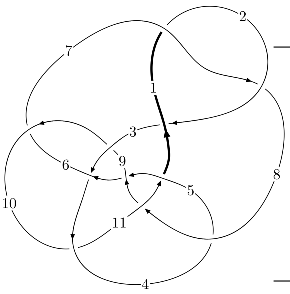
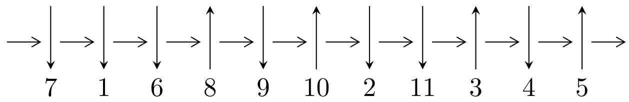
$11a_{239}$ ($K11a_{239}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$
\begin{aligned}
I_1^u &= \langle 3u^{16} - 18u^{15} + \cdots + 4b + 36,\ -11u^{16} + 64u^{15} + \cdots + 8a - 132,\ u^{17} - 6u^{16} + \cdots + 28u - 8\rangle \\
I_2^u &= \langle -u^2a + au + b, \\
&\quad 4u^5a - 9u^6 - 4u^4a + 19u^5 - 4u^3a - 7u^4 + 8u^2a - 30u^3 + 8a^2 - 12au + 53u^2 + 12a - 61u + 22, \\
&\quad u^7 - 3u^6 + 3u^5 + 2u^4 - 9u^3 + 13u^2 - 10u + 4\rangle \\
I_3^u &= \langle -2.57269 \times 10^{30}a^7u^5 + 1.10741 \times 10^{30}a^6u^5 + \cdots - 6.76928 \times 10^{31}a - 1.39005 \times 10^{31}, \\
&\quad a^7u^5 - 3a^6u^5 + \cdots - 8a + 4,\ u^6 + u^5 - u^4 - 2u^3 + u + 1\rangle \\
I_4^u &= \langle 29259u^5a^3 + 22409u^5a^2 + \cdots + 58215a + 25537,\ -u^5a^3 + u^5a + \cdots + a^4 + 2a, \\
&\quad u^6 + u^5 - u^4 - 2u^3 + u + 1\rangle \\
I_5^u &= \langle 5u^{21} - u^{20} + \cdots + 2b - 5,\ 22u^{21} - 27u^{20} + \cdots + 6a + 3, \\
&\quad u^{22} - 8u^{20} + 29u^{18} - 65u^{16} + 96u^{14} - 95u^{12} + 59u^{10} - 20u^8 + 5u^6 - 8u^4 + 8u^2 - 3\rangle \\
I_6^u &= \langle -u^5 - u^4 - u^2a - au + u^2 + b + u + 1,\ u^5a + 2u^4a - u^4 - 2u^2a - u^3 + a^2 - au - u^2 + 2u, \\
&\quad u^6 + u^5 - u^4 - 2u^3 + u + 1\rangle \\
I_7^u &= \langle -u^5 + u^3 + b - u,\ u^5 - 2u^3 + a + u,\ u^6 - u^5 - u^4 + 2u^3 - u + 1\rangle
\end{aligned}
$$

$$I_1^v = \langle a,\ b^2 + b + 1,\ v + 1\rangle$$

* 8 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 145 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

I. $\boldsymbol{I_1^u = \langle 3u^{16} - 18u^{15} + \cdots + 4b + 36,\ -11u^{16} + 64u^{15} + \cdots + 8a - 132,\ u^{17} - 6u^{16} + \cdots + 28u - 8\rangle}$

(i) Arc colorings

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

$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

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

$$a_5 = \begin{pmatrix} \frac{11}{8}u^{16} - 8u^{15} + \cdots - \frac{89}{2}u + \frac{33}{2} \\ -\frac{3}{4}u^{16} + \frac{9}{2}u^{15} + \cdots + 26u - 9 \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} \frac{11}{8}u^{16} - \frac{15}{2}u^{15} + \cdots - \frac{65}{2}u + \frac{21}{2} \\ -\frac{3}{4}u^{16} + 2u^{15} + \cdots - 5u^2 + 1 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -\frac{7}{8}u^{16} + \frac{21}{4}u^{15} + \cdots + 19u - \frac{13}{2} \\ 2u^{16} - \frac{19}{2}u^{15} + \cdots - 24u + 7 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} \frac{1}{8}u^{16} - \frac{3}{2}u^{15} + \cdots - \frac{19}{2}u + \frac{7}{2} \\ -\frac{3}{4}u^{16} + 5u^{15} + \cdots + 28u - 11 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -\frac{9}{8}u^{16} + 6u^{15} + \cdots + \frac{45}{2}u - \frac{11}{2} \\ -\frac{1}{4}u^{16} + 2u^{15} + \cdots + 22u - 11 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -\frac{7}{8}u^{16} + \frac{13}{4}u^{15} + \cdots + 2u - \frac{1}{2} \\ 2u^{15} - \frac{15}{2}u^{14} + \cdots + 18u - 7 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -\frac{7}{8}u^{16} + \frac{13}{4}u^{15} + \cdots + 2u - \frac{1}{2} \\ 2u^{15} - \frac{15}{2}u^{14} + \cdots + 18u - 7 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{29}{2}u^{16} + 72u^{15} - \frac{209}{2}u^{14} - 120u^{13} + \frac{1253}{2}u^{12} - 780u^{11} - \frac{287}{2}u^{10} + 1656u^9 - \frac{4241}{2}u^8 + 703u^7 + \frac{2779}{2}u^6 - 2264u^5 + \frac{3031}{2}u^4 - 319u^3 - 255u^2 + 226u - 62$

in decimal forms when there is not enough margin.

