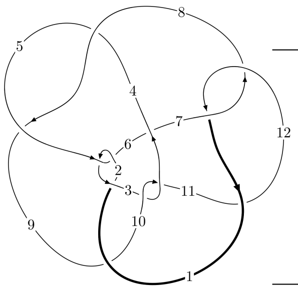
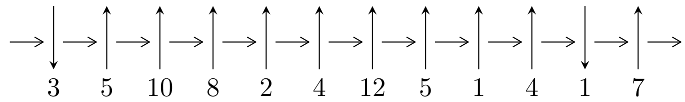
$12n_{0510}$ $(K12n_{0510})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle u^8 - 4u^7 + 8u^6 - 8u^5 + 4u^4 + u^2 + b - 2u + 1,\ -u^8 + 4u^7 - 8u^6 + 8u^5 - 4u^4 - u^3 + a + 2u - 2,$$
$$u^9 - 5u^8 + 12u^7 - 16u^6 + 12u^5 - 3u^4 - u^3 - u^2 + 3u - 1\rangle$$
$$I_2^u = \langle u^2a + u^2 + b,\ -u^9a + 4u^9 + \cdots + 2a - 1,\ u^{10} + 2u^9 + u^8 - u^7 + 2u^6 + 5u^5 + 2u^4 - 4u^3 - 3u^2 + u + 1\rangle$$
$$I_3^u = \langle -9u^9 + 29u^8 - 20u^7 - 81u^6 + 207u^5 - 123u^4 - 256u^3 + 576u^2 + 16b - 472u + 176,$$
$$13u^9 - 43u^8 + 34u^7 + 113u^6 - 309u^5 + 217u^4 + 350u^3 - 876u^2 + 32a + 776u - 320,$$
$$u^{10} - 5u^9 + 8u^8 + 5u^7 - 39u^6 + 55u^5 + 4u^4 - 116u^3 + 168u^2 - 112u + 32\rangle$$
$$I_4^u = \langle u^8 - 2u^7 - 2u^6 + 6u^5 - 2u^4 - 4u^3 + 5u^2 + b - 1,\ -u^8 + 2u^7 + 2u^6 - 6u^5 + 2u^4 + 3u^3 - 4u^2 + a + 2u,$$
$$u^9 - u^8 - 4u^7 + 4u^6 + 4u^5 - 5u^4 + u^3 + 3u^2 - u - 1\rangle$$
$$I_5^u = \langle 4u^{19} - 5u^{18} + \cdots + 8b - 34,\ -8u^{19}a - 62u^{19} + \cdots - 86a - 198,\ u^{20} + 2u^{19} + \cdots + 2u - 1\rangle$$
$$I_6^u = \langle u^2a + u^2 + b,\ u^2a + a^2 + u^2 + a + u - 1,\ u^3 - u - 1\rangle$$
$$I_7^u = \langle -au + b + a - u + 1,\ a^2 - 2au - a + u + 3,\ u^2 + u - 1\rangle$$

* 7 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 98 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. $I_1^u = \langle u^8-4u^7+8u^6-8u^5+4u^4+u^2+b-2u+1,\ -u^8+4u^7+\cdots+a-2,\ u^9-5u^8+\cdots+3u-1\rangle$

(i) Arc colorings

$$a_3 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_4 = \begin{pmatrix}1\\-u^2\end{pmatrix}$$
$$a_5 = \begin{pmatrix}u^8-4u^7+8u^6-8u^5+4u^4+u^3-2u+2\\-u^8+4u^7-8u^6+8u^5-4u^4-u^2+2u-1\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}u\\-u^3+u\end{pmatrix}$$
$$a_2 = \begin{pmatrix}u^7-3u^6+5u^5-4u^4+2u^3+u\\-u^8+3u^7-4u^6+u^5+2u^4-2u^3-u^2+u\end{pmatrix}$$
$$a_6 = \begin{pmatrix}u^8-3u^7+5u^6-4u^5+2u^4+u^3+1\\-2u^8+7u^7-12u^6+10u^5-4u^4-u^3-u^2+2u-1\end{pmatrix}$$
$$a_7 = \begin{pmatrix}2u^8-8u^7+15u^6-14u^5+5u^4+3u^3-u^2-3u+2\\u^7-3u^6+5u^5-4u^4+u^3+u^2+u-1\end{pmatrix}$$
$$a_1 = \begin{pmatrix}-u^8+4u^7-7u^6+6u^5-2u^4-u^2+2u\\-u^8+3u^7-4u^6+u^5+2u^4-2u^3-u^2+u\end{pmatrix}$$
$$a_9 = \begin{pmatrix}-u^2\\u^4-u^3+u\end{pmatrix}$$
$$a_8 = \begin{pmatrix}-u^8+4u^7-8u^6+8u^5-4u^4-u^3+u-1\\u^8-4u^7+8u^6-8u^5+4u^4+u^3-u^2-u+1\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}u^3-u^2+u\\-u^5+2u^4-2u^3+u\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^7+18u^6-32u^5+24u^4-12u^2+2u+15$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{11}	$u^9+5u^8+11u^7+10u^6-u^5-5u^4+9u^3+14u^2+4u-1$
c_2, c_5, c_7 c_{12}	$u^9+3u^8+7u^7+10u^6+11u^5+9u^4+5u^3+2u^2-1$
c_3, c_4, c_8 c_{10}	$u^9-5u^8+12u^7-16u^6+12u^5-3u^4-u^3-u^2+3u-1$
c_6, c_9	$u^9+u^8+4u^7+u^6+11u^5+u^4+11u^3+7u^2+u-1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{11}	$y^9 - 3y^8 + 19y^7 - 54y^6 + 167y^5 - 225y^4 + 233y^3 - 134y^2 + 44y - 1$
c_2, c_5, c_7 c_{12}	$y^9 + 5y^8 + 11y^7 + 10y^6 - y^5 - 5y^4 + 9y^3 + 14y^2 + 4y - 1$
c_3, c_4, c_8 c_{10}	$y^9 - y^8 + 8y^7 + 20y^5 - 3y^4 + 35y^3 - 13y^2 + 7y - 1$
c_6, c_9	$y^9 + 7y^8 + 36y^7 + 107y^6 + 195y^5 + 237y^4 + 131y^3 - 25y^2 + 15y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.000250 + 0.725181I$ $a = -1.000710 + 0.653784I$ $b = 0.948795 - 0.309253I$	$0.91788 + 5.42837I$	$11.84517 - 4.00961I$
$u = 1.000250 - 0.725181I$ $a = -1.000710 - 0.653784I$ $b = 0.948795 + 0.309253I$	$0.91788 - 5.42837I$	$11.84517 + 4.00961I$
$u = 0.546415 + 1.108600I$ $a = -0.230267 - 0.335909I$ $b = 0.309218 - 1.245070I$	$-9.16918 - 1.97699I$	$1.47834 + 1.39149I$
$u = 0.546415 - 1.108600I$ $a = -0.230267 + 0.335909I$ $b = 0.309218 + 1.245070I$	$-9.16918 + 1.97699I$	$1.47834 - 1.39149I$
$u = -0.519685 + 0.388914I$ $a = 1.137270 - 0.230863I$ $b = -0.160625 + 0.891368I$	$-2.04430 - 1.72035I$	$4.21443 + 4.65394I$
$u = -0.519685 - 0.388914I$ $a = 1.137270 + 0.230863I$ $b = -0.160625 - 0.891368I$	$-2.04430 + 1.72035I$	$4.21443 - 4.65394I$
$u = 1.26544 + 0.92224I$ $a = -1.55365 + 0.07913I$ $b = 0.600380 + 1.232850I$	$-4.8606 + 16.8243I$	$6.88008 - 9.57741I$
$u = 1.26544 - 0.92224I$ $a = -1.55365 - 0.07913I$ $b = 0.600380 - 1.232850I$	$-4.8606 - 16.8243I$	$6.88008 + 9.57741I$
$u = 0.415171$ $a = 1.29473$ $b = -0.395535$	0.703597	14.1640

