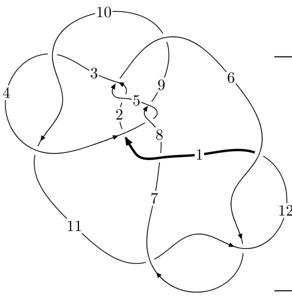
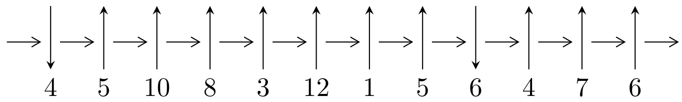
$12n_{0823}$ ($K12n_{0823}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u &= \langle 257u^{24} - 3084u^{23} + \cdots + 64b + 37824,\ -77u^{24} + 410u^{23} + \cdots + 128a + 14912,\\
&\quad u^{25} - 12u^{24} + \cdots + 640u - 128\rangle\\
I_2^u &= \langle -10a^5u^2 + 16a^4u^2 + \cdots - 109a + 76,\\
&\quad a^6 - a^4u^2 - 2a^4u - 2a^3u^2 - 2a^4 - 3a^3u + a^2u^2 - a^3 + a^2u + 4u^2a - a^2 + 7au - 3u^2 + 4a - 4u - 2,\\
&\quad u^3 + u^2 - 1\rangle\\
I_3^u &= \langle 2u^{13} + 7u^{12} + u^{11} - 26u^{10} - 32u^9 + 24u^8 + 74u^7 + 23u^6 - 63u^5 - 51u^4 + 16u^3 + 26u^2 + b - 5,\\
&\quad 5u^{14} + 17u^{13} + \cdots + a - 5,\\
&\quad u^{15} + 3u^{14} - u^{13} - 13u^{12} - 11u^{11} + 18u^{10} + 34u^9 - u^8 - 39u^7 - 19u^6 + 19u^5 + 17u^4 - 4u^3 - 6u^2 + 1\rangle\\
I_4^u &= \langle -44a^7u^2 - 73a^6u^2 + \cdots - 213a + 245,\ -2a^6u^2 - a^5u^2 + \cdots + 7a + 13,\ u^3 + u^2 - 1\rangle
\end{aligned}$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 82 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. $\boldsymbol{I_1^u = \langle 257u^{24} - 3084u^{23} + \cdots + 64b + 37824,\ -77u^{24} + 410u^{23} + \cdots + 128a + 14912,\ u^{25} - 12u^{24} + \cdots + 640u - 128\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

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

$$a_8 = \begin{pmatrix} \frac{77}{128}u^{24} - \frac{205}{64}u^{23} + \cdots + 432u - \frac{233}{2} \\ -\frac{257}{64}u^{24} + \frac{771}{16}u^{23} + \cdots + \frac{4961}{2}u - 591 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} \frac{77}{128}u^{24} - \frac{205}{64}u^{23} + \cdots + 432u - \frac{233}{2} \\ -\frac{853}{64}u^{24} + \frac{579}{4}u^{23} + \cdots + \frac{9947}{2}u - 1105 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} \frac{77}{128}u^{24} - \frac{801}{64}u^{23} + \cdots - 1547u + \frac{795}{2} \\ \frac{715}{64}u^{24} - \frac{1849}{16}u^{23} + \cdots - \frac{5931}{2}u + 601 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -\frac{1}{16}u^{24} + \frac{5}{8}u^{23} + \cdots + 4u + \frac{1}{2} \\ -\frac{1}{8}u^{23} + \frac{5}{4}u^{22} + \cdots - \frac{63}{2}u + 8 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -\frac{15}{16}u^{24} + \frac{167}{16}u^{23} + \cdots + \frac{1391}{4}u - 71 \\ -\frac{15}{16}u^{24} + \frac{77}{8}u^{23} + \cdots + 128u - 16 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} \frac{65}{8}u^{24} - \frac{1579}{16}u^{23} + \cdots - 5798u + 1396 \\ \frac{333}{16}u^{24} - \frac{3509}{16}u^{23} + \cdots - 5955u + 1208 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -\frac{41}{16}u^{24} + \frac{455}{16}u^{23} + \cdots + \frac{3727}{4}u - 191 \\ -\frac{41}{16}u^{24} + \frac{199}{8}u^{23} + \cdots - 40u + 56 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -\frac{421}{64}u^{24} + \frac{4673}{64}u^{23} + \cdots + \frac{11579}{4}u - 663 \\ -\frac{423}{64}u^{24} + \frac{1921}{32}u^{23} + \cdots + 110u + 70 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{553}{16}u^{24} - \frac{3059}{8}u^{23} + \cdots - 15300u + 3482$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{25} - 3u^{24} + \cdots + 2u + 1$
