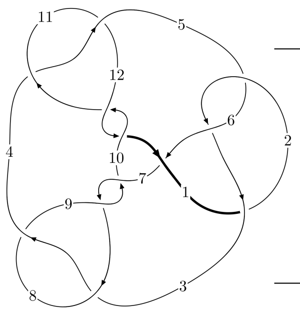
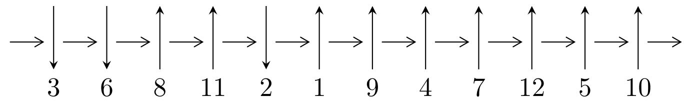
$12a_{0327}$ $(K12a_{0327})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -u^{23} - u^{22} + \cdots + 4b + 1,\ -u^6 + u^4 - 2u^2 + a + 1,\ u^{24} - u^{23} + \cdots - 3u^2 + 1 \rangle$$
$$I_2^u = \langle -1.28182 \times 10^{16} u^{51} - 5.11407 \times 10^{16} u^{50} + \cdots + 3.64498 \times 10^{17} b + 4.59559 \times 10^{17},$$
$$2.08375 \times 10^{17} u^{51} - 4.62594 \times 10^{17} u^{50} + \cdots + 7.28997 \times 10^{17} a + 2.74422 \times 10^{18},\ u^{52} - 2u^{51} + \cdots + 20u +$$
$$I_3^u = \langle u^3 + u^2 + b,\ -u^2 + a + 1,\ u^4 - u^2 + 1 \rangle$$
$$I_4^u = \langle b - u,\ a,\ u^{12} - u^{11} - 2u^{10} + 3u^9 + 2u^8 - 5u^7 + u^6 + 3u^5 - 2u^4 + 2u^2 - 2u + 1 \rangle$$
$$I_5^u = \langle a^3u^2 + 8a^3u + 5a^2u^2 + 10a^3 + 17a^2u - 57u^2a + 27a^2 - 42au - 60u^2 + 46b + 5a - 43u - 48,$$
$$a^4 - 2a^3u - 2a^2u^2 - a^2u - 6u^2a - a^2 + 3u^2 + 6a + 4u - 1,\ u^3 + u^2 - 1 \rangle$$
$$I_6^u = \langle b - u,\ a,\ u^3 + u^2 - 1 \rangle$$
$$I_7^u = \langle -u^2 + b - u + 1,\ a - 1,\ u^4 - u^2 + 1 \rangle$$
$$I_8^u = \langle u^2 + b - u,\ -u^2 + a + 1,\ u^4 - u^2 + 1 \rangle$$
$$I_9^u = \langle u^3 - u^2 + b + 1,\ a - 1,\ u^4 - u^2 + 1 \rangle$$

* 9 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 119 representations.

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[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.

