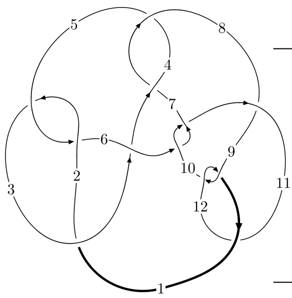
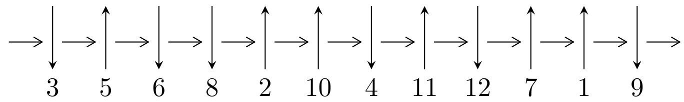
$12a_{0004}$ ($K12a_{0004}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -5.58623 \times 10^{76} u^{129} - 4.47141 \times 10^{78} u^{128} + \cdots + 1.43114 \times 10^{77} b - 2.84585 \times 10^{78},$$
$$- 6.57135 \times 10^{77} u^{129} + 2.71715 \times 10^{77} u^{128} + \cdots + 2.86227 \times 10^{77} a - 1.19729 \times 10^{78},$$
$$u^{130} - 8u^{129} + \cdots + 2u + 1 \rangle$$
$$I_2^u = \langle a^4 u - a^3 u - a^3 + a^2 - 2au + b - a + u + 1,\ a^5 + a^4 u - a^3 u - a^3 - 2a^2 - au - u - 1,\ u^2 + u + 1 \rangle$$
$$I_3^u = \langle b - a,\ u^4 a - u^3 a - 2u^4 + u^2 a + 2u^3 + a^2 - 2u^2 - a - u + 2,\ u^5 - u^4 + 2u^3 - u^2 + u - 1 \rangle$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 150 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. $\boldsymbol{I^u_1 = \langle -5.59\times 10^{76}u^{129} - 4.47\times 10^{78}u^{128} + \cdots + 1.43\times 10^{77}b - 2.85\times 10^{78},\ -6.57\times 10^{77}u^{129} + 2.72\times 10^{77}u^{128} + \cdots + 2.86\times 10^{77}a - 1.20\times 10^{78},\ u^{130} - 8u^{129} + \cdots + 2u + 1\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_5 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_3 = \begin{pmatrix}1\\-u^2\end{pmatrix}$$
$$a_6 = \begin{pmatrix}u\\u\end{pmatrix}$$
$$a_4 = \begin{pmatrix}u^4+u^2+1\\u^4\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}2.29585u^{129} - 0.949298u^{128} + \cdots + 20.9609u + 4.18300\\0.390335u^{129} + 31.2438u^{128} + \cdots + 51.6062u + 19.8853\end{pmatrix}$$
$$a_7 = \begin{pmatrix}10.7738u^{129} - 82.0527u^{128} + \cdots - 10.7181u - 6.86334\\12.5299u^{129} - 88.0806u^{128} + \cdots + 9.84424u + 0.206116\end{pmatrix}$$
$$a_8 = \begin{pmatrix}1.31653u^{129} + 0.669349u^{128} + \cdots + 12.0408u + 4.48855\\-1.36092u^{129} + 42.7776u^{128} + \cdots + 62.9324u + 23.3661\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-0.0358964u^{129} + 12.9188u^{128} + \cdots + 19.8042u + 2.41846\\-5.51164u^{129} + 63.3209u^{128} + \cdots + 30.5290u + 13.4695\end{pmatrix}$$
$$a_1 = \begin{pmatrix}u^2+1\\-u^4\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}0.952102u^{129} + 14.7945u^{128} + \cdots + 31.3058u + 6.90175\\-6.52188u^{129} + 89.6423u^{128} + \cdots + 64.6648u + 26.4860\end{pmatrix}$$
$$a_9 = \begin{pmatrix}-1.46905u^{129} + 24.1231u^{128} + \cdots + 21.6639u + 7.81213\\-3.93886u^{129} + 56.7495u^{128} + \cdots + 45.0240u + 18.7049\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -25.8022u^{129} + 180.947u^{128} + \cdots - 33.4431u - 3.06530$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{130} + 64u^{129} + \cdots - 30u + 1$
c_2, c_5	$u^{130} + 8u^{129} + \cdots - 2u + 1$
c_3	$u^{130} - 8u^{129} + \cdots - 10406338u + 596177$