c_2, c_5	$u^{25} + 12u^{24} + \cdots + 640u + 128$
c_3, c_4, c_8 c_{10}	$u^{25} - u^{24} + \cdots + 2u - 1$
c_6, c_{11}, c_{12}	$u^{25} + 6u^{24} + \cdots + 40u + 8$
c_7	$u^{25} - 6u^{24} + \cdots - 56u + 464$
c_9	$u^{25} + u^{24} + \cdots - 2u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{25} - 27y^{24} + \cdots + 54y - 1$
c_2, c_5	$y^{25} - 12y^{24} + \cdots + 114688y - 16384$
c_3, c_4, c_8 c_{10}	$y^{25} - 5y^{24} + \cdots + 18y - 1$
c_6, c_{11}, c_{12}	$y^{25} + 22y^{24} + \cdots + 416y - 64$
c_7	$y^{25} - 2y^{24} + \cdots - 995392y - 215296$
c_9	$y^{25} - 23y^{24} + \cdots + 66y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.439994 + 0.950507I$ $a = 0.449056 + 0.849462I$ $b = 0.905847 + 0.107899I$	$-3.00593 - 0.74051I$	$5.05508 + 0.18570I$
$u = 0.439994 - 0.950507I$ $a = 0.449056 - 0.849462I$ $b = 0.905847 - 0.107899I$	$-3.00593 + 0.74051I$	$5.05508 - 0.18570I$
$u = 0.617552 + 0.911770I$ $a = -0.520485 - 0.949952I$ $b = -1.202860 - 0.092876I$	$-9.79766 + 1.38415I$	$2.19427 - 0.69570I$
$u = 0.617552 - 0.911770I$ $a = -0.520485 + 0.949952I$ $b = -1.202860 + 0.092876I$	$-9.79766 - 1.38415I$	$2.19427 + 0.69570I$
$u = -0.155216 + 0.814496I$ $a = 0.569549 + 0.594113I$ $b = 0.482434 + 0.018405I$	$-2.49837 - 1.57308I$	$4.64082 + 4.61190I$
$u = -0.155216 - 0.814496I$ $a = 0.569549 - 0.594113I$ $b = 0.482434 - 0.018405I$	$-2.49837 + 1.57308I$	$4.64082 - 4.61190I$
$u = 0.473172 + 1.138930I$ $a = -0.327562 - 0.860505I$ $b = -0.840347 - 0.335702I$	$-1.79770 - 4.91771I$	$8.41927 + 6.28509I$
$u = 0.473172 - 1.138930I$ $a = -0.327562 + 0.860505I$ $b = -0.840347 + 0.335702I$	$-1.79770 + 4.91771I$	$8.41927 - 6.28509I$
$u = 1.097810 + 0.681530I$ $a = -0.926077 - 0.303192I$ $b = -1.55305 + 0.96565I$	$-8.25231 + 4.52896I$	$4.39857 - 4.77646I$
$u = 1.097810 - 0.681530I$ $a = -0.926077 + 0.303192I$ $b = -1.55305 - 0.96565I$	$-8.25231 - 4.52896I$	$4.39857 + 4.77646I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.569528 + 1.179720I$ $a = 0.270690 + 0.922850I$ $b = 0.887146 + 0.468456I$	$-7.44241 - 8.72137I$	$5.19162 + 6.35185I$
$u = 0.569528 - 1.179720I$ $a = 0.270690 - 0.922850I$ $b = 0.887146 - 0.468456I$	$-7.44241 + 8.72137I$	$5.19162 - 6.35185I$
$u = 1.32152$ $a = -0.469575$ $b = -1.93007$	5.64216	30.1590
$u = 1.306160 + 0.296832I$ $a = 0.548745 + 0.102029I$ $b = 1.63919 - 0.62194I$	$1.99285 + 5.34908I$	$13.9471 - 13.2059I$
