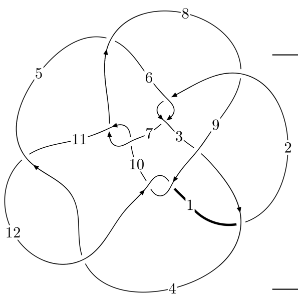
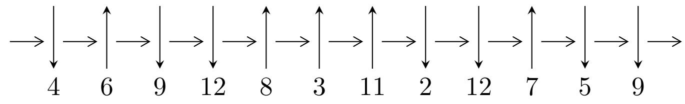
$12n_{0781}$ ($K12n_{0781}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & 155164409u^{19} - 1173171752u^{18} + \cdots + 19656063b + 4652516609, \\
& 3194027005u^{19} - 23918980957u^{18} + \cdots + 864866772a + 84007929151, \\
& u^{20} - 9u^{19} + \cdots - 101u - 44\rangle \\
I_2^u = \langle & 1153398772571u^{26}a - 27659986158013u^{26} + \cdots + 47932282550416a + 517986614105786, \\
& 6.62034 \times 10^{14}au^{26} + 1.26437 \times 10^{15}u^{26} + \cdots - 4.24307 \times 10^{15}a - 1.06993 \times 10^{16},\ u^{27} + 4u^{26} + \cdots - 16u + \\
I_3^u = \langle & b + u - 2,\ 2u^3 - 12u^2 + 5a + 19u - 7,\ u^4 - 6u^3 + 12u^2 - 11u + 5\rangle \\
I_4^u = \langle & u^{10}a + 2u^{11} + \cdots - a - 3,\ 2u^{11}a + 4u^{11} + \cdots - 3a + 10, \\
& u^{12} + 3u^{11} - 2u^{10} - 14u^9 - 7u^8 + 19u^7 + 20u^6 - 4u^5 - 13u^4 - 7u^3 + 4u + 1\rangle
\end{aligned}$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 102 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.

$$I^u_1 = \langle 1.55\times10^{8}u^{19}-1.17\times10^{9}u^{18}+\cdots+1.97\times10^{7}b+4.65\times10^{9},\ 3.19\times10^{9}u^{19}-2.39\times10^{10}u^{18}+\cdots+8.65\times10^{8}a+8.40\times10^{10},\ u^{20}-9u^{19}+\cdots-101u-44\rangle$$

(i) Arc colorings

$$a_3 = \begin{pmatrix}1\\0\end{pmatrix}$$

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

$$a_4 = \begin{pmatrix}1\\u^2\end{pmatrix}$$

$$a_6 = \begin{pmatrix}-3.69309u^{19}+27.6563u^{18}+\cdots-289.384u-97.1340\\-7.89397u^{19}+59.6850u^{18}+\cdots-701.033u-236.696\end{pmatrix}$$

$$a_7 = \begin{pmatrix}-11.5871u^{19}+87.3412u^{18}+\cdots-990.417u-333.830\\-7.89397u^{19}+59.6850u^{18}+\cdots-701.033u-236.696\end{pmatrix}$$

$$a_2 = \begin{pmatrix}-0.729812u^{19}+5.09498u^{18}+\cdots-10.5444u-0.980246\\-3.00124u^{19}+23.1501u^{18}+\cdots-293.563u-98.7110\end{pmatrix}$$

$$a_1 = \begin{pmatrix}-0.770109u^{19}+6.89068u^{18}+\cdots-123.191u-34.8650\\1.39273u^{19}-6.70756u^{18}+\cdots-150.601u-35.6579\end{pmatrix}$$

$$a_8 = \begin{pmatrix}1.32525u^{19}-10.3344u^{18}+\cdots+119.923u+43.4460\\-2.61701u^{19}+19.7532u^{18}+\cdots-222.509u-77.4331\end{pmatrix}$$

$$a_5 = \begin{pmatrix}-3.35278u^{19}+25.4969u^{18}+\cdots-322.784u-103.076\\-4.67803u^{19}+35.8313u^{18}+\cdots-442.706u-147.522\end{pmatrix}$$

$$a_{12} = \begin{pmatrix}-0.770109u^{19}+6.89068u^{18}+\cdots-123.191u-34.8650\\-0.0402972u^{19}+1.79570u^{18}+\cdots-112.646u-33.8848\end{pmatrix}$$

$$a_{10} = \begin{pmatrix}-7.78475u^{19}+58.9253u^{18}+\cdots-701.929u-238.453\\-11.1375u^{19}+84.4222u^{18}+\cdots-1023.71u-342.529\end{pmatrix}$$