c_4, c_7	$u^{130} + 3u^{129} + \cdots + 3072u + 1024$
c_6, c_{10}	$u^{130} - 3u^{129} + \cdots - 3072u + 1024$
c_8	$u^{130} + 8u^{129} + \cdots + 10406338u + 596177$
c_9, c_{12}	$u^{130} - 8u^{129} + \cdots + 2u + 1$
c_{11}	$u^{130} - 64u^{129} + \cdots + 30u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{11}	$y^{130} + 12y^{129} + \cdots + 686y + 1$
c_2, c_5, c_9 c_{12}	$y^{130} + 64y^{129} + \cdots - 30y + 1$
c_3, c_8	$y^{130} - 40y^{129} + \cdots - 17001882314902y + 355427015329$
c_4, c_6, c_7 c_{10}	$y^{130} - 65y^{129} + \cdots - 22020096y + 1048576$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.592700 + 0.792019I$ $a = -0.279524 + 1.370980I$ $b = -0.115357 + 0.676864I$	$0.002551 - 0.973476I$	0
$u = -0.592700 - 0.792019I$ $a = -0.279524 - 1.370980I$ $b = -0.115357 - 0.676864I$	$0.002551 + 0.973476I$	0
$u = -0.744003 + 0.687533I$ $a = 0.020821 + 0.486800I$ $b = -1.091330 + 0.106265I$	$2.03115 - 5.05572I$	0
$u = -0.744003 - 0.687533I$ $a = 0.020821 - 0.486800I$ $b = -1.091330 - 0.106265I$	$2.03115 + 5.05572I$	0
$u = -0.759392 + 0.616515I$ $a = -0.453470 - 0.697097I$ $b = 0.708494 - 0.160786I$	$6.34959 - 1.94756I$	0
$u = -0.759392 - 0.616515I$ $a = -0.453470 + 0.697097I$ $b = 0.708494 + 0.160786I$	$6.34959 + 1.94756I$	0
$u = -0.542109 + 0.787886I$ $a = -1.69307 + 1.39703I$ $b = -2.24766 + 1.18744I$	$0.00252 - 3.66806I$	0
$u = -0.542109 - 0.787886I$ $a = -1.69307 - 1.39703I$ $b = -2.24766 - 1.18744I$	$0.00252 + 3.66806I$	0
$u = -0.783339 + 0.694881I$ $a = -0.151450 - 0.242064I$ $b = 1.050480 + 0.115263I$	$4.55149 - 9.95496I$	0
$u = -0.783339 - 0.694881I$ $a = -0.151450 + 0.242064I$ $b = 1.050480 - 0.115263I$	$4.55149 + 9.95496I$	0

Solutions to I^u_1	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.862122 + 0.340997I$ $a = 0.74839 - 1.92906I$ $b = -0.199145 - 0.718224I$	$2.45608 - 13.29840I$	0
$u = 0.862122 - 0.340997I$ $a = 0.74839 + 1.92906I$ $b = -0.199145 + 0.718224I$	$2.45608 + 13.29840I$	0
$u = -0.431112 + 0.988134I$ $a = -2.89647 + 0.13589I$ $b = -3.43417 - 0.15726I$	$-0.785891 + 0.018251I$	0
$u = -0.431112 - 0.988134I$ $a = -2.89647 - 0.13589I$ $b = -3.43417 + 0.15726I$	$-0.785891 - 0.018251I$	0
$u = -0.505657 + 0.752572I$ $a = -1.48334 + 2.03829I$ $b = -1.97303 + 1.70778I$	$-0.00252 - 3.66806I$	0
$u = -0.505657 - 0.752572I$ $a = -1.48334 - 2.03829I$ $b = -1.97303 - 1.70778I$	$-0.00252 + 3.66806I$	0
$u = -0.637914 + 0.643957I$ $a = 0.26515 - 1.56494I$ $b = -0.252681 - 0.684601I$	$1.64093 - 4.70889I$	0
$u = -0.637914 - 0.643957I$ $a = 0.26515 + 1.56494I$ $b = -0.252681 + 0.684601I$	$1.64093 + 4.70889I$	0
$u = 0.472721 + 0.986926I$ $a = 0.366438 + 0.491612I$ $b = 0.730104 - 0.899035I$	$5.43061 - 1.83010I$	0
