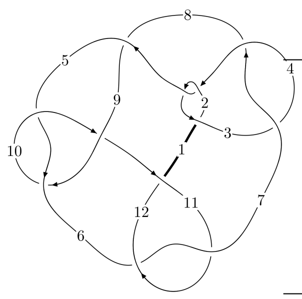
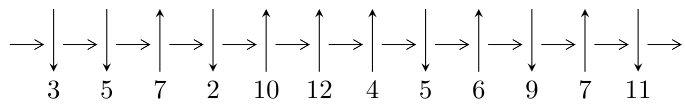
$12n_{0158}$ ($K12n_{0158}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$
\begin{aligned}
I_1^u &= \langle 37u^{25} + 5u^{24} + \cdots + 32b + 3,\ 11u^{25} - u^{24} + \cdots + 64a + 73,\ u^{26} + 5u^{24} + \cdots + 7u^2 + 1 \rangle \\
I_2^u &= \langle 1.64036 \times 10^{19} u^{35} - 6.55779 \times 10^{19} u^{34} + \cdots + 1.64861 \times 10^{20} b - 8.76883 \times 10^{20}, \\
&\quad - 2.73439 \times 10^{20} u^{35} + 9.88504 \times 10^{20} u^{34} + \cdots + 2.80263 \times 10^{21} a + 2.34140 \times 10^{22}, \\
&\quad u^{36} - 2u^{35} + \cdots - 16u + 17 \rangle \\
I_3^u &= \langle b + 1,\ -u^3 + u^2 + 2a + 1,\ u^4 + u^2 + u + 1 \rangle \\
I_4^u &= \langle b + 1,\ u^5 - u^4 + u^3 - u^2 + a + u,\ u^6 - u^5 + 2u^4 - 2u^3 + 2u^2 - 2u + 1 \rangle \\
I_5^u &= \langle -a^2 + 2au + b + 2a - 2u - 1,\ a^3 - 3a^2u - 3a^2 + 6au + a - 2u + 1,\ u^2 + 1 \rangle
\end{aligned}
$$

* 5 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 78 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. $I^u_1 =$
$\langle 37u^{25}+5u^{24}+\cdots+32b+3,\ 11u^{25}-u^{24}+\cdots+64a+73,\ u^{26}+5u^{24}+\cdots+7u^2+1\rangle$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} -0.171875u^{25} + 0.0156250u^{24} + \cdots + 4.29688u - 1.14063 \\ -1.15625u^{25} - 0.156250u^{24} + \cdots - 1.59375u - 0.0937500 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} -1.32813u^{25} - 0.140625u^{24} + \cdots + 2.70313u - 1.23438 \\ -1.15625u^{25} - 0.156250u^{24} + \cdots - 1.59375u - 0.0937500 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} \frac{1}{8}u^{24} + \frac{1}{2}u^{22} + \cdots + u + \frac{1}{8} \\ \frac{1}{8}u^{24} + \frac{1}{2}u^{22} + \cdots + u + \frac{1}{8} \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 1.39063u^{25} + 0.203125u^{24} + \cdots + 4.48438u - 2.07813 \\ 0.593750u^{25} + 0.343750u^{24} + \cdots - 0.0937500u - 0.593750 \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} -u^3 \\ u^5 + u^3 + u \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} \frac{1}{8}u^{25} + \frac{1}{2}u^{23} + \cdots + \frac{1}{8}u - 1 \\ \frac{1}{8}u^{25} + \frac{1}{2}u^{23} + \cdots + 2u^2 + \frac{1}{8}u \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} \frac{1}{8}u^{24} + \frac{1}{2}u^{22} + \cdots + u + \frac{1}{8} \\ \frac{1}{8}u^{24} + \frac{1}{2}u^{22} + \cdots + u + \frac{1}{8} \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{563}{128}u^{25} - \frac{159}{128}u^{24} + \cdots - \frac{1045}{128}u - \frac{521}{128}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{26}+7u^{25}+\cdots-47u+16$
