^{17}+\cdots-5u+\frac{3}{2}\\-u^{18}+4u^{17}+\cdots-5u+1\end{pmatrix}$$
$$a_3 = \begin{pmatrix}u^2+1\\-u^4-2u^2\end{pmatrix}$$
$$a_8 = \begin{pmatrix}\frac{7}{2}u^{18}-\frac{33}{2}u^{17}+\cdots+52u-\frac{33}{2}\\-u^{18}+5u^{17}+\cdots-22u+7\end{pmatrix}$$
$$a_6 = \begin{pmatrix}-\frac{5}{2}u^{18}+\frac{23}{2}u^{17}+\cdots-34u+\frac{17}{2}\\u^{18}-5u^{17}+\cdots+20u-5\end{pmatrix}$$
$$a_2 = \begin{pmatrix}-\frac{1}{2}u^{18}+\frac{3}{2}u^{17}+\cdots-2u+\frac{1}{2}\\u^{18}-4u^{17}+\cdots+6u-1\end{pmatrix}$$
$$a_7 = \begin{pmatrix}4u^{18}-19u^{17}+\cdots+63u-19\\-u^{18}+5u^{17}+\cdots-24u+8\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}\frac{7}{2}u^{18}-\frac{33}{2}u^{17}+\cdots+54u-\frac{33}{2}\\-u^{18}+5u^{17}+\cdots-27u+9\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -u^{17}+5u^{16}-22u^{15}+64u^{14}-159u^{13}+316u^{12}-537u^{11}+764u^{10}-924u^9+932u^8-775u^7+509u^6-237u^5+56u^4+27u^3-33u^2+17u-8$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{19} + 29u^{18} + \cdots - 5u + 1$
c_2, c_7, c_{12}	$u^{19} + u^{18} + \cdots + u + 1$
c_3, c_4, c_{11}	$u^{19} - 5u^{18} + \cdots - 11u + 2$
c_5, c_8	$u^{19} + 10u^{17} + \cdots - 3u + 1$
c_6, c_{10}	$u^{19} + 15u^{18} + \cdots + 1280u + 128$
c_9	$u^{19} - 18u^{17} + \cdots + u + 142$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{19} - 85y^{18} + \cdots + 107y - 1$
c_2, c_7, c_{12}	$y^{19} - 29y^{18} + \cdots - 5y - 1$
c_3, c_4, c_{11}	$y^{19} + 21y^{18} + \cdots + 49y - 4$
c_5, c_8	$y^{19} + 20y^{18} + \cdots + 29y - 1$
c_6, c_{10}	$y^{19} + 7y^{18} + \cdots + 98304y - 16384$
c_9	$y^{19} - 36y^{18} + \cdots - 59071y - 20164$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.855612 + 0.517253I$ $a = -0.909632 - 0.056467I$ $b = -0.55550 + 1.60326I$	$-13.4415 - 7.8504I$	$-10.93721 + 4.73909I$
$u = 0.855612 - 0.517253I$ $a = -0.909632 + 0.056467I$ $b = -0.55550 - 1.60326I$	$-13.4415 + 7.8504I$	$-10.93721 - 4.73909I$
$u = 0.837505 + 0.614615I$ $a = 0.803451 - 0.480637I$ $b = -0.25051 - 1.50923I$	$-13.15870 + 2.26983I$	$-11.04237 + 0.00811I$
$u = 0.837505 - 0.614615I$ $a = 0.803451 + 0.480637I$ $b = -0.25051 + 1.50923I$	$-13.15870 - 2.26983I$	$-11.04237 - 0.00811I$
$u = -0.113992 + 0.724011I$ $a = 0.100196 + 0.799956I$ $b = 0.365076 + 0.254010I$	$1.84434 + 1.33494I$	$-1.83885 - 5.69262I$
$u = -0.113992 - 0.724011I$ $a = 0.100196 - 0.799956I$ $b = 0.365076 - 0.254010I$	$1.84434 - 1.33494I$	$-1.83885 + 5.69262I$