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_7	$u^{17} - 6u^{16} + \cdots + 28u - 8$
c_2	$u^{17} + 10u^{16} + \cdots + 208u + 64$
c_3, c_8	$u^{17} - 13u^{16} + \cdots + 259u - 47$
c_4, c_6, c_9 c_{11}	$u^{17} - u^{16} + \cdots + u - 1$
c_5, c_{10}	$u^{17} + 2u^{16} + \cdots - u + 4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_7	$y^{17} - 10y^{16} + \cdots + 208y - 64$
c_2	$y^{17} - 6y^{16} + \cdots + 47360y - 4096$
c_3, c_8	$y^{17} - 13y^{16} + \cdots - 7555y - 2209$
c_4, c_6, c_9 c_{11}	$y^{17} - 5y^{16} + \cdots + 21y - 1$
c_5, c_{10}	$y^{17} - 12y^{16} + \cdots + 177y - 16$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.334231 + 0.945289I$ $a = 1.186990 + 0.667740I$ $b = -1.11552 - 1.11726I$	$-1.10093 + 13.85920I$	$-2.71296 - 7.57439I$
$u = 0.334231 - 0.945289I$ $a = 1.186990 - 0.667740I$ $b = -1.11552 + 1.11726I$	$-1.10093 - 13.85920I$	$-2.71296 + 7.57439I$
$u = 0.788176 + 0.924452I$ $a = -0.655874 - 0.649894I$ $b = 1.016290 + 0.314455I$	$2.41973 + 2.94950I$	$2.91048 - 5.30771I$
$u = 0.788176 - 0.924452I$ $a = -0.655874 + 0.649894I$ $b = 1.016290 - 0.314455I$	$2.41973 - 2.94950I$	$2.91048 + 5.30771I$
$u = 0.857122 + 0.870195I$ $a = 1.129770 + 0.148811I$ $b = -1.086350 + 0.571276I$	$2.21297 - 9.35015I$	$-0.11785 + 9.82632I$
$u = 0.857122 - 0.870195I$ $a = 1.129770 - 0.148811I$ $b = -1.086350 - 0.571276I$	$2.21297 + 9.35015I$	$-0.11785 - 9.82632I$
$u = 0.337237 + 0.670381I$ $a = -1.111840 + 0.085153I$ $b = 0.766763 + 0.185332I$	$1.74054 + 0.98669I$	$3.14210 - 1.82725I$
$u = 0.337237 - 0.670381I$ $a = -1.111840 - 0.085153I$ $b = 0.766763 - 0.185332I$	$1.74054 - 0.98669I$	$3.14210 + 1.82725I$
$u = 1.164700 + 0.502631I$ $a = 0.659288 + 0.927604I$ $b = -0.659915 + 0.384127I$	$-0.77068 - 5.56913I$	$-2.33811 + 7.26294I$
$u = 1.164700 - 0.502631I$ $a = 0.659288 - 0.927604I$ $b = -0.659915 - 0.384127I$	$-0.77068 + 5.56913I$	$-2.33811 - 7.26294I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.187760 + 0.627012I$ $a = -1.63439 - 0.99047I$ $b = 1.13230 - 1.24110I$	$-3.7013 - 19.5737I$	$-5.36728 + 10.75666I$
$u = 1.187760 - 0.627012I$ $a = -1.63439 + 0.99047I$ $b = 1.13230 + 1.24110I$	$-3.7013 + 19.5737I$	$-5.36728 - 10.75666I$
$u = -1.340970 + 0.177838I$ $a = 0.340570 - 0.263792I$ $b = 0.885606 - 1.042740I$	$-6.89672 - 10.17430I$	$-7.93890 + 7.26215I$
$u = -1.340970 - 0.177838I$ $a = 0.340570 + 0.263792I$ $b = 0.885606 + 1.042740I$	$-6.89672 + 10.17430I$	$-7.93890 - 7.26215I$
$u = 1.46179$ $a = 0.501964$ $b = 0.338845$	-7.70589	-19.1410
$u = -0.515829$ $a = -0.663529$ $b = -0.518819$	-1.37384	-7.65930
$u = -1.60248$ $a = -0.167458$ $b = -0.698369$	-6.69142	13.6450

II. $I^u_2 = \langle -u^2a + au + b,\ 4u^5a - 9u^6 + \cdots + 12a + 22,\ u^7 - 3u^6 + 3u^5 + 2u^4 - 9u^3 + 13u^2 - 10u + 4\rangle$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u^2+1 \\ u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} a \\ u^2a - au \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} u^3a - u^2a + a \\ u^5a - u^4a - u^3a + 2u^2a - au \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -\frac{1}{2}u^6a - \frac{1}{2}u^6 + \cdots + 2a + \frac{3}{2} \\ u^6a + \frac{1}{2}u^6 + \cdots - 2a + \frac{3}{2}u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} u^6 - \frac{3}{2}u^5 + \cdots + a - \frac{1}{2} \\ -\frac{1}{2}u^6 + \frac{1}{2}u^5 + \cdots + au - \frac{1}{2}u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -\frac{1}{2}u^6 + u^5 + \cdots + a + \frac{3}{2} \\ \frac{1}{2}u^6 - \frac{1}{2}u^5 + \cdots + au + \frac{3}{2}u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} \frac{1}{2}u^6a - \frac{1}{4}u^6 + \cdots - \frac{13}{4}u + \frac{3}{2} \\ -u^5a + u^6 + \cdots - 2a - 3 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} \frac{1}{2}u^6a - \frac{1}{4}u^6 + \cdots - \frac{13}{4}u + \frac{3}{2} \\ -u^5a + u^6 + \cdots - 2a - 3 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 7u^6 - 10u^5 - u^4 + 26u^3 - 27u^2 + 16u + 2$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_7	$(u^7-3u^6+3u^5+2u^4-9u^3+13u^2-10u+4)^2$
c_2	$(u^7+3u^6+3u^5-7u^3+5u^2-4u+16)^2$
c_3, c_8	$u^{14}-15u^{13}+\cdots-1309u+187$
c_4, c_6, c_9 c_{11}	$u^{14}+u^{13}+\cdots+4u+1$
c_5, c_{10}	$(u^7-u^6+u^5-u^4+u^3+u-1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_7	$(y^7 - 3y^6 + 3y^5 - 7y^3 - 5y^2 - 4y - 16)^2$
c_2	$(y^7 - 3y^6 - 5y^5 - 80y^4 - 71y^3 + 31y^2 - 144y - 256)^2$
c_3, c_8	$y^{14} - 3y^{13} + \cdots - 5797y + 34969$
c_4, c_6, c_9 c_{11}	$y^{14} - 3y^{13} + \cdots - 2y + 1$
c_5, c_{10}	$(y^7 + y^6 + y^5 + 3y^4 + y^3 + y - 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.814935 + 0.691474I$ $a = 0.818477 + 1.080010I$ $b = -0.985169 - 0.322797I$	$4.60437 - 2.63118I$	$2.98391 + 3.36378I$
$u = 0.814935 + 0.691474I$ $a = -1.56532 - 0.18032I$ $b = 1.063050 - 0.568346I$	$4.60437 - 2.63118I$	$2.98391 + 3.36378I$
$u = 0.814935 - 0.691474I$ $a = 0.818477 - 1.080010I$ $b = -0.985169 + 0.322797I$	$4.60437 + 2.63118I$	$2.98391 - 3.36378I$
$u = 0.814935 - 0.691474I$ $a = -1.56532 + 0.18032I$ $b = 1.063050 + 0.568346I$	$4.60437 + 2.63118I$	$2.98391 - 3.36378I$
$u = 0.244291 + 1.049540I$ $a = -1.068000 - 0.437680I$ $b = 1.13868 + 1.13618I$	$0.04250 + 5.03576I$	$-2.7810 - 16.4347I$
$u = 0.244291 + 1.049540I$ $a = 0.330014 + 0.179733I$ $b = -0.327975 - 0.408300I$	$0.04250 + 5.03576I$	$-2.7810 - 16.4347I$
$u = 0.244291 - 1.049540I$ $a = -1.068000 + 0.437680I$ $b = 1.13868 - 1.13618I$	$0.04250 - 5.03576I$	$-2.7810 + 16.4347I$
$u = 0.244291 - 1.049540I$ $a = 0.330014 - 0.179733I$ $b = -0.327975 + 0.408300I$	$0.04250 - 5.03576I$	$-2.7810 + 16.4347I$
$u = 1.229510 + 0.632474I$ $a = -0.783908 - 0.339718I$ $b = 0.405865 - 0.683351I$	$-2.94764 - 10.98550I$	$-7.63392 + 11.66372I$
$u = 1.229510 + 0.632474I$ $a = 1.43734 + 1.01814I$ $b = -1.10890 + 1.20639I$	$-2.94764 - 10.98550I$	$-7.63392 + 11.66372I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.229510 - 0.632474I$ $a = -0.783908 + 0.339718I$ $b = 0.405865 + 0.683351I$	$-2.94764 + 10.98550I$	$-7.63392 - 11.66372I$
$u = 1.229510 - 0.632474I$ $a = 1.43734 - 1.01814I$ $b = -1.10890 - 1.20639I$	$-2.94764 + 10.98550I$	$-7.63392 - 11.66372I$
$u = -1.57747$ $a = -0.168609 + 0.061232I$ $b = -0.685543 + 0.248960I$	-6.68831	6.86200
$u = -1.57747$ $a = -0.168609 - 0.061232I$ $b = -0.685543 - 0.248960I$	-6.68831	6.86200