$u = 0.472721 - 0.986926I$ $a = 0.366438 - 0.491612I$ $b = 0.730104 + 0.899035I$	$5.43061 + 1.83010I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.568348 + 0.936676I$ $a = 1.86032 + 0.03104I$ $b = 2.46856 - 0.26096I$	$0.785891 - 0.018251I$	0
$u = -0.568348 - 0.936676I$ $a = 1.86032 - 0.03104I$ $b = 2.46856 + 0.26096I$	$0.785891 + 0.018251I$	0
$u = 0.837632 + 0.330901I$ $a = -0.63276 + 1.88171I$ $b = 0.321496 + 0.720320I$	$-8.00471I$	0
$u = 0.837632 - 0.330901I$ $a = -0.63276 - 1.88171I$ $b = 0.321496 - 0.720320I$	$8.00471I$	0
$u = 0.807554 + 0.375193I$ $a = 0.67303 - 1.65111I$ $b = -0.376203 - 0.491162I$	$5.04203 - 4.93450I$	0
$u = 0.807554 - 0.375193I$ $a = 0.67303 + 1.65111I$ $b = -0.376203 + 0.491162I$	$5.04203 + 4.93450I$	0
$u = -0.202837 + 1.101200I$ $a = 0.702355 - 0.859861I$ $b = 0.61872 - 1.76397I$	$2.02680 - 3.40551I$	0
$u = -0.202837 - 1.101200I$ $a = 0.702355 + 0.859861I$ $b = 0.61872 + 1.76397I$	$2.02680 + 3.40551I$	0
$u = 0.877007 + 0.063352I$ $a = 1.131520 + 0.385876I$ $b = 0.201976 + 0.136445I$	$-1.86134 + 3.02789I$	0
$u = 0.877007 - 0.063352I$ $a = 1.131520 - 0.385876I$ $b = 0.201976 - 0.136445I$	$-1.86134 - 3.02789I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.356637 + 1.072920I$ $a = -1.082510 + 0.005267I$ $b = -2.08828 + 0.10975I$	$-2.02680 + 3.40551I$	0
$u = 0.356637 - 1.072920I$ $a = -1.082510 - 0.005267I$ $b = -2.08828 - 0.10975I$	$-2.02680 - 3.40551I$	0
$u = 0.485761 + 1.022820I$ $a = -0.539985 - 0.564035I$ $b = -0.972768 + 0.630871I$	$1.86134 + 3.02789I$	0
$u = 0.485761 - 1.022820I$ $a = -0.539985 + 0.564035I$ $b = -0.972768 - 0.630871I$	$1.86134 - 3.02789I$	0
$u = -0.450602 + 1.045830I$ $a = -1.61996 + 0.23774I$ $b = -1.99584 + 0.89329I$	$-1.75761 - 1.88399I$	0
$u = -0.450602 - 1.045830I$ $a = -1.61996 - 0.23774I$ $b = -1.99584 - 0.89329I$	$-1.75761 + 1.88399I$	0
$u = -0.338433 + 1.092870I$ $a = -1.25500 + 0.66822I$ $b = -1.41448 + 1.48706I$	$-1.36077 - 0.74859I$	0
$u = -0.338433 - 1.092870I$ $a = -1.25500 - 0.66822I$ $b = -1.41448 - 1.48706I$	$-1.36077 + 0.74859I$	0
$u = 0.527011 + 1.018560I$ $a = 0.642820 + 0.338568I$ $b = 1.28844 - 0.85517I$	$5.92691 + 7.48471I$	0
$u = 0.527011 - 1.018560I$ $a = 0.642820 - 0.338568I$ $b = 1.28844 + 0.85517I$	$5.92691 - 7.48471I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.468701+1.047850I$ $a=\ \ 2.38303+0.29053I$ $b=\ \ 3.03269+0.70962I$	$-1.64093-4.70889I$	0
$u=-0.468701-1.047850I$ $a=\ \ 2.38303-0.29053I$ $b=\ \ 3.03269-0.70962I$	$-1.64093+4.70889I$	0
$u=-0.675397+0.928630I$ $a=-0.332315+0.520207I$ $b=-0.570321-0.396184I$	$1.317160-0.310998I$	0
$u=-0.675397-0.928630I$ $a=-0.332315-0.520207I$ $b=-0.570321+0.396184I$	$1.317160+0.310998I$	0
$u=\ \ 0.159588+1.138830I$ $a=\ \ 0.665887+0.212809I$ $b=\ \ 1.04567+1.22172I$	$-\ 2.37014I$	0
$u=\ \ 0.159588-1.138830I$ $a=\ \ 0.665887-0.212809I$ $b=\ \ 1.04567-1.22172I$	$2.37014I$	0