$u = 1.306160 - 0.296832I$ $a = 0.548745 - 0.102029I$ $b = 1.63919 + 0.62194I$	$1.99285 - 5.34908I$	$13.9471 + 13.2059I$
$u = 1.214200 + 0.704239I$ $a = 0.907328 + 0.113165I$ $b = 1.41310 - 1.02138I$	$-0.61951 + 6.87942I$	$8.00000 - 4.38169I$
$u = 1.214200 - 0.704239I$ $a = 0.907328 - 0.113165I$ $b = 1.41310 + 1.02138I$	$-0.61951 - 6.87942I$	$8.00000 + 4.38169I$
$u = 1.22071 + 0.77249I$ $a = -0.990264 - 0.040589I$ $b = -1.37746 + 1.13069I$	$0.51235 + 11.71780I$	$8.00000 - 8.48371I$
$u = 1.22071 - 0.77249I$ $a = -0.990264 + 0.040589I$ $b = -1.37746 - 1.13069I$	$0.51235 - 11.71780I$	$8.00000 + 8.48371I$
$u = 1.20009 + 0.80742I$ $a = 1.066910 + 0.022071I$ $b = 1.40118 - 1.21648I$	$-5.4265 + 15.7509I$	$8.00000 - 8.57855I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.20009 - 0.80742I$ $a = 1.066910 - 0.022071I$ $b = 1.40118 + 1.21648I$	$-5.4265 - 15.7509I$	$8.00000 + 8.57855I$
$u = -0.338292$ $a = -1.19055$ $b = -0.300946$	0.647725	15.2540
$u = -1.66374$ $a = 0.444714$ $b = 0.277763$	6.10335	20.9380
$u = -1.64375 + 0.30866I$ $a = -0.440186 - 0.060519I$ $b = -0.278561 - 0.018758I$	$2.17466 - 4.23595I$	0
$u = -1.64375 - 0.30866I$ $a = -0.440186 + 0.060519I$ $b = -0.278561 + 0.018758I$	$2.17466 + 4.23595I$	0

II. $\boldsymbol{I_2^u =}$
$\boldsymbol{\langle -10a^5u^2+16a^4u^2+\cdots-109a+76,\ -a^4u^2-2a^3u^2+\cdots+4a-2,\ u^3+u^2-1\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u \\ u^2+u-1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} a \\ 0.169492a^5u^2 - 0.271186a^4u^2 + \cdots + 1.84746a - 1.28814 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} a \\ 0.169492a^5u^2 - 0.271186a^4u^2 + \cdots + 1.84746a - 1.28814 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -0.135593a^5u^2 + 0.0169492a^4u^2 + \cdots - 0.677966a + 0.830508 \\ -0.457627a^5u^2 - 0.0677966a^4u^2 + \cdots + 0.711864a - 1.32203 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -a^2u \\ 0.0677966a^5u^2 + 0.491525a^4u^2 + \cdots - 0.661017a + 1.08475 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 0.203390a^5u^2 - 0.525424a^4u^2 + \cdots + 1.01695a + 1.25424 \\ 0.610169a^5u^2 + 0.423729a^4u^2 + \cdots + 1.05085a + 0.762712 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -0.271186a^5u^2 + 1.03390a^4u^2 + \cdots - 1.35593a + 0.661017 \\ -a^5u^2 - a^3u^2 + \cdots - a^2 + 1 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 0.0677966a^5u^2 - 0.508475a^4u^2 + \cdots + 0.338983a + 2.08475 \\ -0.0169492a^5u^2 + 0.627119a^4u^2 + \cdots + 0.915254a + 0.728814 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0.237288a^5u^2 + 0.220339a^4u^2 + \cdots + 1.18644a - 1.20339 \\ 1.67797a^5u^2 - 0.0847458a^4u^2 + \cdots + 0.389831a + 0.847458 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{152}{59}a^5u^2 + \frac{40}{59}a^4u^2 + \cdots - \frac{184}{59}a + \frac{1134}{59}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{18} - 2u^{17} + \cdots - 252u - 27$