c_2, c_4	$u^{26}-5u^{25}+\cdots-17u+4$
c_3, c_7	$u^{26}-3u^{25}+\cdots-304u+64$
c_5, c_6, c_9 c_{11}	$u^{26}+5u^{24}+\cdots+7u^2+1$
c_8	$u^{26}+6u^{25}+\cdots+1024u+256$
c_{10}, c_{12}	$u^{26}+10u^{25}+\cdots+14u+1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{26}+29y^{25}+\cdots-4769y+256$
c_2, c_4	$y^{26}-7y^{25}+\cdots+47y+16$
c_3, c_7	$y^{26}-27y^{25}+\cdots-28928y+4096$
c_5, c_6, c_9 c_{11}	$y^{26}+10y^{25}+\cdots+14y+1$
c_8	$y^{26}+10y^{25}+\cdots+1540096y+65536$
c_{10}, c_{12}	$y^{26}+22y^{25}+\cdots+22y+1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.686718 + 0.790237I$ $a = 0.862776 + 0.752523I$ $b = -0.112686 - 0.757455I$	$1.98398 + 2.27305I$	$3.49441 - 2.95209I$
$u = 0.686718 - 0.790237I$ $a = 0.862776 - 0.752523I$ $b = -0.112686 + 0.757455I$	$1.98398 - 2.27305I$	$3.49441 + 2.95209I$
$u = 0.332646 + 0.885585I$ $a = 0.859182 + 0.253751I$ $b = 0.966203 + 0.651765I$	$0.374508 - 1.260680I$	$0.03372 - 2.82297I$
$u = 0.332646 - 0.885585I$ $a = 0.859182 - 0.253751I$ $b = 0.966203 - 0.651765I$	$0.374508 + 1.260680I$	$0.03372 + 2.82297I$
$u = -0.943048 + 0.573575I$ $a = -0.572959 + 1.084400I$ $b = 1.06906 - 0.99419I$	$9.87605 + 3.35816I$	$3.98629 - 0.41980I$
$u = -0.943048 - 0.573575I$ $a = -0.572959 - 1.084400I$ $b = 1.06906 + 0.99419I$	$9.87605 - 3.35816I$	$3.98629 + 0.41980I$
$u = -0.597517 + 0.932496I$ $a = -0.074973 - 0.361234I$ $b = -1.085400 + 0.468804I$	$-1.78026 - 3.46737I$	$-1.87106 + 4.78330I$
$u = -0.597517 - 0.932496I$ $a = -0.074973 + 0.361234I$ $b = -1.085400 - 0.468804I$	$-1.78026 + 3.46737I$	$-1.87106 - 4.78330I$
$u = -0.925240 + 0.681323I$ $a = -0.07111 - 1.54316I$ $b = 0.94455 + 1.07986I$	$10.29890 - 4.17338I$	$4.09194 + 4.29853I$
$u = -0.925240 - 0.681323I$ $a = -0.07111 + 1.54316I$ $b = 0.94455 - 1.07986I$	$10.29890 + 4.17338I$	$4.09194 - 4.29853I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.615881 + 1.015000I$ $a = -1.05911 - 1.42400I$ $b = -1.324650 + 0.202541I$	$-2.47670 + 6.15727I$	$-1.31624 - 5.25780I$
$u = 0.615881 - 1.015000I$ $a = -1.05911 + 1.42400I$ $b = -1.324650 - 0.202541I$	$-2.47670 - 6.15727I$	$-1.31624 + 5.25780I$
$u = 0.213984 + 0.755898I$ $a = 1.343350 + 0.180099I$ $b = 0.844053 - 0.643735I$	$0.79107 + 3.73974I$	$2.88234 - 8.52096I$
$u = 0.213984 - 0.755898I$ $a = 1.343350 - 0.180099I$ $b = 0.844053 + 0.643735I$	$0.79107 - 3.73974I$	$2.88234 + 8.52096I$
