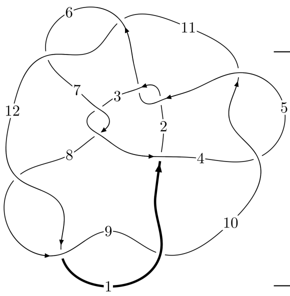
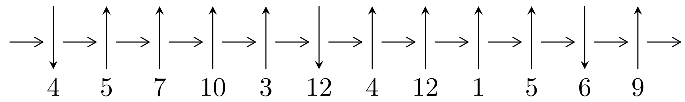
$12n_{0747}$ ($K12n_{0747}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -2.18510\times10^{87}u^{63} + 3.43048\times10^{87}u^{62} + \cdots + 1.06222\times10^{86}b + 4.40024\times10^{87},$$
$$1.30342\times10^{88}u^{63} - 1.96828\times10^{88}u^{62} + \cdots + 1.06222\times10^{86}a - 2.56911\times10^{88},\ u^{64} - 2u^{63} + \cdots - 23u +$$
$$I_2^u = \langle u^5 - u^4 - 3u^3 + u^2 + b + 2u + 1,\ 2u^9 - 2u^8 - 12u^7 + 9u^6 + 24u^5 - 11u^4 - 17u^3 + a + 2u + 6,$$
$$u^{10} - u^9 - 6u^8 + 4u^7 + 13u^6 - 4u^5 - 11u^4 - 2u^3 + 2u^2 + 4u + 1\rangle$$
$$I_3^u = \langle b + a + u + 1,\ a^2 + au + 3a + u + 1,\ u^2 + u - 1\rangle$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 78 representations.

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

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

I. $\boldsymbol{I_1^u = \langle -2.19 \times 10^{87}u^{63} + 3.43 \times 10^{87}u^{62} + \cdots + 1.06 \times 10^{86}b + 4.40 \times 10^{87},\ 1.30 \times 10^{88}u^{63} - 1.97 \times 10^{88}u^{62} + \cdots + 1.06 \times 10^{86}a - 2.57 \times 10^{88},\ u^{64} - 2u^{63} + \cdots - 23u + 1\rangle}$