c_2, c_5	$(u^3 - u^2 + 1)^6$
c_3, c_4, c_8 c_{10}	$u^{18} - 3u^{16} + \cdots + 6u - 11$
c_6, c_{11}, c_{12}	$(u^3 + 2u + 1)^6$
c_7	$(u^3 + 3u^2 + 5u + 2)^6$
c_9	$u^{18} + u^{16} + \cdots - 52u - 43$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{18} - 6y^{17} + \cdots - 81000y + 729$
c_2, c_5	$(y^3 - y^2 + 2y - 1)^6$
c_3, c_4, c_8 c_{10}	$y^{18} - 6y^{17} + \cdots - 1136y + 121$
c_6, c_{11}, c_{12}	$(y^3 + 4y^2 + 4y - 1)^6$
c_7	$(y^3 + y^2 + 13y - 4)^6$
c_9	$y^{18} + 2y^{17} + \cdots - 17840y + 1849$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.877439 + 0.744862I$ $a = -0.927224 - 0.015489I$ $b = -0.407238 - 0.969235I$	$2.69787 - 2.82812I$	$17.1261 + 2.9794I$
$u = -0.877439 + 0.744862I$ $a = 1.104550 - 0.072177I$ $b = 1.63644 + 0.28753I$	$-7.53006 + 2.30982I$	$5.17231 - 0.22957I$
$u = -0.877439 + 0.744862I$ $a = 0.187603 + 1.191150I$ $b = -0.734633 + 0.080557I$	$-7.53006 + 2.30982I$	$5.17231 - 0.22957I$
$u = -0.877439 + 0.744862I$ $a = -1.241110 - 0.215785I$ $b = -1.66753 - 0.94699I$	$-7.53006 - 7.96606I$	$5.17231 + 6.18847I$
$u = -0.877439 + 0.744862I$ $a = 0.346778 - 1.240900I$ $b = 0.918807 + 0.323963I$	$-7.53006 - 7.96606I$	$5.17231 + 6.18847I$
$u = -0.877439 + 0.744862I$ $a = 0.529395 + 0.353208I$ $b = 0.254152 + 1.224170I$	$2.69787 - 2.82812I$	$17.1261 + 2.9794I$
$u = -0.877439 - 0.744862I$ $a = -0.927224 + 0.015489I$ $b = -0.407238 + 0.969235I$	$2.69787 + 2.82812I$	$17.1261 - 2.9794I$
$u = -0.877439 - 0.744862I$ $a = 1.104550 + 0.072177I$ $b = 1.63644 - 0.28753I$	$-7.53006 - 2.30982I$	$5.17231 + 0.22957I$
$u = -0.877439 - 0.744862I$ $a = 0.187603 - 1.191150I$ $b = -0.734633 - 0.080557I$	$-7.53006 - 2.30982I$	$5.17231 + 0.22957I$
$u = -0.877439 - 0.744862I$ $a = -1.241110 + 0.215785I$ $b = -1.66753 + 0.94699I$	$-7.53006 + 7.96606I$	$5.17231 - 6.18847I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.877439 - 0.744862I$ $a = 0.346778 + 1.240900I$ $b = 0.918807 - 0.323963I$	$-7.53006 + 7.96606I$	$5.17231 - 6.18847I$
$u = -0.877439 - 0.744862I$ $a = 0.529395 - 0.353208I$ $b = 0.254152 - 1.224170I$	$2.69787 + 2.82812I$	$17.1261 - 2.9794I$
$u = 0.754878$ $a = 0.737750 + 0.212805I$ $b = 0.61766 + 2.03584I$	$-3.39248 + 5.13794I$	$11.70158 - 3.20902I$
$u = 0.754878$ $a = 0.737750 - 0.212805I$ $b = 0.61766 - 2.03584I$	$-3.39248 - 5.13794I$	$11.70158 + 3.20902I$
$u = 0.754878$ $a = -0.90888 + 1.32075I$ $b = -0.090652 - 1.376170I$	$-3.39248 - 5.13794I$	$11.70158 + 3.20902I$
$u = 0.754878$ $a = -0.90888 - 1.32075I$ $b = -0.090652 + 1.376170I$	$-3.39248 + 5.13794I$	$11.70158 - 3.20902I$
$u = 0.754878$ $a = -1.94302$ $b = -1.43643$	6.83546	23.6550
$u = 0.754878$ $a = 2.28528$ $b = 0.382411$	6.83546	23.6550

III.