$$I_1^u = \langle -u^{23} - u^{22} + \cdots + 4b + 1,\ -u^6 + u^4 - 2u^2 + a + 1,\ u^{24} - u^{23} + \cdots - 3u^2 + 1\rangle$$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^6 - u^4 + 2u^2 - 1 \\ \frac{1}{4}u^{23} + \frac{1}{4}u^{22} + \cdots + 2u^2 - \frac{1}{4} \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -\frac{1}{4}u^{23} + u^{21} + \cdots + \frac{1}{4}u - \frac{1}{2} \\ \frac{1}{2}u^{23} + \frac{1}{2}u^{22} + \cdots + 2u^2 - \frac{1}{2} \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u^2 + 1 \\ u^2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u^4 - u^2 + 1 \\ -u^4 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} \frac{1}{4}u^{23} - u^{21} + \cdots - \frac{1}{4}u + \frac{1}{2} \\ \frac{1}{4}u^{22} - \frac{1}{2}u^{21} + \cdots - \frac{1}{4}u - \frac{3}{4} \end{pmatrix}$$
$$a_5 = \begin{pmatrix} u \\ -\frac{1}{4}u^{23} + \frac{1}{4}u^{22} + \cdots + \frac{3}{2}u + \frac{1}{4} \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} u^2 - 1 \\ \frac{1}{4}u^{23} + \frac{1}{4}u^{22} + \cdots + 2u^2 - \frac{1}{4} \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ -\frac{1}{4}u^{23} + u^{21} + \cdots + \frac{1}{4}u + \frac{1}{2} \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$= u^{23} - \frac{5}{2}u^{22} + 6u^{20} - u^{19} - 21u^{18} + 19u^{17} + 29u^{16} - \frac{95}{2}u^{15} - 43u^{14} + \frac{193}{2}u^{13} + 31u^{12} - \frac{295}{2}u^{11} - 3u^{10} + 161u^9 - \frac{35}{2}u^8 - \frac{311}{2}u^7 + \frac{95}{2}u^6 + 95u^5 - \frac{61}{2}u^4 - 36u^3 + \frac{7}{2}u^2 + \frac{23}{2}u + \frac{15}{2}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{24} + 12u^{23} + \cdots + 56u + 16$
c_2, c_5	$u^{24} + 4u^{23} + \cdots + 12u + 4$
c_3, c_4, c_8 c_{11}	$u^{24} - u^{23} + \cdots - 3u^2 + 1$
c_6	$u^{24} + 12u^{23} + \cdots + 876u + 188$
c_7, c_9, c_{10} c_{12}	$u^{24} - 7u^{23} + \cdots - 6u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{24} + 24y^{22} + \cdots + 1760y + 256$
c_2, c_5	$y^{24} - 12y^{23} + \cdots - 56y + 16$
c_3, c_4, c_8 c_{11}	$y^{24} - 7y^{23} + \cdots - 6y + 1$
c_6	$y^{24} + 12y^{23} + \cdots - 37560y + 35344$
c_7, c_9, c_{10} c_{12}	$y^{24} + 25y^{23} + \cdots + 6y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.997654 + 0.063385I$ $a = 0.942467 - 0.373018I$ $b = 0.114843 + 0.496939I$	$5.25543 - 0.92360I$	$15.9667 + 0.9405I$
$u = -0.997654 - 0.063385I$ $a = 0.942467 + 0.373018I$ $b = 0.114843 - 0.496939I$	$5.25543 + 0.92360I$	$15.9667 - 0.9405I$
$u = 1.001330 + 0.130771I$ $a = 0.822888 + 0.752742I$ $b = 0.402636 - 1.030140I$	$3.57553 + 5.62812I$	$12.5450 - 6.6163I$
$u = 1.001330 - 0.130771I$ $a = 0.822888 - 0.752742I$ $b = 0.402636 + 1.030140I$	$3.57553 - 5.62812I$	$12.5450 + 6.6163I$
$u = -0.760211 + 0.865552I$ $a = 1.24479 - 0.91941I$ $b = -2.02625 - 0.25873I$	$-7.41712 - 0.40141I$	$2.13735 + 2.27627I$
$u = -0.760211 - 0.865552I$ $a = 1.24479 + 0.91941I$ $b = -2.02625 + 0.25873I$	$-7.41712 + 0.40141I$	$2.13735 - 2.27627I$
$u = 0.729818 + 0.904919I$ $a = 1.56496 + 1.41813I$ $b = -2.37154 + 0.16884I$	$-10.52250 - 4.79311I$	$-0.73258 + 1.28832I$
$u = 0.729818 - 0.904919I$ $a = 1.56496 - 1.41813I$ $b = -2.37154 - 0.16884I$	$-10.52250 + 4.79311I$	$-0.73258 - 1.28832I$
$u = 0.925994 + 0.739498I$ $a = -0.317422 - 0.284084I$ $b = -0.032960 - 1.025040I$	$-2.70773 + 8.50857I$	$3.70396 - 8.56767I$
$u = 0.925994 - 0.739498I$ $a = -0.317422 + 0.284084I$ $b = -0.032960 + 1.025040I$	$-2.70773 - 8.50857I$	$3.70396 + 8.56767I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.820795 + 0.890761I$ $a = 1.65081 + 0.21101I$ $b = -1.82529 + 0.81637I$	$-12.04400 + 4.45797I$	$-1.81976 - 4.80562I$
$u = 0.820795 - 0.890761I$ $a = 1.65081 - 0.21101I$ $b = -1.82529 - 0.81637I$	$-12.04400 - 4.45797I$	$-1.81976 + 4.80562I$
$u = 1.024520 + 0.763888I$ $a = -1.15966 - 1.14324I$ $b = 2.19721 - 0.55212I$	$-5.73077 + 11.79410I$	$4.86199 - 7.29279I$
$u = 1.024520 - 0.763888I$ $a = -1.15966 + 1.14324I$ $b = 2.19721 + 0.55212I$	$-5.73077 - 11.79410I$	$4.86199 + 7.29279I$
$u = -1.004430 + 0.806604I$ $a = -0.56218 + 1.55066I$ $b = 1.64632 - 0.45435I$	$-10.85360 - 8.18091I$	$-0.32980 + 5.06079I$
$u = -1.004430 - 0.806604I$ $a = -0.56218 - 1.55066I$ $b = 1.64632 + 0.45435I$	$-10.85360 + 8.18091I$	$-0.32980 - 5.06079I$
$u = -0.602609 + 0.358517I$ $a = -0.517620 - 0.652115I$ $b = 0.102178 - 1.019880I$	$0.06490 - 4.25573I$	$5.05969 + 5.51828I$
$u = -0.602609 - 0.358517I$ $a = -0.517620 + 0.652115I$ $b = 0.102178 + 1.019880I$	$0.06490 + 4.25573I$	$5.05969 - 5.51828I$
$u = -1.051550 + 0.766917I$ $a = -1.53210 + 1.34344I$ $b = 2.87795 + 0.47141I$	$-8.4633 - 17.2201I$	$2.43977 + 10.58669I$
$u = -1.051550 - 0.766917I$ $a = -1.53210 - 1.34344I$ $b = 2.87795 - 0.47141I$	$-8.4633 + 17.2201I$	$2.43977 - 10.58669I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.638863 + 0.153437I$ $a = -0.327734 + 0.320762I$ $b = 0.626252 + 0.329284I$	$1.105580 + 0.097930I$	$9.88722 - 0.56674I$
$u = 0.638863 - 0.153437I$ $a = -0.327734 - 0.320762I$ $b = 0.626252 - 0.329284I$	$1.105580 - 0.097930I$	$9.88722 + 0.56674I$
$u = -0.224865 + 0.471112I$ $a = -1.309200 - 0.505527I$ $b = -0.211349 - 0.055814I$	$-1.61046 + 1.10126I$	$-1.71956 - 0.90297I$
$u = -0.224865 - 0.471112I$ $a = -1.309200 + 0.505527I$ $b = -0.211349 + 0.055814I$	$-1.61046 - 1.10126I$	$-1.71956 + 0.90297I$