$u = -0.522459 + 1.135990I$ $a = 1.068060 - 0.495553I$ $b = 0.679614 + 0.169964I$	$-3.56752 - 8.00011I$	$1.95259 + 8.91191I$
$u = -0.522459 - 1.135990I$ $a = 1.068060 + 0.495553I$ $b = 0.679614 - 0.169964I$	$-3.56752 + 8.00011I$	$1.95259 - 8.91191I$
$u = -0.661950 + 1.073520I$ $a = -0.360539 + 1.342880I$ $b = -0.585613 - 0.805144I$	$0.06912 - 8.45528I$	$-0.31615 + 7.82627I$
$u = -0.661950 - 1.073520I$ $a = -0.360539 - 1.342880I$ $b = -0.585613 + 0.805144I$	$0.06912 + 8.45528I$	$-0.31615 - 7.82627I$
$u = 0.573105 + 0.355043I$ $a = 0.431069 - 0.470281I$ $b = 0.145218 + 0.443676I$	$1.181070 + 0.652752I$	$6.65549 - 2.84470I$
$u = 0.573105 - 0.355043I$ $a = 0.431069 + 0.470281I$ $b = 0.145218 - 0.443676I$	$1.181070 - 0.652752I$	$6.65549 + 2.84470I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.715044 + 1.157990I$ $a = -0.890942 - 0.102027I$ $b = 0.750500 + 1.133340I$	$7.16363 + 8.23028I$	$1.13390 - 4.65943I$
$u = 0.715044 - 1.157990I$ $a = -0.890942 + 0.102027I$ $b = 0.750500 - 1.133340I$	$7.16363 - 8.23028I$	$1.13390 + 4.65943I$
$u = 0.674140 + 1.197450I$ $a = 1.10131 + 1.68297I$ $b = 1.16977 - 0.88449I$	$5.7894 + 15.5253I$	$-0.62931 - 8.80838I$
$u = 0.674140 - 1.197450I$ $a = 1.10131 - 1.68297I$ $b = 1.16977 + 0.88449I$	$5.7894 - 15.5253I$	$-0.62931 + 8.80838I$
$u = -0.161303 + 0.352465I$ $a = -0.88611 + 2.09278I$ $b = -0.960623 - 0.194500I$	$-1.73934 - 0.69423I$	$-4.47291 + 0.47105I$
$u = -0.161303 - 0.352465I$ $a = -0.88611 - 2.09278I$ $b = -0.960623 + 0.194500I$	$-1.73934 + 0.69423I$	$-4.47291 - 0.47105I$

II. $\boldsymbol{I_2^u = \langle 1.64 \times 10^{19} u^{35} - 6.56 \times 10^{19} u^{34} + \cdots + 1.65 \times 10^{20} b - 8.77 \times 10^{20},\ -2.73 \times 10^{20} u^{35} + 9.89 \times 10^{20} u^{34} + \cdots + 2.80 \times 10^{21} a + 2.34 \times 10^{22},\ u^{36} - 2u^{35} + \cdots - 16u + 17 \rangle}$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} 0.0975652u^{35} - 0.352706u^{34} + \cdots + 2.60900u - 8.35431 \\ -0.0994997u^{35} + 0.397778u^{34} + \cdots - 0.756708u + 5.31894 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} -0.00193454u^{35} + 0.0450723u^{34} + \cdots + 1.85229u - 3.03538 \\ -0.0994997u^{35} + 0.397778u^{34} + \cdots - 0.756708u + 5.31894 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.167671u^{35} - 0.201737u^{34} + \cdots + 7.20414u - 0.801787 \\ -0.203086u^{35} + 0.207511u^{34} + \cdots - 4.38662u + 1.19177 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -0.677695u^{35} + 1.09907u^{34} + \cdots - 8.59244u + 5.59975 \\ 0.0381892u^{35} - 0.396278u^{34} + \cdots + 0.00858699u - 5.74660 \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} -u^3 \\ u^5 + u^3 + u \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} -0.0123763u^{35} + 0.0202099u^{34} + \cdots + 1.02313u + 3.72869 \\ 0.0511253u^{35} - 0.134072u^{34} + \cdots + 0.364967u - 2.38667 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 0.135850u^{35} - 0.216397u^{34} + \cdots + 6.63547u - 1.67092 \\ -0.158595u^{35} + 0.210763u^{34} + \cdots - 1.68145u + 1.66988 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{9229420892597763703 5}{16486056133491279586 3}u^{35} + \frac{248194929627859910457}{164860561334912795863}u^{34} + \cdots - \frac{119307686977212921029 2}{164860561334912795863}u + \frac{146811638123773752300 6}{164860561334912795863}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^{18}+4u^{17}+\cdots+11u+1)^2$
c_2, c_4	$(u^{18}-4u^{17}+\cdots+3u-1)^2$
c_3, c_7	$(u^{18}+u^{17}+\cdots+4u+8)^2$
c_5, c_6, c_9 c_{11}	$u^{36}-2u^{35}+\cdots-16u+17$
c_8	$(u^{18}-2u^{17}+\cdots-18u-17)^2$
c_{10}, c_{12}	$u^{36}+18u^{35}+\cdots+1784u+289$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^{18} + 24y^{17} + \cdots - 11y + 1)^2$
c_2, c_4	$(y^{18} - 4y^{17} + \cdots - 11y + 1)^2$
c_3, c_7	$(y^{18} - 21y^{17} + \cdots - 592y + 64)^2$
c_5, c_6, c_9 c_{11}	$y^{36} + 18y^{35} + \cdots + 1784y + 289$
c_8	$(y^{18} + 10y^{17} + \cdots - 1106y + 289)^2$
c_{10}, c_{12}	$y^{36} - 2y^{35} + \cdots + 426376y + 83521$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.591186 + 0.787704I$ $a = -1.56603 - 0.88745I$ $b = 0.889957 + 0.956699I$	$2.38234 - 1.09047I$	$0.174080 - 0.422577I$
$u = 0.591186 - 0.787704I$ $a = -1.56603 + 0.88745I$ $b = 0.889957 - 0.956699I$	$2.38234 + 1.09047I$	$0.174080 + 0.422577I$
$u = -0.794635 + 0.529818I$ $a = 0.753156 - 1.018670I$ $b = -0.405572 + 0.756937I$	$1.68246 + 2.95811I$	$2.86830 - 3.60082I$
$u = -0.794635 - 0.529818I$ $a = 0.753156 + 1.018670I$ $b = -0.405572 - 0.756937I$	$1.68246 - 2.95811I$	$2.86830 + 3.60082I$
$u = -0.575111 + 0.759119I$ $a = -0.73772 + 1.69762I$ $b = -1.189210 - 0.282581I$	$-1.21564 - 1.22055I$	$0.481280 - 0.071123I$
$u = -0.575111 - 0.759119I$ $a = -0.73772 - 1.69762I$ $b = -1.189210 + 0.282581I$	$-1.21564 + 1.22055I$	$0.481280 + 0.071123I$
$u = 0.167080 + 1.041030I$ $a = -2.61040 - 3.09914I$ $b = -1.10588$	-5.41960	$2.98163 + 0.I$
$u = 0.167080 - 1.041030I$ $a = -2.61040 + 3.09914I$ $b = -1.10588$	-5.41960	$2.98163 + 0.I$
$u = 0.997738 + 0.395002I$ $a = -0.292945 - 1.197000I$ $b = 1.13145 + 0.93287I$	$8.25713 - 9.46502I$	$2.19641 + 5.12935I$