$$\boldsymbol{I^u_3 = \langle 2u^{13}+7u^{12}+\cdots+b-5,\ 5u^{14}+17u^{13}+\cdots+a-5,\ u^{15}+3u^{14}+\cdots-6u^2+1\rangle}$$

(i) Arc colorings

$$a_2 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_5 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_3 = \begin{pmatrix}1\\-u^2\end{pmatrix}$$
$$a_6 = \begin{pmatrix}u\\-u^3+u\end{pmatrix}$$
$$a_8 = \begin{pmatrix}-5u^{14}-17u^{13}+\cdots+4u+5\\-2u^{13}-7u^{12}+\cdots-26u^2+5\end{pmatrix}$$
$$a_9 = \begin{pmatrix}-5u^{14}-17u^{13}+\cdots+4u+5\\3u^{14}+8u^{13}+\cdots-5u+3\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}-7u^{14}-24u^{13}+\cdots+9u+5\\u^{14}+2u^{13}+\cdots-2u+2\end{pmatrix}$$
$$a_4 = \begin{pmatrix}u^{14}+4u^{13}+\cdots-10u-6\\u^{14}+3u^{13}+\cdots-4u^2-5u\end{pmatrix}$$
$$a_1 = \begin{pmatrix}5u^{14}+16u^{13}+\cdots-17u-8\\u^{13}+3u^{12}+\cdots-4u-4\end{pmatrix}$$
$$a_7 = \begin{pmatrix}-9u^{14}-32u^{13}+\cdots+15u+15\\-4u^{14}-14u^{13}+\cdots+10u+3\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}6u^{14}+19u^{13}+\cdots-21u-8\\u^{14}+4u^{13}+\cdots-7u-4\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}3u^{14}+13u^{13}+\cdots-3u-4\\3u^{14}+9u^{13}+\cdots-u-1\end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 8u^{14}+21u^{13}-11u^{12}-84u^{11}-54u^{10}+113u^9+166u^8-35u^7-173u^6-38u^5+82u^4+34u^3-32u^2-6u+9$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{15} + 3u^{14} + \cdots + 4u^2 - 1$
c_2	$u^{15} + 3u^{14} + \cdots - 6u^2 + 1$
c_3, c_8	$u^{15} + u^{14} + \cdots + 6u^2 - 1$
c_4, c_{10}	$u^{15} - u^{14} + \cdots - 6u^2 + 1$
c_5	$u^{15} - 3u^{14} + \cdots + 6u^2 - 1$
c_6	$u^{15} + u^{14} + \cdots - 3u^2 + 1$
c_7	$u^{15} - u^{14} + \cdots - 2u + 1$
c_9	$u^{15} + u^{14} + \cdots - 4u^2 + 1$
c_{11}, c_{12}	$u^{15} - u^{14} + \cdots + 3u^2 - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{15} + 7y^{14} + \cdots + 8y - 1$
c_2, c_5	$y^{15} - 11y^{14} + \cdots + 12y - 1$
c_3, c_4, c_8 c_{10}	$y^{15} - 15y^{14} + \cdots + 12y - 1$
c_6, c_{11}, c_{12}	$y^{15} + 15y^{14} + \cdots + 6y - 1$
c_7	$y^{15} - 5y^{14} + \cdots + 2y - 1$
c_9	$y^{15} + 3y^{14} + \cdots + 8y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.772963 + 0.597189I$ $a = -0.827811 - 0.016279I$ $b = -0.343553 - 1.218360I$	$1.77519 - 3.34740I$	$8.50075 + 8.05329I$
$u = -0.772963 - 0.597189I$ $a = -0.827811 + 0.016279I$ $b = -0.343553 + 1.218360I$	$1.77519 + 3.34740I$	$8.50075 - 8.05329I$
$u = 1.21630$ $a = -1.10982$ $b = -0.609066$	8.60341	19.2250
$u = 1.216020 + 0.268411I$ $a = 1.037430 - 0.282211I$ $b = 0.591253 - 0.100818I$	$4.59696 + 3.78442I$	$13.45506 - 3.52568I$
$u = 1.216020 - 0.268411I$ $a = 1.037430 + 0.282211I$ $b = 0.591253 + 0.100818I$	$4.59696 - 3.78442I$	$13.45506 + 3.52568I$