II. $\boldsymbol{I_2^u = \langle -1.28 \times 10^{16} u^{51} - 5.11 \times 10^{16} u^{50} + \cdots + 3.64 \times 10^{17} b + 4.60 \times 10^{17},\ 2.08 \times 10^{17} u^{51} - 4.63 \times 10^{17} u^{50} + \cdots + 7.29 \times 10^{17} a + 2.74 \times 10^{18},\ u^{52} - 2u^{51} + \cdots + 20u + 4\rangle}$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -0.285839u^{51} + 0.634563u^{50} + \cdots - 11.9888u - 3.76438 \\ 0.0351666u^{51} + 0.140304u^{50} + \cdots - 7.18667u - 1.26080 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -0.376087u^{51} + 0.637127u^{50} + \cdots - 10.2579u - 3.06437 \\ -0.0536490u^{51} + 0.328407u^{50} + \cdots - 4.99796u - 1.24908 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u^2 + 1 \\ u^2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u^4 - u^2 + 1 \\ -u^4 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -0.0501715u^{51} + 0.417802u^{50} + \cdots - 9.11537u - 4.14850 \\ -0.102327u^{51} - 0.0485043u^{50} + \cdots - 8.90760u - 1.99867 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0.0611096u^{51} - 0.333673u^{50} + \cdots + 7.08230u - 1.32447 \\ -0.120328u^{51} + 0.230313u^{50} + \cdots + 6.03865u + 0.284922 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -0.336174u^{51} + 0.534328u^{50} + \cdots - 6.12727u - 2.93706 \\ 0.185608u^{51} + 0.186049u^{50} + \cdots - 7.63784u - 1.44011 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -0.222742u^{51} + 0.513738u^{50} + \cdots + 5.05004u + 4.21170 \\ 0.221796u^{51} - 0.742510u^{50} + \cdots - 0.144816u + 0.763127 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $=$
$$\frac{175172589829383178}{91124580510363867}u^{51} - \frac{434551767463876444}{91124580510363867}u^{50} + \cdots + \frac{784093020302745154}{91124580510363867}u + \frac{353320257970419306}{30374860170121289}$$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^{26}+15u^{25}+\cdots+4u+1)^2$
c_2, c_5	$(u^{26}-u^{25}+\cdots-2u^2+1)^2$
c_3, c_4, c_8 c_{11}	$u^{52}-2u^{51}+\cdots+20u+4$
c_6	$(u^{26}-3u^{25}+\cdots+4u+1)^2$
c_7, c_9, c_{10} c_{12}	$u^{52}-16u^{51}+\cdots-152u+16$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^{26} - 3y^{25} + \cdots - 16y + 1)^2$
c_2, c_5	$(y^{26} - 15y^{25} + \cdots - 4y + 1)^2$
c_3, c_4, c_8 c_{11}	$y^{52} - 16y^{51} + \cdots - 152y + 16$
c_6	$(y^{26} + 21y^{25} + \cdots - 68y + 1)^2$
c_7, c_9, c_{10} c_{12}	$y^{52} + 40y^{51} + \cdots + 78048y + 256$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.752589 + 0.686692I$ $a = -1.19861 - 1.00203I$ $b = 1.75066 - 0.28301I$	$0.134724 - 0.617454I$	$7.60333 + 0.92062I$
$u = 0.752589 - 0.686692I$ $a = -1.19861 + 1.00203I$ $b = 1.75066 + 0.28301I$	$0.134724 + 0.617454I$	$7.60333 - 0.92062I$
$u = 1.021920 + 0.291673I$ $a = -0.675586 - 0.356154I$ $b = 0.0136506 - 0.1110620I$	$0.134724 + 0.617454I$	$7.60333 - 0.92062I$
$u = 1.021920 - 0.291673I$ $a = -0.675586 + 0.356154I$ $b = 0.0136506 + 0.1110620I$	$0.134724 - 0.617454I$	$7.60333 + 0.92062I$
$u = -0.842250 + 0.401014I$ $a = -0.301397 + 0.041356I$ $b = -0.014640 - 1.010940I$	$0.11473 - 4.15162I$	$6.01126 + 6.89813I$
$u = -0.842250 - 0.401014I$ $a = -0.301397 - 0.041356I$ $b = -0.014640 + 1.010940I$	$0.11473 + 4.15162I$	$6.01126 - 6.89813I$
$u = -0.752492 + 0.788189I$ $a = -1.69455 + 1.94272I$ $b = 2.70085 - 0.03238I$	$-2.50569 + 4.90020I$	$3.66047 - 4.25570I$
$u = -0.752492 - 0.788189I$ $a = -1.69455 - 1.94272I$ $b = 2.70085 + 0.03238I$	$-2.50569 - 4.90020I$	$3.66047 + 4.25570I$
$u = 0.951867 + 0.554822I$ $a = -1.110860 + 0.329191I$ $b = 0.36805 - 1.46263I$	-0.330999	$4.51777 + 0.I$
$u = 0.951867 - 0.554822I$ $a = -1.110860 - 0.329191I$ $b = 0.36805 + 1.46263I$	-0.330999	$4.51777 + 0.I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.084340+0.227015I$ $a=\;\;0.703611-0.413455I$ $b=\;\;0.194210-0.006182I$	$0.74787-5.97219I$	$9.15925+6.03254I$
$u=-1.084340-0.227015I$ $a=\;\;0.703611+0.413455I$ $b=\;\;0.194210+0.006182I$	$0.74787+5.97219I$	$9.15925-6.03254I$
$u=-0.885563+0.095980I$ $a=\;\;1.47605+0.13629I$ $b=-0.239465-1.096400I$	$2.16312-4.62114I$	$11.65491+5.89029I$
$u=-0.885563-0.095980I$ $a=\;\;1.47605-0.13629I$ $b=-0.239465+1.096400I$	$2.16312+4.62114I$	$11.65491-5.89029I$
$u=-0.988091+0.542376I$ $a=\;\;0.473259+0.644867I$ $b=\;\;0.136840-1.204680I$	$-1.24430-4.51893I$	$1.06028+5.49831I$
$u=-0.988091-0.542376I$ $a=\;\;0.473259-0.644867I$ $b=\;\;0.136840+1.204680I$	$-1.24430+4.51893I$	$1.06028-5.49831I$