$$a_{11} = \begin{pmatrix}-4.05370u^{19}+30.6802u^{18}+\cdots-397.822u-137.762\\-8.13629u^{19}+61.2722u^{18}+\cdots-730.150u-243.818\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{1862218903}{19656063}u^{19}-\frac{13770753601}{19656063}u^{18}+\cdots+\frac{47665991273}{6552021}u+\frac{49632160054}{19656063}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_9, c_{12}	$u^{20} + 3u^{19} + \cdots + 7u + 1$
c_2, c_6, c_7 c_{10}	$u^{20} - 3u^{18} + \cdots - 2u - 1$
c_3	$u^{20} - 9u^{19} + \cdots - 101u - 44$
c_4, c_8, c_{11}	$u^{20} - u^{19} + \cdots + u - 1$
c_5	$u^{20} + 4u^{19} + \cdots + 371u + 44$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_9, c_{12}	$y^{20} - 31y^{19} + \cdots - 53y + 1$
c_2, c_6, c_7 c_{10}	$y^{20} - 6y^{19} + \cdots - 2y + 1$
c_3	$y^{20} - 29y^{19} + \cdots - 23841y + 1936$
c_4, c_8, c_{11}	$y^{20} + 9y^{19} + \cdots + 3y + 1$
c_5	$y^{20} - 22y^{19} + \cdots - 10041y + 1936$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.052670 + 0.214579I$ $a = 0.32175 - 1.92778I$ $b = -0.836827 - 0.543539I$	$6.83483 + 4.33332I$	$0.05876 - 7.63423I$
$u = -1.052670 - 0.214579I$ $a = 0.32175 + 1.92778I$ $b = -0.836827 + 0.543539I$	$6.83483 - 4.33332I$	$0.05876 + 7.63423I$
$u = 1.120110 + 0.346275I$ $a = -0.233306 - 0.424229I$ $b = -0.38707 - 1.48766I$	$-5.30551 - 1.26066I$	$2.12940 + 5.78685I$
$u = 1.120110 - 0.346275I$ $a = -0.233306 + 0.424229I$ $b = -0.38707 + 1.48766I$	$-5.30551 + 1.26066I$	$2.12940 - 5.78685I$
$u = -0.476182 + 0.251897I$ $a = 0.298266 + 0.199444I$ $b = 0.127716 - 0.483656I$	$-0.934143 + 0.731157I$	$-6.62873 - 3.56102I$
$u = -0.476182 - 0.251897I$ $a = 0.298266 - 0.199444I$ $b = 0.127716 + 0.483656I$	$-0.934143 - 0.731157I$	$-6.62873 + 3.56102I$
$u = 1.46200 + 0.11516I$ $a = -0.105955 + 0.364783I$ $b = 0.313911 + 0.848453I$	$-7.00266 + 1.06770I$	$-8.57959 - 5.53529I$
$u = 1.46200 - 0.11516I$ $a = -0.105955 - 0.364783I$ $b = 0.313911 - 0.848453I$	$-7.00266 - 1.06770I$	$-8.57959 + 5.53529I$
$u = -0.42309 + 1.47138I$ $a = -1.165830 + 0.209425I$ $b = 1.44769 + 0.49745I$	$7.84975 + 9.25606I$	$2.98645 - 8.19728I$
$u = -0.42309 - 1.47138I$ $a = -1.165830 - 0.209425I$ $b = 1.44769 - 0.49745I$	$7.84975 - 9.25606I$	$2.98645 + 8.19728I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.44287 + 0.52695I$ $a = 1.215020 + 0.143277I$ $b = -0.794041 - 0.102232I$	$2.39136 + 0.46763I$	$16.5681 - 6.4930I$
$u = 1.44287 - 0.52695I$ $a = 1.215020 - 0.143277I$ $b = -0.794041 + 0.102232I$	$2.39136 - 0.46763I$	$16.5681 + 6.4930I$
$u = -0.374420 + 0.266879I$ $a = -3.88796 + 1.78468I$ $b = 0.790015 - 0.335634I$	$9.03012 - 2.73757I$	$11.18044 + 1.41623I$
$u = -0.374420 - 0.266879I$ $a = -3.88796 - 1.78468I$ $b = 0.790015 + 0.335634I$	$9.03012 + 2.73757I$	$11.18044 - 1.41623I$
$u = 1.67183$ $a = 0.0164989$ $b = 0.556210$	-7.42843	21.0830
$u = 1.64455 + 0.32821I$ $a = -0.97484 - 1.07134I$ $b = 0.955066 - 0.584622I$	$-3.92374 - 8.34608I$	$0. + 8.57009I$
$u = 1.64455 - 0.32821I$ $a = -0.97484 + 1.07134I$ $b = 0.955066 + 0.584622I$	$-3.92374 + 8.34608I$	$0. - 8.57009I$
$u = 1.66385 + 0.49105I$ $a = 0.747318 + 0.938443I$ $b = -1.33112 + 0.78381I$	$1.0956 - 16.1913I$	$1.21980 + 7.93611I$
$u = 1.66385 - 0.49105I$ $a = 0.747318 - 0.938443I$ $b = -1.33112 - 0.78381I$	$1.0956 + 16.1913I$	$1.21980 - 7.93611I$
$u = -2.68586$ $a = 0.713636$ $b = -1.12689$	3.80648	0