$u = 0.997738 - 0.395002I$ $a = -0.292945 + 1.197000I$ $b = 1.13145 - 0.93287I$	$8.25713 + 9.46502I$	$2.19641 - 5.12935I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.274534 + 0.872882I$ $a = 0.93452 + 2.44113I$ $b = -0.509257 - 0.343539I$	$-3.86556 - 1.11682I$	$-2.38496 + 6.15764I$
$u = -0.274534 - 0.872882I$ $a = 0.93452 - 2.44113I$ $b = -0.509257 + 0.343539I$	$-3.86556 + 1.11682I$	$-2.38496 - 6.15764I$
$u = 0.588697 + 0.917985I$ $a = 0.52281 + 2.44549I$ $b = 1.023450 - 0.903197I$	$1.96168 + 5.76942I$	$-0.89628 - 5.17142I$
$u = 0.588697 - 0.917985I$ $a = 0.52281 - 2.44549I$ $b = 1.023450 + 0.903197I$	$1.96168 - 5.76942I$	$-0.89628 + 5.17142I$
$u = 0.985654 + 0.488151I$ $a = -0.268666 + 1.306090I$ $b = 0.841043 - 1.112380I$	$9.21890 - 2.04734I$	$3.38974 + 0.64724I$
$u = 0.985654 - 0.488151I$ $a = -0.268666 - 1.306090I$ $b = 0.841043 + 1.112380I$	$9.21890 + 2.04734I$	$3.38974 - 0.64724I$
$u = 0.670337 + 0.891635I$ $a = -0.058974 - 1.277660I$ $b = -0.405572 + 0.756937I$	$1.68246 + 2.95811I$	$2.86830 - 3.60082I$
$u = 0.670337 - 0.891635I$ $a = -0.058974 + 1.277660I$ $b = -0.405572 - 0.756937I$	$1.68246 - 2.95811I$	$2.86830 + 3.60082I$
$u = 0.626901 + 0.585336I$ $a = -0.339138 + 0.406991I$ $b = -1.189210 - 0.282581I$	$-1.21564 - 1.22055I$	$0.481280 - 0.071123I$
$u = 0.626901 - 0.585336I$ $a = -0.339138 - 0.406991I$ $b = -1.189210 + 0.282581I$	$-1.21564 + 1.22055I$	$0.481280 + 0.071123I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.453358 + 1.062450I$ $a = 1.049730 + 0.489075I$ $b = 0.550076 - 0.259421I$	$-0.92819 + 3.34376I$	$3.77359 - 4.65236I$
$u = 0.453358 - 1.062450I$ $a = 1.049730 - 0.489075I$ $b = 0.550076 + 0.259421I$	$-0.92819 - 3.34376I$	$3.77359 + 4.65236I$
$u = -0.106316 + 1.174290I$ $a = 0.436208 - 0.085284I$ $b = -0.509257 + 0.343539I$	$-3.86556 + 1.11682I$	$-2.38496 - 6.15764I$
$u = -0.106316 - 1.174290I$ $a = 0.436208 + 0.085284I$ $b = -0.509257 - 0.343539I$	$-3.86556 - 1.11682I$	$-2.38496 + 6.15764I$
$u = -0.331026 + 1.152710I$ $a = 0.999190 - 0.535049I$ $b = 0.441998$	-4.89262	$-6 - 1.185937 + 0.10I$
$u = -0.331026 - 1.152710I$ $a = 0.999190 + 0.535049I$ $b = 0.441998$	-4.89262	$-6 - 1.185937 + 0.10I$
$u = -0.715398 + 0.207958I$ $a = 0.433150 - 0.002861I$ $b = 0.550076 - 0.259421I$	$-0.92819 + 3.34376I$	$3.77359 - 4.65236I$
$u = -0.715398 - 0.207958I$ $a = 0.433150 + 0.002861I$ $b = 0.550076 + 0.259421I$	$-0.92819 - 3.34376I$	$3.77359 + 4.65236I$