III. $\boldsymbol{I_3^u = \langle -2.57 \times 10^{30} a^7 u^5 + 1.11 \times 10^{30} a^6 u^5 + \cdots - 6.77 \times 10^{31} a - 1.39 \times 10^{31},\ a^7 u^5 - 3a^6 u^5 + \cdots - 8a + 4,\ u^6 + u^5 - u^4 - 2u^3 + u + 1 \rangle}$

(i) Arc colorings

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

$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

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

$$a_5 = \begin{pmatrix} a \\ 0.0725908a^7u^5 - 0.0312466a^6u^5 + \cdots + 1.91001a + 0.392216 \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} -0.0137916a^7u^5 + 0.00218527a^6u^5 + \cdots + 0.411608a + 0.495146 \\ 0.151420a^7u^5 - 0.00837117a^6u^5 + \cdots + 2.66136a + 0.605770 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0.00470703a^7u^5 - 0.00280449a^6u^5 + \cdots + 0.181900a + 0.413915 \\ -0.103428a^7u^5 + 0.0229172a^6u^5 + \cdots + 1.71283a - 1.57617 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.142900a^7u^5 - 0.162959a^6u^5 + \cdots - 0.921925a + 1.11192 \\ -0.0326497a^7u^5 - 0.0359075a^6u^5 + \cdots + 3.38577a - 1.09902 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.138594a^7u^5 - 0.138648a^6u^5 + \cdots - 1.12523a + 1.42701 \\ -0.00903181a^7u^5 - 0.0141319a^6u^5 + \cdots + 3.74823a - 0.965404 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0.0782518a^7u^5 - 0.0823113a^6u^5 + \cdots + 0.426516a - 1.12444 \\ 0.0398061a^7u^5 + 0.0659338a^6u^5 + \cdots - 2.81464a + 1.61215 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0.0782518a^7u^5 - 0.0823113a^6u^5 + \cdots + 0.426516a - 1.12444 \\ 0.0398061a^7u^5 + 0.0659338a^6u^5 + \cdots - 2.81464a + 1.61215 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{4371177550733369341379808}{3733821763848768427378506 1}a^7u^5 - \frac{8613150463936407409230296}{37338217638487684273785061}a^6u^5 + \cdots - \frac{4834872314001961117202962 96}{37338217638487684273785061}a - \frac{5208001341670264857868029 42}{37338217638487684273785061}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_7	$(u^6 + u^5 - u^4 - 2u^3 + u + 1)^8$
c_2	$(u^6 + 3u^5 + 5u^4 + 4u^3 + 2u^2 + u + 1)^8$
c_3, c_8	$(u^4 + u^3 - 2u + 1)^{12}$
c_4, c_6, c_9 c_{11}	$u^{48} - u^{47} + \cdots + 258u + 67$
c_5, c_{10}	$(u^{24} - u^{23} + \cdots - 148u + 43)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_7	$(y^6 - 3y^5 + 5y^4 - 4y^3 + 2y^2 - y + 1)^8$
c_2	$(y^6 + y^5 + 5y^4 + 6y^2 + 3y + 1)^8$
c_3, c_8	$(y^4 - y^3 + 6y^2 - 4y + 1)^{12}$
c_4, c_6, c_9 c_{11}	$y^{48} + 21y^{47} + \cdots + 251016y + 4489$
c_5, c_{10}	$(y^{24} - 21y^{23} + \cdots - 20872y + 1849)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.002190 + 0.295542I$ $a = -0.457748 - 0.979472I$ $b = -0.468678 - 1.255150I$	$-5.18047 + 3.13546I$	$-15.7167 - 6.1340I$
$u = 1.002190 + 0.295542I$ $a = 0.673790 + 0.414822I$ $b = -0.203937 + 1.370430I$	$-5.18047 - 4.98407I$	$-15.7167 + 7.7224I$
$u = 1.002190 + 0.295542I$ $a = 0.368896 - 0.698369I$ $b = 0.199323 - 1.036770I$	$-5.18047 - 4.98407I$	$-15.7167 + 7.7224I$
$u = 1.002190 + 0.295542I$ $a = 0.600740 - 0.091577I$ $b = 0.77443 + 1.38879I$	$-5.18047 + 3.13546I$	$-15.7167 - 6.1340I$
$u = 1.002190 + 0.295542I$ $a = 2.07317 + 2.02956I$ $b = -1.54509 + 0.60670I$	$-5.18047 - 4.98407I$	$-15.7167 + 7.7224I$
$u = 1.002190 + 0.295542I$ $a = -1.79302 - 2.40528I$ $b = 1.74582 - 0.65394I$	$-5.18047 + 3.13546I$	$-15.7167 - 6.1340I$
$u = 1.002190 + 0.295542I$ $a = -2.51170 - 1.86755I$ $b = -0.110952 - 0.260042I$	$-5.18047 + 3.13546I$	$-15.7167 - 6.1340I$
$u = 1.002190 + 0.295542I$ $a = 2.73201 + 1.67151I$ $b = 0.037319 + 0.504525I$	$-5.18047 - 4.98407I$	$-15.7167 + 7.7224I$
$u = 1.002190 - 0.295542I$ $a = -0.457748 + 0.979472I$ $b = -0.468678 + 1.255150I$	$-5.18047 - 3.13546I$	$-15.7167 + 6.1340I$
$u = 1.002190 - 0.295542I$ $a = 0.673790 - 0.414822I$ $b = -0.203937 - 1.370430I$	$-5.18047 + 4.98407I$	$-15.7167 - 7.7224I$