II. $I_2^u = \langle 1.15 \times 10^{12} au^{26} - 2.77 \times 10^{13} u^{26} + \cdots + 4.79 \times 10^{13} a + 5.18 \times 10^{14},\ 6.62 \times 10^{14} au^{26} + 1.26 \times 10^{15} u^{26} + \cdots - 4.24 \times 10^{15} a - 1.07 \times 10^{16},\ u^{27} + 4u^{26} + \cdots - 16u + 1 \rangle$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} a \\ -0.0242410au^{26} + 0.581330u^{26} + \cdots - 1.00739a - 10.8865 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -0.0242410au^{26} + 0.581330u^{26} + \cdots - 0.00739376a - 10.8865 \\ -0.0242410au^{26} + 0.581330u^{26} + \cdots - 1.00739a - 10.8865 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -1.08669au^{26} + 0.00739376u^{26} + \cdots + 7.02849a + 7.42850 \\ -0.0360384au^{26} - 1.26454u^{26} + \cdots - 0.689023a + 8.59574 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -0.841478au^{26} - u^{26} + \cdots + 6.18701a + 16 \\ 0.337969au^{26} - 1.00739u^{26} + \cdots - 0.596266a + 8.57150 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -1.50664au^{26} - 2.66029u^{26} + \cdots + 10.2782a + 26.5660 \\ -0.242104au^{26} - 1.76324u^{26} + \cdots + 1.68247a + 6.29618 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 0.513982au^{26} - 4.80755u^{26} + \cdots - 2.50550a + 27.3198 \\ 0.513982au^{26} + 1.68297u^{26} + \cdots - 2.50550a - 9.53524 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -0.841478au^{26} - u^{26} + \cdots + 6.18701a + 16 \\ 0.245212au^{26} - 1.00739u^{26} + \cdots - 0.841478a + 8.57150 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 2.50550au^{26} + 4.15537u^{26} + \cdots - 10.7922a - 38.4438 \\ 0.398816u^{26} + 2.23271u^{25} + \cdots + 57.1829u - 5.41613 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 1.92417au^{26} + 3.36740u^{26} + \cdots + 0.0943422a - 27.9026 \\ -0.396547u^{26} + 0.153675u^{25} + \cdots + 32.0090u - 1.30351 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= \frac{195093488669178}{47580483876995}u^{26} + \frac{621166284588117}{47580483876995}u^{25} + \cdots + \frac{10739526635696416}{47580483876995}u - \frac{1670488305527964}{47580483876995}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_9, c_{12}	$u^{54} - 9u^{53} + \cdots - 817482u + 44911$
c_2, c_6, c_7 c_{10}	$u^{54} - 2u^{53} + \cdots - 7504u + 1667$
c_3	$(u^{27} + 4u^{26} + \cdots - 16u + 1)^2$
c_4, c_8, c_{11}	$u^{54} + 3u^{53} + \cdots - 7068u + 1763$
c_5	$(u^{27} - 2u^{26} + \cdots - 67u + 47)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_9, c_{12}	$y^{54} - 53y^{53} + \cdots + 26272962362y + 2016997921$
c_2, c_6, c_7 c_{10}	$y^{54} - 28y^{53} + \cdots - 34895734y + 2778889$
c_3	$(y^{27} - 30y^{26} + \cdots + 108y - 1)^2$
c_4, c_8, c_{11}	$y^{54} + 27y^{53} + \cdots + 38637652y + 3108169$
c_5	$(y^{27} - 20y^{26} + \cdots + 14171y - 2209)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.158532 + 0.935582I$ $a = -1.50310 + 0.50723I$ $b = 1.316050 - 0.206467I$	$2.66520 - 3.11494I$	$4.06258 + 4.43870I$
$u = -0.158532 + 0.935582I$ $a = -0.232784 + 0.158230I$ $b = -0.125783 + 1.310910I$	$2.66520 - 3.11494I$	$4.06258 + 4.43870I$
$u = -0.158532 - 0.935582I$ $a = -1.50310 - 0.50723I$ $b = 1.316050 + 0.206467I$	$2.66520 + 3.11494I$	$4.06258 - 4.43870I$
$u = -0.158532 - 0.935582I$ $a = -0.232784 - 0.158230I$ $b = -0.125783 - 1.310910I$	$2.66520 + 3.11494I$	$4.06258 - 4.43870I$
$u = 1.07088$ $a = 0.20349 + 1.69086I$ $b = -1.039390 + 0.501438I$	7.61014	2.10720
$u = 1.07088$ $a = 0.20349 - 1.69086I$ $b = -1.039390 - 0.501438I$	7.61014	2.10720
$u = 0.221976 + 0.825159I$ $a = 0.865041 - 0.769539I$ $b = -0.188178 - 0.427579I$	$1.85443 + 1.12451I$	$2.23685 + 3.40792I$
$u = 0.221976 + 0.825159I$ $a = 1.56832 + 0.15522I$ $b = -1.056960 - 0.253260I$	$1.85443 + 1.12451I$	$2.23685 + 3.40792I$
$u = 0.221976 - 0.825159I$ $a = 0.865041 + 0.769539I$ $b = -0.188178 + 0.427579I$	$1.85443 - 1.12451I$	$2.23685 - 3.40792I$
$u = 0.221976 - 0.825159I$ $a = 1.56832 - 0.15522I$ $b = -1.056960 + 0.253260I$	$1.85443 - 1.12451I$	$2.23685 - 3.40792I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.772781+0.145831I$ $a=-0.955249+0.172273I$ $b=\ \ 0.942406-0.743444I$	$5.86045+0.50074I$	$-0.026133-1.385067I$
$u=-0.772781+0.145831I$ $a=-0.03004-1.56141I$ $b=-0.956615-0.919647I$	$5.86045+0.50074I$	$-0.026133-1.385067I$
