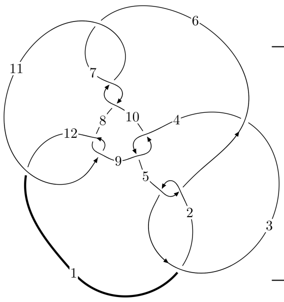
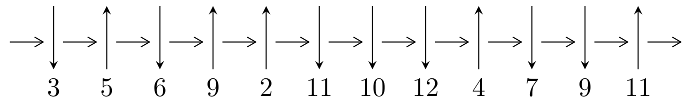
$12n_{0053}$ $(K12n_{0053})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 291u^{21} - 1049u^{20} + \cdots + 2048b + 307,\ 1007u^{21} - 2141u^{20} + \cdots + 4096a - 3617,$$
$$u^{22} - 2u^{21} + \cdots + 11u^2 + 1\rangle$$
$$I_2^u = \langle 194087126632u^{17} + 1704357838964u^{16} + \cdots + 107703165884487b + 37991651925802,$$
$$-107427678939090u^{17} - 569643045714954u^{16} + \cdots + 786233110959551a - 1104507859905079,$$
$$u^{18} + 5u^{17} + \cdots + 286u + 73\rangle$$
$$I_3^u = \langle -a^4 - a^3u + a^3 + 2a^2u + 4au + 4b + 4a - 4,\ a^5 + a^4u - a^4 - 2a^3u - 4a^2u - 4a^2 + 4a - 4u + 4,\ u^2 + 1\rangle$$
$$I_4^u = \langle b - 2a,\ 4a^2 + 2a + 1,\ u - 1\rangle$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 52 representations.

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[1] The image of knot diagram is generated by the software "**Draw programme**" developed by Andrew Bartholomew(`http://www.layer8.co.uk/maths/draw/index.htm#Running-draw`), where we modified some parts for our purpose(`https://github.com/CATsTAILs/LinksPainter`).

[2] All coefficients of polynomials are rational numbers. But the coefficients are sometimes approximated in decimal forms when there is not enough margin.

