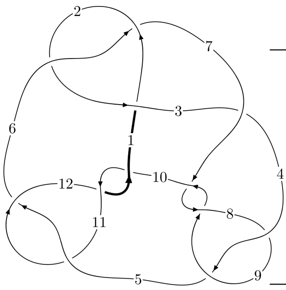
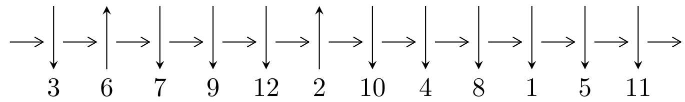
$12a_{0232}$ ($K12a_{0232}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -3u^{23} - 7u^{22} + \cdots + 4b - 22,\ u^{23} + 15u^{22} + \cdots + 8a - 66,\ u^{24} + 5u^{23} + \cdots - 12u - 4\rangle$$
$$I_2^u = \langle -u^{37} + 2u^{36} + \cdots + 2b - 1,\ -u^{37}a + 3u^{37} + \cdots + a - 6,\ u^{38} - 2u^{37} + \cdots - 2u + 1\rangle$$
$$I_3^u = \langle -au + b - a,\ a^2 + a + 1,\ u^2 + 1\rangle$$
$$I_4^u = \langle au + b - a + u,\ a^2 + a + 1,\ u^2 + 1\rangle$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 108 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. $I_1^u = \langle -3u^{23}-7u^{22}+\cdots+4b-22,\ u^{23}+15u^{22}+\cdots+8a-66,\ u^{24}+5u^{23}+\cdots-12u-4\rangle$

(i) Arc colorings

$$a_2 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_6 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_3 = \begin{pmatrix}1\\-u^2\end{pmatrix}$$
$$a_7 = \begin{pmatrix}u\\u\end{pmatrix}$$
$$a_4 = \begin{pmatrix}u^4+u^2+1\\u^4\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}-0.125000u^{23}-1.87500u^{22}+\cdots+13.1250u+8.25000\\\frac{3}{4}u^{23}+\frac{7}{4}u^{22}+\cdots+\frac{35}{4}u+\frac{11}{2}\end{pmatrix}$$
$$a_8 = \begin{pmatrix}-\frac{1}{8}u^{23}-\frac{3}{8}u^{22}+\cdots+\frac{13}{8}u+\frac{3}{4}\\\frac{1}{4}u^{23}+\frac{5}{4}u^{22}+\cdots-\frac{3}{4}u-\frac{1}{2}\end{pmatrix}$$
$$a_1 = \begin{pmatrix}u^2+1\\-u^4\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-\frac{3}{8}u^{23}-\frac{13}{8}u^{22}+\cdots+\frac{67}{8}u+\frac{19}{4}\\\frac{7}{4}u^{23}+\frac{29}{4}u^{22}+\cdots-\frac{21}{4}u-\frac{1}{2}\end{pmatrix}$$
$$a_9 = \begin{pmatrix}-\frac{3}{8}u^{23}-\frac{9}{8}u^{22}+\cdots+\frac{35}{8}u+\frac{13}{4}\\\frac{3}{4}u^{23}+\frac{15}{4}u^{22}+\cdots-\frac{11}{4}u-\frac{1}{2}\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}-\frac{1}{8}u^{23}-\frac{3}{8}u^{22}+\cdots+\frac{13}{8}u+\frac{7}{4}\\\frac{3}{4}u^{23}+\frac{13}{4}u^{22}+\cdots-\frac{17}{4}u-\frac{3}{2}\end{pmatrix}$$
$$a_5 = \begin{pmatrix}\frac{7}{8}u^{23}+\frac{29}{8}u^{22}+\cdots-\frac{35}{8}u-\frac{11}{4}\\\frac{3}{4}u^{23}+\frac{7}{4}u^{22}+\cdots+\frac{35}{4}u+\frac{11}{2}\end{pmatrix}$$

(ii) Obstruction class $=-1$

(iii) Cusp Shapes $= 11u^{23}+55u^{22}+202u^{21}+511u^{20}+1091u^{19}+1935u^{18}+3107u^{17}+4507u^{16}+6140u^{15}+7797u^{14}+9280u^{13}+10305u^{12}+10665u^{11}+10334u^{10}+9374u^9+7922u^8+6201u^7+4343u^6+2630u^5+1231u^4+311u^3-76u^2-124u-58$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{24} + 13u^{23} + \cdots - 56u + 16$