$u=-0.772781-0.145831I$ $a=-0.955249-0.172273I$ $b=\ \ 0.942406+0.743444I$	$5.86045-0.50074I$	$-0.026133+1.385067I$
$u=-0.772781-0.145831I$ $a=-0.03004+1.56141I$ $b=-0.956615+0.919647I$	$5.86045-0.50074I$	$-0.026133+1.385067I$
$u=\ \ 0.732746+0.037797I$ $a=-0.197320+0.642818I$ $b=\ \ 1.097490-0.609563I$	$6.70782-6.19371I$	$1.04615+5.14040I$
$u=\ \ 0.732746+0.037797I$ $a=\ \ 0.39411+1.87802I$ $b=-1.136770+0.758571I$	$6.70782-6.19371I$	$1.04615+5.14040I$
$u=\ \ 0.732746-0.037797I$ $a=-0.197320-0.642818I$ $b=\ \ 1.097490+0.609563I$	$6.70782+6.19371I$	$1.04615-5.14040I$
$u=\ \ 0.732746-0.037797I$ $a=\ \ 0.39411-1.87802I$ $b=-1.136770-0.758571I$	$6.70782+6.19371I$	$1.04615-5.14040I$
$u=-1.41462+0.08838I$ $a=\ \ 0.262151-0.521305I$ $b=\ \ 0.744839-1.008240I$	$-3.85325-2.16315I$	$0.43125+2.34406I$
$u=-1.41462+0.08838I$ $a=\ \ 0.94161+1.25020I$ $b=-0.893423+0.347194I$	$-3.85325-2.16315I$	$0.43125+2.34406I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.41462-0.08838I$ $a=\ 0.262151+0.521305I$ $b=\ 0.744839+1.008240I$	$-3.85325+2.16315I$	$0.43125-2.34406I$
$u=-1.41462-0.08838I$ $a=\ 0.94161-1.25020I$ $b=-0.893423-0.347194I$	$-3.85325+2.16315I$	$0.43125-2.34406I$
$u=\ 0.96419+1.06250I$ $a=-0.777537-0.509617I$ $b=\ 1.49984-0.06654I$	$7.39896-3.81582I$	$3.19122+3.12687I$
$u=\ 0.96419+1.06250I$ $a=\ 0.996480+0.564354I$ $b=-1.52086+0.54966I$	$7.39896-3.81582I$	$3.19122+3.12687I$
$u=\ 0.96419-1.06250I$ $a=-0.777537+0.509617I$ $b=\ 1.49984+0.06654I$	$7.39896+3.81582I$	$3.19122-3.12687I$
$u=\ 0.96419-1.06250I$ $a=\ 0.996480-0.564354I$ $b=-1.52086-0.54966I$	$7.39896+3.81582I$	$3.19122-3.12687I$
$u=\ 1.46227+0.17089I$ $a=-0.70585-1.22803I$ $b=\ 1.080150-0.757376I$	$-2.64494-4.30028I$	$1.62045+0.54924I$
$u=\ 1.46227+0.17089I$ $a=\ 1.11356-1.22226I$ $b=-0.794850-0.366906I$	$-2.64494-4.30028I$	$1.62045+0.54924I$
$u=\ 1.46227-0.17089I$ $a=-0.70585+1.22803I$ $b=\ 1.080150+0.757376I$	$-2.64494+4.30028I$	$1.62045-0.54924I$
$u=\ 1.46227-0.17089I$ $a=\ 1.11356+1.22226I$ $b=-0.794850+0.366906I$	$-2.64494+4.30028I$	$1.62045-0.54924I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.53479$ $a=\ \ 0.414758+0.269711I$ $b=-1.024280-0.077414I$	3.41879	6.41080
$u=-1.53479$ $a=\ \ 0.414758-0.269711I$ $b=-1.024280+0.077414I$	3.41879	6.41080
$u=-1.46424+0.50584I$ $a=\ \ 0.865744-0.882179I$ $b=-1.37593-0.68985I$	$-1.70679+8.63753I$	$0.70129-5.57252I$
$u=-1.46424+0.50584I$ $a=-0.222321+0.420033I$ $b=-0.51373+1.37153I$	$-1.70679+8.63753I$	$0.70129-5.57252I$
$u=-1.46424-0.50584I$ $a=\ \ 0.865744+0.882179I$ $b=-1.37593+0.68985I$	$-1.70679-8.63753I$	$0.70129+5.57252I$
$u=-1.46424-0.50584I$ $a=-0.222321-0.420033I$ $b=-0.51373-1.37153I$	$-1.70679-8.63753I$	$0.70129+5.57252I$
$u=\ \ 1.60572+0.14635I$ $a=\ \ 0.143649+0.671229I$ $b=\ \ 0.676206+1.121340I$	$-3.96610-0.49039I$	$2.17660+0.87451I$
$u=\ \ 1.60572+0.14635I$ $a=-0.032560+0.591612I$ $b=-0.898818+0.272522I$	$-3.96610-0.49039I$	$2.17660+0.87451I$
$u=\ \ 1.60572-0.14635I$ $a=\ \ 0.143649-0.671229I$ $b=\ \ 0.676206-1.121340I$	$-3.96610+0.49039I$	$2.17660-0.87451I$
$u=\ \ 1.60572-0.14635I$ $a=-0.032560-0.591612I$ $b=-0.898818-0.272522I$	$-3.96610+0.49039I$	$2.17660-0.87451I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.61132 + 0.29006I$ $a = -0.953605 + 0.809181I$ $b = 1.074430 + 0.451641I$	$-4.62159 + 3.33366I$	$0. - 1.64502I$
$u = -1.61132 + 0.29006I$ $a = 0.079718 - 0.306892I$ $b = 0.745769 - 0.725411I$	$-4.62159 + 3.33366I$	$0. - 1.64502I$
$u = -1.61132 - 0.29006I$ $a = -0.953605 - 0.809181I$ $b = 1.074430 - 0.451641I$	$-4.62159 - 3.33366I$	$0. + 1.64502I$
$u = -1.61132 - 0.29006I$ $a = 0.079718 + 0.306892I$ $b = 0.745769 + 0.725411I$	$-4.62159 - 3.33366I$	$0. + 1.64502I$
$u = -1.64260 + 0.12656I$ $a = -0.539122 + 1.081180I$ $b = 1.193170 + 0.752557I$	$-2.09892 + 7.32302I$	$1.91859 - 5.85391I$
$u = -1.64260 + 0.12656I$ $a = -0.147988 - 0.383193I$ $b = -0.958048 - 0.349092I$	$-2.09892 + 7.32302I$	$1.91859 - 5.85391I$
$u = -1.64260 - 0.12656I$ $a = -0.539122 - 1.081180I$ $b = 1.193170 - 0.752557I$	$-2.09892 - 7.32302I$	$1.91859 + 5.85391I$
$u = -1.64260 - 0.12656I$ $a = -0.147988 + 0.383193I$ $b = -0.958048 + 0.349092I$	$-2.09892 - 7.32302I$	$1.91859 + 5.85391I$
$u = 0.341878$ $a = -0.80620 + 4.25915I$ $b = 1.024170 - 0.310510I$	10.0079	6.39560
$u = 0.341878$ $a = -0.80620 - 4.25915I$ $b = 1.024170 + 0.310510I$	10.0079	6.39560