$u = -0.741693 + 1.001970I$ $a = 0.645240 + 0.343179I$ $b = 0.168411 + 0.864224I$	$-1.02527 - 2.06106I$	$10.76904 + 5.89866I$
$u = -0.741693 - 1.001970I$ $a = 0.645240 - 0.343179I$ $b = 0.168411 - 0.864224I$	$-1.02527 + 2.06106I$	$10.76904 - 5.89866I$
$u = -0.581097 + 0.353670I$ $a = 1.215450 - 0.514042I$ $b = 0.12631 + 1.63261I$	$-4.31889 - 5.65349I$	$3.28441 + 7.61935I$
$u = -0.581097 - 0.353670I$ $a = 1.215450 + 0.514042I$ $b = 0.12631 - 1.63261I$	$-4.31889 + 5.65349I$	$3.28441 - 7.61935I$
$u = 0.661672$ $a = 2.39502$ $b = 0.953687$	6.37007	2.43460

Solutions to I_3^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.577868 + 0.178736I$ $a = -2.47388 + 1.02720I$ $b = -0.998690 + 0.209089I$	$1.98344 - 1.67719I$	$4.13214 - 1.25424I$
$u = 0.577868 - 0.178736I$ $a = -2.47388 - 1.02720I$ $b = -0.998690 - 0.209089I$	$1.98344 + 1.67719I$	$4.13214 + 1.25424I$
$u = -1.41521$ $a = 0.382739$ $b = 1.30454$	5.30168	4.34420
$u = -1.42952 + 0.46018I$ $a = -0.430407 - 0.024659I$ $b = -0.868313 - 0.551235I$	$1.65539 - 4.71343I$	$7.35653 + 5.31534I$
$u = -1.42952 - 0.46018I$ $a = -0.430407 + 0.024659I$ $b = -0.868313 + 0.551235I$	$1.65539 + 4.71343I$	$7.35653 - 5.31534I$

IV. $\boldsymbol{I^u_4 =}$
$\boldsymbol{\langle -44a^7u^2-73a^6u^2+\cdots-213a+245,\ -2a^6u^2-a^5u^2+\cdots+7a+13,\ u^3+u^2-1\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u \\ u^2+u-1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} a \\ 0.273292a^7u^2+0.453416a^6u^2+\cdots+1.32298a-1.52174 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} a \\ 0.273292a^7u^2+0.453416a^6u^2+\cdots+1.32298a-1.52174 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -0.677019a^7u^2-0.645963a^6u^2+\cdots+0.745342a+1.56522 \\ -0.658385a^7u^2-0.683230a^6u^2+\cdots+1.40373a-0.652174 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -a^2u \\ 1.36025a^7u^2+0.279503a^6u^2+\cdots+0.0621118a-0.869565 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -1.02484a^7u^2-1.95031a^6u^2+\cdots+2.78882a+0.956522 \\ -1.16149a^7u^2-0.677019a^6u^2+\cdots-0.372671a+1.21739 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -1.72671a^7u^2-2.54658a^6u^2+\cdots+5.32298a+2.47826 \\ 0.00621118a^7u^2-2.01242a^6u^2+\cdots+2.55280a-1.73913 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 0.608696a^7u^2-2.21739a^6u^2+\cdots+3.17391a-0.434783 \\ -\frac{15}{7}a^7u^2-\frac{5}{7}a^6u^2+\cdots+\frac{9}{7}a+1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -0.950311a^7u^2+1.90062a^6u^2+\cdots-2.57764a-2.91304 \\ 0.124224a^7u^2+3.75155a^6u^2+\cdots-4.94410a-0.782609 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{52}{23}a^7u^2-\frac{80}{23}a^6u^2+\cdots+\frac{248}{23}a+\frac{254}{23}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{24} - 5u^{23} + \cdots - 20u + 109$