$u=\ \ 0.251252+1.140130I$ $a=-1.54021+0.19344I$ $b=-2.49789+0.53268I$	$-4.46877-3.84660I$	0
$u=\ \ 0.251252-1.140130I$ $a=-1.54021-0.19344I$ $b=-2.49789-0.53268I$	$-4.46877+3.84660I$	0
$u=-0.513294+1.050470I$ $a=\ \ 1.84558-0.12849I$ $b=\ \ 2.37333-0.75961I$	$-\ 6.20757I$	0
$u=-0.513294-1.050470I$ $a=\ \ 1.84558+0.12849I$ $b=\ \ 2.37333+0.75961I$	$6.20757I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.765140 + 0.316117I$ $a = 0.69915 + 1.34740I$ $b = -0.337122 + 0.331391I$	$0.02607 - 6.72571I$	0
$u = 0.765140 - 0.316117I$ $a = 0.69915 - 1.34740I$ $b = -0.337122 - 0.331391I$	$0.02607 + 6.72571I$	0
$u = 0.319775 + 1.132450I$ $a = 0.776712 - 0.855144I$ $b = 1.018630 + 0.042020I$	$-5.24352 + 3.43630I$	0
$u = 0.319775 - 1.132450I$ $a = 0.776712 + 0.855144I$ $b = 1.018630 - 0.042020I$	$-5.24352 - 3.43630I$	0
$u = 0.812896 + 0.117062I$ $a = -0.836162 - 0.719564I$ $b = -0.046145 - 0.185916I$	$-3.30887 - 1.04774I$	0
$u = 0.812896 - 0.117062I$ $a = -0.836162 + 0.719564I$ $b = -0.046145 + 0.185916I$	$-3.30887 + 1.04774I$	0
$u = -0.713520 + 0.941097I$ $a = 0.073348 - 0.368777I$ $b = 0.339239 + 0.653351I$	$3.82254 + 4.35831I$	0
$u = -0.713520 - 0.941097I$ $a = 0.073348 + 0.368777I$ $b = 0.339239 - 0.653351I$	$3.82254 - 4.35831I$	0
$u = -0.720770 + 0.382430I$ $a = 1.21227 + 1.61500I$ $b = 0.040862 + 0.626279I$	$6.53732 - 1.08710I$	0
$u = -0.720770 - 0.382430I$ $a = 1.21227 - 1.61500I$ $b = 0.040862 - 0.626279I$	$6.53732 + 1.08710I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.607854 + 0.541029I$ $a = -0.364104 + 0.970250I$ $b = 0.992932 - 0.142984I$	$7.34314 - 2.99182I$	0
$u = 0.607854 - 0.541029I$ $a = -0.364104 - 0.970250I$ $b = 0.992932 + 0.142984I$	$7.34314 + 2.99182I$	0
$u = 0.282116 + 1.153040I$ $a = -0.975944 + 0.537028I$ $b = -1.297810 - 0.377038I$	$-6.34959 - 1.94756I$	0
$u = 0.282116 - 1.153040I$ $a = -0.975944 - 0.537028I$ $b = -1.297810 + 0.377038I$	$-6.34959 + 1.94756I$	0
$u = -0.314207 + 1.148530I$ $a = 1.24218 - 0.96080I$ $b = 1.37827 - 1.90081I$	$0.82517 + 3.75302I$	0
$u = -0.314207 - 1.148530I$ $a = 1.24218 + 0.96080I$ $b = 1.37827 + 1.90081I$	$0.82517 - 3.75302I$	0
$u = 0.298545 + 1.153470I$ $a = 1.330110 - 0.305323I$ $b = 2.22260 - 0.60801I$	$-6.53732 + 1.08710I$	0
$u = 0.298545 - 1.153470I$ $a = 1.330110 + 0.305323I$ $b = 2.22260 + 0.60801I$	$-6.53732 - 1.08710I$	0
$u = 0.504837 + 0.629537I$ $a = -0.066456 + 0.842581I$ $b = 1.390670 - 0.236290I$	$6.51581 + 5.82934I$	0
$u = 0.504837 - 0.629537I$ $a = -0.066456 - 0.842581I$ $b = 1.390670 + 0.236290I$	$6.51581 - 5.82934I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.666933 + 0.991022I$ $a = 0.517466 - 0.044732I$ $b = 0.928061 + 0.862163I$	$5.24352 - 3.43630I$	0