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.1382100 + 0.0296626I$ $a = -2.23980 - 1.90608I$ $b = -0.676102 + 0.783648I$	$1.15814 - 2.56837I$	$-5.68616 + 5.09265I$
$u = 0.1382100 + 0.0296626I$ $a = -4.00516 - 10.10660I$ $b = 0.765217 - 0.171124I$	$1.15814 - 2.56837I$	$-5.68616 + 5.09265I$
$u = 0.1382100 - 0.0296626I$ $a = -2.23980 + 1.90608I$ $b = -0.676102 - 0.783648I$	$1.15814 + 2.56837I$	$-5.68616 - 5.09265I$
$u = 0.1382100 - 0.0296626I$ $a = -4.00516 + 10.10660I$ $b = 0.765217 + 0.171124I$	$1.15814 + 2.56837I$	$-5.68616 - 5.09265I$

III. $\boldsymbol{I^u_3 = \langle b + u - 2,\ 2u^3 - 12u^2 + 5a + 19u - 7,\ u^4 - 6u^3 + 12u^2 - 11u + 5\rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -\frac{2}{5}u^3 + \frac{12}{5}u^2 - \frac{19}{5}u + \frac{7}{5} \\ -u + 2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -\frac{2}{5}u^3 + \frac{12}{5}u^2 - \frac{24}{5}u + \frac{17}{5} \\ -u + 2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -\frac{4}{5}u^3 + \frac{19}{5}u^2 - \frac{23}{5}u + \frac{9}{5} \\ u^2 - 4u + 4 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} \frac{1}{5}u^3 - \frac{1}{5}u^2 - \frac{8}{5}u + \frac{4}{5} \\ 3u^3 - 13u^2 + 13u - 6 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -\frac{1}{5}u^3 + \frac{1}{5}u^2 + \frac{8}{5}u - \frac{4}{5} \\ -u^3 + 5u^2 - 5u + 1 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} \frac{4}{5}u^3 - \frac{19}{5}u^2 + \frac{28}{5}u - \frac{19}{5} \\ u^3 - 3u^2 + 4u - 4 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} \frac{1}{5}u^3 - \frac{1}{5}u^2 - \frac{8}{5}u + \frac{4}{5} \\ u^3 - 4u^2 + 3u - 1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} \frac{11}{5}u^3 - \frac{51}{5}u^2 + \frac{62}{5}u - \frac{31}{5} \\ 3u^3 - 14u^2 + 19u - 11 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} \frac{7}{5}u^3 - \frac{27}{5}u^2 + \frac{19}{5}u - \frac{7}{5} \\ 3u^3 - 13u^2 + 15u - 7 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -22u^2 + 35u - 21$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_9, c_{12}	$y^4 - 5y^3 - 2y^2 - 20y + 1$
c_2, c_6, c_7 c_{10}	$y^4 - 4y^3 + 10y^2 - 9y + 1$
c_3	$y^4 - 12y^3 + 22y^2 - y + 25$
c_4, c_8, c_{11}	$y^4 - y^3 - 2y^2 - 4y + 1$
c_5	$y^4 - 13y^3 + 46y^2 - 64y + 25$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.620433 + 0.769480I$ $a = -1.109540 - 0.805650I$ $b = 1.37957 - 0.76948I$	$8.50524 - 7.16341I$	$5.27273 + 5.92572I$
$u = 0.620433 - 0.769480I$ $a = -1.109540 + 0.805650I$ $b = 1.37957 + 0.76948I$	$8.50524 + 7.16341I$	$5.27273 - 5.92572I$
$u = 1.64145$ $a = -0.140116$ $b = 0.358555$	-7.61222	-22.8250
$u = 3.11769$ $a = 0.759190$ $b = -1.11769$	3.76121	-125.720