$u = -0.775491 + 1.032570I$ $a = -0.952803 + 0.345976I$ $b = 0.841043 - 1.112380I$	$9.21890 - 2.04734I$	$3.38974 + 0.64724I$
$u = -0.775491 - 1.032570I$ $a = -0.952803 - 0.345976I$ $b = 0.841043 + 1.112380I$	$9.21890 + 2.04734I$	$3.38974 - 0.64724I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.726810 + 1.099240I$ $a = 0.83534 - 1.78440I$ $b = 1.13145 + 0.93287I$	$8.25713 - 9.46502I$	$2.19641 + 5.12935I$
$u = -0.726810 - 1.099240I$ $a = 0.83534 + 1.78440I$ $b = 1.13145 - 0.93287I$	$8.25713 + 9.46502I$	$2.19641 - 5.12935I$
$u = 0.066926 + 1.357280I$ $a = 0.785883 + 0.110703I$ $b = 0.889957 - 0.956699I$	$2.38234 + 1.09047I$	$0.174080 + 0.422577I$
$u = 0.066926 - 1.357280I$ $a = 0.785883 - 0.110703I$ $b = 0.889957 + 0.956699I$	$2.38234 - 1.09047I$	$0.174080 - 0.422577I$
$u = 0.151444 + 1.368190I$ $a = 0.753153 - 0.013270I$ $b = 1.023450 + 0.903197I$	$1.96168 - 5.76942I$	$-0.89628 + 5.17142I$
$u = 0.151444 - 1.368190I$ $a = 0.753153 + 0.013270I$ $b = 1.023450 - 0.903197I$	$1.96168 + 5.76942I$	$-0.89628 - 5.17142I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= \frac{21}{4}u^3 - \frac{11}{4}u^2 + \frac{1}{2}u - \frac{1}{4}$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.547424 + 0.585652I$ $a = -0.278726 + 0.483420I$ $b = -1.00000$	$-0.66484 - 1.39709I$	$1.69137 + 3.76574I$
$u = -0.547424 - 0.585652I$ $a = -0.278726 - 0.483420I$ $b = -1.00000$	$-0.66484 + 1.39709I$	$1.69137 - 3.76574I$
$u = \quad 0.547424 + 1.120870I$ $a = -0.971274 - 0.813859I$ $b = -1.00000$	$-4.26996 + 7.64338I$	$-7.31637 - 4.91712I$
$u = \quad 0.547424 - 1.120870I$ $a = -0.971274 + 0.813859I$ $b = -1.00000$	$-4.26996 - 7.64338I$	$-7.31637 + 4.91712I$

IV.

$\boldsymbol{I_4^u = \langle b+1,\ u^5 - u^4 + u^3 - u^2 + a + u,\ u^6 - u^5 + 2u^4 - 2u^3 + 2u^2 - 2u + 1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -u^5 + 3u^3 + u^2 + 3u - 6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.498832 + 1.001300I$ $a = -0.767394 + 0.943705I$ $b = -1.00000$	$-1.91067 - 2.82812I$	$-2.82789 + 2.41717I$
$u = -0.498832 - 1.001300I$ $a = -0.767394 - 0.943705I$ $b = -1.00000$	$-1.91067 + 2.82812I$	$-2.82789 - 2.41717I$
$u = \quad 0.284920 + 1.115140I$ $a = -1.37744 - 1.47725I$ $b = -1.00000$	-6.04826	$-11.34423 + 0.I$
$u = \quad 0.284920 - 1.115140I$ $a = -1.37744 + 1.47725I$ $b = -1.00000$	-6.04826	$-11.34423 + 0.I$
$u = \quad 0.713912 + 0.305839I$ $a = -0.355167 - 0.198843I$ $b = -1.00000$	$-1.91067 - 2.82812I$	$-2.82789 + 2.41717I$
$u = \quad 0.713912 - 0.305839I$ $a = -0.355167 + 0.198843I$ $b = -1.00000$	$-1.91067 + 2.82812I$	$-2.82789 - 2.41717I$

V.