c_2, c_6	$u^{24} - 5u^{23} + \cdots + 12u - 4$
c_3	$u^{24} + 5u^{23} + \cdots - 256u - 64$
c_4, c_5, c_8 c_{11}	$u^{24} - 4u^{22} + \cdots - 2u - 1$
c_7, c_9, c_{10} c_{12}	$u^{24} + 8u^{23} + \cdots + 4u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{24} - 3y^{23} + \cdots - 11552y + 256$
c_2, c_6	$y^{24} + 13y^{23} + \cdots - 56y + 16$
c_3	$y^{24} - 7y^{23} + \cdots - 40960y + 4096$
c_4, c_5, c_8 c_{11}	$y^{24} - 8y^{23} + \cdots - 4y + 1$
c_7, c_9, c_{10} c_{12}	$y^{24} + 20y^{23} + \cdots + 4y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.257222 + 1.017220I$ $a = 0.401654 - 0.008767I$ $b = 0.272209 - 0.624992I$	$-3.50051 + 2.57930I$	$-16.8117 - 4.7598I$
$u = 0.257222 - 1.017220I$ $a = 0.401654 + 0.008767I$ $b = 0.272209 + 0.624992I$	$-3.50051 - 2.57930I$	$-16.8117 + 4.7598I$
$u = -0.908792 + 0.262544I$ $a = 1.44352 - 1.19871I$ $b = 0.476457 + 0.127868I$	$3.72106 + 11.69860I$	$-5.36042 - 8.05318I$
$u = -0.908792 - 0.262544I$ $a = 1.44352 + 1.19871I$ $b = 0.476457 - 0.127868I$	$3.72106 - 11.69860I$	$-5.36042 + 8.05318I$
$u = 0.769198 + 0.739991I$ $a = -0.486482 + 0.038089I$ $b = 0.467190 + 0.882825I$	$7.88027 - 3.10260I$	$-2.08649 + 2.69746I$
$u = 0.769198 - 0.739991I$ $a = -0.486482 - 0.038089I$ $b = 0.467190 - 0.882825I$	$7.88027 + 3.10260I$	$-2.08649 - 2.69746I$
$u = -0.848943 + 0.362352I$ $a = -1.20123 + 1.01267I$ $b = -0.567849 - 0.040943I$	$5.70577 + 0.22260I$	$-1.77984 + 2.03296I$
$u = -0.848943 - 0.362352I$ $a = -1.20123 - 1.01267I$ $b = -0.567849 + 0.040943I$	$5.70577 - 0.22260I$	$-1.77984 - 2.03296I$
$u = -0.292804 + 0.863918I$ $a = -0.320360 + 0.625045I$ $b = -0.081672 + 0.710622I$	$-0.53022 - 1.37947I$	$-5.11379 + 4.42535I$
$u = -0.292804 - 0.863918I$ $a = -0.320360 - 0.625045I$ $b = -0.081672 - 0.710622I$	$-0.53022 + 1.37947I$	$-5.11379 - 4.42535I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.736879 + 0.861025I$ $a = 0.481995 - 0.036451I$ $b = -0.337196 - 1.007010I$	$7.52630 + 8.69544I$	$-3.16830 - 8.31175I$
$u = 0.736879 - 0.861025I$ $a = 0.481995 + 0.036451I$ $b = -0.337196 + 1.007010I$	$7.52630 - 8.69544I$	$-3.16830 + 8.31175I$
$u = -0.741563$ $a = 1.82111$ $b = 0.349010$	-5.65295	-15.3580
$u = -0.441869 + 1.180010I$ $a = -0.07853 - 1.44892I$ $b = -0.32749 - 2.36407I$	$-9.05396 - 4.24780I$	$-18.5113 + 3.9565I$
$u = -0.441869 - 1.180010I$ $a = -0.07853 + 1.44892I$ $b = -0.32749 + 2.36407I$	$-9.05396 + 4.24780I$	$-18.5113 - 3.9565I$
