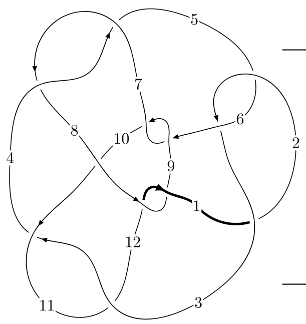
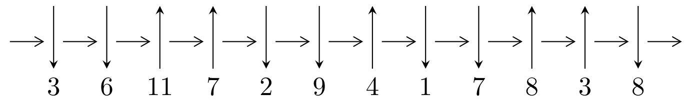
$12n_{0544}$ ($K12n_{0544}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle b - u,\ -297940u^{22} + 1271608u^{21} + \cdots + 35873a - 1822970,\ u^{23} - u^{22} + \cdots + 2u - 1\rangle$$

$$\begin{aligned} I_2^u = \langle &-3.19561 \times 10^{118}u^{57} + 9.66229 \times 10^{118}u^{56} + \cdots + 3.56639 \times 10^{118}b + 1.16120 \times 10^{121}, \\ &- 5.59702 \times 10^{119}u^{57} + 1.70818 \times 10^{120}u^{56} + \cdots + 1.13768 \times 10^{121}a - 1.17564 \times 10^{123}, \\ &u^{58} - 3u^{57} + \cdots - 1554u + 319\rangle \end{aligned}$$

$$\begin{aligned} I_3^u = \langle &b + u,\ u^{11} - 2u^{10} + 6u^9 - 9u^8 + 14u^7 - 14u^6 + 15u^5 - 10u^4 + 8u^3 - 4u^2 + a + 3u, \\ &u^{12} - u^{11} + 5u^{10} - 4u^9 + 10u^8 - 5u^7 + 11u^6 - 2u^5 + 8u^4 + u^3 + 4u^2 + 2u + 1\rangle \end{aligned}$$

$$\begin{aligned} I_4^u = \langle &-u^9 - 6u^7 + 2u^6 - 13u^5 + 5u^4 - 13u^3 + 2u^2 + b - 6u,\ 2u^8 + 11u^6 - 4u^5 + 20u^4 - 8u^3 + 14u^2 + a + u + 3, \\ &u^{10} + 6u^8 - 2u^7 + 13u^6 - 5u^5 + 13u^4 - 2u^3 + 6u^2 + 1\rangle \end{aligned}$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 103 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. $I_1^u = \langle b - u,\ -2.98 \times 10^5 u^{22} + 1.27 \times 10^6 u^{21} + \cdots + 3.59 \times 10^4 a - 1.82 \times 10^6,\ u^{23} - u^{22} + \cdots + 2u - 1\rangle$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 8.30541u^{22} - 35.4475u^{21} + \cdots - 119.158u + 50.8173 \\ u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -6.42670u^{22} + 32.7476u^{21} + \cdots + 118.160u - 51.7962 \\ 2.08212u^{22} - 9.08254u^{21} + \cdots - 29.5331u + 12.6710 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -6.22329u^{22} + 26.3650u^{21} + \cdots + 88.6247u - 38.1463 \\ 2.15839u^{22} - 6.69484u^{21} + \cdots - 16.9712u + 6.49179 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 8.30541u^{22} - 35.4475u^{21} + \cdots - 120.158u + 50.8173 \\ u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 27.1421u^{22} - 24.0277u^{21} + \cdots - 34.2065u - 7.30541 \\ -u^2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -3.87484u^{22} + 24.8029u^{21} + \cdots + 100.302u - 45.5822 \\ 3.11435u^{22} - 17.5854u^{21} + \cdots - 61.5896u + 27.1421 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 4.63399u^{22} - 17.0272u^{21} + \cdots - 47.3917u + 18.8850 \\ 1.03222u^{22} - 8.50286u^{21} + \cdots - 31.0564u + 14.4711 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -0.909765u^{22} + 6.70869u^{21} + \cdots + 19.6352u - 10.1222 \\ 2.15839u^{22} - 6.69484u^{21} + \cdots - 16.9712u + 6.49179 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{1000543}{35873}u^{22} - \frac{712577}{35873}u^{21} + \cdots - \frac{3006108}{35873}u + \frac{2311747}{35873}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{23} + 8u^{22} + \cdots + 224u + 64$
c_2, c_5	$u^{23} + 8u^{22} + \cdots - 56u - 8$
c_3, c_4, c_7 c_{11}	$u^{23} + u^{22} + \cdots + 2u + 1$
c_6, c_8, c_9 c_{12}	$u^{23} + u^{22} + \cdots - u + 1$
c_{10}	$u^{23} + 19u^{22} + \cdots + 1792u + 256$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{23} + 4y^{22} + \cdots - 46592y - 4096$
c_2, c_5	$y^{23} - 8y^{22} + \cdots + 224y - 64$