IV. $\boldsymbol{I^u_4 =}$
$\boldsymbol{\langle u^{10}a+2u^{11}+\cdots-a-3,\ 2u^{11}a+4u^{11}+\cdots-3a+10,\ u^{12}+3u^{11}+\cdots+4u+1\rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} a \\ -u^{10}a - 2u^{11} + \cdots + a + 3 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u^{10}a - 2u^{11} + \cdots + 2a + 3 \\ -u^{10}a - 2u^{11} + \cdots + a + 3 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 3u^{11}a + 9u^{10}a + \cdots - 14u - 5 \\ u^{10}a + 2u^9a + \cdots - 2u - 1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 3u^{10}a + u^{11} + \cdots - 8u - 4 \\ -6u^{11}a + 3u^{11} + \cdots - 3a + 1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} u^{10}a + u^{11} + \cdots + u + 4 \\ u^{10}a - u^{11} + \cdots - a + 4 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -u^{10}a - u^{11} + \cdots + a - 8 \\ -u^{10}a + 3u^{10} + \cdots + a - 4 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 3u^{10}a + u^{11} + \cdots - 8u - 4 \\ -3u^{11}a + u^{11} + \cdots + 6u + 1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -u^{11}a - 3u^{10}a + \cdots - 7u - 9 \\ -u^{10} - u^9 + 5u^8 + 6u^7 - 7u^6 - 11u^5 + u^4 + 5u^3 + 2u^2 + 2u - 2 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -3u^{11}a - 10u^{10}a + \cdots + 3a - 1 \\ -u^{10} - 2u^9 + 3u^8 + 9u^7 + u^6 - 11u^5 - 7u^4 + u^3 + 2u^2 + 3u \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes
$= 2u^{11} + 3u^{10} - 11u^9 - 19u^8 + 17u^7 + 42u^6 + 2u^5 - 34u^4 - 22u^3 - 2u^2 + 11u + 10$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_9	$u^{24} - 6u^{23} + \cdots + 10u + 1$
c_2, c_7	$u^{24} - u^{23} + \cdots + u^2 + 1$
c_3	$(u^{12} + 3u^{11} + \cdots + 4u + 1)^2$
c_4	$u^{24} + 10u^{22} + \cdots + 8u + 1$
c_5	$(u^{12} + 5u^{11} + \cdots - u + 1)^2$
c_6, c_{10}	$u^{24} + u^{23} + \cdots + u^2 + 1$
c_8, c_{11}	$u^{24} + 10u^{22} + \cdots - 8u + 1$
c_{12}	$u^{24} + 6u^{23} + \cdots - 10u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_9, c_{12}	$y^{24} - 12y^{23} + \cdots - 22y + 1$
c_2, c_6, c_7 c_{10}	$y^{24} - 7y^{23} + \cdots + 2y + 1$
c_3	$(y^{12} - 13y^{11} + \cdots - 16y + 1)^2$
c_4, c_8, c_{11}	$y^{24} + 20y^{23} + \cdots - 12y + 1$
c_5	$(y^{12} - 11y^{11} + \cdots - 15y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.825594 + 0.098170I$ $a = -0.53917 - 2.00160I$ $b = -0.762732 - 0.663101I$	$7.88103 + 3.00613I$	$2.46057 - 2.77569I$
$u = 0.825594 + 0.098170I$ $a = -1.31555 - 1.91865I$ $b = 0.818361 + 0.141778I$	$7.88103 + 3.00613I$	$2.46057 - 2.77569I$
$u = 0.825594 - 0.098170I$ $a = -0.53917 + 2.00160I$ $b = -0.762732 + 0.663101I$	$7.88103 - 3.00613I$	$2.46057 + 2.77569I$
$u = 0.825594 - 0.098170I$ $a = -1.31555 + 1.91865I$ $b = 0.818361 - 0.141778I$	$7.88103 - 3.00613I$	$2.46057 + 2.77569I$
$u = 1.25362$ $a = 0.243567 + 0.537746I$ $b = 0.160883 + 1.179440I$	-5.74068	-1.95790
$u = 1.25362$ $a = 0.243567 - 0.537746I$ $b = 0.160883 - 1.179440I$	-5.74068	-1.95790
$u = -1.107540 + 0.627422I$ $a = 0.725858 - 1.187980I$ $b = -1.244680 - 0.659147I$	$9.51415 + 2.44072I$	$5.50124 - 2.26022I$
$u = -1.107540 + 0.627422I$ $a = -0.974699 + 0.995211I$ $b = 1.183370 + 0.002215I$	$9.51415 + 2.44072I$	$5.50124 - 2.26022I$
$u = -1.107540 - 0.627422I$ $a = 0.725858 + 1.187980I$ $b = -1.244680 + 0.659147I$	$9.51415 - 2.44072I$	$5.50124 + 2.26022I$
$u = -1.107540 - 0.627422I$ $a = -0.974699 - 0.995211I$ $b = 1.183370 - 0.002215I$	$9.51415 - 2.44072I$	$5.50124 + 2.26022I$