$u = -0.139106 + 1.265020I$ $a = 0.512595 + 0.449475I$ $b = 1.292080 + 0.305072I$	$0.20869 - 2.74167I$	$-5.66024 + 3.24559I$
$u = -0.139106 - 1.265020I$ $a = 0.512595 - 0.449475I$ $b = 1.292080 - 0.305072I$	$0.20869 + 2.74167I$	$-5.66024 - 3.24559I$
$u = -0.601530 + 1.137570I$ $a = -0.60703 + 1.34772I$ $b = -1.24236 + 1.92686I$	$3.38318 - 5.58195I$	$-4.62085 + 2.23324I$
$u = -0.601530 - 1.137570I$ $a = -0.60703 - 1.34772I$ $b = -1.24236 - 1.92686I$	$3.38318 + 5.58195I$	$-4.62085 - 2.23324I$
$u = -0.267870 + 1.300090I$ $a = -0.722509 - 0.703157I$ $b = -1.78732 - 0.89031I$	$-1.42153 + 7.81679I$	$-9.52899 - 7.40459I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.267870 - 1.300090I$ $a = -0.722509 + 0.703157I$ $b = -1.78732 + 0.89031I$	$-1.42153 - 7.81679I$	$-9.52899 + 7.40459I$
$u = -0.589102 + 1.197530I$ $a = 0.70080 - 1.54523I$ $b = 1.50441 - 2.44048I$	$0.8984 - 17.1574I$	$-8.6015 + 11.3063I$
$u = -0.589102 - 1.197530I$ $a = 0.70080 + 1.54523I$ $b = 1.50441 + 2.44048I$	$0.8984 + 17.1574I$	$-8.6015 - 11.3063I$
$u = 0.395000$ $a = -0.569953$ $b = 0.314058$	-0.952863	-10.1550

II. $I^u_2 =$ $\langle -u^{37}+2u^{36}+\cdots+2b-1,\ -u^{37}a+3u^{37}+\cdots+a-6,\ u^{38}-2u^{37}+\cdots-2u+1\rangle$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} u^4+u^2+1 \\ u^4 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} a \\ \frac{1}{2}u^{37}-u^{36}+\cdots-\frac{1}{2}u+\frac{1}{2} \end{pmatrix}$$
$$a_8 = \begin{pmatrix} \frac{1}{2}u^{37}a-\frac{1}{2}u^{37}+\cdots+\frac{1}{2}a-\frac{1}{2} \\ \frac{1}{2}u^{37}a+u^{37}+\cdots-\frac{1}{2}a-\frac{3}{2} \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^2+1 \\ -u^4 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} \frac{1}{2}u^{36}-\frac{1}{2}u^{35}+\cdots+a-1 \\ \frac{1}{2}u^{37}-\frac{1}{2}u^{36}+\cdots+au+\frac{1}{2} \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -u^{36}a+\frac{1}{2}u^{36}+\cdots+\frac{1}{2}a-1 \\ -\frac{1}{2}u^{37}a+\frac{3}{2}u^{37}+\cdots+5u-\frac{5}{2} \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -u^{37}+2u^{36}+\cdots+\frac{1}{2}a+1 \\ -\frac{3}{2}u^{37}+4u^{36}+\cdots+\frac{1}{2}a+\frac{3}{2} \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -\frac{1}{2}u^{37}+\frac{3}{2}u^{36}+\cdots+a-2u \\ -\frac{1}{2}u^{35}+\frac{1}{2}u^{34}+\cdots+\frac{3}{2}u-\frac{1}{2} \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$= -2u^{35}-16u^{33}-64u^{31}+4u^{30}-160u^{29}+28u^{28}-270u^{27}+96u^{26}-312u^{25}+192u^{24}-244u^{23}+228u^{22}-132u^{21}+120u^{20}-66u^{19}-56u^{18}-36u^{17}-128u^{16}+12u^{15}-48u^{14}+44u^{13}+32u^{12}+16u^{11}+32u^{10}-28u^{9}+4u^{8}-20u^{7}+4u^{6}+4u^{4}+6u^{3}-4u^{2}-8$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^{38} + 20u^{37} + \cdots + 4u + 1)^2$