c_3, c_4, c_7 c_{11}	$y^{23} + 9y^{22} + \cdots - 14y - 1$
c_6, c_8, c_9 c_{12}	$y^{23} - 7y^{22} + \cdots + 7y - 1$
c_{10}	$y^{23} + 3y^{22} + \cdots - 917504y - 65536$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.595557 + 0.724305I$ $a = 0.588152 + 0.605726I$ $b = 0.595557 + 0.724305I$	$-3.26156 - 2.02161I$	$-7.52324 + 1.29376I$
$u = 0.595557 - 0.724305I$ $a = 0.588152 - 0.605726I$ $b = 0.595557 - 0.724305I$	$-3.26156 + 2.02161I$	$-7.52324 - 1.29376I$
$u = -0.076288 + 0.784165I$ $a = -1.76014 - 1.54801I$ $b = -0.076288 + 0.784165I$	$-4.83015 - 0.57289I$	$-12.62080 + 1.94666I$
$u = -0.076288 - 0.784165I$ $a = -1.76014 + 1.54801I$ $b = -0.076288 - 0.784165I$	$-4.83015 + 0.57289I$	$-12.62080 - 1.94666I$
$u = 0.034883 + 0.769214I$ $a = -2.73995 - 0.59974I$ $b = 0.034883 + 0.769214I$	$-3.21113 + 6.60809I$	$-8.60360 - 5.54346I$
$u = 0.034883 - 0.769214I$ $a = -2.73995 + 0.59974I$ $b = 0.034883 - 0.769214I$	$-3.21113 - 6.60809I$	$-8.60360 + 5.54346I$
$u = 0.892857 + 0.857700I$ $a = 0.995548 - 0.607995I$ $b = 0.892857 + 0.857700I$	$2.59080 - 3.50765I$	$-2.16401 + 2.34355I$
$u = 0.892857 - 0.857700I$ $a = 0.995548 + 0.607995I$ $b = 0.892857 - 0.857700I$	$2.59080 + 3.50765I$	$-2.16401 - 2.34355I$
$u = -0.954684 + 0.841112I$ $a = -0.696145 + 0.071332I$ $b = -0.954684 + 0.841112I$	$0.46179 - 3.67942I$	$-15.1455 + 3.7839I$
$u = -0.954684 - 0.841112I$ $a = -0.696145 - 0.071332I$ $b = -0.954684 - 0.841112I$	$0.46179 + 3.67942I$	$-15.1455 - 3.7839I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.030245 + 0.711475I$ $a = 1.98396 - 0.44610I$ $b = -0.030245 + 0.711475I$	$-1.04488 - 2.00499I$	$-5.60935 + 2.44566I$
$u = -0.030245 - 0.711475I$ $a = 1.98396 + 0.44610I$ $b = -0.030245 - 0.711475I$	$-1.04488 + 2.00499I$	$-5.60935 - 2.44566I$
$u = -0.820681 + 1.010850I$ $a = -0.875561 - 0.658608I$ $b = -0.820681 + 1.010850I$	$3.30522 - 2.73850I$	$-1.61112 + 1.01002I$
$u = -0.820681 - 1.010850I$ $a = -0.875561 + 0.658608I$ $b = -0.820681 - 1.010850I$	$3.30522 + 2.73850I$	$-1.61112 - 1.01002I$
$u = 0.771841 + 1.092470I$ $a = 1.131310 - 0.059859I$ $b = 0.771841 + 1.092470I$	$-5.97493 + 8.04810I$	$-9.91244 - 7.34824I$
$u = 0.771841 - 1.092470I$ $a = 1.131310 + 0.059859I$ $b = 0.771841 - 1.092470I$	$-5.97493 - 8.04810I$	$-9.91244 + 7.34824I$
$u = -0.134711 + 0.539165I$ $a = 0.665406 + 0.037719I$ $b = -0.134711 + 0.539165I$	$-0.392979 - 1.193410I$	$-3.74262 + 6.17586I$
$u = -0.134711 - 0.539165I$ $a = 0.665406 - 0.037719I$ $b = -0.134711 - 0.539165I$	$-0.392979 + 1.193410I$	$-3.74262 - 6.17586I$
$u = 0.518072$ $a = 2.27868$ $b = 0.518072$	-2.81486	2.60140
$u = -0.83900 + 1.23581I$ $a = -1.080680 - 0.355800I$ $b = -0.83900 + 1.23581I$	$1.69434 - 10.77260I$	$-3.35458 + 6.38544I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.83900 - 1.23581I$ $a = -1.080680 + 0.355800I$ $b = -0.83900 - 1.23581I$	$1.69434 + 10.77260I$	$-3.35458 - 6.38544I$
$u = 0.80144 + 1.27487I$ $a = 1.148760 - 0.417261I$ $b = 0.80144 + 1.27487I$	$-0.2661 + 17.0711I$	$-5.51346 - 9.58728I$
$u = 0.80144 - 1.27487I$ $a = 1.148760 + 0.417261I$ $b = 0.80144 - 1.27487I$	$-0.2661 - 17.0711I$	$-5.51346 + 9.58728I$