$u = -0.666933 - 0.991022I$ $a = 0.517466 + 0.044732I$ $b = 0.928061 - 0.862163I$	$5.24352 + 3.43630I$	0
$u = -0.353321 + 0.721783I$ $a = -0.343500 + 0.722117I$ $b = 0.155238 + 0.612312I$	$-0.21075 - 1.41586I$	0
$u = -0.353321 - 0.721783I$ $a = -0.343500 - 0.722117I$ $b = 0.155238 - 0.612312I$	$-0.21075 + 1.41586I$	0
$u = 0.753855 + 0.274407I$ $a = -0.21006 + 1.73079I$ $b = 0.763868 + 0.769940I$	$-2.03115 - 5.05572I$	0
$u = 0.753855 - 0.274407I$ $a = -0.21006 - 1.73079I$ $b = 0.763868 - 0.769940I$	$-2.03115 + 5.05572I$	0
$u = 0.523860 + 1.095900I$ $a = 0.994994 + 0.110231I$ $b = 1.82003 + 0.70446I$	$-0.82517 + 3.75302I$	0
$u = 0.523860 - 1.095900I$ $a = 0.994994 - 0.110231I$ $b = 1.82003 - 0.70446I$	$-0.82517 - 3.75302I$	0
$u = 0.742527 + 0.251049I$ $a = -0.684611 - 1.196410I$ $b = 0.221207 - 0.237585I$	$-2.34021 - 2.11255I$	0
$u = 0.742527 - 0.251049I$ $a = -0.684611 + 1.196410I$ $b = 0.221207 + 0.237585I$	$-2.34021 + 2.11255I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.207139 + 1.201600I$ $a = -1.163270 - 0.128589I$ $b = -1.58002 - 1.09985I$	$-5.04203 - 4.93450I$	0
$u = 0.207139 - 1.201600I$ $a = -1.163270 + 0.128589I$ $b = -1.58002 + 1.09985I$	$-5.04203 + 4.93450I$	0
$u = -0.726869 + 0.257675I$ $a = 1.47665 + 1.91063I$ $b = 0.240041 + 0.759395I$	$4.91540 + 6.93250I$	0
$u = -0.726869 - 0.257675I$ $a = 1.47665 - 1.91063I$ $b = 0.240041 - 0.759395I$	$4.91540 - 6.93250I$	0
$u = -0.571420 + 1.093010I$ $a = -1.51849 - 0.70201I$ $b = -2.22945 - 1.39363I$	$4.46877 - 3.84660I$	0
$u = -0.571420 - 1.093010I$ $a = -1.51849 + 0.70201I$ $b = -2.22945 + 1.39363I$	$4.46877 + 3.84660I$	0
$u = -0.527541 + 1.114890I$ $a = 1.90836 + 0.83253I$ $b = 2.69017 + 1.42427I$	$-0.02607 - 6.72571I$	0
$u = -0.527541 - 1.114890I$ $a = 1.90836 - 0.83253I$ $b = 2.69017 - 1.42427I$	$-0.02607 + 6.72571I$	0
$u = 0.189253 + 1.225290I$ $a = 1.246120 + 0.332373I$ $b = 1.68589 + 1.32332I$	$-2.79851 - 10.17260I$	0
$u = 0.189253 - 1.225290I$ $a = 1.246120 - 0.332373I$ $b = 1.68589 - 1.32332I$	$-2.79851 + 10.17260I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.528531 + 1.127640I$ $a = -1.70688 - 0.63680I$ $b = -2.32441 + 0.03304I$	$-3.82254 + 4.35831I$	0
$u = 0.528531 - 1.127640I$ $a = -1.70688 + 0.63680I$ $b = -2.32441 - 0.03304I$	$-3.82254 - 4.35831I$	0
$u = -0.538340 + 1.137910I$ $a = -1.85191 - 1.02755I$ $b = -2.68557 - 1.65381I$	$2.37294 - 11.72860I$	0
$u = -0.538340 - 1.137910I$ $a = -1.85191 + 1.02755I$ $b = -2.68557 + 1.65381I$	$2.37294 + 11.72860I$	0
$u = 0.503014 + 0.544291I$ $a = 0.152514 - 1.018220I$ $b = -1.252910 + 0.044275I$	$3.30887 + 1.04774I$	0
$u = 0.503014 - 0.544291I$ $a = 0.152514 + 1.018220I$ $b = -1.252910 - 0.044275I$	$3.30887 - 1.04774I$	0
$u = 0.538181 + 1.140090I$ $a = -0.999312 - 0.285459I$ $b = -1.61090 - 0.95534I$	$-4.91540 + 6.93250I$	0