Solutions to I_3^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.002190 - 0.295542I$ $a = 0.368896 + 0.698369I$ $b = 0.199323 + 1.036770I$	$-5.18047 + 4.98407I$	$-15.7167 - 7.7224I$
$u = 1.002190 - 0.295542I$ $a = 0.600740 + 0.091577I$ $b = 0.77443 - 1.38879I$	$-5.18047 - 3.13546I$	$-15.7167 + 6.1340I$
$u = 1.002190 - 0.295542I$ $a = 2.07317 - 2.02956I$ $b = -1.54509 - 0.60670I$	$-5.18047 + 4.98407I$	$-15.7167 - 7.7224I$
$u = 1.002190 - 0.295542I$ $a = -1.79302 + 2.40528I$ $b = 1.74582 + 0.65394I$	$-5.18047 - 3.13546I$	$-15.7167 + 6.1340I$
$u = 1.002190 - 0.295542I$ $a = -2.51170 + 1.86755I$ $b = -0.110952 + 0.260042I$	$-5.18047 - 3.13546I$	$-15.7167 + 6.1340I$
$u = 1.002190 - 0.295542I$ $a = 2.73201 - 1.67151I$ $b = 0.037319 - 0.504525I$	$-5.18047 + 4.98407I$	$-15.7167 - 7.7224I$
$u = -0.428243 + 0.664531I$ $a = -0.541502 - 0.997202I$ $b = 0.213230 + 0.751517I$	$-1.39926 + 3.13546I$	$-8.28328 - 6.13398I$
$u = -0.428243 + 0.664531I$ $a = 0.241612 + 0.808856I$ $b = -0.496583 - 0.413571I$	$-1.39926 + 3.13546I$	$-8.28328 - 6.13398I$
$u = -0.428243 + 0.664531I$ $a = -0.078871 - 1.180870I$ $b = 0.301803 - 0.762568I$	$-1.39926 - 4.98407I$	$-8.28328 + 7.72243I$
$u = -0.428243 + 0.664531I$ $a = -0.300534 + 0.237449I$ $b = -0.146082 + 1.344830I$	$-1.39926 + 3.13546I$	$-8.28328 - 6.13398I$

Solutions to I_3^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.428243 + 0.664531I$ $a = -1.55909 + 0.46475I$ $b = 0.696177 + 1.068770I$	$-1.39926 + 3.13546I$	$-8.28328 - 6.13398I$
$u = -0.428243 + 0.664531I$ $a = -1.38135 + 1.00825I$ $b = 0.644388 - 1.011590I$	$-1.39926 - 4.98407I$	$-8.28328 + 7.72243I$
$u = -0.428243 + 0.664531I$ $a = 1.83610 + 0.25167I$ $b = -1.14936 - 1.56331I$	$-1.39926 - 4.98407I$	$-8.28328 + 7.72243I$
$u = -0.428243 + 0.664531I$ $a = 1.43866 - 1.35771I$ $b = -1.065770 + 0.881470I$	$-1.39926 - 4.98407I$	$-8.28328 + 7.72243I$
$u = -0.428243 - 0.664531I$ $a = -0.541502 + 0.997202I$ $b = 0.213230 - 0.751517I$	$-1.39926 - 3.13546I$	$-8.28328 + 6.13398I$
$u = -0.428243 - 0.664531I$ $a = 0.241612 - 0.808856I$ $b = -0.496583 + 0.413571I$	$-1.39926 - 3.13546I$	$-8.28328 + 6.13398I$
$u = -0.428243 - 0.664531I$ $a = -0.078871 + 1.180870I$ $b = 0.301803 + 0.762568I$	$-1.39926 + 4.98407I$	$-8.28328 - 7.72243I$
$u = -0.428243 - 0.664531I$ $a = -0.300534 - 0.237449I$ $b = -0.146082 - 1.344830I$	$-1.39926 - 3.13546I$	$-8.28328 + 6.13398I$
$u = -0.428243 - 0.664531I$ $a = -1.55909 - 0.46475I$ $b = 0.696177 - 1.068770I$	$-1.39926 - 3.13546I$	$-8.28328 + 6.13398I$
$u = -0.428243 - 0.664531I$ $a = -1.38135 - 1.00825I$ $b = 0.644388 + 1.011590I$	$-1.39926 + 4.98407I$	$-8.28328 - 7.72243I$

Solutions to I_3^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.428243 - 0.664531I$ $a = 1.83610 - 0.25167I$ $b = -1.14936 + 1.56331I$	$-1.39926 + 4.98407I$	$-8.28328 - 7.72243I$
$u = -0.428243 - 0.664531I$ $a = 1.43866 + 1.35771I$ $b = -1.065770 - 0.881470I$	$-1.39926 + 4.98407I$	$-8.28328 - 7.72243I$
$u = -1.073950 + 0.558752I$ $a = -0.918192 + 0.038272I$ $b = 0.295211 + 0.810996I$	$-3.28987 + 1.63325I$	$-12.00000 + 1.41763I$
$u = -1.073950 + 0.558752I$ $a = -0.408987 + 0.794851I$ $b = -0.234870 + 1.115430I$	$-3.28987 + 1.63325I$	$-12.00000 + 1.41763I$
$u = -1.073950 + 0.558752I$ $a = 0.871839 + 0.152692I$ $b = -0.048095 - 0.363748I$	$-3.28987 + 1.63325I$	$-12.00000 + 1.41763I$
$u = -1.073950 + 0.558752I$ $a = -0.602261 - 0.354328I$ $b = -0.92695 + 1.50690I$	$-3.28987 + 1.63325I$	$-12.00000 + 1.41763I$
$u = -1.073950 + 0.558752I$ $a = 0.75465 + 1.25519I$ $b = 1.59249 - 1.70119I$	$-3.28987 + 9.75279I$	$-12.0000 - 12.4388I$
$u = -1.073950 + 0.558752I$ $a = 0.30374 - 1.56582I$ $b = -0.111915 - 0.755296I$	$-3.28987 + 9.75279I$	$-12.0000 - 12.4388I$
$u = -1.073950 + 0.558752I$ $a = -1.95539 + 0.89217I$ $b = 1.26240 + 1.08359I$	$-3.28987 + 9.75279I$	$-12.0000 - 12.4388I$
$u = -1.073950 + 0.558752I$ $a = 2.11344 - 0.77539I$ $b = -0.754320 - 1.137930I$	$-3.28987 + 9.75279I$	$-12.0000 - 12.4388I$