(i) Arc colorings

$$a_9 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -122.708u^{63} + 185.299u^{62} + \cdots - 5249.53u + 241.862 \\ 20.5711u^{63} - 32.2954u^{62} + \cdots + 884.457u - 41.4249 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 80.9216u^{63} - 120.495u^{62} + \cdots + 3818.05u - 185.936 \\ -10.4054u^{63} + 15.9135u^{62} + \cdots - 498.812u + 22.3121 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -97.7534u^{63} + 145.797u^{62} + \cdots - 4117.81u + 187.718 \\ 42.6309u^{63} - 64.8314u^{62} + \cdots + 1801.77u - 85.1621 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -44.4529u^{63} + 65.0075u^{62} + \cdots - 1944.92u + 88.7000 \\ -21.8652u^{63} + 33.1776u^{62} + \cdots - 951.044u + 46.6180 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 148.216u^{63} - 219.442u^{62} + \cdots + 6319.96u - 310.655 \\ -26.4978u^{63} + 40.7839u^{62} + \cdots - 1214.82u + 58.2926 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -66.3181u^{63} + 98.1851u^{62} + \cdots - 2895.96u + 135.318 \\ -21.8652u^{63} + 33.1776u^{62} + \cdots - 951.044u + 46.6180 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -17.7302u^{63} + 25.0723u^{62} + \cdots - 616.299u + 35.7654 \\ 51.1592u^{63} - 77.8247u^{62} + \cdots + 2236.56u - 107.971 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 812.905u^{63} - 1227.04u^{62} + \cdots + 34392.6u - 1624.68$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{64} - 6u^{63} + \cdots + 392u + 49$
c_2, c_5	$u^{64} - 2u^{63} + \cdots + 14u + 1$
c_3, c_7	$u^{64} - u^{63} + \cdots - 30u + 7$
c_4, c_{10}	$u^{64} - 2u^{63} + \cdots - 649u - 23$
c_6, c_{11}	$u^{64} - u^{63} + \cdots + 16u + 1$
c_8, c_9, c_{12}	$u^{64} - 2u^{63} + \cdots - 23u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{64} - 10y^{63} + \cdots - 254506y + 2401$
c_2, c_5	$y^{64} - 18y^{63} + \cdots - 60y + 1$
c_3, c_7	$y^{64} - 21y^{63} + \cdots - 3056y + 49$
c_4, c_{10}	$y^{64} - 28y^{63} + \cdots - 464395y + 529$
c_6, c_{11}	$y^{64} - 51y^{63} + \cdots - 312y + 1$
c_8, c_9, c_{12}	$y^{64} - 58y^{63} + \cdots + 39y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.145672 + 0.968068I$ $a = 0.158850 - 0.010710I$ $b = -0.509053 + 0.675145I$	$1.07637 + 4.19054I$	0
$u = 0.145672 - 0.968068I$ $a = 0.158850 + 0.010710I$ $b = -0.509053 - 0.675145I$	$1.07637 - 4.19054I$	0
$u = -0.317235 + 1.010710I$ $a = -0.0311390 + 0.0511144I$ $b = -1.146370 - 0.672425I$	$-4.56279 - 10.69090I$	0
$u = -0.317235 - 1.010710I$ $a = -0.0311390 - 0.0511144I$ $b = -1.146370 + 0.672425I$	$-4.56279 + 10.69090I$	0
$u = -0.317994 + 0.869749I$ $a = 0.0728894 + 0.0793513I$ $b = 1.254910 + 0.487312I$	$-6.15152 - 3.00155I$	0
$u = -0.317994 - 0.869749I$ $a = 0.0728894 - 0.0793513I$ $b = 1.254910 - 0.487312I$	$-6.15152 + 3.00155I$	0
$u = -0.950390 + 0.519722I$ $a = 0.594935 + 1.039960I$ $b = -0.623717 + 0.052076I$	$-4.21641 - 1.93351I$	0
$u = -0.950390 - 0.519722I$ $a = 0.594935 - 1.039960I$ $b = -0.623717 - 0.052076I$	$-4.21641 + 1.93351I$	0
$u = -0.017192 + 0.901588I$ $a = 0.068027 + 0.657514I$ $b = -1.070960 + 0.469701I$	$-5.87061 + 3.95242I$	0
$u = -0.017192 - 0.901588I$ $a = 0.068027 - 0.657514I$ $b = -1.070960 - 0.469701I$	$-5.87061 - 3.95242I$	0