II. $\boldsymbol{I_2^u = \langle -3.20 \times 10^{118} u^{57} + 9.66 \times 10^{118} u^{56} + \cdots + 3.57 \times 10^{118} b + 1.16 \times 10^{121},\ -5.60 \times 10^{119} u^{57} + 1.71 \times 10^{120} u^{56} + \cdots + 1.14 \times 10^{121} a - 1.18 \times 10^{123},\ u^{58} - 3u^{57} + \cdots - 1554u + 319 \rangle}$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

$$a_8 = \begin{pmatrix} 0.0491969u^{57} - 0.150146u^{56} + \cdots - 319.134u + 103.337 \\ 0.896035u^{57} - 2.70926u^{56} + \cdots + 2187.69u - 325.595 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.697741u^{57} - 2.72311u^{56} + \cdots + 4242.50u - 894.659 \\ 0.446252u^{57} - 0.981013u^{56} + \cdots - 427.855u + 208.612 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.128099u^{57} - 0.508562u^{56} + \cdots + 3468.94u - 902.338 \\ 0.631071u^{57} - 1.40121u^{56} + \cdots - 573.075u + 292.501 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -0.846838u^{57} + 2.55911u^{56} + \cdots - 2506.82u + 428.932 \\ 0.896035u^{57} - 2.70926u^{56} + \cdots + 2187.69u - 325.595 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -0.624323u^{57} + 2.17283u^{56} + \cdots - 2326.98u + 416.764 \\ 0.138074u^{57} - 1.25210u^{56} + \cdots + 3319.00u - 821.619 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.567460u^{57} - 2.49194u^{56} + \cdots + 4488.01u - 991.415 \\ -0.538016u^{57} + 1.58442u^{56} + \cdots - 1160.49u + 155.114 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 1.58726u^{57} - 5.10882u^{56} + \cdots + 5564.88u - 1026.14 \\ -0.716147u^{57} + 1.76858u^{56} + \cdots - 559.740u - 36.0934 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.295318u^{57} + 0.123708u^{56} + \cdots + 2668.23u - 756.863 \\ 0.248161u^{57} - 0.642225u^{56} + \cdots + 25.6544u + 48.6724 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 7.52804u^{57} - 17.2152u^{56} + \cdots - 2223.72u + 2324.01$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^{29} + 12u^{28} + \cdots + 221u + 25)^2$
c_2, c_5	$(u^{29} - 2u^{28} + \cdots + 9u - 5)^2$
c_3, c_4, c_7 c_{11}	$u^{58} + 3u^{57} + \cdots + 1554u + 319$
c_6, c_8, c_9 c_{12}	$u^{58} + 2u^{57} + \cdots - 174u + 71$
c_{10}	$(u^{29} - 6u^{28} + \cdots + 16u - 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^{29} + 20y^{28} + \cdots + 2541y - 625)^2$
c_2, c_5	$(y^{29} - 12y^{28} + \cdots + 221y - 25)^2$
c_3, c_4, c_7 c_{11}	$y^{58} + 27y^{57} + \cdots + 2796268y + 101761$
c_6, c_8, c_9 c_{12}	$y^{58} - 22y^{57} + \cdots - 163614y + 5041$
c_{10}	$(y^{29} - 16y^{28} + \cdots + 54y - 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.127047 + 0.952571I$ $a = 0.23783 - 1.58753I$ $b = -0.01551 + 1.47649I$	$-6.73564 - 2.26625I$	$-7.53399 + 2.10986I$
$u = 0.127047 - 0.952571I$ $a = 0.23783 + 1.58753I$ $b = -0.01551 - 1.47649I$	$-6.73564 + 2.26625I$	$-7.53399 - 2.10986I$
$u = 0.977889 + 0.395391I$ $a = -0.936601 + 0.438187I$ $b = -0.993488 + 0.566307I$	$4.63913 - 2.75586I$	0
$u = 0.977889 - 0.395391I$ $a = -0.936601 - 0.438187I$ $b = -0.993488 - 0.566307I$	$4.63913 + 2.75586I$	0
$u = -0.668662 + 0.632286I$ $a = 0.556317 + 0.387986I$ $b = 0.387221 + 0.812398I$	$-0.167430 - 0.855798I$	$-5.76721 + 5.00765I$
$u = -0.668662 - 0.632286I$ $a = 0.556317 - 0.387986I$ $b = 0.387221 - 0.812398I$	$-0.167430 + 0.855798I$	$-5.76721 - 5.00765I$
$u = 0.387221 + 0.812398I$ $a = -0.202528 + 0.663324I$ $b = -0.668662 + 0.632286I$	$-0.167430 - 0.855798I$	$-5.76721 + 5.00765I$