$u = 0.538181 - 1.140090I$ $a = -0.999312 + 0.285459I$ $b = -1.61090 + 0.95534I$	$-4.91540 - 6.93250I$	0
$u = 0.693096 + 0.248467I$ $a = 0.03129 - 1.52205I$ $b = -1.015360 - 0.684978I$	$-1.317160 + 0.310998I$	0
$u = 0.693096 - 0.248467I$ $a = 0.03129 + 1.52205I$ $b = -1.015360 + 0.684978I$	$-1.317160 - 0.310998I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.548101 + 1.139230I$ $a = 1.88806 + 0.33278I$ $b = 2.60546 - 0.28806I$	$-4.55149 + 9.95496I$	0
$u = 0.548101 - 1.139230I$ $a = 1.88806 - 0.33278I$ $b = 2.60546 + 0.28806I$	$-4.55149 - 9.95496I$	0
$u = 0.563356 + 1.132890I$ $a = 1.124730 + 0.274811I$ $b = 1.78260 + 1.05938I$	$-2.37294 + 11.72860I$	0
$u = 0.563356 - 1.132890I$ $a = 1.124730 - 0.274811I$ $b = 1.78260 - 1.05938I$	$-2.37294 - 11.72860I$	0
$u = 0.375686 + 1.209700I$ $a = 0.867750 - 0.609516I$ $b = 1.50084 - 0.93497I$	$-7.34314 + 2.99182I$	0
$u = 0.375686 - 1.209700I$ $a = 0.867750 + 0.609516I$ $b = 1.50084 + 0.93497I$	$-7.34314 - 2.99182I$	0
$u = 0.593573 + 1.127630I$ $a = -1.63430 + 0.21749I$ $b = -2.54523 + 0.91215I$	$2.79851 + 10.17260I$	0
$u = 0.593573 - 1.127630I$ $a = -1.63430 - 0.21749I$ $b = -2.54523 - 0.91215I$	$2.79851 - 10.17260I$	0
$u = -0.660551 + 0.287177I$ $a = -1.29417 - 1.96194I$ $b = -0.149997 - 0.806285I$	$2.34021 + 2.11255I$	0
$u = -0.660551 - 0.287177I$ $a = -1.29417 + 1.96194I$ $b = -0.149997 + 0.806285I$	$2.34021 - 2.11255I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.547395 + 0.450281I$ $a = 0.84602 - 1.66085I$ $b = -0.151581 - 0.839571I$	$1.75761 + 1.88399I$	0
$u = -0.547395 - 0.450281I$ $a = 0.84602 + 1.66085I$ $b = -0.151581 + 0.839571I$	$1.75761 - 1.88399I$	0
$u = 0.590046 + 1.152570I$ $a = 1.92960 - 0.26481I$ $b = 2.84177 - 0.85536I$	$-2.45608 + 13.29840I$	0
$u = 0.590046 - 1.152570I$ $a = 1.92960 + 0.26481I$ $b = 2.84177 + 0.85536I$	$-2.45608 - 13.29840I$	0
$u = 0.497713 + 1.197790I$ $a = -0.580901 - 0.488791I$ $b = -0.818281 - 0.997952I$	$-6.51581 + 5.82934I$	0
$u = 0.497713 - 1.197790I$ $a = -0.580901 + 0.488791I$ $b = -0.818281 + 0.997952I$	$-6.51581 - 5.82934I$	0
$u = 0.601488 + 1.158110I$ $a = -1.94185 + 0.41885I$ $b = -2.90478 + 0.99661I$	$18.7022I$	0
$u = 0.601488 - 1.158110I$ $a = -1.94185 - 0.41885I$ $b = -2.90478 - 0.99661I$	$-\ 18.7022I$	0
$u = -0.393098 + 0.573073I$ $a = -0.29091 - 2.72525I$ $b = 0.05260 - 1.85375I$	$-0.002551 + 0.973476I$	0
$u = -0.393098 - 0.573073I$ $a = -0.29091 + 2.72525I$ $b = 0.05260 + 1.85375I$	$-0.002551 - 0.973476I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.074106+0.690389I$ $a=-0.724325+0.179063I$ $b=\ \ 0.110669+0.786581I$	$-1.35309I$	$0.+3.62859I$
$u=-0.074106-0.690389I$ $a=-0.724325-0.179063I$ $b=\ \ 0.110669-0.786581I$	$1.35309I$	$0.-3.62859I$