c_2, c_6	$(u^{38} + 2u^{37} + \cdots + 2u + 1)^2$
c_3	$(u^{38} - 2u^{37} + \cdots - 48u + 4)^2$
c_4, c_5, c_8 c_{11}	$u^{76} - u^{75} + \cdots - 10u + 1$
c_7, c_9, c_{10} c_{12}	$u^{76} + 27u^{75} + \cdots + 50u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^{38} + 32y^{36} + \cdots + 16y + 1)^2$
c_2, c_6	$(y^{38} + 20y^{37} + \cdots + 4y + 1)^2$
c_3	$(y^{38} - 14y^{37} + \cdots - 744y + 16)^2$
c_4, c_5, c_8 c_{11}	$y^{76} - 27y^{75} + \cdots - 50y + 1$
c_7, c_9, c_{10} c_{12}	$y^{76} + 45y^{75} + \cdots - 850y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.092692 + 1.025860I$ $a = 0.318432 + 1.014780I$ $b = 0.334512 + 0.975336I$	$-1.74996 - 2.04750I$	$-12.12731 + 2.88539I$
$u = 0.092692 + 1.025860I$ $a = 0.039232 - 0.182499I$ $b = 1.017750 - 0.618683I$	$-1.74996 - 2.04750I$	$-12.12731 + 2.88539I$
$u = 0.092692 - 1.025860I$ $a = 0.318432 - 1.014780I$ $b = 0.334512 - 0.975336I$	$-1.74996 + 2.04750I$	$-12.12731 - 2.88539I$
$u = 0.092692 - 1.025860I$ $a = 0.039232 + 0.182499I$ $b = 1.017750 + 0.618683I$	$-1.74996 + 2.04750I$	$-12.12731 - 2.88539I$
$u = 0.879654 + 0.307202I$ $a = 1.23008 + 1.04497I$ $b = 0.628001 + 0.013623I$	$4.78266 - 5.95391I$	$-3.44271 + 3.17174I$
$u = 0.879654 + 0.307202I$ $a = -1.40216 - 1.08867I$ $b = -0.396763 + 0.200388I$	$4.78266 - 5.95391I$	$-3.44271 + 3.17174I$
$u = 0.879654 - 0.307202I$ $a = 1.23008 - 1.04497I$ $b = 0.628001 - 0.013623I$	$4.78266 + 5.95391I$	$-3.44271 - 3.17174I$
$u = 0.879654 - 0.307202I$ $a = -1.40216 + 1.08867I$ $b = -0.396763 - 0.200388I$	$4.78266 + 5.95391I$	$-3.44271 - 3.17174I$
$u = 0.417100 + 0.987049I$ $a = -0.244327 - 0.928480I$ $b = 0.99403 - 1.23227I$	$-0.72961 - 1.85914I$	$-8.12259 + 1.13673I$
$u = 0.417100 + 0.987049I$ $a = -0.11634 + 1.93055I$ $b = 0.68195 + 2.26923I$	$-0.72961 - 1.85914I$	$-8.12259 + 1.13673I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.417100 - 0.987049I$ $a = -0.244327 + 0.928480I$ $b = 0.99403 + 1.23227I$	$-0.72961 + 1.85914I$	$-8.12259 - 1.13673I$
$u = 0.417100 - 0.987049I$ $a = -0.11634 - 1.93055I$ $b = 0.68195 - 2.26923I$	$-0.72961 + 1.85914I$	$-8.12259 - 1.13673I$
$u = -0.751160 + 0.801850I$ $a = -0.632410 + 0.158393I$ $b = 0.180392 - 0.828562I$	$7.77825 - 2.79187I$	$-2.37424 + 2.87718I$
$u = -0.751160 + 0.801850I$ $a = 0.314560 + 0.230340I$ $b = -0.600746 + 1.023140I$	$7.77825 - 2.79187I$	$-2.37424 + 2.87718I$