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.073950 - 0.558752I$ $a = -0.918192 - 0.038272I$ $b = 0.295211 - 0.810996I$	$-3.28987 - 1.63325I$	$-12.00000 - 1.41763I$
$u = -1.073950 - 0.558752I$ $a = -0.408987 - 0.794851I$ $b = -0.234870 - 1.115430I$	$-3.28987 - 1.63325I$	$-12.00000 - 1.41763I$
$u = -1.073950 - 0.558752I$ $a = 0.871839 - 0.152692I$ $b = -0.048095 + 0.363748I$	$-3.28987 - 1.63325I$	$-12.00000 - 1.41763I$
$u = -1.073950 - 0.558752I$ $a = -0.602261 + 0.354328I$ $b = -0.92695 - 1.50690I$	$-3.28987 - 1.63325I$	$-12.00000 - 1.41763I$
$u = -1.073950 - 0.558752I$ $a = 0.75465 - 1.25519I$ $b = 1.59249 + 1.70119I$	$-3.28987 - 9.75279I$	$-12.0000 + 12.4388I$
$u = -1.073950 - 0.558752I$ $a = 0.30374 + 1.56582I$ $b = -0.111915 + 0.755296I$	$-3.28987 - 9.75279I$	$-12.0000 + 12.4388I$
$u = -1.073950 - 0.558752I$ $a = -1.95539 - 0.89217I$ $b = 1.26240 - 1.08359I$	$-3.28987 - 9.75279I$	$-12.0000 + 12.4388I$
$u = -1.073950 - 0.558752I$ $a = 2.11344 + 0.77539I$ $b = -0.754320 + 1.137930I$	$-3.28987 - 9.75279I$	$-12.0000 + 12.4388I$

IV. $\boldsymbol{I^u_4 = \langle 29259u^5a^3 + 22409u^5a^2 + \cdots + 58215a + 25537,\ -u^5a^3 + u^5a + \cdots + a^4 + 2a,\ u^6 + u^5 - u^4 - 2u^3 + u + 1\rangle}$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u^2+1 \\ u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} a \\ -0.333957a^3u^5 - 0.255773a^2u^5 + \cdots - 0.664456a - 0.291475 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u \\ -u^3+u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0.258375a^3u^5 + 0.626642a^2u^5 + \cdots + 0.968806a + 0.435118 \\ -0.424663a^3u^5 - 0.139146a^2u^5 + \cdots - 1.60531a - 0.730839 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0.103489a^3u^5 - 0.0715305a^2u^5 + \cdots + 0.944346a + 1.67934 \\ -0.00241973a^3u^5 - 0.0406789a^2u^5 + \cdots - 0.479233a - 0.813281 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0.409540a^3u^5 - 0.115097a^2u^5 + \cdots + 0.360106a + 0.147832 \\ -0.0755824a^3u^5 + 0.370870a^2u^5 + \cdots - 0.695650a + 0.143643 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0.333957a^3u^5 + 0.255773a^2u^5 + \cdots - 0.335544a + 0.291475 \\ -0.333957a^3u^5 - 0.255773a^2u^5 + \cdots - 0.664456a - 0.291475 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0.142741a^3u^5 + 0.305331a^2u^5 + \cdots - 0.0788582a + 1.27780 \\ -0.326595a^3u^5 - 0.207481a^2u^5 + \cdots - 0.635659a - 1.67560 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0.142741a^3u^5 + 0.305331a^2u^5 + \cdots - 0.0788582a + 1.27780 \\ -0.326595a^3u^5 - 0.207481a^2u^5 + \cdots - 0.635659a - 1.67560 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{84848}{87613}u^5a^3 + \frac{222968}{87613}u^5a^2 + \cdots + \frac{15672}{87613}a + \frac{372470}{87613}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_7	$(u^6 + u^5 - u^4 - 2u^3 + u + 1)^4$
c_2	$(u^6 + 3u^5 + 5u^4 + 4u^3 + 2u^2 + u + 1)^4$
c_3, c_8	$(u^2 + u + 1)^{12}$
c_4, c_6, c_9 c_{11}	$u^{24} + u^{23} + \cdots + 4u + 1$
c_5, c_{10}	$u^{24} + 3u^{23} + \cdots + 114u + 31$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_7	$(y^6 - 3y^5 + 5y^4 - 4y^3 + 2y^2 - y + 1)^4$
c_2	$(y^6 + y^5 + 5y^4 + 6y^2 + 3y + 1)^4$
c_3, c_8	$(y^2 + y + 1)^{12}$
c_4, c_6, c_9 c_{11}	$y^{24} + 3y^{23} + \cdots - 8y + 1$
c_5, c_{10}	$y^{24} + 15y^{23} + \cdots + 25444y + 961$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.002190 + 0.295542I$ $a = 0.337338 + 0.829459I$ $b = -0.199854 - 0.781144I$	$-1.89061 - 4.98407I$	$-3.71672 + 7.72243I$
$u = 1.002190 + 0.295542I$ $a = -0.781973 + 0.104129I$ $b = 0.776686 + 0.745871I$	$-1.89061 + 3.13546I$	$-3.71672 - 6.13398I$
$u = 1.002190 + 0.295542I$ $a = 0.48786 + 1.59395I$ $b = -0.589768 + 0.819748I$	$-1.89061 - 4.98407I$	$-3.71672 + 7.72243I$
$u = 1.002190 + 0.295542I$ $a = -1.72936 - 0.60119I$ $b = -0.41531 - 1.44901I$	$-1.89061 + 3.13546I$	$-3.71672 - 6.13398I$
$u = 1.002190 - 0.295542I$ $a = 0.337338 - 0.829459I$ $b = -0.199854 + 0.781144I$	$-1.89061 + 4.98407I$	$-3.71672 - 7.72243I$
$u = 1.002190 - 0.295542I$ $a = -0.781973 - 0.104129I$ $b = 0.776686 - 0.745871I$	$-1.89061 - 3.13546I$	$-3.71672 + 6.13398I$
$u = 1.002190 - 0.295542I$ $a = 0.48786 - 1.59395I$ $b = -0.589768 - 0.819748I$	$-1.89061 + 4.98407I$	$-3.71672 - 7.72243I$
$u = 1.002190 - 0.295542I$ $a = -1.72936 + 0.60119I$ $b = -0.41531 + 1.44901I$	$-1.89061 - 3.13546I$	$-3.71672 + 6.13398I$
$u = -0.428243 + 0.664531I$ $a = 0.755292 + 1.009740I$ $b = -0.371900 - 0.003878I$	$1.89061 + 3.13546I$	$3.71672 - 6.13398I$
$u = -0.428243 + 0.664531I$ $a = -1.245150 - 0.328581I$ $b = 1.128940 + 0.724032I$	$1.89061 + 3.13546I$	$3.71672 - 6.13398I$