Solutions to I^u_1	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.076120 + 0.259760I$ $a = 0.82530 + 1.41539I$ $b = -0.22338 - 1.44415I$	$2.60826 + 0.73468I$	0
$u = 1.076120 - 0.259760I$ $a = 0.82530 - 1.41539I$ $b = -0.22338 + 1.44415I$	$2.60826 - 0.73468I$	0
$u = 0.045996 + 0.875054I$ $a = 0.201918 - 0.847332I$ $b = 1.087860 - 0.197488I$	$-4.71214 - 3.22971I$	0
$u = 0.045996 - 0.875054I$ $a = 0.201918 + 0.847332I$ $b = 1.087860 + 0.197488I$	$-4.71214 + 3.22971I$	0
$u = 1.149260 + 0.077977I$ $a = -0.74710 + 1.82542I$ $b = 1.69518 - 1.61779I$	$3.76038 + 0.86686I$	0
$u = 1.149260 - 0.077977I$ $a = -0.74710 - 1.82542I$ $b = 1.69518 + 1.61779I$	$3.76038 - 0.86686I$	0
$u = 1.16929$ $a = -0.910966$ $b = -0.966261$	8.52254	0
$u = -0.936704 + 0.797768I$ $a = -0.469421 - 0.560340I$ $b = 0.560431 - 0.288250I$	$-2.68573 + 4.64400I$	0
$u = -0.936704 - 0.797768I$ $a = -0.469421 + 0.560340I$ $b = 0.560431 + 0.288250I$	$-2.68573 - 4.64400I$	0
$u = 1.222740 + 0.203951I$ $a = 0.695120 - 0.912173I$ $b = -1.110160 + 0.648732I$	$1.76600 + 0.88415I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.222740 - 0.203951I$ $a = 0.695120 + 0.912173I$ $b = -1.110160 - 0.648732I$	$1.76600 - 0.88415I$	0
$u = -1.246660 + 0.059464I$ $a = -0.55090 - 1.49771I$ $b = -0.171764 + 0.903029I$	$5.22128 + 0.20023I$	0
$u = -1.246660 - 0.059464I$ $a = -0.55090 + 1.49771I$ $b = -0.171764 - 0.903029I$	$5.22128 - 0.20023I$	0
$u = 1.272690 + 0.032209I$ $a = 0.15479 - 2.26835I$ $b = -0.88983 + 1.50685I$	$3.53094 + 4.77456I$	0
$u = 1.272690 - 0.032209I$ $a = 0.15479 + 2.26835I$ $b = -0.88983 - 1.50685I$	$3.53094 - 4.77456I$	0
$u = 0.088214 + 0.702646I$ $a = 0.445527 + 0.157220I$ $b = 0.698844 - 0.817971I$	$-0.19370 + 2.61233I$	$7.84382 - 3.48904I$
$u = 0.088214 - 0.702646I$ $a = 0.445527 - 0.157220I$ $b = 0.698844 + 0.817971I$	$-0.19370 - 2.61233I$	$7.84382 + 3.48904I$
$u = 1.240250 + 0.395827I$ $a = 0.50755 - 1.33041I$ $b = -0.398132 + 0.148486I$	$-1.02699 + 7.77383I$	0
$u = 1.240250 - 0.395827I$ $a = 0.50755 + 1.33041I$ $b = -0.398132 - 0.148486I$	$-1.02699 - 7.77383I$	0
$u = -1.300310 + 0.106200I$ $a = 0.10878 + 2.07536I$ $b = 0.21246 - 1.86082I$	$4.03767 - 5.60876I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.300310 - 0.106200I$ $a = 0.10878 - 2.07536I$ $b = 0.21246 + 1.86082I$	$4.03767 + 5.60876I$	0
$u = 0.127283 + 0.672520I$ $a = -0.046765 + 0.488251I$ $b = 1.054710 - 0.369106I$	$-1.43385 + 2.27144I$	$1.22544 - 3.26874I$
$u = 0.127283 - 0.672520I$ $a = -0.046765 - 0.488251I$ $b = 1.054710 + 0.369106I$	$-1.43385 - 2.27144I$	$1.22544 + 3.26874I$
$u = -1.266290 + 0.418664I$ $a = -0.46184 - 1.34292I$ $b = 1.53300 + 1.08160I$	$-1.99825 - 8.66191I$	0
$u = -1.266290 - 0.418664I$ $a = -0.46184 + 1.34292I$ $b = 1.53300 - 1.08160I$	$-1.99825 + 8.66191I$	0
$u = 1.261270 + 0.461738I$ $a = -0.471642 - 0.784639I$ $b = -0.246549 + 0.646298I$	$4.61034 + 1.14842I$	0
$u = 1.261270 - 0.461738I$ $a = -0.471642 + 0.784639I$ $b = -0.246549 - 0.646298I$	$4.61034 - 1.14842I$	0
$u = -1.323370 + 0.315223I$ $a = -0.00992 + 1.87693I$ $b = -0.84124 - 1.24795I$	$4.22712 - 6.35841I$	0
$u = -1.323370 - 0.315223I$ $a = -0.00992 - 1.87693I$ $b = -0.84124 + 1.24795I$	$4.22712 + 6.35841I$	0
$u = 1.290860 + 0.454754I$ $a = -0.544269 + 0.810497I$ $b = 0.318363 + 0.015687I$	$-1.80259 + 0.89192I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.290860 - 0.454754I$ $a = -0.544269 - 0.810497I$ $b = 0.318363 - 0.015687I$	$-1.80259 - 0.89192I$	0
$u = -1.37057$ $a = -0.961744$ $b = -0.218443$	8.24072	0
$u = -1.306900 + 0.427782I$ $a = 0.534404 + 0.813965I$ $b = -1.58618 - 0.60287I$	$-0.48910 - 1.44438I$	0
$u = -1.306900 - 0.427782I$ $a = 0.534404 - 0.813965I$ $b = -1.58618 + 0.60287I$	$-0.48910 + 1.44438I$	0
$u = -1.366280 + 0.266791I$ $a = 0.53978 + 1.75105I$ $b = -0.88158 - 1.25458I$	$3.30380 - 5.68458I$	0
$u = -1.366280 - 0.266791I$ $a = 0.53978 - 1.75105I$ $b = -0.88158 + 1.25458I$	$3.30380 + 5.68458I$	0
$u = -1.38190 + 0.42110I$ $a = -0.02647 - 1.49795I$ $b = 0.78691 + 1.35385I$	$5.89179 - 9.11420I$	0
$u = -1.38190 - 0.42110I$ $a = -0.02647 + 1.49795I$ $b = 0.78691 - 1.35385I$	$5.89179 + 9.11420I$	0
$u = 0.553755$ $a = 1.04389$ $b = -0.735717$	1.07870	9.45760
$u = -0.517206$ $a = -1.23311$ $b = -0.969631$	2.29968	-3.88090