II. $\boldsymbol{I_2^u = \langle u^2a + u^2 + b,\ -u^9a + 4u^9 + \cdots + 2a - 1,\ u^{10} + 2u^9 + \cdots + u + 1\rangle}$

(i) Arc colorings

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

$$a_{10} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

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

$$a_{11} = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -u^9a + 3u^9 + \cdots - 2u + 3 \\ u^8a - 2u^9 + \cdots + u - 2 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -2u^9a - 3u^8a + \cdots - 2a - 2 \\ u^9a + u^9 + \cdots + 2a + 3 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^9a + 2u^9 + \cdots - a - 2u \\ u^9a + u^8a + \cdots + a + 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u^9a + u^9 + \cdots - u + 1 \\ u^8a - 2u^9 + \cdots + u - 2 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u^9a - u^9 + \cdots + a - 1 \\ -u^3a - u^3 + au \end{pmatrix}$$

$$a_8 = \begin{pmatrix} u^9a - u^9 + \cdots + a - 1 \\ au \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} u^9a - u^9 + \cdots + a - 1 \\ u^8 + u^7 - u^5 + 3u^4 + 2u^3 - 3u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 11u^9 + 12u^8 - 8u^7 - 19u^6 + 32u^5 + 32u^4 - 25u^3 - 59u^2 + 4u + 39$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{11}	$u^{20} + 8u^{19} + \cdots - 512u + 1024$
c_2, c_5, c_7 c_{12}	$u^{20} + 6u^{19} + \cdots + 192u + 32$
c_3, c_4, c_8 c_{10}	$(u^{10} + 2u^9 + u^8 - u^7 + 2u^6 + 5u^5 + 2u^4 - 4u^3 - 3u^2 + u + 1)^2$
c_6, c_9	$u^{20} + 2u^{19} + \cdots - 13u^2 + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{11}	$y^{20} + 8y^{19} + \cdots + 655360y + 1048576$
c_2, c_5, c_7 c_{12}	$y^{20} + 8y^{19} + \cdots - 512y + 1024$
c_3, c_4, c_8 c_{10}	$(y^{10} - 2y^9 + 9y^8 - 13y^7 + 28y^6 - 33y^5 + 36y^4 - 34y^3 + 21y^2 - 7y + 1)^2$
c_6, c_9	$y^{20} + 24y^{19} + \cdots - 26y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.697487 + 0.893220I$ $a = -0.662772 - 0.575220I$ $b = 0.821731 + 0.241096I$	$-4.56796 - 1.72827I$	$5.99377 + 2.10096I$
$u = -0.697487 + 0.893220I$ $a = 0.0120261 + 0.0747158I$ $b = 0.222000 + 1.284270I$	$-4.56796 - 1.72827I$	$5.99377 + 2.10096I$
$u = -0.697487 - 0.893220I$ $a = -0.662772 + 0.575220I$ $b = 0.821731 - 0.241096I$	$-4.56796 + 1.72827I$	$5.99377 - 2.10096I$
$u = -0.697487 - 0.893220I$ $a = 0.0120261 - 0.0747158I$ $b = 0.222000 - 1.284270I$	$-4.56796 + 1.72827I$	$5.99377 - 2.10096I$
$u = -0.693459 + 0.193871I$ $a = 1.50091 - 0.64277I$ $b = -0.935824 + 0.957395I$	$2.81596 - 6.19567I$	$19.0021 + 9.7994I$
$u = -0.693459 + 0.193871I$ $a = -3.12443 + 0.88317I$ $b = 0.704293 - 0.962732I$	$2.81596 - 6.19567I$	$19.0021 + 9.7994I$
$u = -0.693459 - 0.193871I$ $a = 1.50091 + 0.64277I$ $b = -0.935824 - 0.957395I$	$2.81596 + 6.19567I$	$19.0021 - 9.7994I$
$u = -0.693459 - 0.193871I$ $a = -3.12443 - 0.88317I$ $b = 0.704293 + 0.962732I$	$2.81596 + 6.19567I$	$19.0021 - 9.7994I$
$u = 0.862296 + 0.948082I$ $a = -1.67900 + 0.41333I$ $b = 0.570373 + 1.174400I$	$-7.29651 + 6.88238I$	$4.01797 - 5.83705I$
$u = 0.862296 + 0.948082I$ $a = -0.166644 + 0.078095I$ $b = 0.257113 - 1.350450I$	$-7.29651 + 6.88238I$	$4.01797 - 5.83705I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.862296 - 0.948082I$ $a = -1.67900 - 0.41333I$ $b = 0.570373 - 1.174400I$	$-7.29651 - 6.88238I$	$4.01797 + 5.83705I$
$u = 0.862296 - 0.948082I$ $a = -0.166644 - 0.078095I$ $b = 0.257113 + 1.350450I$	$-7.29651 - 6.88238I$	$4.01797 + 5.83705I$
$u = 0.663837 + 0.151994I$ $a = 1.58914 + 0.48669I$ $b = -0.982955 - 0.725714I$	$3.48993 + 0.66365I$	$16.4607 - 8.1518I$
$u = 0.663837 + 0.151994I$ $a = -1.75895 + 2.14112I$ $b = 0.748997 - 0.740931I$	$3.48993 + 0.66365I$	$16.4607 - 8.1518I$
$u = 0.663837 - 0.151994I$ $a = 1.58914 - 0.48669I$ $b = -0.982955 + 0.725714I$	$3.48993 - 0.66365I$	$16.4607 + 8.1518I$
$u = 0.663837 - 0.151994I$ $a = -1.75895 - 2.14112I$ $b = 0.748997 + 0.740931I$	$3.48993 - 0.66365I$	$16.4607 + 8.1518I$
$u = -1.135190 + 0.826360I$ $a = -1.031390 - 0.513255I$ $b = 0.981958 + 0.252022I$	$-1.84362 - 11.11570I$	$9.52549 + 6.91894I$
$u = -1.135190 + 0.826360I$ $a = -1.67888 - 0.10717I$ $b = 0.612314 - 1.208760I$	$-1.84362 - 11.11570I$	$9.52549 + 6.91894I$
$u = -1.135190 - 0.826360I$ $a = -1.031390 + 0.513255I$ $b = 0.981958 - 0.252022I$	$-1.84362 + 11.11570I$	$9.52549 - 6.91894I$
$u = -1.135190 - 0.826360I$ $a = -1.67888 + 0.10717I$ $b = 0.612314 + 1.208760I$	$-1.84362 + 11.11570I$	$9.52549 - 6.91894I$