$$I_5^u = \langle -a^2+2au+b+2a-2u-1,\ a^3-3a^2u-3a^2+6au+a-2u+1,\ u^2+1\rangle$$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

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

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.000000I$ $a = 0.437720 + 0.337641I$ $b = 0.877439 + 0.744862I$	$-0.26574 - 2.82812I$	$-4.49024 + 2.97945I$
$u = 1.000000I$ $a = 1.56228 + 0.33764I$ $b = 0.877439 - 0.744862I$	$-0.26574 + 2.82812I$	$-4.49024 - 2.97945I$
$u = 1.000000I$ $a = 1.00000 + 2.32472I$ $b = -0.754878$	-4.40332	$-11.01951 + 0.I$
$u = -1.000000I$ $a = 0.437720 - 0.337641I$ $b = 0.877439 - 0.744862I$	$-0.26574 + 2.82812I$	$-4.49024 - 2.97945I$
$u = -1.000000I$ $a = 1.56228 - 0.33764I$ $b = 0.877439 + 0.744862I$	$-0.26574 - 2.82812I$	$-4.49024 + 2.97945I$
$u = -1.000000I$ $a = 1.00000 - 2.32472I$ $b = -0.754878$	-4.40332	$-11.01951 + 0.I$

VI. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^{10})(u^3-u^2+2u-1)^2(u^{18}+4u^{17}+\cdots+11u+1)^2$ $\cdot(u^{26}+7u^{25}+\cdots-47u+16)$
c_2	$((u-1)^{10})(u^3+u^2-1)^2(u^{18}-4u^{17}+\cdots+3u-1)^2$ $\cdot(u^{26}-5u^{25}+\cdots-17u+4)$
c_3, c_7	$u^{10}(u^6-3u^4+2u^2+1)(u^{18}+u^{17}+\cdots+4u+8)^2$ $\cdot(u^{26}-3u^{25}+\cdots-304u+64)$
c_4	$((u+1)^{10})(u^3-u^2+1)^2(u^{18}-4u^{17}+\cdots+3u-1)^2$ $\cdot(u^{26}-5u^{25}+\cdots-17u+4)$
c_5, c_6	$(u^2+1)^3(u^4+u^2+u+1)(u^6-u^5+2u^4-2u^3+2u^2-2u+1)$ $\cdot(u^{26}+5u^{24}+\cdots+7u^2+1)(u^{36}-2u^{35}+\cdots-16u+17)$
c_8	$u^6(u^3+u^2-1)^2(u^4-3u^3+4u^2-3u+2)$ $\cdot((u^{18}-2u^{17}+\cdots-18u-17)^2)(u^{26}+6u^{25}+\cdots+1024u+256)$
c_9, c_{11}	$(u^2+1)^3(u^4+u^2-u+1)(u^6+u^5+2u^4+2u^3+2u^2+2u+1)$ $\cdot(u^{26}+5u^{24}+\cdots+7u^2+1)(u^{36}-2u^{35}+\cdots-16u+17)$
c_{10}, c_{12}	$(u+1)^6(u^4+2u^3+3u^2+u+1)(u^6+3u^5+4u^4+2u^3+1)$ $\cdot(u^{26}+10u^{25}+\cdots+14u+1)(u^{36}+18u^{35}+\cdots+1784u+289)$

VII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^{10})(y^3+3y^2+2y-1)^2(y^{18}+24y^{17}+\cdots-11y+1)^2$ $\cdot(y^{26}+29y^{25}+\cdots-4769y+256)$
c_2, c_4	$((y-1)^{10})(y^3-y^2+2y-1)^2(y^{18}-4y^{17}+\cdots-11y+1)^2$ $\cdot(y^{26}-7y^{25}+\cdots+47y+16)$
c_3, c_7	$y^{10}(y^3-3y^2+2y+1)^2(y^{18}-21y^{17}+\cdots-592y+64)^2$ $\cdot(y^{26}-27y^{25}+\cdots-28928y+4096)$
c_5, c_6, c_9 c_{11}	$(y+1)^6(y^4+2y^3+3y^2+y+1)(y^6+3y^5+4y^4+2y^3+1)$ $\cdot(y^{26}+10y^{25}+\cdots+14y+1)(y^{36}+18y^{35}+\cdots+1784y+289)$
c_8	$y^6(y^3-y^2+2y-1)^2(y^4-y^3+2y^2+7y+4)$ $\cdot(y^{18}+10y^{17}+\cdots-1106y+289)^2$ $\cdot(y^{26}+10y^{25}+\cdots+1540096y+65536)$
c_{10}, c_{12}	$(y-1)^6(y^4+2y^3+7y^2+5y+1)(y^6-y^5+4y^4-2y^3+8y^2+1)$ $\cdot(y^{26}+22y^{25}+\cdots+22y+1)(y^{36}-2y^{35}+\cdots+426376y+83521)$