$u = 0.387221 - 0.812398I$ $a = -0.202528 - 0.663324I$ $b = -0.668662 - 0.632286I$	$-0.167430 + 0.855798I$	$-5.76721 - 5.00765I$
$u = -0.110836 + 0.876726I$ $a = 1.96629 + 0.41853I$ $b = 0.654584 - 0.910489I$	$-3.66053 - 6.90208I$	$-9.96617 + 6.29904I$
$u = -0.110836 - 0.876726I$ $a = 1.96629 - 0.41853I$ $b = 0.654584 + 0.910489I$	$-3.66053 + 6.90208I$	$-9.96617 - 6.29904I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.654584 + 0.910489I$ $a = -1.51908 - 0.44975I$ $b = -0.110836 - 0.876726I$	$-3.66053 + 6.90208I$	0
$u = 0.654584 - 0.910489I$ $a = -1.51908 + 0.44975I$ $b = -0.110836 + 0.876726I$	$-3.66053 - 6.90208I$	0
$u = 0.814690 + 0.780723I$ $a = -1.40132 + 0.34702I$ $b = -0.726543 - 1.203870I$	$2.61948 + 3.58008I$	0
$u = 0.814690 - 0.780723I$ $a = -1.40132 - 0.34702I$ $b = -0.726543 + 1.203870I$	$2.61948 - 3.58008I$	0
$u = -0.993488 + 0.566307I$ $a = 0.852627 + 0.427457I$ $b = 0.977889 + 0.395391I$	$4.63913 - 2.75586I$	0
$u = -0.993488 - 0.566307I$ $a = 0.852627 - 0.427457I$ $b = 0.977889 - 0.395391I$	$4.63913 + 2.75586I$	0
$u = 0.443209 + 1.072830I$ $a = -1.48211 + 0.72163I$ $b = -0.650204 - 1.000790I$	$-1.23755 + 4.31563I$	0
$u = 0.443209 - 1.072830I$ $a = -1.48211 - 0.72163I$ $b = -0.650204 + 1.000790I$	$-1.23755 - 4.31563I$	0
$u = -0.850210 + 0.803191I$ $a = -0.634473 - 0.269123I$ $b = -1.234730 - 0.504043I$	$3.93086 - 3.48812I$	0
$u = -0.850210 - 0.803191I$ $a = -0.634473 + 0.269123I$ $b = -1.234730 + 0.504043I$	$3.93086 + 3.48812I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.650204 + 1.000790I$ $a = 1.54577 + 0.42567I$ $b = 0.443209 - 1.072830I$	$-1.23755 - 4.31563I$	0
$u = -0.650204 - 1.000790I$ $a = 1.54577 - 0.42567I$ $b = 0.443209 + 1.072830I$	$-1.23755 + 4.31563I$	0
$u = 0.961290 + 0.747797I$ $a = -0.214703 - 0.719788I$ $b = 0.293154 - 0.718460I$	$-4.70521 - 1.62785I$	0
$u = 0.961290 - 0.747797I$ $a = -0.214703 + 0.719788I$ $b = 0.293154 + 0.718460I$	$-4.70521 + 1.62785I$	0
$u = 0.293154 + 0.718460I$ $a = 1.178760 + 0.019061I$ $b = 0.961290 - 0.747797I$	$-4.70521 + 1.62785I$	$-12.78119 - 2.62015I$
$u = 0.293154 - 0.718460I$ $a = 1.178760 - 0.019061I$ $b = 0.961290 + 0.747797I$	$-4.70521 - 1.62785I$	$-12.78119 + 2.62015I$
$u = -0.750845 + 0.972729I$ $a = 0.891287 - 0.126207I$ $b = 0.138741 - 0.574265I$	$-0.54706 - 2.65768I$	0
$u = -0.750845 - 0.972729I$ $a = 0.891287 + 0.126207I$ $b = 0.138741 + 0.574265I$	$-0.54706 + 2.65768I$	0
$u = -0.835011 + 0.907349I$ $a = 1.36765 + 0.44806I$ $b = 0.65037 - 1.27337I$	$1.86996 - 8.79177I$	0
$u = -0.835011 - 0.907349I$ $a = 1.36765 - 0.44806I$ $b = 0.65037 + 1.27337I$	$1.86996 + 8.79177I$	0

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.879347 + 0.893897I$ $a = 0.311886 + 0.304169I$ $b = 0.794571 + 1.007140I$	$1.92974 + 2.45935I$	0
$u = -0.879347 - 0.893897I$ $a = 0.311886 - 0.304169I$ $b = 0.794571 - 1.007140I$	$1.92974 - 2.45935I$	0
$u = 0.831284 + 0.944870I$ $a = 0.644636 - 0.342540I$ $b = 1.246010 - 0.447063I$	$2.30912 + 9.86806I$	0
$u = 0.831284 - 0.944870I$ $a = 0.644636 + 0.342540I$ $b = 1.246010 + 0.447063I$	$2.30912 - 9.86806I$	0
$u = 0.794571 + 1.007140I$ $a = -0.256766 + 0.339709I$ $b = -0.879347 + 0.893897I$	$1.92974 + 2.45935I$	0
$u = 0.794571 - 1.007140I$ $a = -0.256766 - 0.339709I$ $b = -0.879347 - 0.893897I$	$1.92974 - 2.45935I$	0