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.428243+0.664531I$ $a=-1.09300+1.05874I$ $b=1.06242-1.34996I$	$1.89061-4.98407I$	$3.71672+7.72243I$
$u=-0.428243+0.664531I$ $a=1.92783-0.97509I$ $b=-0.817270+0.334261I$	$1.89061-4.98407I$	$3.71672+7.72243I$
$u=-0.428243-0.664531I$ $a=0.755292-1.009740I$ $b=-0.371900+0.003878I$	$1.89061-3.13546I$	$3.71672+6.13398I$
$u=-0.428243-0.664531I$ $a=-1.245150+0.328581I$ $b=1.128940-0.724032I$	$1.89061-3.13546I$	$3.71672+6.13398I$
$u=-0.428243-0.664531I$ $a=-1.09300-1.05874I$ $b=1.06242+1.34996I$	$1.89061+4.98407I$	$3.71672-7.72243I$
$u=-0.428243-0.664531I$ $a=1.92783+0.97509I$ $b=-0.817270-0.334261I$	$1.89061+4.98407I$	$3.71672-7.72243I$
$u=-1.073950+0.558752I$ $a=0.124813-1.010030I$ $b=-1.214610+0.323938I$	$1.63325I$	$0.+1.41763I$
$u=-1.073950+0.558752I$ $a=-0.583237+0.928763I$ $b=0.193738+0.326753I$	$1.63325I$	$0.+1.41763I$
$u=-1.073950+0.558752I$ $a=-1.77856+0.70986I$ $b=0.991934+0.425381I$	$9.75279I$	$0.-12.43877I$
$u=-1.073950+0.558752I$ $a=2.07814-1.06623I$ $b=-1.04502-1.63482I$	$9.75279I$	$0.-12.43877I$

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.073950 - 0.558752I$ $a = \quad 0.124813 + 1.010030I$ $b = -1.214610 - 0.323938I$	$-1.63325I$	$0. - 1.41763I$
$u = -1.073950 - 0.558752I$ $a = -0.583237 - 0.928763I$ $b = \quad 0.193738 - 0.326753I$	$-1.63325I$	$0. - 1.41763I$
$u = -1.073950 - 0.558752I$ $a = -1.77856 - 0.70986I$ $b = \quad 0.991934 - 0.425381I$	$-9.75279I$	$0. + 12.43877I$
$u = -1.073950 - 0.558752I$ $a = \quad 2.07814 + 1.06623I$ $b = -1.04502 + 1.63482I$	$-9.75279I$	$0. + 12.43877I$

V. $I^u_5 =$ $\langle 5u^{21}-u^{20}+\cdots+2b-5,\ 22u^{21}-27u^{20}+\cdots+6a+3,\ u^{22}-8u^{20}+\cdots+8u^2-3\rangle$

(i) Arc colorings

$$a_1 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_7 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_2 = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_3 = \begin{pmatrix}-u^2+1\\u^2\end{pmatrix}$$
$$a_5 = \begin{pmatrix}-\frac{11}{3}u^{21}+\frac{9}{2}u^{20}+\cdots+\frac{19}{6}u-\frac{1}{2}\\-\frac{5}{2}u^{21}+\frac{1}{2}u^{20}+\cdots-\frac{23}{2}u+\frac{5}{2}\end{pmatrix}$$
$$a_8 = \begin{pmatrix}-u\\-u^3+u\end{pmatrix}$$
$$a_4 = \begin{pmatrix}-\frac{25}{6}u^{21}+5u^{20}+\cdots+\frac{2}{3}u+7\\-2u^{21}-\frac{3}{2}u^{20}+\cdots-\frac{21}{2}u-\frac{7}{2}\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-\frac{5}{3}u^{21}+3u^{20}+\cdots-\frac{41}{6}u+\frac{17}{2}\\3u^{21}+2u^{20}+\cdots+\frac{5}{2}u+4\end{pmatrix}$$
$$a_9 = \begin{pmatrix}\frac{7}{6}u^{21}-2u^{20}+\cdots+\frac{4}{3}u-\frac{21}{2}\\5u^{21}+7u^{20}+\cdots+7u+\frac{25}{2}\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}-\frac{5}{6}u^{21}-\frac{5}{2}u^{20}+\cdots-\frac{8}{3}u-\frac{23}{2}\\\frac{9}{2}u^{21}+7u^{20}+\cdots-\frac{1}{2}u+11\end{pmatrix}$$
$$a_6 = \begin{pmatrix}-\frac{4}{3}u^{21}+3u^{20}+\cdots-\frac{2}{3}u+\frac{5}{2}\\3u^{21}-22u^{19}+\cdots+\frac{17}{2}u+5\end{pmatrix}$$

$$a_6 = \begin{pmatrix}-\frac{4}{3}u^{21}+3u^{20}+\cdots-\frac{2}{3}u+\frac{5}{2}\\3u^{21}-22u^{19}+\cdots+\frac{17}{2}u+5\end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes
$= -21u^{20}+149u^{18}-468u^{16}+901u^{14}-1086u^{12}+816u^{10}-304u^8+31u^6-53u^4+110u^2-51$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_7	$u^{22} - 8u^{20} + \cdots + 8u^2 - 3$
c_2	$(u^{11} + 8u^{10} + \cdots + 8u + 3)^2$
c_3, c_8	$u^{22} - 8u^{21} + \cdots - u - 1$
c_4, c_6, c_9 c_{11}	$u^{22} - 2u^{21} + \cdots - 4u - 1$
c_5, c_{10}	$(u^{11} + u^{10} - 3u^9 - 4u^8 + 4u^7 + 5u^6 - 5u^5 - 4u^4 + 8u^3 + 2u^2 - u + 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_7	$(y^{11} - 8y^{10} + \cdots + 8y - 3)^2$
c_2	$(y^{11} - 6y^{10} + \cdots + 16y - 9)^2$
c_3, c_8	$y^{22} - 16y^{21} + \cdots - 11y + 1$
c_4, c_6, c_9 c_{11}	$y^{22} + 8y^{21} + \cdots - 28y + 1$
c_5, c_{10}	$(y^{11} - 7y^{10} + \cdots - 3y - 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.960008 + 0.311265I$ $a = 2.13610 - 2.32098I$ $b = -0.953626 - 0.297733I$	$-4.63619 - 2.72788I$	$-3.55265 - 2.90330I$
$u = -0.960008 - 0.311265I$ $a = 2.13610 + 2.32098I$ $b = -0.953626 + 0.297733I$	$-4.63619 + 2.72788I$	$-3.55265 + 2.90330I$
$u = 0.960008 + 0.311265I$ $a = 0.557092 + 0.459872I$ $b = 0.57629 + 1.32709I$	$-4.63619 + 2.72788I$	$-3.55265 + 2.90330I$
$u = 0.960008 - 0.311265I$ $a = 0.557092 - 0.459872I$ $b = 0.57629 - 1.32709I$	$-4.63619 - 2.72788I$	$-3.55265 - 2.90330I$
$u = -0.917066 + 0.263679I$ $a = -2.01041 + 2.78490I$ $b = 0.905203 + 0.036742I$	$-4.39205 + 5.08643I$	$-2.94559 - 9.60994I$
$u = -0.917066 - 0.263679I$ $a = -2.01041 - 2.78490I$ $b = 0.905203 - 0.036742I$	$-4.39205 - 5.08643I$	$-2.94559 + 9.60994I$
$u = 0.917066 + 0.263679I$ $a = 0.123926 + 0.668097I$ $b = -0.290016 + 1.220730I$	$-4.39205 - 5.08643I$	$-2.94559 + 9.60994I$
$u = 0.917066 - 0.263679I$ $a = 0.123926 - 0.668097I$ $b = -0.290016 - 1.220730I$	$-4.39205 + 5.08643I$	$-2.94559 - 9.60994I$
$u = 0.958173 + 0.586442I$ $a = 0.520358 + 0.305725I$ $b = 0.274503 + 1.358430I$	$-3.10505 - 2.43732I$	$-10.07137 + 9.32376I$
$u = 0.958173 - 0.586442I$ $a = 0.520358 - 0.305725I$ $b = 0.274503 - 1.358430I$	$-3.10505 + 2.43732I$	$-10.07137 - 9.32376I$