c_2, c_5	$(u^3 - u^2 + 1)^8$
c_3, c_4, c_8 c_{10}	$u^{24} + u^{23} + \cdots - 24u + 7$
c_6, c_{11}, c_{12}	$(u^4 - u^3 + 2u^2 - 2u + 1)^6$
c_7	$(u^2 - u + 1)^{12}$
c_9	$u^{24} + 3u^{23} + \cdots + 20u + 19$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{24} + 9y^{23} + \cdots + 27504y + 11881$
c_2, c_5	$(y^3 - y^2 + 2y - 1)^8$
c_3, c_4, c_8 c_{10}	$y^{24} - 15y^{23} + \cdots - 716y + 49$
c_6, c_{11}, c_{12}	$(y^4 + 3y^3 + 2y^2 + 1)^6$
c_7	$(y^2 + y + 1)^{12}$
c_9	$y^{24} + 5y^{23} + \cdots + 1424y + 361$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.877439 + 0.744862I$ $a = -0.040773 - 0.997477I$ $b = 0.617792 + 0.097671I$	$-1.37919 - 0.79824I$	$8.49024 - 0.48465I$
$u = -0.877439 + 0.744862I$ $a = 0.964624 - 0.327636I$ $b = 0.525863 + 0.945972I$	$-1.37919 - 4.85801I$	$8.49024 + 6.44355I$
$u = -0.877439 + 0.744862I$ $a = -1.039300 - 0.058321I$ $b = -1.39358 - 0.47039I$	$-1.37919 - 0.79824I$	$8.49024 - 0.48465I$
$u = -0.877439 + 0.744862I$ $a = 1.033460 + 0.263154I$ $b = 0.303126 + 0.916009I$	$-1.37919 - 0.79824I$	$8.49024 - 0.48465I$
$u = -0.877439 + 0.744862I$ $a = -0.254667 + 1.040960I$ $b = -0.745244 - 0.312818I$	$-1.37919 - 4.85801I$	$8.49024 + 6.44355I$
$u = -0.877439 + 0.744862I$ $a = -0.747266 - 0.522075I$ $b = -0.56367 - 1.44433I$	$-1.37919 - 4.85801I$	$8.49024 + 6.44355I$
$u = -0.877439 + 0.744862I$ $a = 1.121100 + 0.196208I$ $b = 1.43883 + 0.82244I$	$-1.37919 - 4.85801I$	$8.49024 + 6.44355I$
$u = -0.877439 + 0.744862I$ $a = -0.159736 - 0.339671I$ $b = 0.154539 - 1.116840I$	$-1.37919 - 0.79824I$	$8.49024 - 0.48465I$
$u = -0.877439 - 0.744862I$ $a = -0.040773 + 0.997477I$ $b = 0.617792 - 0.097671I$	$-1.37919 + 0.79824I$	$8.49024 + 0.48465I$
$u = -0.877439 - 0.744862I$ $a = 0.964624 + 0.327636I$ $b = 0.525863 - 0.945972I$	$-1.37919 + 4.85801I$	$8.49024 - 6.44355I$

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.877439-0.744862I$ $a=-1.039300+0.058321I$ $b=-1.39358+0.47039I$	$-1.37919+0.79824I$	$8.49024+0.48465I$
$u=-0.877439-0.744862I$ $a=\ \ 1.033460-0.263154I$ $b=\ \ 0.303126-0.916009I$	$-1.37919+0.79824I$	$8.49024+0.48465I$
$u=-0.877439-0.744862I$ $a=-0.254667-1.040960I$ $b=-0.745244+0.312818I$	$-1.37919+4.85801I$	$8.49024-6.44355I$
$u=-0.877439-0.744862I$ $a=-0.747266+0.522075I$ $b=-0.56367+1.44433I$	$-1.37919+4.85801I$	$8.49024-6.44355I$
$u=-0.877439-0.744862I$ $a=\ \ 1.121100-0.196208I$ $b=\ \ 1.43883-0.82244I$	$-1.37919+4.85801I$	$8.49024-6.44355I$
$u=-0.877439-0.744862I$ $a=-0.159736+0.339671I$ $b=\ \ 0.154539+1.116840I$	$-1.37919+0.79824I$	$8.49024+0.48465I$
$u=\ \ 0.754878$ $a=-0.935402+0.185618I$ $b=-0.56365-1.65106I$	$2.75839+2.02988I$	$15.0195-3.4641I$