$u = 0.188057 + 1.304610I$ $a = -0.034973 + 0.242616I$ $b = 0.188057 - 1.304610I$	-11.0631	0
$u = 0.188057 - 1.304610I$ $a = -0.034973 - 0.242616I$ $b = 0.188057 + 1.304610I$	-11.0631	0
$u = 1.246010 + 0.447063I$ $a = 0.528405 - 0.449901I$ $b = 0.831284 - 0.944870I$	$2.30912 - 9.86806I$	0
$u = 1.246010 - 0.447063I$ $a = 0.528405 + 0.449901I$ $b = 0.831284 + 0.944870I$	$2.30912 + 9.86806I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.234730 + 0.504043I$ $a = -0.444964 - 0.409054I$ $b = -0.850210 - 0.803191I$	$3.93086 + 3.48812I$	0
$u = -1.234730 - 0.504043I$ $a = -0.444964 + 0.409054I$ $b = -0.850210 + 0.803191I$	$3.93086 - 3.48812I$	0
$u = 0.191238 + 0.563226I$ $a = -0.019603 + 0.414508I$ $b = 0.33099 - 1.93554I$	$-5.12050 + 3.68484I$	$-9.5195 - 25.5363I$
$u = 0.191238 - 0.563226I$ $a = -0.019603 - 0.414508I$ $b = 0.33099 + 1.93554I$	$-5.12050 - 3.68484I$	$-9.5195 + 25.5363I$
$u = -0.726543 + 1.203870I$ $a = 1.013080 + 0.561957I$ $b = 0.814690 - 0.780723I$	$2.61948 - 3.58008I$	0
$u = -0.726543 - 1.203870I$ $a = 1.013080 - 0.561957I$ $b = 0.814690 + 0.780723I$	$2.61948 + 3.58008I$	0
$u = 0.138741 + 0.574265I$ $a = -1.79959 + 0.51679I$ $b = -0.750845 - 0.972729I$	$-0.54706 + 2.65768I$	$-5.51240 - 3.43968I$
$u = 0.138741 - 0.574265I$ $a = -1.79959 - 0.51679I$ $b = -0.750845 + 0.972729I$	$-0.54706 - 2.65768I$	$-5.51240 + 3.43968I$
$u = 0.65037 + 1.27337I$ $a = -1.032490 + 0.688756I$ $b = -0.835011 - 0.907349I$	$1.86996 + 8.79177I$	0
$u = 0.65037 - 1.27337I$ $a = -1.032490 - 0.688756I$ $b = -0.835011 + 0.907349I$	$1.86996 - 8.79177I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.03227 + 1.44258I$ $a = 0.078303 - 1.166600I$ $b = 0.152775 + 0.491791I$	$-7.68709 + 1.70661I$	0
$u = 0.03227 - 1.44258I$ $a = 0.078303 + 1.166600I$ $b = 0.152775 - 0.491791I$	$-7.68709 - 1.70661I$	0
$u = -0.01551 + 1.47649I$ $a = 0.005861 - 1.044740I$ $b = 0.127047 + 0.952571I$	$-6.73564 - 2.26625I$	0
$u = -0.01551 - 1.47649I$ $a = 0.005861 + 1.044740I$ $b = 0.127047 - 0.952571I$	$-6.73564 + 2.26625I$	0
$u = 0.152775 + 0.491791I$ $a = 1.11061 - 3.08212I$ $b = 0.03227 + 1.44258I$	$-7.68709 + 1.70661I$	$-3.08074 - 5.87302I$
$u = 0.152775 - 0.491791I$ $a = 1.11061 + 3.08212I$ $b = 0.03227 - 1.44258I$	$-7.68709 - 1.70661I$	$-3.08074 + 5.87302I$
$u = 0.33099 + 1.93554I$ $a = -0.0546110 + 0.1132170I$ $b = 0.191238 - 0.563226I$	$-5.12050 - 3.68484I$	0
$u = 0.33099 - 1.93554I$ $a = -0.0546110 - 0.1132170I$ $b = 0.191238 + 0.563226I$	$-5.12050 + 3.68484I$	0

III. $I_3^u = \langle b + u,\ u^{11} - 2u^{10} + \cdots + a + 3u,\ u^{12} - u^{11} + \cdots + 2u + 1\rangle$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

$$a_8 = \begin{pmatrix} -u^{11} + 2u^{10} + \cdots + 4u^2 - 3u \\ -u \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^{11} - 2u^{10} + \cdots + 3u - 1 \\ -u^{10} + u^9 - 4u^8 + 3u^7 - 6u^6 + 2u^5 - 5u^4 + u^3 - 3u^2 - 1 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u^{11} - u^{10} + 5u^9 - 5u^8 + 11u^7 - 8u^6 + 13u^5 - 5u^4 + 8u^3 - u^2 + 4u + 1 \\ -2u^{10} + 2u^9 - 7u^8 + 5u^7 - 10u^6 + 3u^5 - 9u^4 + u^3 - 5u^2 - 2u - 2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^{11} + 2u^{10} + \cdots + 4u^2 - 2u \\ -u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u^{11} - u^{10} + 