$u = 0.030735 + 1.321750I$ $a = -1.098310 + 0.606917I$ $b = -0.403445 + 0.928311I$	$2.98081 + 0.93862I$	$-5.64110 - 2.81933I$
$u = 0.030735 - 1.321750I$ $a = -1.098310 - 0.606917I$ $b = -0.403445 - 0.928311I$	$2.98081 - 0.93862I$	$-5.64110 + 2.81933I$
$u = 0.115597 + 1.356600I$ $a = 1.77650 - 0.51209I$ $b = 0.91251 - 1.25835I$	$3.95111 - 4.05741I$	$-5.74595 + 1.84063I$
$u = 0.115597 - 1.356600I$ $a = 1.77650 + 0.51209I$ $b = 0.91251 + 1.25835I$	$3.95111 + 4.05741I$	$-5.74595 - 1.84063I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.31913 + 1.53475I$ $a = -1.73237 + 0.83605I$ $b = -0.85879 + 1.57727I$	$-6.80749 - 12.16250I$	$-7.67551 + 5.42074I$
$u = 0.31913 - 1.53475I$ $a = -1.73237 - 0.83605I$ $b = -0.85879 - 1.57727I$	$-6.80749 + 12.16250I$	$-7.67551 - 5.42074I$
$u = 0.398864 + 0.081266I$ $a = -0.07628 + 1.71759I$ $b = 0.427663 - 1.071520I$	$-0.63713 - 2.25906I$	$-4.49996 + 0.38823I$
$u = 0.398864 - 0.081266I$ $a = -0.07628 - 1.71759I$ $b = 0.427663 + 1.071520I$	$-0.63713 + 2.25906I$	$-4.49996 - 0.38823I$
$u = 0.30835 + 1.59968I$ $a = 0.798169 - 1.114480I$ $b = 0.029454 - 1.281070I$	$-5.90194 - 2.02936I$	$-8.97202 + 0.94297I$
$u = 0.30835 - 1.59968I$ $a = 0.798169 + 1.114480I$ $b = 0.029454 + 1.281070I$	$-5.90194 + 2.02936I$	$-8.97202 - 0.94297I$
$u = -0.363080$ $a = -0.809970$ $b = -0.215750$	-0.659169	-15.1130
$u = -0.07027 + 1.64614I$ $a = 0.493254 + 0.199283I$ $b = 0.441412 - 0.066654I$	$10.11590 + 2.22289I$	$2.40930 - 2.51224I$
$u = -0.07027 - 1.64614I$ $a = 0.493254 - 0.199283I$ $b = 0.441412 + 0.066654I$	$10.11590 - 2.22289I$	$2.40930 + 2.51224I$

II.
$$\boldsymbol{I^u_2 = \langle -u^8 - u^7 + \cdots + b - 2u,\ -u^8 - 2u^7 + \cdots + a - 2,\ u^{11} + 2u^{10} + \cdots + 7u^2 - 1\rangle}$$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} u^8 + 2u^7 + 7u^6 + 11u^5 + 16u^4 + 18u^3 + 13u^2 + 8u + 2 \\ u^8 + u^7 + 6u^6 + 5u^5 + 11u^4 + 7u^3 + 6u^2 + 2u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u^{10} - 3u^9 + \cdots - 14u - 3 \\ -u^{10} - 2u^9 - 8u^8 - 12u^7 - 22u^6 - 24u^5 - 25u^4 - 17u^3 - 10u^2 - 2u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u^2 + 1 \\ -u^4 - 2u^2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} u^7 + u^6 + 6u^5 + 5u^4 + 11u^3 + 7u^2 + 6u + 2 \\ u^8 + u^7 + 6u^6 + 5u^5 + 11u^4 + 7u^3 + 6u^2 + 2u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -u^6 - u^5 - 5u^4 - 4u^3 - 7u^2 - 4u - 2 \\ -u^7 - u^6 - 5u^5 - 4u^4 - 7u^3 - 4u^2 - 3u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -u^9 - 2u^8 - 8u^7 - 12u^6 - 22u^5 - 24u^4 - 25u^3 - 17u^2 - 10u - 2 \\ -u^{10} - 2u^9 - 8u^8 - 12u^7 - 22u^6 - 24u^5 - 26u^4 - 18u^3 - 12u^2 - 3u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u^{10} - 2u^9 + \cdots - 9u - 2 \\ -u^8 - 2u^7 - 6u^6 - 9u^5 - 11u^4 - 11u^3 - 6u^2 - 3u - 1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u^5 + u^4 + 4u^3 + 3u^2 + 4u + 2 \\ u^8 + u^7 + 6u^6 + 5u^5 + 11u^4 + 7u^3 + 6u^2 + 3u \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes
$= 3u^{10} + 6u^9 + 27u^8 + 39u^7 + 85u^6 + 85u^5 + 108u^4 + 66u^3 + 41u^2 + 5u - 11$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{11} - 11u^{10} + \cdots + 6u - 1$
c_2	$u^{11} + u^{10} - 5u^9 - 4u^8 + 8u^7 + 5u^6 - 6u^5 - 7u^4 + 3u^2 - 1$
c_3, c_4	$u^{11} + 2u^{10} + \cdots + 7u^2 - 1$
c_5	$u^{11} + u^9 - 4u^8 + 2u^7 - 3u^6 + 7u^5 - 3u^4 + 3u^3 - 4u^2 - 1$
c_6	$u^{11} + 4u^9 + 3u^8 + 3u^7 + 7u^6 + 3u^5 + 2u^4 + 4u^3 + u^2 + 1$
c_7, c_{12}	$u^{11} - u^{10} - 5u^9 + 4u^8 + 8u^7 - 5u^6 - 6u^5 + 7u^4 - 3u^2 + 1$
c_8	$u^{11} + u^9 + 4u^8 + 2u^7 + 3u^6 + 7u^5 + 3u^4 + 3u^3 + 4u^2 + 1$
c_9	$u^{11} - 5u^9 + 2u^8 + 10u^7 + 3u^6 + 3u^5 + u^4 - u^3 + 2u^2 + 1$
c_{10}	$u^{11} + 4u^9 - 3u^8 + 3u^7 - 7u^6 + 3u^5 - 2u^4 + 4u^3 - u^2 - 1$
c_{11}	$u^{11} - 2u^{10} + \cdots - 7u^2 + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{11} - 23y^{10} + \cdots - 10y - 1$
c_2, c_7, c_{12}	$y^{11} - 11y^{10} + \cdots + 6y - 1$
c_3, c_4, c_{11}	$y^{11} + 14y^{10} + \cdots + 14y - 1$
c_5, c_8	$y^{11} + 2y^{10} + 5y^9 + 2y^8 + y^6 + 11y^5 + y^4 - 21y^3 - 22y^2 - 8y - 1$
c_6, c_{10}	$y^{11} + 8y^{10} + 22y^9 + 21y^8 - y^7 - 11y^6 - y^5 - 2y^3 - 5y^2 - 2y - 1$
c_9	$y^{11} - 10y^{10} + \cdots - 4y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.395494 + 0.824290I$ $a = 0.720569 + 0.626450I$ $b = -0.190505 + 0.832468I$	$0.620962 + 0.437817I$	$-9.18978 - 1.12208I$
$u = -0.395494 - 0.824290I$ $a = 0.720569 - 0.626450I$ $b = -0.190505 - 0.832468I$	$0.620962 - 0.437817I$	$-9.18978 + 1.12208I$
$u = -0.568934 + 0.281691I$ $a = -0.550853 + 0.784586I$ $b = -0.488844 - 1.076040I$	$-1.08686 + 2.94207I$	$-9.96542 - 7.42015I$
$u = -0.568934 - 0.281691I$ $a = -0.550853 - 0.784586I$ $b = -0.488844 + 1.076040I$	$-1.08686 - 2.94207I$	$-9.96542 + 7.42015I$