I. $\boldsymbol{I^u_1 = \langle 291u^{21} - 1049u^{20} + \cdots + 2048b + 307,\ 1007u^{21} - 2141u^{20} + \cdots + 4096a - 3617,\ u^{22} - 2u^{21} + \cdots + 11u^2 + 1\rangle}$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -0.245850u^{21} + 0.522705u^{20} + \cdots + 0.581787u + 0.883057 \\ -0.142090u^{21} + 0.512207u^{20} + \cdots - 0.498535u - 0.149902 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} -0.387939u^{21} + 1.03491u^{20} + \cdots + 0.0832520u + 0.733154 \\ -0.142090u^{21} + 0.512207u^{20} + \cdots - 0.498535u - 0.149902 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} u^2 + 1 \\ u^4 + 2u^2 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 1 \\ 0.0156250u^{21} - 0.0156250u^{20} + \cdots + 0.0156250u + 0.0156250 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -u \\ -0.0156250u^{21} + 0.0468750u^{20} + \cdots + 0.984375u + 0.0156250 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u \\ -0.0156250u^{21} + 0.0468750u^{20} + \cdots + 0.984375u + 0.0156250 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.0476074u^{21} + 0.0178223u^{20} + \cdots - 6.07739u + 0.889893 \\ -0.0629883u^{21} + 0.0327148u^{20} + \cdots - 0.0932617u - 0.125488 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -0.118896u^{21} + 0.344971u^{20} + \cdots - 0.420166u + 0.744385 \\ -0.435059u^{21} + 0.703613u^{20} + \cdots - 1.04932u - 0.661621 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{16767}{8192}u^{21} - \frac{31037}{8192}u^{20} + \cdots + \frac{76033}{8192}u + \frac{27071}{8192}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{22} + 10u^{21} + \cdots - u + 16$
c_2, c_5	$u^{22} + 2u^{21} + \cdots + 15u + 4$
c_3	$u^{22} - 2u^{21} + \cdots + 663u + 676$
c_4, c_9	$u^{22} + 3u^{21} + \cdots + 120u + 32$
c_6, c_7, c_8 c_{10}, c_{11}	$u^{22} + 2u^{21} + \cdots + 11u^2 + 1$
c_{12}	$u^{22} - 30u^{21} + \cdots - 22u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{22} + 6y^{21} + \cdots - 1857y + 256$
c_2, c_5	$y^{22} + 10y^{21} + \cdots - y + 16$
c_3	$y^{22} + 2y^{21} + \cdots + 1664143y + 456976$
c_4, c_9	$y^{22} + 5y^{21} + \cdots - 1216y + 1024$
c_6, c_7, c_8 c_{10}, c_{11}	$y^{22} + 30y^{21} + \cdots + 22y + 1$
c_{12}	$y^{22} - 78y^{21} + \cdots + 102y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.615782 + 0.803264I$ $a = -0.547833 - 0.548126I$ $b = 1.219690 - 0.593054I$	$-3.37145 + 2.38944I$	$-5.45481 - 0.71996I$
$u = 0.615782 - 0.803264I$ $a = -0.547833 + 0.548126I$ $b = 1.219690 + 0.593054I$	$-3.37145 - 2.38944I$	$-5.45481 + 0.71996I$