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.493387$ $a = -3.44102$ $b = 0.0313711$	6.36082	23.1340
$u = 0.490027$ $a = 3.42978$ $b = -1.25784$	2.53719	−23.9910
$u = 1.49141 + 0.35489I$ $a = 0.78851 - 1.38211I$ $b = -1.63953 + 1.04123I$	$-0.31770 + 7.46862I$	0
$u = 1.49141 - 0.35489I$ $a = 0.78851 + 1.38211I$ $b = -1.63953 - 1.04123I$	$-0.31770 - 7.46862I$	0
$u = 1.47502 + 0.42826I$ $a = -0.46070 + 1.53329I$ $b = 1.42814 - 1.18260I$	$1.1028 + 15.8670I$	0
$u = 1.47502 - 0.42826I$ $a = -0.46070 - 1.53329I$ $b = 1.42814 + 1.18260I$	$1.1028 - 15.8670I$	0
$u = -1.54760$ $a = -0.228222$ $b = 1.16480$	13.5060	0
$u = 1.62930$ $a = -1.54611$ $b = 2.23107$	10.1076	0
$u = -1.64577$ $a = -1.16219$ $b = 1.38735$	9.05367	0
$u = 0.175687 + 0.165118I$ $a = 2.69632 - 1.12663I$ $b = -0.541818 - 0.646762I$	$1.211640 + 0.322145I$	$9.95422 - 2.34487I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.175687 - 0.165118I$ $a = 2.69632 + 1.12663I$ $b = -0.541818 + 0.646762I$	$1.211640 - 0.322145I$	$9.95422 + 2.34487I$
$u = 0.0579910 + 0.0764411I$ $a = -8.09290 + 2.32584I$ $b = 0.33102 - 1.44442I$	$-0.33025 + 4.70984I$	$11.3417 - 11.5444I$
$u = 0.0579910 - 0.0764411I$ $a = -8.09290 - 2.32584I$ $b = 0.33102 + 1.44442I$	$-0.33025 - 4.70984I$	$11.3417 + 11.5444I$
$u = 1.96691$ $a = 0.0504349$ $b = 0.170188$	7.42639	0

II.
$\boldsymbol{I_2^u = \langle u^5-u^4-3u^3+u^2+b+2u+1,\ 2u^9-2u^8+\cdots+a+6,\ u^{10}-u^9+\cdots+4u+1\rangle}$

(i) Arc colorings

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

$$a_{12} = \begin{pmatrix}1\\0\end{pmatrix}$$

$$a_1 = \begin{pmatrix}1\\-u^2\end{pmatrix}$$

$$a_4 = \begin{pmatrix}-2u^9+2u^8+12u^7-9u^6-24u^5+11u^4+17u^3-2u-6\\-u^5+u^4+3u^3-u^2-2u-1\end{pmatrix}$$

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

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

$$a_5 = \begin{pmatrix}-u^9+8u^7-2u^6-18u^5+5u^4+13u^3-u^2-5\\u^8-u^7-4u^6+2u^5+5u^4+u^3-u^2-3u-1\end{pmatrix}$$

$$a_8 = \begin{pmatrix}-u\\u\end{pmatrix}$$

$$a_7 = \begin{pmatrix}2u^9-2u^8-14u^7+12u^6+32u^5-20u^4-27u^3+4u^2+4u+11\\u^9-u^8-5u^7+3u^6+9u^5-2u^4-6u^3-u^2+u+1\end{pmatrix}$$

$$a_3 = \begin{pmatrix}2u^9-17u^7+4u^6+42u^5-11u^4-34u^3+2u^2+u+13\\u^9-2u^8-4u^7+8u^6+5u^5-9u^4-2u^3+u^2+u+1\end{pmatrix}$$