III. $I_3^u = \langle -9u^9 + 29u^8 + \cdots + 16b + 176,\ 13u^9 - 43u^8 + \cdots + 32a - 320,\ u^{10} - 5u^9 + \cdots - 112u + 32\rangle$

(i) Arc colorings

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

$$a_{10} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

$$a_5 = \begin{pmatrix} -\frac{13}{32}u^9 + \frac{43}{32}u^8 + \cdots - \frac{97}{4}u + 10 \\ \frac{9}{16}u^9 - \frac{29}{16}u^8 + \cdots + \frac{59}{2}u - 11 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -\frac{37}{16}u^9 + \frac{133}{16}u^8 + \cdots - \frac{571}{4}u + 50 \\ u^9 - \frac{31}{8}u^8 + \cdots + 73u - 26 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -\frac{3}{16}u^9 + \frac{7}{16}u^8 + \cdots - 8u + \frac{9}{2} \\ \frac{1}{2}u^9 - \frac{11}{8}u^8 + \cdots + \frac{33}{2}u - 6 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -0.812500u^9 + 2.68750u^8 + \cdots - 41.5000u + 14.5000 \\ \frac{3}{2}u^9 - \frac{43}{8}u^8 + \cdots + \frac{189}{2}u - 34 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -\frac{21}{16}u^9 + \frac{71}{16}u^8 + \cdots - \frac{279}{4}u + 24 \\ u^9 - \frac{31}{8}u^8 + \cdots + 73u - 26 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 1.81250u^9 - 6.06250u^8 + \cdots + 100.250u - 34.5000 \\ -\frac{15}{8}u^9 + \frac{13}{2}u^8 + \cdots - \frac{217}{2}u + 38 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -\frac{1}{16}u^8 + \frac{3}{16}u^7 + \cdots + \frac{7}{2}u - \frac{5}{2} \\ \frac{1}{16}u^9 - \frac{3}{16}u^8 + \cdots - \frac{9}{2}u^2 + \frac{7}{2}u \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -1.18750u^9 + 4.06250u^8 + \cdots - 67.2500u + 23.5000 \\ u^9 - \frac{29}{8}u^8 + \cdots + \frac{127}{2}u - 22 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= -12u^9 + 42u^8 - 32u^7 - 110u^6 + 302u^5 - 200u^4 - 356u^3 + 854u^2 - 716u + 262$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{11}	$(u^5 + 3u^4 + 4u^3 + u^2 - u - 1)^2$
c_2, c_5, c_7 c_{12}	$(u^5 - u^4 + 2u^3 - u^2 + u - 1)^2$
c_3, c_4, c_8 c_{10}	$u^{10} - 5u^9 + \cdots - 112u + 32$
c_6, c_9	$u^{10} - 2u^9 + 7u^8 - 12u^7 + 28u^6 - 30u^5 + 33u^4 - 12u^3 + 7u^2 + 2u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{11}	$(y^5 - y^4 + 8y^3 - 3y^2 + 3y - 1)^2$
c_2, c_5, c_7 c_{12}	$(y^5 + 3y^4 + 4y^3 + y^2 - y - 1)^2$
c_3, c_4, c_8 c_{10}	$y^{10} - 9y^9 + \cdots - 1792y + 1024$
c_6, c_9	$y^{10} + 10y^9 + \cdots + 10y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.741441 + 0.645002I$ $a = 1.071590 - 0.512139I$ $b = -0.766826$	0.132640	$11.03771 + 0.I$
$u = 0.741441 - 0.645002I$ $a = 1.071590 + 0.512139I$ $b = -0.766826$	0.132640	$11.03771 + 0.I$
$u = 1.46105 + 0.05872I$ $a = -1.46066 - 0.89350I$ $b = 0.339110 + 0.822375I$	$4.27660 + 3.06116I$	$12.9698 - 8.8613I$
$u = 1.46105 - 0.05872I$ $a = -1.46066 + 0.89350I$ $b = 0.339110 - 0.822375I$	$4.27660 - 3.06116I$	$12.9698 + 8.8613I$
$u = 1.27770 + 0.76072I$ $a = 1.64111 - 0.08519I$ $b = -0.455697 - 1.200150I$	$-6.81032 + 8.80167I$	$4.51137 - 6.99717I$
$u = 1.27770 - 0.76072I$ $a = 1.64111 + 0.08519I$ $b = -0.455697 + 1.200150I$	$-6.81032 - 8.80167I$	$4.51137 + 6.99717I$
$u = 0.68721 + 1.38261I$ $a = 0.400210 + 0.011625I$ $b = -0.455697 + 1.200150I$	$-6.81032 - 8.80167I$	$4.51137 + 6.99717I$
$u = 0.68721 - 1.38261I$ $a = 0.400210 - 0.011625I$ $b = -0.455697 - 1.200150I$	$-6.81032 + 8.80167I$	$4.51137 - 6.99717I$
$u = -1.66741 + 0.39957I$ $a = -0.902252 - 0.079481I$ $b = 0.339110 - 0.822375I$	$4.27660 - 3.06116I$	$12.9698 + 8.8613I$
$u = -1.66741 - 0.39957I$ $a = -0.902252 + 0.079481I$ $b = 0.339110 + 0.822375I$	$4.27660 + 3.06116I$	$12.9698 - 8.8613I$