$u = -0.751160 - 0.801850I$ $a = -0.632410 - 0.158393I$ $b = 0.180392 + 0.828562I$	$7.77825 + 2.79187I$	$-2.37424 - 2.87718I$
$u = -0.751160 - 0.801850I$ $a = 0.314560 - 0.230340I$ $b = -0.600746 - 1.023140I$	$7.77825 + 2.79187I$	$-2.37424 - 2.87718I$
$u = -0.526392 + 1.014900I$ $a = -0.419575 + 0.987304I$ $b = 0.069923 + 1.154680I$	$1.44131 - 2.65190I$	$-4.42318 + 2.95185I$
$u = -0.526392 + 1.014900I$ $a = -0.08723 + 1.46483I$ $b = -0.84966 + 1.95526I$	$1.44131 - 2.65190I$	$-4.42318 + 2.95185I$
$u = -0.526392 - 1.014900I$ $a = -0.419575 - 0.987304I$ $b = 0.069923 - 1.154680I$	$1.44131 + 2.65190I$	$-4.42318 - 2.95185I$
$u = -0.526392 - 1.014900I$ $a = -0.08723 - 1.46483I$ $b = -0.84966 - 1.95526I$	$1.44131 + 2.65190I$	$-4.42318 - 2.95185I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.463054 + 1.059920I$ $a = 0.096981 - 1.116530I$ $b = -1.12569 - 1.36983I$	$-1.64453 - 3.37129I$	$-10.06940 + 3.97155I$
$u = -0.463054 + 1.059920I$ $a = -0.44289 - 1.98577I$ $b = 0.40811 - 2.85964I$	$-1.64453 - 3.37129I$	$-10.06940 + 3.97155I$
$u = -0.463054 - 1.059920I$ $a = 0.096981 + 1.116530I$ $b = -1.12569 + 1.36983I$	$-1.64453 + 3.37129I$	$-10.06940 - 3.97155I$
$u = -0.463054 - 1.059920I$ $a = -0.44289 + 1.98577I$ $b = 0.40811 + 2.85964I$	$-1.64453 + 3.37129I$	$-10.06940 - 3.97155I$
$u = 0.369116 + 1.125930I$ $a = 0.394531 - 1.005700I$ $b = 0.57224 - 1.83555I$	$-4.11479 + 2.70212I$	$-12.89170 - 3.76810I$
$u = 0.369116 + 1.125930I$ $a = 0.043624 + 0.868515I$ $b = -0.506712 + 0.873442I$	$-4.11479 + 2.70212I$	$-12.89170 - 3.76810I$
$u = 0.369116 - 1.125930I$ $a = 0.394531 + 1.005700I$ $b = 0.57224 + 1.83555I$	$-4.11479 - 2.70212I$	$-12.89170 + 3.76810I$
$u = 0.369116 - 1.125930I$ $a = 0.043624 - 0.868515I$ $b = -0.506712 - 0.873442I$	$-4.11479 - 2.70212I$	$-12.89170 + 3.76810I$
$u = 0.536688 + 1.074140I$ $a = 0.351361 + 1.092920I$ $b = -0.182927 + 1.250470I$	$0.50867 + 8.15703I$	$-6.43185 - 7.89440I$
$u = 0.536688 + 1.074140I$ $a = 0.12188 - 1.56571I$ $b = -0.71430 - 2.45999I$	$0.50867 + 8.15703I$	$-6.43185 - 7.89440I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.536688 - 1.074140I$ $a = 0.351361 - 1.092920I$ $b = -0.182927 - 1.250470I$	$0.50867 - 8.15703I$	$-6.43185 + 7.89440I$
$u = 0.536688 - 1.074140I$ $a = 0.12188 + 1.56571I$ $b = -0.71430 + 2.45999I$	$0.50867 - 8.15703I$	$-6.43185 + 7.89440I$
$u = 0.424797 + 0.672856I$ $a = -0.573283 + 0.461174I$ $b = -0.799729 - 1.006180I$	$0.24459 + 5.40327I$	$-7.14076 - 8.73282I$
$u = 0.424797 + 0.672856I$ $a = 2.15958 + 0.01504I$ $b = 1.15044 - 1.04061I$	$0.24459 + 5.40327I$	$-7.14076 - 8.73282I$