$$a_6 = \begin{pmatrix}3u^9-3u^8-19u^7+15u^6+41u^5-22u^4-33u^3+3u^2+5u+12\\u^9-u^8-5u^7+3u^6+9u^5-2u^4-6u^3-u^2+u+1\end{pmatrix}$$

$$a_{11} = \begin{pmatrix}-3u^9+5u^8+15u^7-21u^6-28u^5+26u^4+22u^3-2u^2-7u-9\\-u^3+2u\end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -7u^9+12u^8+30u^7-45u^6-46u^5+43u^4+32u^3+10u^2-15u-6$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{10}+u^9+u^8+16u^7+11u^6+11u^5+27u^4+13u^3+3u^2-1$
c_2	$u^{10}+u^9-3u^8-6u^7-2u^6+7u^5+9u^4+3u^3-4u^2-4u-1$
c_3	$u^{10}-6u^9+13u^8-11u^7-2u^6+12u^5-7u^4-5u^3+8u^2-5u+1$
c_4	$u^{10}-3u^8+u^7+2u^6-2u^5+u^4+u^3-2u^2-u+1$
c_5	$u^{10}-u^9-3u^8+6u^7-2u^6-7u^5+9u^4-3u^3-4u^2+4u-1$
c_6	$u^{10}+u^9-2u^8-u^7+u^6+2u^5+2u^4-u^3-3u^2+1$
c_7	$u^{10}+6u^9+13u^8+11u^7-2u^6-12u^5-7u^4+5u^3+8u^2+5u+1$
c_8, c_9	$u^{10}+u^9-6u^8-4u^7+13u^6+4u^5-11u^4+2u^3+2u^2-4u+1$
c_{10}	$u^{10}-3u^8-u^7+2u^6+2u^5+u^4-u^3-2u^2+u+1$
c_{11}	$u^{10}-u^9-2u^8+u^7+u^6-2u^5+2u^4+u^3-3u^2+1$
c_{12}	$u^{10}-u^9-6u^8+4u^7+13u^6-4u^5-11u^4-2u^3+2u^2+4u+1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{10} + y^9 + \cdots - 6y + 1$
c_2, c_5	$y^{10} - 7y^9 + \cdots - 8y + 1$
c_3, c_7	$y^{10} - 10y^9 + 33y^8 - 43y^7 + 42y^6 - 76y^5 + 53y^4 - 21y^3 - 9y + 1$
c_4, c_{10}	$y^{10} - 6y^9 + 13y^8 - 11y^7 - 2y^6 + 12y^5 - 7y^4 - 5y^3 + 8y^2 - 5y + 1$
c_6, c_{11}	$y^{10} - 5y^9 + 8y^8 - 5y^7 - 7y^6 + 12y^5 - 2y^4 - 11y^3 + 13y^2 - 6y + 1$
c_8, c_9, c_{12}	$y^{10} - 13y^9 + \cdots - 12y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.118050 + 0.232448I$ $a = -0.159280 - 1.307010I$ $b = -0.630949 + 1.176290I$	$3.06671 + 1.14968I$	$12.41669 - 0.09656I$
$u = 1.118050 - 0.232448I$ $a = -0.159280 + 1.307010I$ $b = -0.630949 - 1.176290I$	$3.06671 - 1.14968I$	$12.41669 + 0.09656I$
$u = -1.27546$ $a = -1.36835$ $b = -0.278715$	9.38465	20.1760
$u = -1.333980 + 0.226517I$ $a = 0.35319 + 2.32281I$ $b = -0.92049 - 1.72482I$	$3.07640 - 6.89606I$	$7.33660 + 9.72380I$
$u = -1.333980 - 0.226517I$ $a = 0.35319 - 2.32281I$ $b = -0.92049 + 1.72482I$	$3.07640 + 6.89606I$	$7.33660 - 9.72380I$
$u = -0.227124 + 0.579101I$ $a = 0.242833 + 0.178690I$ $b = 0.488743 - 1.032260I$	$-0.76904 + 4.14977I$	$4.72090 - 3.87430I$
$u = -0.227124 - 0.579101I$ $a = 0.242833 - 0.178690I$ $b = 0.488743 + 1.032260I$	$-0.76904 - 4.14977I$	$4.72090 + 3.87430I$
$u = 1.55280$ $a = -0.492950$ $b = 1.50160$	12.6171	9.76370
$u = -0.288130$ $a = -5.71392$ $b = -0.569642$	6.02399	-1.25560
$u = 1.89689$ $a = -0.298260$ $b = 0.472157$	7.28432	-12.6330