$u=\;\;0.652457+0.571498I$ $a=\;\;0.98577-1.47704I$ $b=\;\;0.58799+1.32773I$	$-1.24430+4.51893I$	$1.06028-5.49831I$
$u=\;\;0.652457-0.571498I$ $a=\;\;0.98577+1.47704I$ $b=\;\;0.58799-1.32773I$	$-1.24430-4.51893I$	$1.06028+5.49831I$
$u=\;\;0.722344+0.873653I$ $a=-1.27009-0.90834I$ $b=\;\;2.02407-0.21519I$	$-6.66680-5.70836I$	$3.28436+2.61089I$
$u=\;\;0.722344-0.873653I$ $a=-1.27009+0.90834I$ $b=\;\;2.02407+0.21519I$	$-6.66680+5.70836I$	$3.28436-2.61089I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.971674 + 0.598016I$ $a = -0.392194 - 0.140230I$ $b = 0.003048 - 0.949049I$	$2.16312 + 4.62114I$	$11.65491 - 5.89029I$
$u = 0.971674 - 0.598016I$ $a = -0.392194 + 0.140230I$ $b = 0.003048 + 0.949049I$	$2.16312 - 4.62114I$	$11.65491 + 5.89029I$
$u = -0.695608 + 0.907900I$ $a = -1.66112 + 1.35074I$ $b = 2.39253 + 0.23778I$	$-9.5709 + 11.0305I$	$0.68896 - 6.00028I$
$u = -0.695608 - 0.907900I$ $a = -1.66112 - 1.35074I$ $b = 2.39253 - 0.23778I$	$-9.5709 - 11.0305I$	$0.68896 + 6.00028I$
$u = -0.128928 + 0.836166I$ $a = 0.704339 - 0.655474I$ $b = -0.253889 - 0.601697I$	$-6.22742 - 7.20928I$	$-0.73612 + 6.27610I$
$u = -0.128928 - 0.836166I$ $a = 0.704339 + 0.655474I$ $b = -0.253889 + 0.601697I$	$-6.22742 + 7.20928I$	$-0.73612 - 6.27610I$
$u = 0.834456 + 0.812598I$ $a = 1.21182 + 1.89134I$ $b = -2.39545 - 0.28919I$	$-6.53686 - 1.23377I$	$-1.59190 + 0.83965I$
$u = 0.834456 - 0.812598I$ $a = 1.21182 - 1.89134I$ $b = -2.39545 + 0.28919I$	$-6.53686 + 1.23377I$	$-1.59190 - 0.83965I$
$u = 0.054522 + 0.827933I$ $a = -0.782373 - 0.644964I$ $b = 0.272506 - 0.513614I$	$-6.53686 + 1.23377I$	$-1.59190 - 0.83965I$
$u = 0.054522 - 0.827933I$ $a = -0.782373 + 0.644964I$ $b = 0.272506 + 0.513614I$	$-6.53686 - 1.23377I$	$-1.59190 + 0.83965I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.139850 + 0.271378I$ $a = -0.431580 + 0.818565I$ $b = -0.237751 - 0.669102I$	$-2.50569 - 4.90020I$	$3.66047 + 4.25570I$
$u = -1.139850 - 0.271378I$ $a = -0.431580 - 0.818565I$ $b = -0.237751 + 0.669102I$	$-2.50569 + 4.90020I$	$3.66047 - 4.25570I$
$u = 0.955556 + 0.693925I$ $a = -1.33481 - 1.07208I$ $b = 2.06526 - 0.70643I$	$0.74787 + 5.97219I$	$9.15925 - 6.03254I$
$u = 0.955556 - 0.693925I$ $a = -1.33481 + 1.07208I$ $b = 2.06526 + 0.70643I$	$0.74787 - 5.97219I$	$9.15925 + 6.03254I$
$u = 1.160440 + 0.222987I$ $a = 0.476162 + 0.877504I$ $b = 0.345484 - 0.648450I$	$-1.81559 + 10.65820I$	$6.00000 - 9.11948I$
$u = 1.160440 - 0.222987I$ $a = 0.476162 - 0.877504I$ $b = 0.345484 + 0.648450I$	$-1.81559 - 10.65820I$	$6.00000 + 9.11948I$
$u = -0.782234 + 0.897806I$ $a = -1.60548 + 0.09310I$ $b = 1.66931 + 0.79077I$	$-11.54940 + 1.88087I$	0
$u = -0.782234 - 0.897806I$ $a = -1.60548 - 0.09310I$ $b = 1.66931 - 0.79077I$	$-11.54940 - 1.88087I$	0
$u = -0.535320 + 0.606452I$ $a = -1.054240 - 0.782163I$ $b = -0.070591 + 0.734237I$	-2.58244	$-2.20453 + 0.I$
$u = -0.535320 - 0.606452I$ $a = -1.054240 + 0.782163I$ $b = -0.070591 - 0.734237I$	-2.58244	$-2.20453 + 0.I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.934473 + 0.782146I$ $a = 2.03442 + 0.84782I$ $b = -2.58958 + 1.04646I$	$-6.22742 + 7.20928I$	$0. - 6.27610I$
$u = 0.934473 - 0.782146I$ $a = 2.03442 - 0.84782I$ $b = -2.58958 - 1.04646I$	$-6.22742 - 7.20928I$	$0. + 6.27610I$
$u = -0.978705 + 0.735947I$ $a = -2.06142 + 1.31787I$ $b = 3.02109 + 0.91961I$	$-1.81559 - 10.65820I$	$6.00000 + 9.11948I$
$u = -0.978705 - 0.735947I$ $a = -2.06142 - 1.31787I$ $b = 3.02109 - 0.91961I$	$-1.81559 + 10.65820I$	$6.00000 - 9.11948I$
$u = -1.001680 + 0.777271I$ $a = 1.16815 - 1.10223I$ $b = -2.16629 - 0.53914I$	$-6.66680 - 5.70836I$	0
$u = -1.001680 - 0.777271I$ $a = 1.16815 + 1.10223I$ $b = -2.16629 + 0.53914I$	$-6.66680 + 5.70836I$	0
$u = 0.978293 + 0.824595I$ $a = 0.66515 + 1.58276I$ $b = -1.76953 - 0.40279I$	$-11.54940 + 1.88087I$	0
$u = 0.978293 - 0.824595I$ $a = 0.66515 - 1.58276I$ $b = -1.76953 + 0.40279I$	$-11.54940 - 1.88087I$	0
$u = 1.034790 + 0.782497I$ $a = 1.58803 + 1.23418I$ $b = -2.80611 + 0.54589I$	$-9.5709 + 11.0305I$	0
$u = 1.034790 - 0.782497I$ $a = 1.58803 - 1.23418I$ $b = -2.80611 - 0.54589I$	$-9.5709 - 11.0305I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.210315 + 0.193461I$ $a = -0.16245 - 3.16407I$ $b = 0.497755 - 0.746437I$	$0.11473 - 4.15162I$	$6.01126 + 6.89813I$
$u = -0.210315 - 0.193461I$ $a = -0.16245 + 3.16407I$ $b = 0.497755 + 0.746437I$	$0.11473 + 4.15162I$	$6.01126 - 6.89813I$