$u = 0.424797 - 0.672856I$ $a = -0.573283 - 0.461174I$ $b = -0.799729 + 1.006180I$	$0.24459 - 5.40327I$	$-7.14076 + 8.73282I$
$u = 0.424797 - 0.672856I$ $a = 2.15958 - 0.01504I$ $b = 1.15044 + 1.04061I$	$0.24459 - 5.40327I$	$-7.14076 + 8.73282I$
$u = -0.606947 + 0.511177I$ $a = -0.829981 + 0.188456I$ $b = -0.573546 + 0.654578I$	$2.90982 - 1.84462I$	$-1.62797 + 3.07541I$
$u = -0.606947 + 0.511177I$ $a = -1.49164 + 0.70399I$ $b = -0.684526 - 0.462319I$	$2.90982 - 1.84462I$	$-1.62797 + 3.07541I$
$u = -0.606947 - 0.511177I$ $a = -0.829981 - 0.188456I$ $b = -0.573546 - 0.654578I$	$2.90982 + 1.84462I$	$-1.62797 - 3.07541I$
$u = -0.606947 - 0.511177I$ $a = -1.49164 - 0.70399I$ $b = -0.684526 + 0.462319I$	$2.90982 + 1.84462I$	$-1.62797 - 3.07541I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.504117 + 1.123560I$		
$a = -0.318845 - 1.236270I$	$-3.18042 + 5.01836I$	$-11.22503 - 3.99262I$
$b = -0.11066 - 2.22477I$		
$u = 0.504117 + 1.123560I$		
$a = 0.45678 + 1.63903I$	$-3.18042 + 5.01836I$	$-11.22503 - 3.99262I$
$b = 1.08898 + 2.11659I$		
$u = 0.504117 - 1.123560I$		
$a = -0.318845 + 1.236270I$	$-3.18042 - 5.01836I$	$-11.22503 + 3.99262I$
$b = -0.11066 + 2.22477I$		
$u = 0.504117 - 1.123560I$		
$a = 0.45678 - 1.63903I$	$-3.18042 - 5.01836I$	$-11.22503 + 3.99262I$
$b = 1.08898 - 2.11659I$		
$u = -0.350867 + 1.182120I$		
$a = -0.332778 - 0.899175I$	$-5.61147 + 2.22079I$	$-15.5130 - 1.9644I$
$b = -1.46268 - 1.13492I$		
$u = -0.350867 + 1.182120I$		
$a = -0.63487 - 1.32116I$	$-5.61147 + 2.22079I$	$-15.5130 - 1.9644I$
$b = -0.89277 - 2.13230I$		
$u = -0.350867 - 1.182120I$		
$a = -0.332778 + 0.899175I$	$-5.61147 - 2.22079I$	$-15.5130 + 1.9644I$
$b = -1.46268 + 1.13492I$		
$u = -0.350867 - 1.182120I$		
$a = -0.63487 + 1.32116I$	$-5.61147 - 2.22079I$	$-15.5130 + 1.9644I$
$b = -0.89277 + 2.13230I$		
$u = 0.649945 + 0.400847I$		
$a = 0.907087 - 0.030828I$	$2.46586 - 3.52445I$	$-2.75723 + 3.36629I$
$b = 0.669846 + 0.531686I$		
$u = 0.649945 + 0.400847I$		
$a = -1.71404 - 0.47572I$	$2.46586 - 3.52445I$	$-2.75723 + 3.36629I$
$b = -0.401143 + 0.674066I$		

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.649945 - 0.400847I$ $a = 0.907087 + 0.030828I$ $b = 0.669846 - 0.531686I$	$2.46586 + 3.52445I$	$-2.75723 - 3.36629I$
$u = 0.649945 - 0.400847I$ $a = -1.71404 + 0.47572I$ $b = -0.401143 - 0.674066I$	$2.46586 + 3.52445I$	$-2.75723 - 3.36629I$
$u = -0.736881 + 0.188549I$ $a = 1.80671 - 0.41605I$ $b = 0.309194 - 0.424971I$	$-1.63069 + 5.81244I$	$-10.15602 - 5.45281I$