IV.

$$\boldsymbol{I^u_4 = \langle u^8 - 2u^7 + \cdots + b - 1,\ -u^8 + 2u^7 + \cdots + a + 2u,\ u^9 - u^8 + \cdots - u - 1\rangle}$$

(i) Arc colorings

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

$$a_{10} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

$$a_5 = \begin{pmatrix} u^8 - 2u^7 - 2u^6 + 6u^5 - 2u^4 - 3u^3 + 4u^2 - 2u \\ -u^8 + 2u^7 + 2u^6 - 6u^5 + 2u^4 + 4u^3 - 5u^2 + 1 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -2u^8 + 3u^7 + 7u^6 - 13u^5 - 2u^4 + 14u^3 - 10u^2 - u + 4 \\ u^8 - u^7 - 4u^6 + 5u^5 + 2u^4 - 6u^3 + 5u^2 + u - 2 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 3u^8 - 5u^7 - 9u^6 + 18u^5 + 2u^4 - 17u^3 + 12u^2 + 2u - 5 \\ -2u^8 + 3u^7 + 6u^6 - 10u^5 - 2u^4 + 9u^3 - 7u^2 - 2u + 3 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 2u^8 - 4u^7 - 5u^6 + 14u^5 - u^4 - 13u^3 + 9u^2 + u - 4 \\ -2u^8 + 3u^7 + 5u^6 - 9u^5 + 7u^3 - 7u^2 - u + 3 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u^8 + 2u^7 + 3u^6 - 8u^5 + 8u^3 - 5u^2 + 2 \\ u^8 - u^7 - 4u^6 + 5u^5 + 2u^4 - 6u^3 + 5u^2 + u - 2 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u^2 - 2 \\ -u^4 + u^3 + 2u^2 - u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u^8 + 2u^7 + 2u^6 - 6u^5 + 2u^4 + 3u^3 - 4u^2 + u - 1 \\ u^8 - 2u^7 - 2u^6 + 6u^5 - 2u^4 - 3u^3 + 5u^2 - u - 1 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -u^3 + u^2 + 3u - 2 \\ u^5 - 2u^4 - 2u^3 + 4u^2 - u \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4u^7 - 2u^6 - 20u^5 + 16u^4 + 20u^3 - 24u^2 + 6u + 15$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{11}	$u^9 - 5u^8 + 15u^7 - 30u^6 + 43u^5 - 43u^4 + 29u^3 - 10u^2 + 1$
c_2, c_7	$u^9 + u^8 + 3u^7 + 2u^6 + 5u^5 + 3u^4 + 5u^3 + 2u^2 + 2u + 1$
c_3, c_8	$u^9 - u^8 - 4u^7 + 4u^6 + 4u^5 - 5u^4 + u^3 + 3u^2 - u - 1$
c_4, c_{10}	$u^9 + u^8 - 4u^7 - 4u^6 + 4u^5 + 5u^4 + u^3 - 3u^2 - u + 1$
c_5, c_{12}	$u^9 - u^8 + 3u^7 - 2u^6 + 5u^5 - 3u^4 + 5u^3 - 2u^2 + 2u - 1$
c_6	$u^9 + u^8 + u^6 + u^5 - u^4 + u^3 - 3u^2 - u - 1$
c_9	$u^9 - u^8 - u^6 + u^5 + u^4 + u^3 + 3u^2 - u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{11}	$y^9 + 5y^8 + 11y^7 + 18y^6 + 39y^5 + 55y^4 + 41y^3 - 14y^2 + 20y - 1$
c_2, c_5, c_7 c_{12}	$y^9 + 5y^8 + 15y^7 + 30y^6 + 43y^5 + 43y^4 + 29y^3 + 10y^2 - 1$
c_3, c_4, c_8 c_{10}	$y^9 - 9y^8 + 32y^7 - 56y^6 + 52y^5 - 35y^4 + 31y^3 - 21y^2 + 7y - 1$
c_6, c_9	$y^9 - y^8 + 3y^6 + 7y^5 + 9y^4 - 5y^3 - 13y^2 - 5y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.462033 + 0.754487I$ $a = 0.078103 - 1.033230I$ $b = -0.336796 - 1.119250I$	$-3.12884 + 6.23780I$	$2.73865 - 7.61913I$
$u = 0.462033 - 0.754487I$ $a = 0.078103 + 1.033230I$ $b = -0.336796 + 1.119250I$	$-3.12884 - 6.23780I$	$2.73865 + 7.61913I$
$u = 0.782089$ $a = -0.220949$ $b = -0.476516$	2.80099	14.9720
$u = -1.364940 + 0.065675I$ $a = -1.289310 - 0.543338I$ $b = 0.635154 + 0.958055I$	$5.53504 + 5.05565I$	$12.9398 - 5.8623I$
$u = -1.364940 - 0.065675I$ $a = -1.289310 + 0.543338I$ $b = 0.635154 - 0.958055I$	$5.53504 - 5.05565I$	$12.9398 + 5.8623I$
$u = -0.559877 + 0.179451I$ $a = 2.50809 - 0.97379I$ $b = -0.791008 + 0.978807I$	$2.21345 - 6.06496I$	$3.18848 + 6.10484I$
$u = -0.559877 - 0.179451I$ $a = 2.50809 + 0.97379I$ $b = -0.791008 - 0.978807I$	$2.21345 + 6.06496I$	$3.18848 - 6.10484I$
$u = 1.57174 + 0.24578I$ $a = -1.186410 - 0.282603I$ $b = 0.230908 + 0.825079I$	$3.84945 + 2.41446I$	$5.14685 + 1.22263I$
$u = 1.57174 - 0.24578I$ $a = -1.186410 + 0.282603I$ $b = 0.230908 - 0.825079I$	$3.84945 - 2.41446I$	$5.14685 - 1.22263I$