III. $\boldsymbol{I_3^u = \langle u^3 + u^2 + b,\ -u^2 + a + 1,\ u^4 - u^2 + 1 \rangle}$

(i) Arc colorings

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

$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^2 - 1 \\ -u^3 - u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u^3 + u^2 - u - 1 \\ -2u^3 - u^2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^2 + 1 \\ u^2 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0 \\ -u^2 + 1 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -u^3 - u^2 + u + 1 \\ u^3 + 2u^2 - 1 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u \\ u^3 - u - 1 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} u^2 - 1 \\ -u^3 - u^2 + 1 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -1 \\ -u^3 - u^2 + u + 2 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -12u^2 + 12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.866025 + 0.500000I$ $a = -0.500000 + 0.866025I$ $b = -0.50000 - 1.86603I$	$6.08965I$	$6.00000 - 10.39230I$
$u = 0.866025 - 0.500000I$ $a = -0.500000 - 0.866025I$ $b = -0.50000 + 1.86603I$	$-6.08965I$	$6.00000 + 10.39230I$
$u = -0.866025 + 0.500000I$ $a = -0.500000 - 0.866025I$ $b = -0.500000 - 0.133975I$	$-6.08965I$	$6.00000 + 10.39230I$
$u = -0.866025 - 0.500000I$ $a = -0.500000 + 0.866025I$ $b = -0.500000 + 0.133975I$	$6.08965I$	$6.00000 - 10.39230I$