$u = 1.046550 + 0.353921I$ $a = 0.455127 + 0.346832I$ $b = 0.134390 + 0.768351I$	$-1.70749 - 1.42840I$	$-2.82321 - 4.75814I$
$u = 1.046550 - 0.353921I$ $a = 0.455127 - 0.346832I$ $b = 0.134390 - 0.768351I$	$-1.70749 + 1.42840I$	$-2.82321 + 4.75814I$
$u = 0.282269 + 0.708144I$ $a = -0.640971 - 0.473149I$ $b = 1.246260 + 0.317348I$	$-3.66689 - 5.42682I$	$-7.22851 + 8.75440I$
$u = 0.282269 - 0.708144I$ $a = -0.640971 + 0.473149I$ $b = 1.246260 - 0.317348I$	$-3.66689 + 5.42682I$	$-7.22851 - 8.75440I$
$u = 0.344516 + 0.519144I$ $a = 0.672348 + 0.637144I$ $b = -0.738214 - 0.182816I$	$-0.71829 - 1.39692I$	$-3.45104 + 5.22381I$
$u = 0.344516 - 0.519144I$ $a = 0.672348 - 0.637144I$ $b = -0.738214 + 0.182816I$	$-0.71829 + 1.39692I$	$-3.45104 - 5.22381I$
$u = -0.008200 + 0.342361I$ $a = 1.46314 + 0.68949I$ $b = -0.072113 - 0.750151I$	$0.55339 - 1.37498I$	$1.51135 + 4.45596I$
$u = -0.008200 - 0.342361I$ $a = 1.46314 - 0.68949I$ $b = -0.072113 + 0.750151I$	$0.55339 + 1.37498I$	$1.51135 - 4.45596I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.21154 + 1.66696I$ $a = 0.133816 + 1.107720I$ $b = -0.091644 - 1.122210I$	$9.07448 + 4.87395I$	$-0.77042 - 2.44706I$
$u = -0.21154 - 1.66696I$ $a = 0.133816 - 1.107720I$ $b = -0.091644 + 1.122210I$	$9.07448 - 4.87395I$	$-0.77042 + 2.44706I$
$u = -0.221701 + 0.205211I$ $a = -2.25437 - 0.26322I$ $b = -0.678597 + 0.748849I$	$-0.25879 + 2.47978I$	$1.67019 - 4.37089I$
$u = -0.221701 - 0.205211I$ $a = -2.25437 + 0.26322I$ $b = -0.678597 - 0.748849I$	$-0.25879 - 2.47978I$	$1.67019 + 4.37089I$
$u = 0.10555 + 1.78725I$ $a = 0.354067 + 1.025410I$ $b = -1.93664 - 1.43012I$	$14.0985 - 4.5775I$	$1.42593 + 2.45051I$
$u = 0.10555 - 1.78725I$ $a = 0.354067 - 1.025410I$ $b = -1.93664 + 1.43012I$	$14.0985 + 4.5775I$	$1.42593 - 2.45051I$
$u = -0.50678 + 1.71782I$ $a = 0.038804 + 1.316300I$ $b = 1.79372 - 1.43052I$	$14.3505 + 13.9596I$	$0.89017 - 6.70291I$
$u = -0.50678 - 1.71782I$ $a = 0.038804 - 1.316300I$ $b = 1.79372 + 1.43052I$	$14.3505 - 13.9596I$	$0.89017 + 6.70291I$
$u = -0.41437 + 1.78716I$ $a = -0.115876 - 1.281550I$ $b = -1.17420 + 1.93112I$	$16.3189 + 7.7022I$	$2.88848 - 2.54222I$
$u = -0.41437 - 1.78716I$ $a = -0.115876 + 1.281550I$ $b = -1.17420 - 1.93112I$	$16.3189 - 7.7022I$	$2.88848 + 2.54222I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.03207 + 1.84087I$ $a = -0.308249 - 1.105700I$ $b = 1.29737 + 1.95650I$	$16.1897 + 1.7866I$	$3.21686 - 1.63436I$
$u = -0.03207 - 1.84087I$ $a = -0.308249 + 1.105700I$ $b = 1.29737 - 1.95650I$	$16.1897 - 1.7866I$	$3.21686 + 1.63436I$