V. $\boldsymbol{I_5^u = \langle 4u^{19} - 5u^{18} + \cdots + 8b - 34,\ -8u^{19}a - 62u^{19} + \cdots - 86a - 198,\ u^{20} + 2u^{19} + \cdots + 2u - 1\rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} a \\ -\frac{1}{2}u^{19} + \frac{5}{8}u^{18} + \cdots - u + \frac{17}{4} \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} \frac{13}{8}u^{19}a - \frac{17}{8}u^{19} + \cdots + \frac{1}{8}a + \frac{7}{4} \\ \frac{1}{2}u^{19}a + \frac{5}{8}u^{19} + \cdots - \frac{9}{8}a - \frac{7}{2} \end{pmatrix}$$
$$a_6 = \begin{pmatrix} \frac{7}{8}u^{19}a - \frac{9}{4}u^{19} + \cdots - \frac{3}{8}a - \frac{55}{8} \\ -\frac{1}{2}u^{19}a - \frac{9}{8}u^{19} + \cdots + \frac{7}{8}a + \frac{11}{8} \end{pmatrix}$$
$$a_7 = \begin{pmatrix} \frac{5}{8}u^{19}a - \frac{31}{8}u^{19} + \cdots - \frac{35}{4}u - 6 \\ -\frac{1}{2}u^{19}a - \frac{5}{8}u^{19} + \cdots + \frac{3}{4}a + \frac{1}{2} \end{pmatrix}$$
$$a_1 = \begin{pmatrix} \frac{17}{8}u^{19}a - \frac{3}{2}u^{19} + \cdots - a - \frac{7}{4} \\ \frac{1}{2}u^{19}a + \frac{5}{8}u^{19} + \cdots - \frac{9}{8}a - \frac{7}{2} \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 2u^{19}a - \frac{3}{4}u^{19} + \cdots + \frac{17}{8}a - \frac{11}{8} \\ -u^{19}a - \frac{5}{8}u^{19} + \cdots + \frac{3}{4}a - \frac{7}{4} \end{pmatrix}$$
$$a_8 = \begin{pmatrix} \frac{3}{4}u^{19}a - \frac{3}{4}u^{19} + \cdots + \frac{11}{8}a - \frac{11}{8} \\ -\frac{1}{4}u^{19}a + \frac{3}{2}u^{19} + \cdots + \frac{1}{8}a + \frac{5}{8} \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 2u^{19}a + \frac{1}{8}u^{19} + \cdots + \frac{17}{8}a + \frac{1}{4} \\ \frac{7}{8}u^{19} + \frac{7}{8}u^{18} + \cdots + \frac{3}{4}u - \frac{11}{8} \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{7}{2}u^{19} - 5u^{18} + \frac{17}{2}u^{17} + 22u^{16} - 5u^{15} - \frac{67}{2}u^{14} + \frac{41}{2}u^{13} + 85u^{12} + \frac{43}{2}u^{11} - \frac{149}{2}u^{10} + \frac{3}{2}u^9 + \frac{157}{2}u^8 - 47u^7 - 175u^6 - 27u^5 + 140u^4 + 99u^3 - \frac{17}{2}u^2 - 17u + 11$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{11}	$(u^5 + 3u^4 + 4u^3 + u^2 - u - 1)^8$
c_2, c_5, c_7 c_{12}	$(u^5 - u^4 + 2u^3 - u^2 + u - 1)^8$
c_3, c_4, c_8 c_{10}	$(u^{20} + 2u^{19} + \cdots + 2u - 1)^2$
c_6, c_9	$u^{40} + 7u^{39} + \cdots + 15696u + 9056$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{11}	$(y^5 - y^4 + 8y^3 - 3y^2 + 3y - 1)^8$
c_2, c_5, c_7 c_{12}	$(y^5 + 3y^4 + 4y^3 + y^2 - y - 1)^8$
c_3, c_4, c_8 c_{10}	$(y^{20} - 8y^{19} + \cdots - 24y + 1)^2$
c_6, c_9	$y^{40} - 15y^{39} + \cdots - 551370496y + 82011136$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.003740 + 0.203240I$ $a = 0.736760 + 0.293591I$ $b = -0.766826$	$2.20462 - 1.53058I$	$12.00374 + 4.43065I$
$u = 1.003740 + 0.203240I$ $a = 0.07037 + 1.42616I$ $b = 0.339110 - 0.822375I$	$2.20462 - 1.53058I$	$12.00374 + 4.43065I$
$u = 1.003740 - 0.203240I$ $a = 0.736760 - 0.293591I$ $b = -0.766826$	$2.20462 + 1.53058I$	$12.00374 - 4.43065I$
$u = 1.003740 - 0.203240I$ $a = 0.07037 - 1.42616I$ $b = 0.339110 + 0.822375I$	$2.20462 + 1.53058I$	$12.00374 - 4.43065I$
$u = -0.837472 + 0.186217I$ $a = 1.62048 + 0.56618I$ $b = -0.455697 + 1.200150I$	$-1.26686 - 5.93141I$	$8.74057 + 7.92923I$
$u = -0.837472 + 0.186217I$ $a = -0.52205 + 2.59753I$ $b = 0.339110 - 0.822375I$	$-1.26686 - 5.93141I$	$8.74057 + 7.92923I$
$u = -0.837472 - 0.186217I$ $a = 1.62048 - 0.56618I$ $b = -0.455697 - 1.200150I$	$-1.26686 + 5.93141I$	$8.74057 - 7.92923I$
$u = -0.837472 - 0.186217I$ $a = -0.52205 - 2.59753I$ $b = 0.339110 + 0.822375I$	$-1.26686 + 5.93141I$	$8.74057 - 7.92923I$
$u = 0.518290 + 1.034340I$ $a = -0.229000 + 1.109210I$ $b = 0.339110 + 0.822375I$	$-1.26686 + 5.93141I$	$8.74057 - 7.92923I$
$u = 0.518290 + 1.034340I$ $a = 0.625942 - 0.270987I$ $b = -0.455697 - 1.200150I$	$-1.26686 + 5.93141I$	$8.74057 - 7.92923I$