5u^9 - 4u^8 + 9u^7 - 4u^6 + 8u^5 + 5u^3 + 2u^2 + 2u + 2 \\ -u^2 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u^9 - 2u^8 + 5u^7 - 8u^6 + 10u^5 - 10u^4 + 8u^3 - 5u^2 + u - 2 \\ -u^8 + u^7 - 3u^6 + 2u^5 - 3u^4 - 2u^2 - 1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u^{11} + u^{10} - 4u^9 + 3u^8 - 6u^7 + u^6 - 4u^5 - 3u^4 - u^3 - 3u^2 - 2u - 2 \\ u^{10} - u^9 + 3u^8 - 2u^7 + 3u^6 + 2u^4 + u^2 + u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -u^{10} + u^9 - 3u^8 + u^7 - 2u^6 - 3u^5 + u^4 - 4u^3 + u^2 - 3u \\ 2u^{10} - 2u^9 + 7u^8 - 5u^7 + 10u^6 - 3u^5 + 9u^4 - u^3 + 5u^2 + 2u + 2 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes
$= 2u^{11} + u^{10} + 4u^9 + 5u^8 - u^7 + 15u^6 - 6u^5 + 15u^4 - 4u^3 + 3u^2 + 4u - 4$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{12} - 5u^{11} + \cdots - 6u + 1$
c_2	$u^{12} + u^{11} - 2u^{10} - 3u^9 + u^8 + 2u^7 + u^6 + 2u^5 - 4u^3 - u^2 + 2u + 1$
c_3, c_7	$u^{12} - u^{11} + \cdots + 2u + 1$
c_4, c_{11}	$u^{12} + u^{11} + \cdots - 2u + 1$
c_5	$u^{12} - u^{11} - 2u^{10} + 3u^9 + u^8 - 2u^7 + u^6 - 2u^5 + 4u^3 - u^2 - 2u + 1$
c_6, c_8	$u^{12} + u^{11} - 3u^{10} + u^9 + 5u^8 - 7u^7 + 7u^5 - 7u^4 + u^3 + 4u^2 - 3u + 1$
c_9, c_{12}	$u^{12} - u^{11} - 3u^{10} - u^9 + 5u^8 + 7u^7 - 7u^5 - 7u^4 - u^3 + 4u^2 + 3u + 1$
c_{10}	$u^{12} - 6u^{11} + \cdots - 4u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{12} - y^{11} + \cdots - 2y + 1$
c_2, c_5	$y^{12} - 5y^{11} + \cdots - 6y + 1$
c_3, c_4, c_7 c_{11}	$y^{12} + 9y^{11} + \cdots + 4y + 1$
c_6, c_8, c_9 c_{12}	$y^{12} - 7y^{11} + \cdots - y + 1$
c_{10}	$y^{12} + 4y^{11} + \cdots + 28y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.466084 + 0.809264I$ $a = 2.16254 - 0.39601I$ $b = 0.466084 - 0.809264I$	$-2.49985 - 7.76270I$	$-3.72598 + 11.08235I$
$u = -0.466084 - 0.809264I$ $a = 2.16254 + 0.39601I$ $b = 0.466084 + 0.809264I$	$-2.49985 + 7.76270I$	$-3.72598 - 11.08235I$
$u = 0.519595 + 0.992665I$ $a = -1.68774 + 0.62888I$ $b = -0.519595 - 0.992665I$	$-0.29532 + 4.35182I$	$0.13392 - 4.24607I$
$u = 0.519595 - 0.992665I$ $a = -1.68774 - 0.62888I$ $b = -0.519595 + 0.992665I$	$-0.29532 - 4.35182I$	$0.13392 + 4.24607I$
$u = 0.854627 + 0.760787I$ $a = -0.871446 - 0.113522I$ $b = -0.854627 - 0.760787I$	$0.91868 + 3.75006I$	$3.14617 - 6.86627I$
$u = 0.854627 - 0.760787I$ $a = -0.871446 + 0.113522I$ $b = -0.854627 + 0.760787I$	$0.91868 - 3.75006I$	$3.14617 + 6.86627I$
$u = -0.017122 + 1.272490I$ $a = -0.196657 + 0.030724I$ $b = 0.017122 - 1.272490I$	$-10.46040 - 1.58679I$	$-9.53450 + 4.49112I$
$u = -0.017122 - 1.272490I$ $a = -0.196657 - 0.030724I$ $b = 0.017122 + 1.272490I$	$-10.46040 + 1.58679I$	$-9.53450 - 4.49112I$
$u = -0.050049 + 1.373520I$ $a = -0.126746 + 0.670182I$ $b = 0.050049 - 1.373520I$	$-8.56258 + 2.71427I$	$-11.98375 - 3.60830I$
$u = -0.050049 - 1.373520I$ $a = -0.126746 - 0.670182I$ $b = 0.050049 + 1.373520I$	$-8.56258 - 2.71427I$	$-11.98375 + 3.60830I$

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.340967 + 0.334336I$ $a = -0.27996 - 2.09817I$ $b = 0.340967 - 0.334336I$	$-3.77450 + 0.33015I$	$-6.53587 + 0.59190I$
$u = -0.340967 - 0.334336I$ $a = -0.27996 + 2.09817I$ $b = 0.340967 + 0.334336I$	$-3.77450 - 0.33015I$	$-6.53587 - 0.59190I$

IV.