II. $\boldsymbol{I_2^u = \langle 1.94 \times 10^{11}u^{17} + 1.70 \times 10^{12}u^{16} + \cdots + 1.08 \times 10^{13}b + 3.80 \times 10^{13},\ -1.07 \times 10^{14}u^{17} - 5.70 \times 10^{14}u^{16} + \cdots + 7.86 \times 10^{14}a - 1.10 \times 10^{15},\ u^{18} + 5u^{17} + \cdots + 286u + 73\rangle}$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0.136636u^{17} + 0.724522u^{16} + \cdots + 14.2921u + 1.40481 \\ -0.0180206u^{17} - 0.158246u^{16} + \cdots - 14.7293u - 3.52744 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 0.118615u^{17} + 0.566276u^{16} + \cdots - 0.437161u - 2.12263 \\ -0.0180206u^{17} - 0.158246u^{16} + \cdots - 14.7293u - 3.52744 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} u^2 + 1 \\ u^4 + 2u^2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -0.00986059u^{17} - 0.0511795u^{16} + \cdots + 8.20061u + 0.548839 \\ 0.0496987u^{17} + 0.246630u^{16} + \cdots + 1.25653u - 0.863009 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -0.0155752u^{17} - 0.0281774u^{16} + \cdots - 6.23377u - 3.19799 \\ -0.00374040u^{17} - 0.0370439u^{16} + \cdots - 8.70788u - 2.90818 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -0.0155752u^{17} - 0.0281774u^{16} + \cdots - 6.23377u - 3.19799 \\ -0.00187659u^{17} + 0.0403158u^{16} + \cdots + 4.36897u + 0.719823 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -0.0396317u^{17} - 0.119184u^{16} + \cdots - 18.5066u - 5.67176 \\ -0.0717938u^{17} - 0.280007u^{16} + \cdots + 7.64298u + 2.57570 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0.0918527u^{17} + 0.479986u^{16} + \cdots + 6.01042u - 2.13207 \\ 0.0272186u^{17} + 0.0921641u^{16} + \cdots - 8.26050u - 3.19936 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$$= -\frac{2168619486192}{10770316588487}u^{17} - \frac{4825728074968}{10770316588487}u^{16} + \cdots + \frac{588892268531920}{10770316588487}u + \frac{119654015108734}{10770316588487}$$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^9+3u^8+8u^7+13u^6+17u^5+17u^4+12u^3+6u^2+u-1)^2$
c_2, c_5	$(u^9+u^8+2u^7+u^6+3u^5+u^4+2u^3+u-1)^2$
c_3	$(u^9-u^8+6u^7-3u^6+15u^5-u^4+16u^3-4u^2-5u-1)^2$
c_4, c_9	$(u^9-u^8-2u^7+3u^6+u^5-3u^4+2u^3-u+1)^2$
c_6, c_7, c_8 c_{10}, c_{11}	$u^{18}-5u^{17}+\cdots-286u+73$
c_{12}	$u^{18}-19u^{17}+\cdots-31208u+5329$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^9+7y^8+20y^7+25y^6+5y^5-15y^4+22y^2+13y-1)^2$
c_2, c_5	$(y^9+3y^8+8y^7+13y^6+17y^5+17y^4+12y^3+6y^2+y-1)^2$
c_3	$(y^9+11y^8+\cdots+17y-1)^2$
c_4, c_9	$(y^9-5y^8+12y^7-15y^6+9y^5+y^4-4y^3+2y^2+y-1)^2$
c_6, c_7, c_8 c_{10}, c_{11}	$y^{18}+19y^{17}+\cdots+31208y+5329$
c_{12}	$y^{18}-41y^{17}+\cdots+388728668y+28398241$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.339672 + 0.982229I$ $a = -2.33238 + 1.39827I$ $b = -0.567186 - 1.241800I$	$3.90681 - 2.45442I$	$-1.67208 + 2.91298I$
$u = 0.339672 - 0.982229I$ $a = -2.33238 - 1.39827I$ $b = -0.567186 + 1.241800I$	$3.90681 + 2.45442I$	$-1.67208 - 2.91298I$
$u = 0.187418 + 1.191530I$ $a = 1.84537 - 1.63478I$ $b = -0.567186 + 1.241800I$	$3.90681 + 2.45442I$	$-1.67208 - 2.91298I$
$u = 0.187418 - 1.191530I$ $a = 1.84537 + 1.63478I$ $b = -0.567186 - 1.241800I$	$3.90681 - 2.45442I$	$-1.67208 + 2.91298I$
$u = -0.341082 + 1.161470I$ $a = 0.605538 + 0.751599I$ $b = 0.646857$	4.48831	$4.65235 + 0.I$
$u = -0.341082 - 1.161470I$ $a = 0.605538 - 0.751599I$ $b = 0.646857$	4.48831	$4.65235 + 0.I$
$u = 0.073821 + 1.217300I$ $a = 0.136037 - 1.077640I$ $b = -0.250475 - 0.120160I$	$1.50643 - 2.09337I$	$-4.51499 + 4.16283I$
$u = 0.073821 - 1.217300I$ $a = 0.136037 + 1.077640I$ $b = -0.250475 + 0.120160I$	$1.50643 + 2.09337I$	$-4.51499 - 4.16283I$
$u = -0.410768 + 0.428375I$ $a = -0.50504 + 1.49973I$ $b = -0.250475 + 0.120160I$	$1.50643 + 2.09337I$	$-4.51499 - 4.16283I$
$u = -0.410768 - 0.428375I$ $a = -0.50504 - 1.49973I$ $b = -0.250475 - 0.120160I$	$1.50643 - 2.09337I$	$-4.51499 + 4.16283I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.35742 + 0.65746I$ $a = \quad 0.610442 + 0.053041I$ $b = \quad 1.01103 - 1.59917I$	$6.88799 + 7.08493I$	$1.57680 - 5.91335I$
$u = -1.35742 - 0.65746I$ $a = \quad 0.610442 - 0.053041I$ $b = \quad 1.01103 + 1.59917I$	$6.88799 - 7.08493I$	$1.57680 + 5.91335I$
$u = -1.22955 + 0.90859I$ $a = -0.408976 + 0.092875I$ $b = -0.01680 + 1.73270I$	$7.66122 + 1.33617I$	$3.28409 - 0.70175I$
$u = -1.22955 - 0.90859I$ $a = -0.408976 - 0.092875I$ $b = -0.01680 - 1.73270I$	$7.66122 - 1.33617I$	$3.28409 + 0.70175I$
$u = \quad 0.00479 + 1.82789I$ $a = \quad 0.090352 + 1.015340I$ $b = -0.01680 - 1.73270I$	$7.66122 - 1.33617I$	$3.28409 + 0.70175I$
$u = \quad 0.00479 - 1.82789I$ $a = \quad 0.090352 - 1.015340I$ $b = -0.01680 + 1.73270I$	$7.66122 + 1.33617I$	$3.28409 - 0.70175I$
$u = \quad 0.23311 + 1.83083I$ $a = -0.137225 - 1.036180I$ $b = \quad 1.01103 + 1.59917I$	$6.88799 - 7.08493I$	$1.57680 + 5.91335I$
$u = \quad 0.23311 - 1.83083I$ $a = -0.137225 + 1.036180I$ $b = \quad 1.01103 - 1.59917I$	$6.88799 + 7.08493I$	$1.57680 - 5.91335I$