$u=\ \ 0.607882+0.332211I$ $a=\ \ 0.507006+1.269540I$ $b=-0.409237+0.014203I$	$1.36077+0.74859I$	0
$u=\ \ 0.607882-0.332211I$ $a=\ \ 0.507006-1.269540I$ $b=-0.409237-0.014203I$	$1.36077-0.74859I$	0
$u=\ \ 0.405740+1.243650I$ $a=-0.580417+0.859262I$ $b=-1.06530+1.30750I$	$-5.92691+7.48471I$	0
$u=\ \ 0.405740-1.243650I$ $a=-0.580417-0.859262I$ $b=-1.06530-1.30750I$	$-5.92691-7.48471I$	0
$u=\ \ 0.479194+1.233190I$ $a=\ \ 0.245390+0.766661I$ $b=\ \ 0.198925+1.307390I$	$-5.43061+1.83010I$	0
$u=\ \ 0.479194-1.233190I$ $a=\ \ 0.245390-0.766661I$ $b=\ \ 0.198925-1.307390I$	$-5.43061-1.83010I$	0
$u=-0.148774+0.072787I$ $a=-3.64744+2.29722I$ $b=-0.167314+0.600107I$	$0.21075-1.41586I$	$1.88923+4.84252I$
$u=-0.148774-0.072787I$ $a=-3.64744-2.29722I$ $b=-0.167314-0.600107I$	$0.21075+1.41586I$	$1.88923-4.84252I$

II. $\boldsymbol{I_2^u = \langle a^4u - a^3u - a^3 + a^2 - 2au + b - a + u + 1,\ a^5 + a^4u - a^3u - a^3 - 2a^2 - au - u - 1,\ u^2 + u + 1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -8a^4u - 3a^4 + 7a^3u + 15a^3 + 12a^2u - 8a^2 + 3au - 4u - 10$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.500000 + 0.866025I$ $a = 0.410598 - 0.711177I$ $b = 1.019470 + 0.343414I$	$2.40108 - 2.02988I$	$0.15429 + 1.95361I$
$u = -0.500000 + 0.866025I$ $a = -0.252108 + 0.649344I$ $b = -0.771697 - 0.688941I$	$5.87256 - 6.43072I$	$0.67715 + 5.27500I$
$u = -0.500000 + 0.866025I$ $a = -0.436295 + 0.543004I$ $b = -1.33549 - 0.57612I$	$5.87256 + 2.37095I$	$5.14480 - 4.03066I$
$u = -0.500000 + 0.866025I$ $a = -0.80632 - 1.36366I$ $b = -1.127600 - 0.820312I$	$0.329100 - 0.499304I$	$-2.94328 - 6.15174I$
$u = -0.500000 + 0.866025I$ $a = 1.58413 + 0.01647I$ $b = 2.21532 + 0.00990I$	$0.32910 - 3.56046I$	$6.96704 + 8.14994I$
$u = -0.500000 - 0.866025I$ $a = 0.410598 + 0.711177I$ $b = 1.019470 - 0.343414I$	$2.40108 + 2.02988I$	$0.15429 - 1.95361I$
$u = -0.500000 - 0.866025I$ $a = -0.252108 - 0.649344I$ $b = -0.771697 + 0.688941I$	$5.87256 + 6.43072I$	$0.67715 - 5.27500I$
$u = -0.500000 - 0.866025I$ $a = -0.436295 - 0.543004I$ $b = -1.33549 + 0.57612I$	$5.87256 - 2.37095I$	$5.14480 + 4.03066I$
$u = -0.500000 - 0.866025I$ $a = -0.80632 + 1.36366I$ $b = -1.127600 + 0.820312I$	$0.329100 + 0.499304I$	$-2.94328 + 6.15174I$
$u = -0.500000 - 0.866025I$ $a = 1.58413 - 0.01647I$ $b = 2.21532 - 0.00990I$	$0.32910 + 3.56046I$	$6.96704 - 8.14994I$

III. $\boldsymbol{I_3^u = \langle b - a,\ u^4 a - 2u^4 + \cdots - a + 2,\ u^5 - u^4 + 2u^3 - u^2 + u - 1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -2u^4 a + u^3 a + u^4 - u^2 a + 5u^3 - 2au - 6u^2 - 2a + 9u - 5$

(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, c_4	$(u^5+u^4-2u^3-u^2+u-1)^2$
c_5	$(u^5+u^4+2u^3+u^2+u+1)^2$
c_6, c_{10}	u^{10}
c_7	$(u^5-u^4-2u^3+u^2+u+1)^2$
c_8, c_{11}, c_{12}	$(u^2+u+1)^5$
c_9	$(u^2-u+1)^5$