$u = -0.736881 + 0.188549I$ $a = 1.78520 - 1.08774I$ $b = 0.649257 + 0.400799I$	$-1.63069 + 5.81244I$	$-10.15602 - 5.45281I$
$u = -0.736881 - 0.188549I$ $a = 1.80671 + 0.41605I$ $b = 0.309194 + 0.424971I$	$-1.63069 - 5.81244I$	$-10.15602 + 5.45281I$
$u = -0.736881 - 0.188549I$ $a = 1.78520 + 1.08774I$ $b = 0.649257 - 0.400799I$	$-1.63069 - 5.81244I$	$-10.15602 + 5.45281I$
$u = -0.521806 + 1.155510I$ $a = 0.36985 - 1.41416I$ $b = 0.12817 - 2.40791I$	$-4.40741 - 10.53470I$	$-13.1011 + 8.4995I$
$u = -0.521806 + 1.155510I$ $a = 0.33140 - 1.85479I$ $b = 1.14785 - 2.73713I$	$-4.40741 - 10.53470I$	$-13.1011 + 8.4995I$
$u = -0.521806 - 1.155510I$ $a = 0.36985 + 1.41416I$ $b = 0.12817 + 2.40791I$	$-4.40741 + 10.53470I$	$-13.1011 - 8.4995I$
$u = -0.521806 - 1.155510I$ $a = 0.33140 + 1.85479I$ $b = 1.14785 + 2.73713I$	$-4.40741 + 10.53470I$	$-13.1011 - 8.4995I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.213295 + 1.276410I$ $a = 0.662381 - 0.531928I$ $b = 1.69785 - 0.73713I$	$-0.48674 - 2.48291I$	$-7.53122 + 2.48903I$
$u = 0.213295 + 1.276410I$ $a = -0.474667 + 0.655902I$ $b = -1.214850 + 0.565221I$	$-0.48674 - 2.48291I$	$-7.53122 + 2.48903I$
$u = 0.213295 - 1.276410I$ $a = 0.662381 + 0.531928I$ $b = 1.69785 + 0.73713I$	$-0.48674 + 2.48291I$	$-7.53122 - 2.48903I$
$u = 0.213295 - 1.276410I$ $a = -0.474667 - 0.655902I$ $b = -1.214850 - 0.565221I$	$-0.48674 + 2.48291I$	$-7.53122 - 2.48903I$
$u = 0.595105 + 1.170590I$ $a = -0.56398 - 1.46203I$ $b = -1.37249 - 2.35989I$	$2.18721 + 11.36400I$	$-6.56181 - 6.84677I$
$u = 0.595105 + 1.170590I$ $a = 0.69980 + 1.41296I$ $b = 1.30389 + 1.99102I$	$2.18721 + 11.36400I$	$-6.56181 - 6.84677I$
$u = 0.595105 - 1.170590I$ $a = -0.56398 + 1.46203I$ $b = -1.37249 + 2.35989I$	$2.18721 - 11.36400I$	$-6.56181 + 6.84677I$
$u = 0.595105 - 1.170590I$ $a = 0.69980 - 1.41296I$ $b = 1.30389 - 1.99102I$	$2.18721 - 11.36400I$	$-6.56181 + 6.84677I$
$u = 0.626124 + 0.193865I$ $a = -1.60011 - 0.43169I$ $b = -0.072389 - 0.405022I$	$-0.611163 - 0.610877I$	$-8.09323 + 0.39189I$
$u = 0.626124 + 0.193865I$ $a = 1.20644 + 1.13811I$ $b = 0.766850 - 0.115790I$	$-0.611163 - 0.610877I$	$-8.09323 + 0.39189I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.626124 - 0.193865I$ $a = -1.60011 + 0.43169I$ $b = -0.072389 + 0.405022I$	$-0.611163 + 0.610877I$	$-8.09323 - 0.39189I$
$u = 0.626124 - 0.193865I$ $a = 1.20644 - 1.13811I$ $b = 0.766850 + 0.115790I$	$-0.611163 + 0.610877I$	$-8.09323 - 0.39189I$