Solutions to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.197871 + 0.665613I$ $a = 0.544098 + 0.505503I$ $b = -0.506495 + 0.897042I$	$1.83491 - 2.17307I$	$2.44305 + 0.96656I$
$u = -0.197871 + 0.665613I$ $a = 2.11053 - 0.83148I$ $b = -1.074320 + 0.072465I$	$1.83491 - 2.17307I$	$2.44305 + 0.96656I$
$u = -0.197871 - 0.665613I$ $a = 0.544098 - 0.505503I$ $b = -0.506495 - 0.897042I$	$1.83491 + 2.17307I$	$2.44305 - 0.96656I$
$u = -0.197871 - 0.665613I$ $a = 2.11053 + 0.83148I$ $b = -1.074320 - 0.072465I$	$1.83491 + 2.17307I$	$2.44305 - 0.96656I$
$u = -1.47309$ $a = 0.960868 + 0.116818I$ $b = -0.725226 - 0.147080I$	2.06794	-0.326150
$u = -1.47309$ $a = 0.960868 - 0.116818I$ $b = -0.725226 + 0.147080I$	2.06794	-0.326150
$u = 1.53037$ $a = 0.142205 + 0.666213I$ $b = 0.518363 + 0.759712I$	-5.45448	-3.70880
$u = 1.53037$ $a = 0.142205 - 0.666213I$ $b = 0.518363 - 0.759712I$	-5.45448	-3.70880
$u = -1.54061 + 0.22982I$ $a = 0.308882 + 0.905973I$ $b = 0.028277 + 0.455528I$	$-3.33520 + 5.64987I$	$-0.48217 - 4.54553I$
$u = -1.54061 + 0.22982I$ $a = -0.757657 + 1.082380I$ $b = 1.133770 + 0.656888I$	$-3.33520 + 5.64987I$	$-0.48217 - 4.54553I$