$u = 0.125362 + 1.374090I$ $a = 1.48225 - 0.25773I$ $b = 1.065730 + 0.479865I$	$-2.02402 - 1.43083I$	$-5.20918 + 0.10056I$
$u = 0.125362 - 1.374090I$ $a = 1.48225 + 0.25773I$ $b = 1.065730 - 0.479865I$	$-2.02402 + 1.43083I$	$-5.20918 - 0.10056I$
$u = -0.20089 + 1.44390I$ $a = -1.56865 - 0.46843I$ $b = -0.86003 - 1.16265I$	$4.55914 + 5.69959I$	$-3.05206 - 5.79000I$
$u = -0.20089 - 1.44390I$ $a = -1.56865 + 0.46843I$ $b = -0.86003 + 1.16265I$	$4.55914 - 5.69959I$	$-3.05206 + 5.79000I$
$u = -0.08861 + 1.68680I$ $a = 0.263127 + 0.581865I$ $b = -0.069116 + 0.558344I$	$9.51549 + 2.22958I$	$-11.44069 - 2.17239I$
$u = -0.08861 - 1.68680I$ $a = 0.263127 - 0.581865I$ $b = -0.069116 - 0.558344I$	$9.51549 - 2.22958I$	$-11.44069 + 2.17239I$

Solutions to I_2^u		$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=$	0.257134		
$a=$	5.30713	-6.72007	-5.28570
$b=$	1.08552		

III.

$$\boldsymbol{I^u_3 = \langle u^2a - au + 3u^2 + 4b - a + u + 5,\ -u^2a + a^2 - au - u^2 - 2a - 2u - 4,\ u^3 + 2u - 1\rangle}$$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} a \\ -\frac{1}{4}u^2a - \frac{3}{4}u^2 + \cdots + \frac{1}{4}a - \frac{5}{4} \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -u \\ -u + 1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -\frac{1}{4}u^2a - \frac{3}{4}u^2 + \cdots - \frac{3}{4}a - \frac{13}{4} \\ \frac{1}{4}u^2a - \frac{1}{4}u^2 + \cdots + \frac{3}{4}a - \frac{3}{4} \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u^2 + 1 \\ -u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} \frac{1}{4}u^2a + \frac{3}{4}u^2 + \cdots + \frac{3}{4}a + \frac{5}{4} \\ -\frac{1}{4}u^2a - \frac{3}{4}u^2 + \cdots + \frac{1}{4}a - \frac{5}{4} \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u^2 + 2 \\ \frac{1}{4}u^2a - \frac{5}{4}u^2 + \cdots + \frac{3}{4}a - \frac{7}{4} \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -\frac{3}{4}u^2a + \frac{3}{4}u^2 + \cdots - \frac{5}{4}a + \frac{1}{4} \\ \frac{1}{2}u^2a - \frac{1}{2}u^2 + \cdots + \frac{1}{2}a - \frac{5}{2} \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -2u^2 - 4 \\ -\frac{1}{2}u^2a + \frac{5}{2}u^2 + \cdots - \frac{3}{2}a + \frac{7}{2} \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u^2 + 2 \\ \frac{1}{4}u^2a - \frac{5}{4}u^2 + \cdots + \frac{3}{4}a - \frac{7}{4} \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^2 - 4u - 18$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^6+6u^5+11u^4+30u^3+81u^2+57u+16$