Solutions to I_5^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.518290 - 1.034340I$ $a = -0.229000 - 1.109210I$ $b = 0.339110 - 0.822375I$	$-1.26686 - 5.93141I$	$8.74057 + 7.92923I$
$u = 0.518290 - 1.034340I$ $a = 0.625942 + 0.270987I$ $b = -0.455697 + 1.200150I$	$-1.26686 - 5.93141I$	$8.74057 + 7.92923I$
$u = -0.876335 + 0.759147I$ $a = 0.899822 + 0.139425I$ $b = -0.455697 + 1.200150I$	$-1.26686 - 2.87025I$	$8.74057 - 0.93206I$
$u = -0.876335 + 0.759147I$ $a = 0.537367 - 0.405725I$ $b = 0.339110 + 0.822375I$	$-1.26686 - 2.87025I$	$8.74057 - 0.93206I$
$u = -0.876335 - 0.759147I$ $a = 0.899822 - 0.139425I$ $b = -0.455697 - 1.200150I$	$-1.26686 + 2.87025I$	$8.74057 + 0.93206I$
$u = -0.876335 - 0.759147I$ $a = 0.537367 + 0.405725I$ $b = 0.339110 - 0.822375I$	$-1.26686 + 2.87025I$	$8.74057 + 0.93206I$
$u = -0.640737 + 1.010450I$ $a = 0.980178 + 0.568848I$ $b = -0.766826$	$-3.33884 + 4.40083I$	$7.77454 - 3.49859I$
$u = -0.640737 + 1.010450I$ $a = 0.314549 + 0.014758I$ $b = -0.455697 - 1.200150I$	$-3.33884 + 4.40083I$	$7.77454 - 3.49859I$
$u = -0.640737 - 1.010450I$ $a = 0.980178 - 0.568848I$ $b = -0.766826$	$-3.33884 - 4.40083I$	$7.77454 + 3.49859I$
$u = -0.640737 - 1.010450I$ $a = 0.314549 - 0.014758I$ $b = -0.455697 + 1.200150I$	$-3.33884 - 4.40083I$	$7.77454 + 3.49859I$

Solutions to I_5^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.626341+0.466406I$ $a=\ \ 0.547283-0.504915I$ $b=-0.766826$	$2.20462-1.53058I$	$12.00374+4.43065I$
$u=-0.626341+0.466406I$ $a=-1.26438-1.85588I$ $b=\ \ 0.339110-0.822375I$	$2.20462-1.53058I$	$12.00374+4.43065I$
$u=-0.626341-0.466406I$ $a=\ \ 0.547283+0.504915I$ $b=-0.766826$	$2.20462+1.53058I$	$12.00374-4.43065I$
$u=-0.626341-0.466406I$ $a=-1.26438+1.85588I$ $b=\ \ 0.339110+0.822375I$	$2.20462+1.53058I$	$12.00374-4.43065I$
$u=-1.086970+0.743564I$ $a=\ \ 0.983639+0.469524I$ $b=-0.766826$	$-3.33884-4.40083I$	$7.77454+3.49859I$
$u=-1.086970+0.743564I$ $a=\ \ 1.56355+0.05153I$ $b=-0.455697+1.200150I$	$-3.33884-4.40083I$	$7.77454+3.49859I$
$u=-1.086970-0.743564I$ $a=\ \ 0.983639-0.469524I$ $b=-0.766826$	$-3.33884+4.40083I$	$7.77454-3.49859I$
$u=-1.086970-0.743564I$ $a=\ \ 1.56355-0.05153I$ $b=-0.455697-1.200150I$	$-3.33884+4.40083I$	$7.77454-3.49859I$
$u=-1.36679$ $a=-1.84955+0.44022I$ $b=\ \ 0.339110-0.822375I$	4.27660	12.9700
$u=-1.36679$ $a=-1.84955-0.44022I$ $b=\ \ 0.339110+0.822375I$	4.27660	12.9700