$u=\ \ 0.754878$ $a=-0.935402-0.185618I$ $b=-0.56365+1.65106I$	$2.75839-2.02988I$	$15.0195+3.4641I$
$u=\ \ 0.754878$ $a=\ \ 1.027300+0.800722I$ $b=\ \ 0.28063-1.38647I$	$2.75839+2.02988I$	$15.0195-3.4641I$
$u=\ \ 0.754878$ $a=\ \ 1.027300-0.800722I$ $b=\ \ 0.28063+1.38647I$	$2.75839-2.02988I$	$15.0195+3.4641I$

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.754878$ $a = 1.88775 + 0.07859I$ $b = 1.63567 + 0.61747I$	$2.75839 + 2.02988I$	$15.0195 - 3.4641I$
$u = 0.754878$ $a = 1.88775 - 0.07859I$ $b = 1.63567 - 0.61747I$	$2.75839 - 2.02988I$	$15.0195 + 3.4641I$
$u = 0.754878$ $a = -2.35710 + 0.41119I$ $b = -0.190292 - 0.406791I$	$2.75839 - 2.02988I$	$15.0195 + 3.4641I$
$u = 0.754878$ $a = -2.35710 - 0.41119I$ $b = -0.190292 + 0.406791I$	$2.75839 + 2.02988I$	$15.0195 - 3.4641I$

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^{15}+3u^{14}+\cdots+4u^2-1)(u^{18}-2u^{17}+\cdots-252u-27)$ $\cdot(u^{24}-5u^{23}+\cdots-20u+109)(u^{25}-3u^{24}+\cdots+2u+1)$
c_2	$((u^3-u^2+1)^{14})(u^{15}+3u^{14}+\cdots-6u^2+1)$ $\cdot(u^{25}+12u^{24}+\cdots+640u+128)$
c_3, c_8	$(u^{15}+u^{14}+\cdots+6u^2-1)(u^{18}-3u^{16}+\cdots+6u-11)$ $\cdot(u^{24}+u^{23}+\cdots-24u+7)(u^{25}-u^{24}+\cdots+2u-1)$
c_4, c_{10}	$(u^{15}-u^{14}+\cdots-6u^2+1)(u^{18}-3u^{16}+\cdots+6u-11)$ $\cdot(u^{24}+u^{23}+\cdots-24u+7)(u^{25}-u^{24}+\cdots+2u-1)$
c_5	$((u^3-u^2+1)^{14})(u^{15}-3u^{14}+\cdots+6u^2-1)$ $\cdot(u^{25}+12u^{24}+\cdots+640u+128)$
c_6	$((u^3+2u+1)^6)(u^4-u^3+2u^2-2u+1)^6(u^{15}+u^{14}+\cdots-3u^2+1)$ $\cdot(u^{25}+6u^{24}+\cdots+40u+8)$
c_7	$((u^2-u+1)^{12})(u^3+3u^2+5u+2)^6(u^{15}-u^{14}+\cdots-2u+1)$ $\cdot(u^{25}-6u^{24}+\cdots-56u+464)$
c_9	$(u^{15}+u^{14}+\cdots-4u^2+1)(u^{18}+u^{16}+\cdots-52u-43)$ $\cdot(u^{24}+3u^{23}+\cdots+20u+19)(u^{25}+u^{24}+\cdots-2u+1)$
c_{11}, c_{12}	$((u^3+2u+1)^6)(u^4-u^3+2u^2-2u+1)^6(u^{15}-u^{14}+\cdots+3u^2-1)$ $\cdot(u^{25}+6u^{24}+\cdots+40u+8)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y^{15}+7y^{14}+\cdots+8y-1)(y^{18}-6y^{17}+\cdots-81000y+729)$ $\cdot(y^{24}+9y^{23}+\cdots+27504y+11881)(y^{25}-27y^{24}+\cdots+54y-1)$
c_2, c_5	$((y^3-y^2+2y-1)^{14})(y^{15}-11y^{14}+\cdots+12y-1)$ $\cdot(y^{25}-12y^{24}+\cdots+114688y-16384)$
c_3, c_4, c_8 c_{10}	$(y^{15}-15y^{14}+\cdots+12y-1)(y^{18}-6y^{17}+\cdots-1136y+121)$ $\cdot(y^{24}-15y^{23}+\cdots-716y+49)(y^{25}-5y^{24}+\cdots+18y-1)$
c_6, c_{11}, c_{12}	$((y^3+4y^2+4y-1)^6)(y^4+3y^3+2y^2+1)^6(y^{15}+15y^{14}+\cdots+6y-1)$ $\cdot(y^{25}+22y^{24}+\cdots+416y-64)$
c_7	$((y^2+y+1)^{12})(y^3+y^2+13y-4)^6(y^{15}-5y^{14}+\cdots+2y-1)$ $\cdot(y^{25}-2y^{24}+\cdots-995392y-215296)$
c_9	$(y^{15}+3y^{14}+\cdots+8y-1)(y^{18}+2y^{17}+\cdots-17840y+1849)$ $\cdot(y^{24}+5y^{23}+\cdots+1424y+361)(y^{25}-23y^{24}+\cdots+66y-1)$