$\boldsymbol{I_4^u = \langle -u^9 - 6u^7 + \cdots + b - 6u,\ 2u^8 + 11u^6 + \cdots + a + 3,\ u^{10} + 6u^8 + \cdots + 6u^2 + 1\rangle}$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

$$a_8 = \begin{pmatrix} -2u^8 - 11u^6 + 4u^5 - 20u^4 + 8u^3 - 14u^2 - u - 3 \\ u^9 + 6u^7 - 2u^6 + 13u^5 - 5u^4 + 13u^3 - 2u^2 + 6u \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 5u^8 + 27u^6 - 10u^5 + 49u^4 - 19u^3 + 36u^2 + 2u + 8 \\ -u^9 - u^8 - 6u^7 - 3u^6 - 11u^5 - 3u^4 - 9u^3 - 3u^2 - 6u - 1 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u^9 + 3u^8 + 6u^7 + 14u^6 + 7u^5 + 23u^4 + 2u^3 + 17u^2 + 8u + 4 \\ -u^9 - 6u^7 + 2u^6 - 13u^5 + 6u^4 - 13u^3 + 5u^2 - 7u + 1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^9 - 2u^8 - 6u^7 - 9u^6 - 9u^5 - 15u^4 - 5u^3 - 12u^2 - 7u - 3 \\ u^9 + 6u^7 - 2u^6 + 13u^5 - 5u^4 + 13u^3 - 2u^2 + 6u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 3u^9 - u^8 + 16u^7 - 12u^6 + 30u^5 - 24u^4 + 24u^3 - 11u^2 + 6u - 6 \\ u^8 + 6u^6 - 2u^5 + 13u^4 - 5u^3 + 13u^2 - 2u + 6 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u^9 + 5u^8 + 5u^7 + 26u^6 - 2u^5 + 50u^4 - 16u^3 + 42u^2 + u + 10 \\ -2u^8 - 11u^6 + 4u^5 - 20u^4 + 8u^3 - 14u^2 - 3 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u^9 + 9u^8 + 5u^7 + 47u^6 - 10u^5 + 87u^4 - 30u^3 + 69u^2 + 2u + 16 \\ -3u^8 - 16u^6 + 6u^5 - 28u^4 + 11u^3 - 19u^2 - u - 4 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 2u^9 + 7u^8 + 10u^7 + 35u^6 + u^5 + 68u^4 - 23u^3 + 62u^2 - 3u + 15 \\ u^9 - 3u^8 + 6u^7 - 19u^6 + 19u^5 - 38u^4 + 26u^3 - 28u^2 + 6u - 6 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 3u^9 + 9u^8 + 14u^7 + 43u^6 - 3u^5 + 85u^4 - 44u^3 + 87u^2 - 16u + 11$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^5 - 3u^4 + 7u^3 - 8u^2 + 5u - 1)^2$
c_2	$(u^5 - u^4 - u^3 + 2u^2 + u - 1)^2$
c_3, c_7	$u^{10} + 6u^8 - 2u^7 + 13u^6 - 5u^5 + 13u^4 - 2u^3 + 6u^2 + 1$
c_4, c_{11}	$u^{10} + 6u^8 + 2u^7 + 13u^6 + 5u^5 + 13u^4 + 2u^3 + 6u^2 + 1$
c_5	$(u^5 + u^4 - u^3 - 2u^2 + u + 1)^2$
c_6, c_8	$u^{10} - 5u^9 + 6u^8 + 6u^7 - 15u^6 + 3u^5 + 9u^4 - 6u^3 - u^2 + 2u + 1$
c_9, c_{12}	$u^{10} + 5u^9 + 6u^8 - 6u^7 - 15u^6 - 3u^5 + 9u^4 + 6u^3 - u^2 - 2u + 1$
c_{10}	$(u^5 + 4u^4 + 4u^3 - u^2 - 2u - 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^5+5y^4+11y^3+9y-1)^2$
c_2, c_5	$(y^5-3y^4+7y^3-8y^2+5y-1)^2$
c_3, c_4, c_7 c_{11}	$y^{10}+12y^9+\cdots+12y+1$
c_6, c_8, c_9 c_{12}	$y^{10}-13y^9+\cdots-6y+1$
c_{10}	$(y^5-8y^4+20y^3-9y^2+2y-1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.581760 + 0.813360I$ $a = -0.429730 + 0.600807I$ $b = -0.581760 + 0.813360I$	0.265516	$-2.34553 + 0.I$
$u = 0.581760 - 0.813360I$ $a = -0.429730 - 0.600807I$ $b = -0.581760 - 0.813360I$	0.265516	$-2.34553 + 0.I$
$u = -0.021542 + 0.707790I$ $a = 0.42920 - 2.79487I$ $b = 0.042962 + 1.411540I$	$-8.15907 + 1.42206I$	$-16.8796 + 1.7077I$
$u = -0.021542 - 0.707790I$ $a = 0.42920 + 2.79487I$ $b = 0.042962 - 1.411540I$	$-8.15907 - 1.42206I$	$-16.8796 - 1.7077I$