III.

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

(i) Arc colorings

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} a \\ \frac{1}{4}a^3u - \frac{1}{2}a^2u + \cdots - a + 1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 1 \\ -1 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} \frac{1}{4}a^3u - \frac{1}{2}a^2u + \cdots - \frac{1}{4}a^3 + 1 \\ \frac{1}{4}a^3u - \frac{1}{2}a^2u + \cdots - a + 1 \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -1 \\ \frac{1}{4}a^4u - \frac{1}{2}a^3u + \cdots + a^2 + \frac{1}{2}a \end{pmatrix}$$

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

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

$$a_2 = \begin{pmatrix} \frac{1}{4}a^4u + \frac{1}{4}a^3u + \cdots + a^2 + 3 \\ \frac{3}{4}a^3u - 2a^2u + \cdots - \frac{1}{2}a + 2 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -\frac{1}{4}a^4u + \frac{1}{4}a^3u + \cdots + \frac{1}{4}a^3 - \frac{1}{2}a^2 \\ -\frac{1}{2}a^4 - \frac{3}{4}a^3u + \frac{3}{4}a^3 + 2a^2u + au + a - 3 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= a^4 + 2a^3u - 2a^3 - 6a^2u + 8$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.000000I$ $a = -0.794743 + 0.582062I$ $b = 1.41878 - 0.21917I$	$-2.58269 - 4.40083I$	$-0.74431 + 3.49859I$
$u = 1.000000I$ $a = -0.582062 + 0.794743I$ $b = 1.41878 + 0.21917I$	$-2.58269 + 4.40083I$	$-0.74431 - 3.49859I$
$u = 1.000000I$ $a = 0.821196 - 0.821196I$ $b = -1.21774$	0.888787	$2.51886 + 0.I$
$u = 1.000000I$ $a = 2.15793 + 0.60232I$ $b = -0.309916 + 0.549911I$	$2.96077 + 1.53058I$	$3.48489 - 4.43065I$
$u = 1.000000I$ $a = -0.60232 - 2.15793I$ $b = -0.309916 - 0.549911I$	$2.96077 - 1.53058I$	$3.48489 + 4.43065I$
$u = -1.000000I$ $a = -0.582062 - 0.794743I$ $b = 1.41878 - 0.21917I$	$-2.58269 + 4.40083I$	$-0.74431 - 3.49859I$
$u = -1.000000I$ $a = -0.794743 - 0.582062I$ $b = 1.41878 + 0.21917I$	$-2.58269 - 4.40083I$	$-0.74431 + 3.49859I$
$u = -1.000000I$ $a = 0.821196 + 0.821196I$ $b = -1.21774$	0.888787	$2.51886 + 0.I$
$u = -1.000000I$ $a = 2.15793 - 0.60232I$ $b = -0.309916 - 0.549911I$	$2.96077 - 1.53058I$	$3.48489 + 4.43065I$
$u = -1.000000I$ $a = -0.60232 + 2.15793I$ $b = -0.309916 + 0.549911I$	$2.96077 + 1.53058I$	$3.48489 - 4.43065I$

IV. $I_4^u = \langle b - 2a,\ 4a^2 + 2a + 1,\ u - 1 \rangle$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} a \\ 2a \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 3a \\ 2a \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 1 \\ 2 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 2 \\ 3 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 1 \\ 2 \end{pmatrix}$$