c_2, c_7, c_{12}	$u^6-3u^4+4u^3+u^2-7u-4$
c_3, c_4, c_{11}	$(u^3+2u-1)^2$
c_5, c_8	$u^6+2u^5+3u^4+8u^3+9u^2+9u+2$
c_6, c_{10}	$(u-1)^6$
c_9	$u^6+3u^5-3u^4-9u^3+7u^2+10u-17$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^6 - 14y^5 - 77y^4 + 230y^3 + 3493y^2 - 657y + 256$
c_2, c_7, c_{12}	$y^6 - 6y^5 + 11y^4 - 30y^3 + 81y^2 - 57y + 16$
c_3, c_4, c_{11}	$(y^3 + 4y^2 + 4y - 1)^2$
c_5, c_8	$y^6 + 2y^5 - 5y^4 - 42y^3 - 51y^2 - 45y + 4$
c_6, c_{10}	$(y - 1)^6$
c_9	$y^6 - 15y^5 + 77y^4 - 217y^3 + 331y^2 - 338y + 289$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.22670 + 1.46771I$ $a = -1.54629 - 0.37257I$ $b = -0.529360 - 0.960345I$	$2.86100 + 5.13794I$	$-8.68207 - 3.20902I$
$u = -0.22670 + 1.46771I$ $a = 1.21680 + 1.17483I$ $b = 0.63214 + 1.62580I$	$2.86100 + 5.13794I$	$-8.68207 - 3.20902I$
$u = -0.22670 - 1.46771I$ $a = -1.54629 + 0.37257I$ $b = -0.529360 + 0.960345I$	$2.86100 - 5.13794I$	$-8.68207 + 3.20902I$
$u = -0.22670 - 1.46771I$ $a = 1.21680 - 1.17483I$ $b = 0.63214 - 1.62580I$	$2.86100 - 5.13794I$	$-8.68207 + 3.20902I$
$u = 0.453398$ $a = -1.29347$ $b = -1.92103$	-7.36693	-20.6360
$u = 0.453398$ $a = 3.95244$ $b = -0.284535$	-7.36693	-20.6360

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

(i) Arc colorings

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} a \\ u^3a + u^3 + 2au + u^2 + a + 2u + 1 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^3a - u^3 + au - 2u^2 - 3u \\ 2u^3 - a + 3u + 1 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u^2 + 1 \\ u^3 + 2u + 1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u^3a - u^3 - 2au - u^2 - 2u - 1 \\ u^3a + u^3 + 2au + u^2 + a + 2u + 1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -u^3 - u^2 - 2u - 2 \\ u^3 + au + 2u^2 + a + u + 2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -u^3a - u^2a - 2u^3 - 2au - u^2 - 2a - 4u - 1 \\ u^3a + u^2a + 2u^3 + au + a + 4u + 3 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 2u^3 + 2u^2 + 4u + 4 \\ -2u^3 - 2au - 4u^2 - 2a - 3u - 4 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -u^3 - u^2 - 2u - 2 \\ u^3 + au + 2u^2 + a + 2u + 2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^3 - 4u - 14$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^8 + 15u^7 + \cdots + 966u + 361$
c_2, c_7, c_{12}	$u^8 - u^7 - 7u^6 + 3u^5 + 20u^4 + 3u^3 - 25u^2 - 4u + 19$