$u = -0.042962 + 1.411540I$ $a = -0.30004 - 1.38575I$ $b = 0.021542 + 0.707790I$	$-8.15907 - 1.42206I$	$-16.8796 - 1.7077I$
$u = -0.042962 - 1.411540I$ $a = -0.30004 + 1.38575I$ $b = 0.021542 - 0.707790I$	$-8.15907 + 1.42206I$	$-16.8796 + 1.7077I$
$u = -0.122679 + 0.543931I$ $a = 0.578758 - 0.866663I$ $b = 0.39458 + 1.74948I$	$-5.13317 - 3.45949I$	$-10.9476 - 9.1982I$
$u = -0.122679 - 0.543931I$ $a = 0.578758 + 0.866663I$ $b = 0.39458 - 1.74948I$	$-5.13317 + 3.45949I$	$-10.9476 + 9.1982I$
$u = -0.39458 + 1.74948I$ $a = -0.278184 - 0.166129I$ $b = 0.122679 + 0.543931I$	$-5.13317 + 3.45949I$	$-10.9476 + 9.1982I$
$u = -0.39458 - 1.74948I$ $a = -0.278184 + 0.166129I$ $b = 0.122679 - 0.543931I$	$-5.13317 - 3.45949I$	$-10.9476 - 9.1982I$

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^5-3u^4+7u^3-8u^2+5u-1)^2)(u^{12}-5u^{11}+\cdots-6u+1)$ $\cdot(u^{23}+8u^{22}+\cdots+224u+64)(u^{29}+12u^{28}+\cdots+221u+25)^2$
c_2	$(u^5-u^4-u^3+2u^2+u-1)^2$ $\cdot(u^{12}+u^{11}-2u^{10}-3u^9+u^8+2u^7+u^6+2u^5-4u^3-u^2+2u+1)$ $\cdot(u^{23}+8u^{22}+\cdots-56u-8)(u^{29}-2u^{28}+\cdots+9u-5)^2$
c_3, c_7	$(u^{10}+6u^8-2u^7+13u^6-5u^5+13u^4-2u^3+6u^2+1)$ $\cdot(u^{12}-u^{11}+\cdots+2u+1)(u^{23}+u^{22}+\cdots+2u+1)$ $\cdot(u^{58}+3u^{57}+\cdots+1554u+319)$
c_4, c_{11}	$(u^{10}+6u^8+2u^7+13u^6+5u^5+13u^4+2u^3+6u^2+1)$ $\cdot(u^{12}+u^{11}+\cdots-2u+1)(u^{23}+u^{22}+\cdots+2u+1)$ $\cdot(u^{58}+3u^{57}+\cdots+1554u+319)$
c_5	$(u^5+u^4-u^3-2u^2+u+1)^2$ $\cdot(u^{12}-u^{11}-2u^{10}+3u^9+u^8-2u^7+u^6-2u^5+4u^3-u^2-2u+1)$ $\cdot(u^{23}+8u^{22}+\cdots-56u-8)(u^{29}-2u^{28}+\cdots+9u-5)^2$
c_6, c_8	$(u^{10}-5u^9+6u^8+6u^7-15u^6+3u^5+9u^4-6u^3-u^2+2u+1)$ $\cdot(u^{12}+u^{11}-3u^{10}+u^9+5u^8-7u^7+7u^5-7u^4+u^3+4u^2-3u+1)$ $\cdot(u^{23}+u^{22}+\cdots-u+1)(u^{58}+2u^{57}+\cdots-174u+71)$
c_9, c_{12}	$(u^{10}+5u^9+6u^8-6u^7-15u^6-3u^5+9u^4+6u^3-u^2-2u+1)$ $\cdot(u^{12}-u^{11}-3u^{10}-u^9+5u^8+7u^7-7u^5-7u^4-u^3+4u^2+3u+1)$ $\cdot(u^{23}+u^{22}+\cdots-u+1)(u^{58}+2u^{57}+\cdots-174u+71)$
c_{10}	$((u^5+4u^4+4u^3-u^2-2u-1)^2)(u^{12}-6u^{11}+\cdots-4u+1)$ $\cdot(u^{23}+19u^{22}+\cdots+1792u+256)(u^{29}-6u^{28}+\cdots+16u-1)^2$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y^5+5y^4+11y^3+9y-1)^2)(y^{12}-y^{11}+\cdots-2y+1)$ $\cdot(y^{23}+4y^{22}+\cdots-46592y-4096)$ $\cdot(y^{29}+20y^{28}+\cdots+2541y-625)^2$
c_2, c_5	$((y^5-3y^4+7y^3-8y^2+5y-1)^2)(y^{12}-5y^{11}+\cdots-6y+1)$ $\cdot(y^{23}-8y^{22}+\cdots+224y-64)(y^{29}-12y^{28}+\cdots+221y-25)^2$
c_3, c_4, c_7 c_{11}	$(y^{10}+12y^9+\cdots+12y+1)(y^{12}+9y^{11}+\cdots+4y+1)$ $\cdot(y^{23}+9y^{22}+\cdots-14y-1)(y^{58}+27y^{57}+\cdots+2796268y+101761)$
c_6, c_8, c_9 c_{12}	$(y^{10}-13y^9+\cdots-6y+1)(y^{12}-7y^{11}+\cdots-y+1)$ $\cdot(y^{23}-7y^{22}+\cdots+7y-1)(y^{58}-22y^{57}+\cdots-163614y+5041)$
c_{10}	$((y^5-8y^4+20y^3-9y^2+2y-1)^2)(y^{12}+4y^{11}+\cdots+28y+1)$ $\cdot(y^{23}+3y^{22}+\cdots-917504y-65536)(y^{29}-16y^{28}+\cdots+54y-1)^2$