Solutions to I_5^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.958173+0.586442I$ $a=-1.026600-0.216633I$ $b=\quad 0.277789+0.634862I$	$-3.10505+2.43732I$	$-10.07137-9.32376I$
$u=-0.958173-0.586442I$ $a=-1.026600+0.216633I$ $b=\quad 0.277789-0.634862I$	$-3.10505-2.43732I$	$-10.07137+9.32376I$
$u=-1.091460+0.565363I$ $a=-1.90932+0.88290I$ $b=\quad 1.01015+1.08285I$	$-2.38202+9.18219I$	$-3.93831-7.03572I$
$u=-1.091460-0.565363I$ $a=-1.90932-0.88290I$ $b=\quad 1.01015-1.08285I$	$-2.38202-9.18219I$	$-3.93831+7.03572I$
$u=\quad 1.091460+0.565363I$ $a=-0.359824-0.126466I$ $b=-0.478799-0.895773I$	$-2.38202-9.18219I$	$-3.93831+7.03572I$
$u=\quad 1.091460-0.565363I$ $a=-0.359824+0.126466I$ $b=-0.478799+0.895773I$	$-2.38202+9.18219I$	$-3.93831-7.03572I$
$u=\quad 0.261071+0.718323I$ $a=-0.628641+0.084315I$ $b=\quad 0.025215-0.703097I$	$-0.17337+4.31510I$	$-2.70293-4.01489I$
$u=\quad 0.261071-0.718323I$ $a=-0.628641-0.084315I$ $b=\quad 0.025215+0.703097I$	$-0.17337-4.31510I$	$-2.70293+4.01489I$
$u=-0.261071+0.718323I$ $a=\quad 1.53803-0.65442I$ $b=-0.865680+0.991862I$	$-0.17337-4.31510I$	$-2.70293+4.01489I$
$u=-0.261071-0.718323I$ $a=\quad 1.53803+0.65442I$ $b=-0.865680-0.991862I$	$-0.17337+4.31510I$	$-2.70293-4.01489I$

Solutions to I_5^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.67677$ $a = 0.269386$ $b = 1.20909$	-6.81120	-59.5780
$u = -1.67677$ $a = -0.150821$ $b = -0.171150$	-6.81120	-59.5780

VI. $\boldsymbol{I^u_6 = \langle -u^5 - u^4 - u^2a - au + u^2 + b + u + 1,\ u^5a + 2u^4a + \cdots + a^2 + 2u,\ u^6 + u^5 - u^4 - 2u^3 + u + 1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 4u^4 - 4u^2 - 4u - 10$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_7	$(u^6+u^5-u^4-2u^3+u+1)^2$
c_2	$(u^6+3u^5+5u^4+4u^3+2u^2+u+1)^2$
c_3, c_8	$(u+1)^{12}$
c_4, c_6, c_9 c_{11}	$u^{12}-u^{11}+2u^{10}+2u^9+3u^8+3u^7+17u^6+9u^5+19u^4+5u^3+6u^2+1$
c_5, c_{10}	$(u^6-u^5-u^4+2u^3-u+1)^2$

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_6^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.002190 + 0.295542I$ $a = 1.207500 - 0.512559I$ $b = 0.51345 + 1.52069I$	$-5.18047 - 0.92430I$	$-15.7167 + 0.7942I$
$u = 1.002190 + 0.295542I$ $a = 0.47863 - 1.41379I$ $b = -0.085204 - 0.856161I$	$-5.18047 - 0.92430I$	$-15.7167 + 0.7942I$
$u = 1.002190 - 0.295542I$ $a = 1.207500 + 0.512559I$ $b = 0.51345 - 1.52069I$	$-5.18047 + 0.92430I$	$-15.7167 - 0.7942I$
$u = 1.002190 - 0.295542I$ $a = 0.47863 + 1.41379I$ $b = -0.085204 + 0.856161I$	$-5.18047 + 0.92430I$	$-15.7167 - 0.7942I$
$u = -0.428243 + 0.664531I$ $a = -1.241310 + 0.272628I$ $b = 0.170133 - 0.403810I$	$-1.39926 - 0.92430I$	$-8.28328 + 0.79423I$
$u = -0.428243 + 0.664531I$ $a = 0.896343 - 1.037440I$ $b = -1.172330 + 0.699352I$	$-1.39926 - 0.92430I$	$-8.28328 + 0.79423I$
$u = -0.428243 - 0.664531I$ $a = -1.241310 - 0.272628I$ $b = 0.170133 + 0.403810I$	$-1.39926 + 0.92430I$	$-8.28328 - 0.79423I$
$u = -0.428243 - 0.664531I$ $a = 0.896343 + 1.037440I$ $b = -1.172330 - 0.699352I$	$-1.39926 + 0.92430I$	$-8.28328 - 0.79423I$
$u = -1.073950 + 0.558752I$ $a = 1.69281 - 0.56928I$ $b = -0.344080 - 0.571978I$	$-3.28987 + 5.69302I$	$-12.00000 - 5.51057I$
$u = -1.073950 + 0.558752I$ $a = -1.53397 + 1.00692I$ $b = 1.41803 + 1.13073I$	$-3.28987 + 5.69302I$	$-12.00000 - 5.51057I$

Solutions to I_6^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.073950-0.558752I$ $a=\ \ 1.69281+0.56928I$ $b=-0.344080+0.571978I$	$-3.28987-5.69302I$	$-12.00000+5.51057I$
$u=-1.073950-0.558752I$ $a=-1.53397-1.00692I$ $b=\ \ 1.41803-1.13073I$	$-3.28987-5.69302I$	$-12.00000+5.51057I$

VII. $\boldsymbol{I^u_7 = \langle -u^5 + u^3 + b - u,\ u^5 - 2u^3 + a + u,\ u^6 - u^5 - u^4 + 2u^3 - u + 1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