Solutions to I_5^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.030490 + 0.931621I$ $a = 0.384781 - 0.097424I$ $b = -0.455697 + 1.200150I$	-6.81032	$4.51137 + 0.I$
$u = 1.030490 + 0.931621I$ $a = 1.62227 + 0.02761I$ $b = -0.455697 - 1.200150I$	-6.81032	$4.51137 + 0.I$
$u = 1.030490 - 0.931621I$ $a = 0.384781 + 0.097424I$ $b = -0.455697 - 1.200150I$	-6.81032	$4.51137 + 0.I$
$u = 1.030490 - 0.931621I$ $a = 1.62227 - 0.02761I$ $b = -0.455697 + 1.200150I$	-6.81032	$4.51137 + 0.I$
$u = 0.316111 + 0.046866I$ $a = 2.10387 - 1.97197I$ $b = -0.455697 - 1.200150I$	$-1.26686 + 2.87025I$	$8.74057 + 0.93206I$
$u = 0.316111 + 0.046866I$ $a = -6.41754 - 3.25398I$ $b = 0.339110 - 0.822375I$	$-1.26686 + 2.87025I$	$8.74057 + 0.93206I$
$u = 0.316111 - 0.046866I$ $a = 2.10387 + 1.97197I$ $b = -0.455697 + 1.200150I$	$-1.26686 - 2.87025I$	$8.74057 - 0.93206I$
$u = 0.316111 - 0.046866I$ $a = -6.41754 + 3.25398I$ $b = 0.339110 + 0.822375I$	$-1.26686 - 2.87025I$	$8.74057 - 0.93206I$
$u = 1.76524$ $a = -0.708336 + 0.263915I$ $b = 0.339110 - 0.822375I$	4.27660	12.9700
$u = 1.76524$ $a = -0.708336 - 0.263915I$ $b = 0.339110 + 0.822375I$	4.27660	12.9700

VI. $I_6^u = \langle u^2a + u^2 + b,\ u^2a + a^2 + u^2 + a + u - 1,\ u^3 - u - 1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -5u^2 + 9u + 13$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_6^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.662359 + 0.562280I$ $a = 0.751796 + 0.282758I$ $b = -0.425318 + 1.270190I$	$-1.45094 - 3.77083I$	$6.42596 + 8.78482I$
$u = -0.662359 + 0.562280I$ $a = -1.87436 + 0.46210I$ $b = -0.237041 - 0.707911I$	$-1.45094 - 3.77083I$	$6.42596 + 8.78482I$
$u = -0.662359 - 0.562280I$ $a = 0.751796 - 0.282758I$ $b = -0.425318 - 1.270190I$	$-1.45094 + 3.77083I$	$6.42596 - 8.78482I$
$u = -0.662359 - 0.562280I$ $a = -1.87436 - 0.46210I$ $b = -0.237041 + 0.707911I$	$-1.45094 + 3.77083I$	$6.42596 - 8.78482I$
$u = 1.32472$ $a = -1.37744 + 0.42692I$ $b = 0.662359 - 0.749187I$	6.19175	16.1480
$u = 1.32472$ $a = -1.37744 - 0.42692I$ $b = 0.662359 + 0.749187I$	6.19175	16.1480

VII. $I^u_7 = \langle -au+b+a-u+1,\ a^2-2au-a+u+3,\ u^2+u-1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $=1$

(iii) Cusp Shapes $=5u+11$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_7^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.618034$ $a = 1.11803 + 1.53884I$ $b = -0.809017 - 0.587785I$	3.28987	14.0900
$u = 0.618034$ $a = 1.11803 - 1.53884I$ $b = -0.809017 + 0.587785I$	3.28987	14.0900
$u = -1.61803$ $a = -1.118030 + 0.363271I$ $b = 0.309017 - 0.951057I$	3.28987	2.90980
$u = -1.61803$ $a = -1.118030 - 0.363271I$ $b = 0.309017 + 0.951057I$	3.28987	2.90980