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.54061-0.22982I$ $a=\ \ 0.308882-0.905973I$ $b=\ \ 0.028277-0.455528I$	$-3.33520-5.64987I$	$-0.48217+4.54553I$
$u=-1.54061-0.22982I$ $a=-0.757657-1.082380I$ $b=\ \ 1.133770-0.656888I$	$-3.33520-5.64987I$	$-0.48217+4.54553I$
$u=-0.270030$ $a=\ \ 1.05107+3.12255I$ $b=\ \ 0.970434+0.909500I$	6.94627	7.14740
$u=-0.270030$ $a=\ \ 1.05107-3.12255I$ $b=\ \ 0.970434-0.909500I$	6.94627	7.14740

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_9	$(u^4-u^3-2u^2-4u+1)(u^{20}+3u^{19}+\cdots+7u+1)$ $\cdot(u^{24}-6u^{23}+\cdots+10u+1)(u^{54}-9u^{53}+\cdots-817482u+44911)$
c_2, c_7	$(u^4-2u^3+3u-1)(u^{20}-3u^{18}+\cdots-2u-1)(u^{24}-u^{23}+\cdots+u^2+1)$ $\cdot(u^{54}-2u^{53}+\cdots-7504u+1667)$
c_3	$(u^4-6u^3+12u^2-11u+5)(u^{12}+3u^{11}+\cdots+4u+1)^2$ $\cdot(u^{20}-9u^{19}+\cdots-101u-44)(u^{27}+4u^{26}+\cdots-16u+1)^2$
c_4	$(u^4-u^3-2u+1)(u^{20}-u^{19}+\cdots+u-1)(u^{24}+10u^{22}+\cdots+8u+1)$ $\cdot(u^{54}+3u^{53}+\cdots-7068u+1763)$
c_5	$(u^4-5u^3+6u^2+2u-5)(u^{12}+5u^{11}+\cdots-u+1)^2$ $\cdot(u^{20}+4u^{19}+\cdots+371u+44)(u^{27}-2u^{26}+\cdots-67u+47)^2$
c_6, c_{10}	$(u^4+2u^3-3u-1)(u^{20}-3u^{18}+\cdots-2u-1)(u^{24}+u^{23}+\cdots+u^2+1)$ $\cdot(u^{54}-2u^{53}+\cdots-7504u+1667)$
c_8, c_{11}	$(u^4+u^3+2u+1)(u^{20}-u^{19}+\cdots+u-1)(u^{24}+10u^{22}+\cdots-8u+1)$ $\cdot(u^{54}+3u^{53}+\cdots-7068u+1763)$
c_{12}	$(u^4+u^3-2u^2+4u+1)(u^{20}+3u^{19}+\cdots+7u+1)$ $\cdot(u^{24}+6u^{23}+\cdots-10u+1)(u^{54}-9u^{53}+\cdots-817482u+44911)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_9, c_{12}	$(y^4-5y^3-2y^2-20y+1)(y^{20}-31y^{19}+\cdots-53y+1)$ $\cdot(y^{24}-12y^{23}+\cdots-22y+1)$ $\cdot(y^{54}-53y^{53}+\cdots+26272962362y+2016997921)$
c_2, c_6, c_7 c_{10}	$(y^4-4y^3+10y^2-9y+1)(y^{20}-6y^{19}+\cdots-2y+1)$ $\cdot(y^{24}-7y^{23}+\cdots+2y+1)$ $\cdot(y^{54}-28y^{53}+\cdots-34895734y+2778889)$
c_3	$(y^4-12y^3+22y^2-y+25)(y^{12}-13y^{11}+\cdots-16y+1)^2$ $\cdot(y^{20}-29y^{19}+\cdots-23841y+1936)(y^{27}-30y^{26}+\cdots+108y-1)^2$
c_4, c_8, c_{11}	$(y^4-y^3-2y^2-4y+1)(y^{20}+9y^{19}+\cdots+3y+1)$ $\cdot(y^{24}+20y^{23}+\cdots-12y+1)$ $\cdot(y^{54}+27y^{53}+\cdots+38637652y+3108169)$
c_5	$(y^4-13y^3+46y^2-64y+25)(y^{12}-11y^{11}+\cdots-15y+1)^2$ $\cdot(y^{20}-22y^{19}+\cdots-10041y+1936)$ $\cdot(y^{27}-20y^{26}+\cdots+14171y-2209)^2$