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

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_7^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.002190+0.295542I$ $a=-0.315740+0.200172I$ $b=-0.428243+0.664531I$	$-1.89061+0.92430I$	$-3.71672-0.79423I$
$u=-1.002190-0.295542I$ $a=-0.315740-0.200172I$ $b=-0.428243-0.664531I$	$-1.89061-0.92430I$	$-3.71672+0.79423I$
$u=\ 0.428243+0.664531I$ $a=-1.49099-0.22339I$ $b=\ 1.002190+0.295542I$	$1.89061+0.92430I$	$3.71672-0.79423I$
$u=\ 0.428243-0.664531I$ $a=-1.49099+0.22339I$ $b=\ 1.002190-0.295542I$	$1.89061-0.92430I$	$3.71672+0.79423I$
$u=\ 1.073950+0.558752I$ $a=\ 1.30674+1.20014I$ $b=-1.073950+0.558752I$	$-\ 5.69302I$	$0.+5.51057I$
$u=\ 1.073950-0.558752I$ $a=\ 1.30674-1.20014I$ $b=-1.073950-0.558752I$	$5.69302I$	$0.-5.51057I$

VIII. $I_1^v = \langle a,\ b^2+b+1,\ v+1\rangle$

(i) Arc colorings

$$a_1 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_7 = \begin{pmatrix}-1\\0\end{pmatrix}$$
$$a_2 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_3 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_5 = \begin{pmatrix}0\\b\end{pmatrix}$$
$$a_8 = \begin{pmatrix}-1\\0\end{pmatrix}$$
$$a_4 = \begin{pmatrix}-b\\b\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}1\\-b-1\end{pmatrix}$$
$$a_9 = \begin{pmatrix}b\\-b\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}0\\-b\end{pmatrix}$$
$$a_6 = \begin{pmatrix}-1\\b+1\end{pmatrix}$$
$$a_6 = \begin{pmatrix}-1\\b+1\end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 8b+4$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = -1.00000$ $a = 0$ $b = -0.500000 + 0.866025I$	$-4.05977I$	$0. + 6.92820I$
$v = -1.00000$ $a = 0$ $b = -0.500000 - 0.866025I$	$4.05977I$	$0. - 6.92820I$

IX. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_7	$u^2(u^6-u^5-u^4+2u^3-u+1)(u^6+u^5-u^4-2u^3+u+1)^{14}$ $\cdot(u^7-3u^6+3u^5+2u^4-9u^3+13u^2-10u+4)^2$ $\cdot(u^{17}-6u^{16}+\cdots+28u-8)(u^{22}-8u^{20}+\cdots+8u^2-3)$
c_2	$u^2(u^6+3u^5+5u^4+4u^3+2u^2+u+1)^{15}$ $\cdot((u^7+3u^6+\cdots-4u+16)^2)(u^{11}+8u^{10}+\cdots+8u+3)^2$ $\cdot(u^{17}+10u^{16}+\cdots+208u+64)$
c_3, c_8	$u^6(u+1)^{12}(u^2-u+1)(u^2+u+1)^{12}(u^4+u^3-2u+1)^{12}$ $\cdot(u^{14}-15u^{13}+\cdots-1309u+187)(u^{17}-13u^{16}+\cdots+259u-47)$ $\cdot(u^{22}-8u^{21}+\cdots-u-1)$
c_4, c_6, c_9 c_{11}	$(u^2+u+1)(u^6+u^5-u^4-2u^3+u+1)$ $\cdot(u^{12}-u^{11}+2u^{10}+2u^9+3u^8+3u^7+17u^6+9u^5+19u^4+5u^3+6u^2+1)$ $\cdot(u^{14}+u^{13}+\cdots+4u+1)(u^{17}-u^{16}+\cdots+u-1)$ $\cdot(u^{22}-2u^{21}+\cdots-4u-1)(u^{24}+u^{23}+\cdots+4u+1)$ $\cdot(u^{48}-u^{47}+\cdots+258u+67)$
c_5, c_{10}	$(u^2-u+1)(u^6-u^5+\cdots-u+1)^2(u^6+u^5+\cdots+u+1)$ $\cdot(u^7-u^6+u^5-u^4+u^3+u-1)^2$ $\cdot(u^{11}+u^{10}-3u^9-4u^8+4u^7+5u^6-5u^5-4u^4+8u^3+2u^2-u+1)^2$ $\cdot(u^{17}+2u^{16}+\cdots-u+4)(u^{24}-u^{23}+\cdots-148u+43)^2$ $\cdot(u^{24}+3u^{23}+\cdots+114u+31)$

X. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_7	$y^2(y^6 - 3y^5 + 5y^4 - 4y^3 + 2y^2 - y + 1)^{15}$ $\cdot ((y^7 - 3y^6 + \cdots - 4y - 16)^2)(y^{11} - 8y^{10} + \cdots + 8y - 3)^2$ $\cdot (y^{17} - 10y^{16} + \cdots + 208y - 64)$
c_2	$y^2(y^6 + y^5 + 5y^4 + 6y^2 + 3y + 1)^{15}$ $\cdot (y^7 - 3y^6 - 5y^5 - 80y^4 - 71y^3 + 31y^2 - 144y - 256)^2$ $\cdot ((y^{11} - 6y^{10} + \cdots + 16y - 9)^2)(y^{17} - 6y^{16} + \cdots + 47360y - 4096)$
c_3, c_8	$y^6(y-1)^{12}(y^2 + y + 1)^{13}(y^4 - y^3 + 6y^2 - 4y + 1)^{12}$ $\cdot (y^{14} - 3y^{13} + \cdots - 5797y + 34969)$ $\cdot (y^{17} - 13y^{16} + \cdots - 7555y - 2209)(y^{22} - 16y^{21} + \cdots - 11y + 1)$
c_4, c_6, c_9 c_{11}	$(y^2 + y + 1)(y^6 - 3y^5 + 5y^4 - 4y^3 + 2y^2 - y + 1)$ $\cdot (y^{12} + 3y^{11} + \cdots + 12y + 1)(y^{14} - 3y^{13} + \cdots - 2y + 1)$ $\cdot (y^{17} - 5y^{16} + \cdots + 21y - 1)(y^{22} + 8y^{21} + \cdots - 28y + 1)$ $\cdot (y^{24} + 3y^{23} + \cdots - 8y + 1)(y^{48} + 21y^{47} + \cdots + 251016y + 4489)$
c_5, c_{10}	$(y^2 + y + 1)(y^6 - 3y^5 + 5y^4 - 4y^3 + 2y^2 - y + 1)^3$ $\cdot ((y^7 + y^6 + y^5 + 3y^4 + y^3 + y - 1)^2)(y^{11} - 7y^{10} + \cdots - 3y - 1)^2$ $\cdot (y^{17} - 12y^{16} + \cdots + 177y - 16)$ $\cdot (y^{24} - 21y^{23} + \cdots - 20872y + 1849)^2$ $\cdot (y^{24} + 15y^{23} + \cdots + 25444y + 961)$