IV. $I_4^u = \langle b - u,\ a,\ u^{12} - u^{11} + \cdots - 2u + 1 \rangle$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -u^3 \\ -u^5 + u^3 + u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u^2 + 1 \\ u^2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u^4 - u^2 + 1 \\ -u^4 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} u^4 - u^2 + 1 \\ u^6 - 2u^4 + u^2 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -u^9 + 2u^7 - 3u^5 + 2u^3 - u \\ u^9 - u^7 + u^5 + u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u^{11} + u^{10} + 3u^9 - 3u^8 - 4u^7 + 5u^6 + 2u^5 - 4u^4 + u^2 - u + 1 \\ -u^7 + u^5 - u + 1 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 4u^{10} - 8u^8 + 12u^6 - 4u^5 - 8u^4 + 4u^3 + 4u^2 - 4u + 10$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{12}+5u^{11}+14u^{10}+25u^9+32u^8+27u^7+13u^6-3u^5-8u^4-6u^3+1$
c_2, c_3, c_5 c_8	$u^{12}-u^{11}-2u^{10}+3u^9+2u^8-5u^7+u^6+3u^5-2u^4+2u^2-2u+1$
c_4, c_{11}	$(u^3+u^2-1)^4$
c_6	$u^{12}-3u^{11}+\cdots-12u+5$
c_7, c_9	$u^{12}-5u^{11}+14u^{10}-25u^9+32u^8-27u^7+13u^6+3u^5-8u^4+6u^3+1$
c_{10}, c_{12}	$(u^3-u^2+2u-1)^4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_7, c_9	$y^{12} + 3y^{11} + \cdots - 16y^2 + 1$
c_2, c_3, c_5 c_8	$y^{12} - 5y^{11} + 14y^{10} - 25y^9 + 32y^8 - 27y^7 + 13y^6 + 3y^5 - 8y^4 + 6y^3 + 1$
c_4, c_{11}	$(y^3 - y^2 + 2y - 1)^4$
c_6	$y^{12} - y^{11} + \cdots + 36y + 25$
c_{10}, c_{12}	$(y^3 + 3y^2 + 2y - 1)^4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.823263 + 0.757838I$ $a = 0$ $b = 0.823263 + 0.757838I$	$-3.02413 - 2.82812I$	$2.49024 + 2.97945I$
$u = 0.823263 - 0.757838I$ $a = 0$ $b = 0.823263 - 0.757838I$	$-3.02413 + 2.82812I$	$2.49024 - 2.97945I$
$u = -0.968261 + 0.566202I$ $a = 0$ $b = -0.968261 + 0.566202I$	1.11345	$9.01951 + 0.I$
$u = -0.968261 - 0.566202I$ $a = 0$ $b = -0.968261 - 0.566202I$	1.11345	$9.01951 + 0.I$
$u = 1.120810 + 0.355729I$ $a = 0$ $b = 1.120810 + 0.355729I$	$-3.02413 + 2.82812I$	$2.49024 - 2.97945I$
$u = 1.120810 - 0.355729I$ $a = 0$ $b = 1.120810 - 0.355729I$	$-3.02413 - 2.82812I$	$2.49024 + 2.97945I$
$u = -1.120460 + 0.417373I$ $a = 0$ $b = -1.120460 + 0.417373I$	$-3.02413 + 2.82812I$	$2.49024 - 2.97945I$
$u = -1.120460 - 0.417373I$ $a = 0$ $b = -1.120460 - 0.417373I$	$-3.02413 - 2.82812I$	$2.49024 + 2.97945I$
$u = 0.590822 + 0.500935I$ $a = 0$ $b = 0.590822 + 0.500935I$	1.11345	$9.01951 + 0.I$
$u = 0.590822 - 0.500935I$ $a = 0$ $b = 0.590822 - 0.500935I$	1.11345	$9.01951 + 0.I$

	Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u =$	$0.053832 + 0.729598I$		
$a =$	0	$-3.02413 + 2.82812I$	$2.49024 - 2.97945I$
$b =$	$0.053832 + 0.729598I$		
$u =$	$0.053832 - 0.729598I$		
$a =$	0	$-3.02413 - 2.82812I$	$2.49024 + 2.97945I$
$b =$	$0.053832 - 0.729598I$		

V.

$$\boldsymbol{I^u_5 = \langle a^3u^2+5a^2u^2+\cdots+5a-48,\ -2a^2u^2-6u^2a+\cdots+6a-1,\ u^3+u^2-1\rangle}$$