c_3, c_4, c_{11}	$(u^4 + u^3 + 2u^2 + 2u + 1)^2$
c_5, c_8	$u^8 + 5u^7 + 13u^6 + 23u^5 + 36u^4 + 31u^3 + 31u^2 + 10u + 7$
c_6, c_{10}	$(u - 1)^8$
c_9	$u^8 - 4u^7 + 3u^6 + 20u^5 + 8u^4 - 2u^3 + 28u^2 + 48u + 31$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^8 - 35y^7 + \cdots + 84142y + 130321$
c_2, c_7, c_{12}	$y^8 - 15y^7 + \cdots - 966y + 361$
c_3, c_4, c_{11}	$(y^4 + 3y^3 + 2y^2 + 1)^2$
c_5, c_8	$y^8 + y^7 + 11y^6 + 159y^5 + 590y^4 + 993y^3 + 845y^2 + 334y + 49$
c_6, c_{10}	$(y-1)^8$
c_9	$y^8 - 10y^7 + \cdots - 568y + 961$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.621744 + 0.440597I$ $a = -1.40199 + 0.41923I$ $b = -0.306391 - 1.124160I$	$-3.28987 + 2.02988I$	$-12.00000 - 3.46410I$
$u = -0.621744 + 0.440597I$ $a = 0.523731 + 0.006202I$ $b = -0.00117 + 1.44231I$	$-3.28987 + 2.02988I$	$-12.00000 - 3.46410I$
$u = -0.621744 - 0.440597I$ $a = -1.40199 - 0.41923I$ $b = -0.306391 + 1.124160I$	$-3.28987 - 2.02988I$	$-12.00000 + 3.46410I$
$u = -0.621744 - 0.440597I$ $a = 0.523731 - 0.006202I$ $b = -0.00117 - 1.44231I$	$-3.28987 - 2.02988I$	$-12.00000 + 3.46410I$
$u = 0.121744 + 1.306620I$ $a = 0.999194 - 0.897147I$ $b = -0.054173 + 0.641191I$	$-3.28987 - 2.02988I$	$-12.00000 + 3.46410I$
$u = 0.121744 + 1.306620I$ $a = -2.62094 - 1.27550I$ $b = -2.13827 - 1.18907I$	$-3.28987 - 2.02988I$	$-12.00000 + 3.46410I$
$u = 0.121744 - 1.306620I$ $a = 0.999194 + 0.897147I$ $b = -0.054173 - 0.641191I$	$-3.28987 + 2.02988I$	$-12.00000 - 3.46410I$
$u = 0.121744 - 1.306620I$ $a = -2.62094 + 1.27550I$ $b = -2.13827 + 1.18907I$	$-3.28987 + 2.02988I$	$-12.00000 - 3.46410I$

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^6 + 6u^5 + 11u^4 + 30u^3 + 81u^2 + 57u + 16)$ $\cdot (u^8 + 15u^7 + \cdots + 966u + 361)(u^{11} - 11u^{10} + \cdots + 6u - 1)$ $\cdot (u^{19} + 29u^{18} + \cdots - 5u + 1)$
c_2	$(u^6 - 3u^4 + 4u^3 + u^2 - 7u - 4)$ $\cdot (u^8 - u^7 - 7u^6 + 3u^5 + 20u^4 + 3u^3 - 25u^2 - 4u + 19)$ $\cdot (u^{11} + u^{10} - 5u^9 - 4u^8 + 8u^7 + 5u^6 - 6u^5 - 7u^4 + 3u^2 - 1)$ $\cdot (u^{19} + u^{18} + \cdots + u + 1)$
c_3, c_4	$((u^3 + 2u - 1)^2)(u^4 + u^3 + 2u^2 + 2u + 1)^2(u^{11} + 2u^{10} + \cdots + 7u^2 - 1)$ $\cdot (u^{19} - 5u^{18} + \cdots - 11u + 2)$
c_5	$(u^6 + 2u^5 + 3u^4 + 8u^3 + 9u^2 + 9u + 2)$ $\cdot (u^8 + 5u^7 + 13u^6 + 23u^5 + 36u^4 + 31u^3 + 31u^2 + 10u + 7)$ $\cdot (u^{11} + u^9 - 4u^8 + 2u^7 - 3u^6 + 7u^5 - 3u^4 + 3u^3 - 4u^2 - 1)$ $\cdot (u^{19} + 10u^{17} + \cdots - 3u + 1)$