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

$$a_1 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 3a + \frac{1}{2} \\ 2a + 1 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} a \\ 2a \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -\frac{31}{2}a - \frac{23}{4}$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.00000$ $a = -0.250000 + 0.433013I$ $b = -0.500000 + 0.866025I$	$-1.64493 + 2.02988I$	$-1.87500 - 6.71170I$
$u = 1.00000$ $a = -0.250000 - 0.433013I$ $b = -0.500000 - 0.866025I$	$-1.64493 - 2.02988I$	$-1.87500 + 6.71170I$

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^2-u+1)(u^5-3u^4+4u^3-u^2-u+1)^2$ $\cdot(u^9+3u^8+8u^7+13u^6+17u^5+17u^4+12u^3+6u^2+u-1)^2$ $\cdot(u^{22}+10u^{21}+\cdots-u+16)$
c_2	$(u^2+u+1)(u^5-u^4+2u^3-u^2+u-1)^2$ $\cdot(u^9+u^8+2u^7+u^6+3u^5+u^4+2u^3+u-1)^2$ $\cdot(u^{22}+2u^{21}+\cdots+15u+4)$
c_3	$(u^2-u+1)(u^5+u^4-2u^3-u^2+u-1)^2$ $\cdot(u^9-u^8+6u^7-3u^6+15u^5-u^4+16u^3-4u^2-5u-1)^2$ $\cdot(u^{22}-2u^{21}+\cdots+663u+676)$
c_4, c_9	$u^2(u^9-u^8-2u^7+3u^6+u^5-3u^4+2u^3-u+1)^2$ $\cdot(u^{10}+5u^8+8u^6+3u^4-u^2+1)(u^{22}+3u^{21}+\cdots+120u+32)$
c_5	$(u^2-u+1)(u^5+u^4+2u^3+u^2+u+1)^2$ $\cdot(u^9+u^8+2u^7+u^6+3u^5+u^4+2u^3+u-1)^2$ $\cdot(u^{22}+2u^{21}+\cdots+15u+4)$
c_6, c_7, c_8	$((u-1)^2)(u^2+1)^5(u^{18}-5u^{17}+\cdots-286u+73)$ $\cdot(u^{22}+2u^{21}+\cdots+11u^2+1)$
c_{10}, c_{11}	$((u+1)^2)(u^2+1)^5(u^{18}-5u^{17}+\cdots-286u+73)$ $\cdot(u^{22}+2u^{21}+\cdots+11u^2+1)$
c_{12}	$((u-1)^{10})(u+1)^2(u^{18}-19u^{17}+\cdots-31208u+5329)$ $\cdot(u^{22}-30u^{21}+\cdots-22u+1)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y^2+y+1)(y^5-y^4+8y^3-3y^2+3y-1)^2$ $\cdot(y^9+7y^8+20y^7+25y^6+5y^5-15y^4+22y^2+13y-1)^2$ $\cdot(y^{22}+6y^{21}+\cdots-1857y+256)$
c_2, c_5	$(y^2+y+1)(y^5+3y^4+4y^3+y^2-y-1)^2$ $\cdot(y^9+3y^8+8y^7+13y^6+17y^5+17y^4+12y^3+6y^2+y-1)^2$ $\cdot(y^{22}+10y^{21}+\cdots-y+16)$
c_3	$(y^2+y+1)(y^5-5y^4+8y^3-3y^2-y-1)^2$ $\cdot(y^9+11y^8+\cdots+17y-1)^2$ $\cdot(y^{22}+2y^{21}+\cdots+1664143y+456976)$
c_4, c_9	$y^2(y^5+5y^4+8y^3+3y^2-y+1)^2$ $\cdot(y^9-5y^8+12y^7-15y^6+9y^5+y^4-4y^3+2y^2+y-1)^2$ $\cdot(y^{22}+5y^{21}+\cdots-1216y+1024)$
c_6, c_7, c_8 c_{10}, c_{11}	$((y-1)^2)(y+1)^{10}(y^{18}+19y^{17}+\cdots+31208y+5329)$ $\cdot(y^{22}+30y^{21}+\cdots+22y+1)$
c_{12}	$((y-1)^{12})(y^{18}-41y^{17}+\cdots+3.88729\times10^8y+2.83982\times10^7)$ $\cdot(y^{22}-78y^{21}+\cdots+102y+1)$