(i) Arc colorings

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

$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} a \\ -0.0217391a^3u^2 - 0.108696a^2u^2 + \cdots - 0.108696a + 1.04348 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} 0.0652174a^3u^2 + 0.326087a^2u^2 + \cdots + 0.326087a + 0.369565 \\ 0.108696a^3u^2 + 0.0434783a^2u^2 + \cdots + 0.543478a + 0.782609 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^2 + 1 \\ u^2 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u \\ -u^2 - u + 1 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.173913a^3u^2 + 0.130435a^2u^2 + \cdots + 0.630435a + 1.34783 \\ 0.521739a^3u^2 + 0.108696a^2u^2 + \cdots - 0.891304a - 1.04348 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -0.0217391a^3u^2 - 0.108696a^2u^2 + \cdots + 0.891304a + 1.04348 \\ -0.108696a^3u^2 - 0.543478a^2u^2 + \cdots - 0.543478a - 1.78261 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 0.0652174a^3u^2 + 0.326087a^2u^2 + \cdots + 0.326087a + 0.369565 \\ 0.108696a^3u^2 + 0.0434783a^2u^2 + \cdots + 0.543478a + 0.782609 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0.369565a^3u^2 - 0.152174a^2u^2 + \cdots - 0.652174a - 0.239130 \\ -0.0869565a^3u^2 - 0.434783a^2u^2 + \cdots - 0.434783a - 1.82609 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 4u + 6$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{12}+5u^{11}+14u^{10}+25u^9+32u^8+27u^7+13u^6-3u^5-8u^4-6u^3+1$
c_2,c_4,c_5 c_{11}	$u^{12}-u^{11}-2u^{10}+3u^9+2u^8-5u^7+u^6+3u^5-2u^4+2u^2-2u+1$
c_3,c_8	$(u^3+u^2-1)^4$
c_6	$u^{12}-3u^{11}+\cdots-12u+5$
c_7,c_9	$(u^3-u^2+2u-1)^4$
c_{10},c_{12}	$u^{12}-5u^{11}+14u^{10}-25u^9+32u^8-27u^7+13u^6+3u^5-8u^4+6u^3+1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{10}, c_{12}	$y^{12} + 3y^{11} + \cdots - 16y^2 + 1$
c_2, c_4, c_5 c_{11}	$y^{12} - 5y^{11} + 14y^{10} - 25y^9 + 32y^8 - 27y^7 + 13y^6 + 3y^5 - 8y^4 + 6y^3 + 1$
c_3, c_8	$(y^3 - y^2 + 2y - 1)^4$
c_6	$y^{12} - y^{11} + \cdots + 36y + 25$
c_7, c_9	$(y^3 + 3y^2 + 2y - 1)^4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.877439 + 0.744862I$ $a = 0.290605 - 0.301472I$ $b = 0.010927 - 1.027890I$	$-3.02413 - 2.82812I$	$2.49024 + 2.97945I$
$u = -0.877439 + 0.744862I$ $a = 1.24058 - 0.98320I$ $b = -1.95244 - 0.50017I$	$-3.02413 - 2.82812I$	$2.49024 + 2.97945I$
$u = -0.877439 + 0.744862I$ $a = -0.83409 + 2.24143I$ $b = 2.38794 - 0.77609I$	$-3.02413 - 2.82812I$	$2.49024 + 2.97945I$
$u = -0.877439 + 0.744862I$ $a = -2.45197 + 0.53297I$ $b = 2.43100 + 1.55928I$	$-3.02413 - 2.82812I$	$2.49024 + 2.97945I$
$u = -0.877439 - 0.744862I$ $a = 0.290605 + 0.301472I$ $b = 0.010927 + 1.027890I$	$-3.02413 + 2.82812I$	$2.49024 - 2.97945I$
$u = -0.877439 - 0.744862I$ $a = 1.24058 + 0.98320I$ $b = -1.95244 + 0.50017I$	$-3.02413 + 2.82812I$	$2.49024 - 2.97945I$
$u = -0.877439 - 0.744862I$ $a = -0.83409 - 2.24143I$ $b = 2.38794 + 0.77609I$	$-3.02413 + 2.82812I$	$2.49024 - 2.97945I$
$u = -0.877439 - 0.744862I$ $a = -2.45197 - 0.53297I$ $b = 2.43100 - 1.55928I$	$-3.02413 + 2.82812I$	$2.49024 - 2.97945I$
$u = 0.754878$ $a = -1.024590 + 0.311643I$ $b = 0.570737 + 0.650080I$	1.11345	9.01950
$u = 0.754878$ $a = -1.024590 - 0.311643I$ $b = 0.570737 - 0.650080I$	1.11345	9.01950

Solutions to I_5^u		$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u =$	0.754878		
$a =$	$1.77946 + 0.29139I$	1.11345	9.01950
$b =$	$0.05182 - 1.57785I$		
$u =$	0.754878		
$a =$	$1.77946 - 0.29139I$	1.11345	9.01950
$b =$	$0.05182 + 1.57785I$		

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

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 4u + 6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_6^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.877439 + 0.744862I$ $a = 0$ $b = -0.877439 + 0.744862I$	$-3.02413 - 2.82812I$	$2.49024 + 2.97945I$
$u = -0.877439 - 0.744862I$ $a = 0$ $b = -0.877439 - 0.744862I$	$-3.02413 + 2.82812I$	$2.49024 - 2.97945I$
$u = 0.754878$ $a = 0$ $b = 0.754878$	1.11345	9.01950

VII. $I_7^u = \langle -u^2 + b - u + 1,\ a - 1,\ u^4 - u^2 + 1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

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

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_7^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.866025 + 0.500000I$ $a = 1.00000$ $b = 0.36603 + 1.36603I$	$-2.02988I$	$6.00000 + 3.46410I$
$u = 0.866025 - 0.500000I$ $a = 1.00000$ $b = 0.36603 - 1.36603I$	$2.02988I$	$6.00000 - 3.46410I$
$u = -0.866025 + 0.500000I$ $a = 1.00000$ $b = -1.36603 - 0.36603I$	$2.02988I$	$6.00000 - 3.46410I$
$u = -0.866025 - 0.500000I$ $a = 1.00000$ $b = -1.36603 + 0.36603I$	$-2.02988I$	$6.00000 + 3.46410I$

VIII. $I_8^u = \langle u^2 + b - u,\ -u^2 + a + 1,\ u^4 - u^2 + 1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4u^2 + 8$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_8^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.866025 + 0.500000I$ $a = -0.500000 + 0.866025I$ $b = 0.366025 - 0.366025I$	$2.02988I$	$6.00000 - 3.46410I$
$u = 0.866025 - 0.500000I$ $a = -0.500000 - 0.866025I$ $b = 0.366025 + 0.366025I$	$-2.02988I$	$6.00000 + 3.46410I$
$u = -0.866025 + 0.500000I$ $a = -0.500000 - 0.866025I$ $b = -1.36603 + 1.36603I$	$-2.02988I$	$6.00000 + 3.46410I$
$u = -0.866025 - 0.500000I$ $a = -0.500000 + 0.866025I$ $b = -1.36603 - 1.36603I$	$2.02988I$	$6.00000 - 3.46410I$