VIII. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_{11}	$(u^4 - u^3 + u^2 - u + 1)(u^5 + 3u^4 + 4u^3 + u^2 - u - 1)^{10}$ $\cdot (u^6 - 4u^5 + 8u^4 - 9u^3 + 8u^2 - 4u + 1)$ $\cdot (u^9 - 5u^8 + 15u^7 - 30u^6 + 43u^5 - 43u^4 + 29u^3 - 10u^2 + 1)$ $\cdot (u^9 + 5u^8 + 11u^7 + 10u^6 - u^5 - 5u^4 + 9u^3 + 14u^2 + 4u - 1)$ $\cdot (u^{20} + 8u^{19} + \cdots - 512u + 1024)$
c_2, c_7	$(u^4 + u^3 + u^2 + u + 1)(u^5 - u^4 + 2u^3 - u^2 + u - 1)^{10}$ $\cdot (u^6 + 2u^4 - u^3 + 2u^2 + 1)$ $\cdot (u^9 + u^8 + 3u^7 + 2u^6 + 5u^5 + 3u^4 + 5u^3 + 2u^2 + 2u + 1)$ $\cdot (u^9 + 3u^8 + 7u^7 + 10u^6 + 11u^5 + 9u^4 + 5u^3 + 2u^2 - 1)$ $\cdot (u^{20} + 6u^{19} + \cdots + 192u + 32)$
c_3, c_8	$(u^2 + u - 1)^2(u^3 - u - 1)^2$ $\cdot (u^9 - 5u^8 + 12u^7 - 16u^6 + 12u^5 - 3u^4 - u^3 - u^2 + 3u - 1)$ $\cdot (u^9 - u^8 - 4u^7 + 4u^6 + 4u^5 - 5u^4 + u^3 + 3u^2 - u - 1)$ $\cdot (u^{10} - 5u^9 + \cdots - 112u + 32)$ $\cdot (u^{10} + 2u^9 + u^8 - u^7 + 2u^6 + 5u^5 + 2u^4 - 4u^3 - 3u^2 + u + 1)^2$ $\cdot (u^{20} + 2u^{19} + \cdots + 2u - 1)^2$
c_4, c_{10}	$(u^2 - u - 1)^2(u^3 - u + 1)^2$ $\cdot (u^9 - 5u^8 + 12u^7 - 16u^6 + 12u^5 - 3u^4 - u^3 - u^2 + 3u - 1)$ $\cdot (u^9 + u^8 - 4u^7 - 4u^6 + 4u^5 + 5u^4 + u^3 - 3u^2 - u + 1)$ $\cdot (u^{10} - 5u^9 + \cdots - 112u + 32)$ $\cdot (u^{10} + 2u^9 + u^8 - u^7 + 2u^6 + 5u^5 + 2u^4 - 4u^3 - 3u^2 + u + 1)^2$ $\cdot (u^{20} + 2u^{19} + \cdots + 2u - 1)^2$
c_5, c_{12}	$(u^4 - u^3 + u^2 - u + 1)(u^5 - u^4 + 2u^3 - u^2 + u - 1)^{10}$ $\cdot (u^6 + 2u^4 + u^3 + 2u^2 + 1)$ $\cdot (u^9 - u^8 + 3u^7 - 2u^6 + 5u^5 - 3u^4 + 5u^3 - 2u^2 + 2u - 1)$ $\cdot (u^9 + 3u^8 + 7u^7 + 10u^6 + 11u^5 + 9u^4 + 5u^3 + 2u^2 - 1)$ $\cdot (u^{20} + 6u^{19} + \cdots + 192u + 32)$
c_6	$(u^4 - u^3 + u^2 - u + 1)(u^6 + u^5 - 3u^4 + 4u^2 - 3u + 1)$ $\cdot (u^9 + u^8 + u^6 + u^5 - u^4 + u^3 - 3u^2 - u - 1)$ $\cdot (u^9 + u^8 + 4u^7 + u^6 + 11u^5 + u^4 + 11u^3 + 7u^2 + u - 1)$ $\cdot (u^{10} - 2u^9 + 7u^8 - 12u^7 + 28u^6 - 30u^5 + 33u^4 - 12u^3 + 7u^2 + 2u + 1)$ $\cdot (u^{20} + 2u^{19} + \cdots - 13u^2 + 1)(u^{40} + 7u^{39} + \cdots + 15696u + 9056)$
c_9	$(u^4 + u^3 + u^2 + u + 1)(u^6 - u^5 - 3u^4 + 4u^2 + 3u + 1)$ $\cdot (u^9 - u^8 - u^6 + u^5 + 3u^4 + u^3 + 3u^2 - u + 1)$ $\cdot (u^9 + u^8 + 4u^7 + u^6 + 11u^5 + u^4 + 11u^3 + 7u^2 + u - 1)$ $\cdot (u^{10} - 2u^9 + 7u^8 - 12u^7 + 28u^6 - 30u^5 + 33u^4 - 12u^3 + 7u^2 + 2u + 1)$ $\cdot (u^{20} + 2u^{19} + \cdots - 13u^2 + 1)(u^{40} + 7u^{39} + \cdots + 15696u + 9056)$

IX. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_{11}	$(y^4+y^3+y^2+y+1)(y^5-y^4+8y^3-3y^2+3y-1)^{10}$ $\cdot(y^6+8y^4+17y^3+8y^2+1)$ $\cdot(y^9-3y^8+19y^7-54y^6+167y^5-225y^4+233y^3-134y^2+44y-1)$ $\cdot(y^9+5y^8+11y^7+18y^6+39y^5+55y^4+41y^3-14y^2+20y-1)$ $\cdot(y^{20}+8y^{19}+\cdots+655360y+1048576)$
c_2, c_5, c_7 c_{12}	$(y^4+y^3+y^2+y+1)(y^5+3y^4+4y^3+y^2-y-1)^{10}$ $\cdot(y^6+4y^5+8y^4+9y^3+8y^2+4y+1)$ $\cdot(y^9+5y^8+11y^7+10y^6-y^5-5y^4+9y^3+14y^2+4y-1)$ $\cdot(y^9+5y^8+15y^7+30y^6+43y^5+43y^4+29y^3+10y^2-1)$ $\cdot(y^{20}+8y^{19}+\cdots-512y+1024)$
c_3, c_4, c_8 c_{10}	$(y^2-3y+1)^2(y^3-2y^2+y-1)^2$ $\cdot(y^9-9y^8+32y^7-56y^6+52y^5-35y^4+31y^3-21y^2+7y-1)$ $\cdot(y^9-y^8+8y^7+20y^5-3y^4+35y^3-13y^2+7y-1)$ $\cdot(y^{10}-9y^9+\cdots-1792y+1024)$ $\cdot(y^{10}-2y^9+9y^8-13y^7+28y^6-33y^5+36y^4-34y^3+21y^2-7y+1)^2$ $\cdot(y^{20}-8y^{19}+\cdots-24y+1)^2$
c_6, c_9	$(y^4+y^3+y^2+y+1)(y^6-7y^5+17y^4-16y^3+10y^2-y+1)$ $\cdot(y^9-y^8+3y^6+7y^5+9y^4-5y^3-13y^2-5y-1)$ $\cdot(y^9+7y^8+36y^7+107y^6+195y^5+237y^4+131y^3-25y^2+15y-1)$ $\cdot(y^{10}+10y^9+\cdots+10y+1)(y^{20}+24y^{19}+\cdots-26y+1)$ $\cdot(y^{40}-15y^{39}+\cdots-551370496y+82011136)$