$u = -0.351526 + 0.483850I$ $a = 0.452401 + 1.125970I$ $b = 0.847436 - 0.808834I$	$0.203455 - 0.349653I$	$-6.40967 + 1.75614I$
$u = -0.351526 + 0.483850I$ $a = 2.63083 + 0.52836I$ $b = 0.814911 + 1.130250I$	$0.203455 - 0.349653I$	$-6.40967 + 1.75614I$
$u = -0.351526 - 0.483850I$ $a = 0.452401 - 1.125970I$ $b = 0.847436 + 0.808834I$	$0.203455 + 0.349653I$	$-6.40967 - 1.75614I$
$u = -0.351526 - 0.483850I$ $a = 2.63083 - 0.52836I$ $b = 0.814911 - 1.130250I$	$0.203455 + 0.349653I$	$-6.40967 - 1.75614I$

III. $I_3^u = \langle -au + b - a,\ a^2 + a + 1,\ u^2 + 1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -8a - 16$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.000000I$ $a = -0.500000 + 0.866025I$ $b = -1.36603 + 0.36603I$	$-1.64493 + 4.05977I$	$-12.00000 - 6.92820I$
$u = 1.000000I$ $a = -0.500000 - 0.866025I$ $b = 0.36603 - 1.36603I$	$-1.64493 - 4.05977I$	$-12.00000 + 6.92820I$
$u = -1.000000I$ $a = -0.500000 + 0.866025I$ $b = 0.36603 + 1.36603I$	$-1.64493 + 4.05977I$	$-12.00000 - 6.92820I$
$u = -1.000000I$ $a = -0.500000 - 0.866025I$ $b = -1.36603 - 0.36603I$	$-1.64493 - 4.05977I$	$-12.00000 + 6.92820I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.000000I$ $a = -0.500000 + 0.866025I$ $b = 0.366025 + 0.366025I$	-1.64493	-12.0000
$u = 1.000000I$ $a = -0.500000 - 0.866025I$ $b = -1.36603 - 1.36603I$	-1.64493	-12.0000
$u = -1.000000I$ $a = -0.500000 + 0.866025I$ $b = -1.36603 + 1.36603I$	-1.64493	-12.0000
$u = -1.000000I$ $a = -0.500000 - 0.866025I$ $b = 0.366025 - 0.366025I$	-1.64493	-12.0000

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^8)(u^{24}+13u^{23}+\cdots-56u+16)(u^{38}+20u^{37}+\cdots+4u+1)^2$
c_2, c_6	$((u^2+1)^4)(u^{24}-5u^{23}+\cdots+12u-4)(u^{38}+2u^{37}+\cdots+2u+1)^2$
c_3	$u^8(u^{24}+5u^{23}+\cdots-256u-64)(u^{38}-2u^{37}+\cdots-48u+4)^2$
c_4, c_5, c_8 c_{11}	$((u^4-u^2+1)^2)(u^{24}-4u^{22}+\cdots-2u-1)(u^{76}-u^{75}+\cdots-10u+1)$
c_7, c_{10}	$((u^2-u+1)^4)(u^{24}+8u^{23}+\cdots+4u+1)(u^{76}+27u^{75}+\cdots+50u+1)$
c_9, c_{12}	$((u^2+u+1)^4)(u^{24}+8u^{23}+\cdots+4u+1)(u^{76}+27u^{75}+\cdots+50u+1)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^8)(y^{24}-3y^{23}+\cdots-11552y+256)$ $\cdot(y^{38}+32y^{36}+\cdots+16y+1)^2$
c_2, c_6	$((y+1)^8)(y^{24}+13y^{23}+\cdots-56y+16)(y^{38}+20y^{37}+\cdots+4y+1)^2$
c_3	$y^8(y^{24}-7y^{23}+\cdots-40960y+4096)$ $\cdot(y^{38}-14y^{37}+\cdots-744y+16)^2$
c_4, c_5, c_8 c_{11}	$((y^2-y+1)^4)(y^{24}-8y^{23}+\cdots-4y+1)(y^{76}-27y^{75}+\cdots-50y+1)$
c_7, c_9, c_{10} c_{12}	$((y^2+y+1)^4)(y^{24}+20y^{23}+\cdots+4y+1)$ $\cdot(y^{76}+45y^{75}+\cdots-850y+1)$