c_6	$(u - 1)^{14}(u^{11} + 4u^9 + 3u^8 + 3u^7 + 7u^6 + 3u^5 + 2u^4 + 4u^3 + u^2 + 1)$ $\cdot (u^{19} + 15u^{18} + \cdots + 1280u + 128)$
c_7, c_{12}	$(u^6 - 3u^4 + 4u^3 + u^2 - 7u - 4)$ $\cdot (u^8 - u^7 - 7u^6 + 3u^5 + 20u^4 + 3u^3 - 25u^2 - 4u + 19)$ $\cdot (u^{11} - u^{10} - 5u^9 + 4u^8 + 8u^7 - 5u^6 - 6u^5 + 7u^4 - 3u^2 + 1)$ $\cdot (u^{19} + u^{18} + \cdots + u + 1)$
c_8	$(u^6 + 2u^5 + 3u^4 + 8u^3 + 9u^2 + 9u + 2)$ $\cdot (u^8 + 5u^7 + 13u^6 + 23u^5 + 36u^4 + 31u^3 + 31u^2 + 10u + 7)$ $\cdot (u^{11} + u^9 + 4u^8 + 2u^7 + 3u^6 + 7u^5 + 3u^4 + 3u^3 + 4u^2 + 1)$ $\cdot (u^{19} + 10u^{17} + \cdots - 3u + 1)$
c_9	$(u^6 + 3u^5 - 3u^4 - 9u^3 + 7u^2 + 10u - 17)$ $\cdot (u^8 - 4u^7 + 3u^6 + 20u^5 + 8u^4 - 2u^3 + 28u^2 + 48u + 31)$ $\cdot (u^{11} - 5u^9 + 2u^8 + 10u^7 + 3u^6 + 3u^5 + u^4 - u^3 + 2u^2 + 1)$ $\cdot (u^{19} - 18u^{17} + \cdots + u + 142)$
c_{10}	$(u - 1)^{14}(u^{11} + 4u^9 - 3u^8 + 3u^7 - 7u^6 + 3u^5 - 2u^4 + 4u^3 - u^2 - 1)$ $\cdot (u^{19} + 15u^{18} + \cdots + 1280u + 128)$
c_{11}	$((u^3 + 2u - 1)^2)(u^4 + u^3 + 2u^2 + 2u + 1)^2(u^{11} - 2u^{10} + \cdots - 7u^2 + 1)$ $\cdot (u^{19} - 5u^{18} + \cdots - 11u + 2)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y^6 - 14y^5 - 77y^4 + 230y^3 + 3493y^2 - 657y + 256)$ $\cdot (y^8 - 35y^7 + \cdots + 84142y + 130321)(y^{11} - 23y^{10} + \cdots - 10y - 1)$ $\cdot (y^{19} - 85y^{18} + \cdots + 107y - 1)$
c_2, c_7, c_{12}	$(y^6 - 6y^5 + 11y^4 - 30y^3 + 81y^2 - 57y + 16)$ $\cdot (y^8 - 15y^7 + \cdots - 966y + 361)(y^{11} - 11y^{10} + \cdots + 6y - 1)$ $\cdot (y^{19} - 29y^{18} + \cdots - 5y - 1)$
c_3, c_4, c_{11}	$(y^3 + 4y^2 + 4y - 1)^2(y^4 + 3y^3 + 2y^2 + 1)^2$ $\cdot (y^{11} + 14y^{10} + \cdots + 14y - 1)(y^{19} + 21y^{18} + \cdots + 49y - 4)$
c_5, c_8	$(y^6 + 2y^5 - 5y^4 - 42y^3 - 51y^2 - 45y + 4)$ $\cdot (y^8 + y^7 + 11y^6 + 159y^5 + 590y^4 + 993y^3 + 845y^2 + 334y + 49)$ $\cdot (y^{11} + 2y^{10} + 5y^9 + 2y^8 + y^6 + 11y^5 + y^4 - 21y^3 - 22y^2 - 8y - 1)$ $\cdot (y^{19} + 20y^{18} + \cdots + 29y - 1)$
c_6, c_{10}	$(y - 1)^{14}$ $\cdot (y^{11} + 8y^{10} + 22y^9 + 21y^8 - y^7 - 11y^6 - y^5 - 2y^3 - 5y^2 - 2y - 1)$ $\cdot (y^{19} + 7y^{18} + \cdots + 98304y - 16384)$
c_9	$(y^6 - 15y^5 + 77y^4 - 217y^3 + 331y^2 - 338y + 289)$ $\cdot (y^8 - 10y^7 + \cdots - 568y + 961)(y^{11} - 10y^{10} + \cdots - 4y - 1)$ $\cdot (y^{19} - 36y^{18} + \cdots - 59071y - 20164)$