(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, c_4, c_7	$(y^5 - 5y^4 + 8y^3 - 3y^2 - y - 1)^2$
c_6, c_{10}	y^{10}
c_8, c_9, c_{11} c_{12}	$(y^2 + y + 1)^5$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.339110+0.822375I$ $a=\ 1.39836+1.74033I$ $b=\ 1.39836+1.74033I$	$-0.329100+0.499304I$	$2.94328+6.15174I$
$u=-0.339110+0.822375I$ $a=\ 0.80799-2.08118I$ $b=\ 0.80799-2.08118I$	$-0.32910-3.56046I$	$-6.96704+8.14994I$
$u=-0.339110-0.822375I$ $a=\ 1.39836-1.74033I$ $b=\ 1.39836-1.74033I$	$-0.329100-0.499304I$	$2.94328-6.15174I$
$u=-0.339110-0.822375I$ $a=\ 0.80799+2.08118I$ $b=\ 0.80799+2.08118I$	$-0.32910+3.56046I$	$-6.96704-8.14994I$
$u=\ 0.766826$ $a=\ 0.258559+0.447838I$ $b=\ 0.258559+0.447838I$	$-2.40108+2.02988I$	$-0.15429-1.95361I$
$u=\ 0.766826$ $a=\ 0.258559-0.447838I$ $b=\ 0.258559-0.447838I$	$-2.40108-2.02988I$	$-0.15429+1.95361I$
$u=\ 0.455697+1.200150I$ $a=\ 0.556121+0.280562I$ $b=\ 0.556121+0.280562I$	$-5.87256+6.43072I$	$-0.67715-5.27500I$
$u=\ 0.455697+1.200150I$ $a=-0.521035+0.341334I$ $b=-0.521035+0.341334I$	$-5.87256+2.37095I$	$-5.14480-4.03066I$
$u=\ 0.455697-1.200150I$ $a=\ 0.556121-0.280562I$ $b=\ 0.556121-0.280562I$	$-5.87256-6.43072I$	$-0.67715+5.27500I$
$u=\ 0.455697-1.200150I$ $a=-0.521035-0.341334I$ $b=-0.521035-0.341334I$	$-5.87256-2.37095I$	$-5.14480+4.03066I$

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^2-u+1)^5(u^5-3u^4+4u^3-u^2-u+1)^2$ $\cdot(u^{130}+64u^{129}+\cdots-30u+1)$
c_2	$((u^2+u+1)^5)(u^5-u^4+\cdots+u-1)^2(u^{130}+8u^{129}+\cdots-2u+1)$
c_3	$(u^2-u+1)^5(u^5+u^4-2u^3-u^2+u-1)^2$ $\cdot(u^{130}-8u^{129}+\cdots-10406338u+596177)$
c_4	$u^{10}(u^5+u^4+\cdots+u-1)^2(u^{130}+3u^{129}+\cdots+3072u+1024)$
c_5	$((u^2-u+1)^5)(u^5+u^4+\cdots+u+1)^2(u^{130}+8u^{129}+\cdots-2u+1)$
c_6	$u^{10}(u^5-u^4+\cdots+u+1)^2(u^{130}-3u^{129}+\cdots-3072u+1024)$
c_7	$u^{10}(u^5-u^4+\cdots+u+1)^2(u^{130}+3u^{129}+\cdots+3072u+1024)$
c_8	$(u^2+u+1)^5(u^5-u^4-2u^3+u^2+u+1)^2$ $\cdot(u^{130}+8u^{129}+\cdots+10406338u+596177)$
c_9	$((u^2-u+1)^5)(u^5+u^4+\cdots+u+1)^2(u^{130}-8u^{129}+\cdots+2u+1)$
c_{10}	$u^{10}(u^5+u^4+\cdots+u-1)^2(u^{130}-3u^{129}+\cdots-3072u+1024)$
c_{11}	$(u^2+u+1)^5(u^5+3u^4+4u^3+u^2-u-1)^2$ $\cdot(u^{130}-64u^{129}+\cdots+30u+1)$
c_{12}	$((u^2+u+1)^5)(u^5-u^4+\cdots+u-1)^2(u^{130}-8u^{129}+\cdots+2u+1)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_{11}	$(y^2+y+1)^5(y^5-y^4+8y^3-3y^2+3y-1)^2$ $\cdot\,(y^{130}+12y^{129}+\cdots+686y+1)$
c_2, c_5, c_9 c_{12}	$(y^2+y+1)^5(y^5+3y^4+4y^3+y^2-y-1)^2$ $\cdot\,(y^{130}+64y^{129}+\cdots-30y+1)$
c_3, c_8	$(y^2+y+1)^5(y^5-5y^4+8y^3-3y^2-y-1)^2$ $\cdot\,(y^{130}-40y^{129}+\cdots-17001882314902y+355427015329)$
c_4, c_6, c_7 c_{10}	$y^{10}(y^5-5y^4+8y^3-3y^2-y-1)^2$ $\cdot\,(y^{130}-65y^{129}+\cdots-22020096y+1048576)$