IX. $I_9^u = \langle u^3 - u^2 + b + 1,\ a - 1,\ u^4 - u^2 + 1 \rangle$

(i) Arc colorings

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

$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 1 \\ -u^3 + u^2 - 1 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u^3 - u + 1 \\ -2u^3 + u^2 - 1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^2 + 1 \\ u^2 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0 \\ -u^2 + 1 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -u^2 - u + 1 \\ -u^3 + 2u^2 + u - 1 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -u^3 \\ u - 1 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 1 \\ -u^3 - 1 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -u^2 + 1 \\ -u \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4u^2 + 8$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_9^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \ \ 0.866025 + 0.500000I$ $a = \ \ 1.00000$ $b = -0.500000 - 0.133975I$	$2.02988I$	$6.00000 - 3.46410I$
$u = \ \ 0.866025 - 0.500000I$ $a = \ \ 1.00000$ $b = -0.500000 + 0.133975I$	$-2.02988I$	$6.00000 + 3.46410I$
$u = -0.866025 + 0.500000I$ $a = \ \ 1.00000$ $b = -0.50000 - 1.86603I$	$-2.02988I$	$6.00000 + 3.46410I$
$u = -0.866025 - 0.500000I$ $a = \ \ 1.00000$ $b = -0.50000 + 1.86603I$	$2.02988I$	$6.00000 - 3.46410I$

X. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^2-u+1)^8(u^3+u^2+2u+1)$ $\cdot(u^{12}+5u^{11}+14u^{10}+25u^9+32u^8+27u^7+13u^6-3u^5-8u^4-6u^3+1)^2$ $\cdot(u^{24}+12u^{23}+\cdots+56u+16)(u^{26}+15u^{25}+\cdots+4u+1)^2$
c_2, c_5	$(u^3+u^2-1)(u^4-u^2+1)^4$ $\cdot(u^{12}-u^{11}-2u^{10}+3u^9+2u^8-5u^7+u^6+3u^5-2u^4+2u^2-2u+1)^2$ $\cdot(u^{24}+4u^{23}+\cdots+12u+4)(u^{26}-u^{25}+\cdots-2u^2+1)^2$
c_3, c_4, c_8 c_{11}	$(u^3+u^2-1)^5(u^4-u^2+1)^4$ $\cdot(u^{12}-u^{11}-2u^{10}+3u^9+2u^8-5u^7+u^6+3u^5-2u^4+2u^2-2u+1)$ $\cdot(u^{24}-u^{23}+\cdots-3u^2+1)(u^{52}-2u^{51}+\cdots+20u+4)$
c_6	$(u^3+3u^2+2u-1)(u^4-u^2+1)^4(u^{12}-3u^{11}+\cdots-12u+5)^2$ $\cdot(u^{24}+12u^{23}+\cdots+876u+188)(u^{26}-3u^{25}+\cdots+4u+1)^2$
c_7, c_{10}	$(u^2+u+1)^8(u^3-u^2+2u-1)^5$ $\cdot(u^{12}-5u^{11}+14u^{10}-25u^9+32u^8-27u^7+13u^6+3u^5-8u^4+6u^3+1)$ $\cdot(u^{24}-7u^{23}+\cdots-6u+1)(u^{52}-16u^{51}+\cdots-152u+16)$
c_9, c_{12}	$(u^2-u+1)^8(u^3-u^2+2u-1)^5$ $\cdot(u^{12}-5u^{11}+14u^{10}-25u^9+32u^8-27u^7+13u^6+3u^5-8u^4+6u^3+1)$ $\cdot(u^{24}-7u^{23}+\cdots-6u+1)(u^{52}-16u^{51}+\cdots-152u+16)$

XI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y^2+y+1)^8)(y^3+3y^2+2y-1)(y^{12}+3y^{11}+\cdots-16y^2+1)^2$ $\cdot(y^{24}+24y^{22}+\cdots+1760y+256)(y^{26}-3y^{25}+\cdots-16y+1)^2$
c_2, c_5	$(y^2-y+1)^8(y^3-y^2+2y-1)$ $\cdot(y^{12}-5y^{11}+14y^{10}-25y^9+32y^8-27y^7+13y^6+3y^5-8y^4+6y^3+1)^2$ $\cdot(y^{24}-12y^{23}+\cdots-56y+16)(y^{26}-15y^{25}+\cdots-4y+1)^2$
c_3, c_4, c_8 c_{11}	$(y^2-y+1)^8(y^3-y^2+2y-1)^5$ $\cdot(y^{12}-5y^{11}+14y^{10}-25y^9+32y^8-27y^7+13y^6+3y^5-8y^4+6y^3+1)$ $\cdot(y^{24}-7y^{23}+\cdots-6y+1)(y^{52}-16y^{51}+\cdots-152y+16)$
c_6	$((y^2-y+1)^8)(y^3-5y^2+10y-1)(y^{12}-y^{11}+\cdots+36y+25)^2$ $\cdot(y^{24}+12y^{23}+\cdots-37560y+35344)(y^{26}+21y^{25}+\cdots-68y+1)^2$
c_7, c_9, c_{10} c_{12}	$((y^2+y+1)^8)(y^3+3y^2+2y-1)^5(y^{12}+3y^{11}+\cdots-16y^2+1)$ $\cdot(y^{24}+25y^{23}+\cdots+6y+1)(y^{52}+40y^{51}+\cdots+78048y+256)$