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

(i) Arc colorings

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

$$a_{12} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} a \\ -a - u - 1 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} au + 2 \\ -au + a + 2u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u \\ -u + 1 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -au + a - u \\ au - 2a - 2 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u \\ u \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} u \\ -u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -u - 1 \\ -a - 1 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -au - a - u \\ au + a + u \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -6au - 13a - 2u + 14$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_5	$y^4 - 8y^3 + 18y^2 - 13y + 1$
c_3, c_7	$(y-1)^4$
c_4, c_6, c_{10} c_{11}	$y^4 - 7y^3 + 13y^2 - 7y + 1$
c_8, c_9, c_{12}	$(y^2 - 3y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.618034$ $a = -0.522740$ $b = -1.09529$	2.63189	21.4980
$u = 0.618034$ $a = -3.09529$ $b = 1.47726$	2.63189	64.4810
$u = -1.61803$ $a = 0.355674$ $b = 0.262360$	10.5276	16.0650
$u = -1.61803$ $a = -1.73764$ $b = 2.35567$	10.5276	22.9560

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^4+2u^3-2u^2-3u+1)$ $\cdot(u^{10}+u^9+u^8+16u^7+11u^6+11u^5+27u^4+13u^3+3u^2-1)$ $\cdot(u^{64}-6u^{63}+\cdots+392u+49)$
c_2	$(u^4+2u^3-2u^2-3u+1)$ $\cdot(u^{10}+u^9-3u^8-6u^7-2u^6+7u^5+9u^4+3u^3-4u^2-4u-1)$ $\cdot(u^{64}-2u^{63}+\cdots+14u+1)$
c_3	$(u+1)^4$ $\cdot(u^{10}-6u^9+13u^8-11u^7-2u^6+12u^5-7u^4-5u^3+8u^2-5u+1)$ $\cdot(u^{64}-u^{63}+\cdots-30u+7)$
c_4	$(u^4+u^3-3u^2-u+1)(u^{10}-3u^8+\cdots-u+1)$ $\cdot(u^{64}-2u^{63}+\cdots-649u-23)$
c_5	$(u^4-2u^3-2u^2+3u+1)$ $\cdot(u^{10}-u^9-3u^8+6u^7-2u^6-7u^5+9u^4-3u^3-4u^2+4u-1)$ $\cdot(u^{64}-2u^{63}+\cdots+14u+1)$
c_6	$(u^4+u^3-3u^2-u+1)$ $\cdot(u^{10}+u^9-2u^8-u^7+u^6+2u^5+2u^4-u^3-3u^2+1)$ $\cdot(u^{64}-u^{63}+\cdots+16u+1)$
c_7	$(u-1)^4$ $\cdot(u^{10}+6u^9+13u^8+11u^7-2u^6-12u^5-7u^4+5u^3+8u^2+5u+1)$ $\cdot(u^{64}-u^{63}+\cdots-30u+7)$
c_8, c_9	$(u^2-u-1)^2$ $\cdot(u^{10}+u^9-6u^8-4u^7+13u^6+4u^5-11u^4+2u^3+2u^2-4u+1)$ $\cdot(u^{64}-2u^{63}+\cdots-23u+1)$
c_{10}	$(u^4-u^3-3u^2+u+1)(u^{10}-3u^8+\cdots+u+1)$ $\cdot(u^{64}-2u^{63}+\cdots-649u-23)$
c_{11}	$(u^4-u^3-3u^2+u+1)$ $\cdot(u^{10}-u^9-2u^8+u^7+u^6-2u^5+2u^4+u^3-3u^2+1)$ $\cdot(u^{64}-u^{63}+\cdots+16u+1)$
c_{12}	$(u^2+u-1)^2$ $\cdot(u^{10}-u^9-6u^8+4u^7+13u^6-4u^5-11u^4-2u^3+2u^2+4u+1)$ $\cdot(u^{64}-2u^{63}+\cdots-23u+1)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y^4 - 8y^3 + 18y^2 - 13y + 1)(y^{10} + y^9 + \cdots - 6y + 1)$ $\cdot (y^{64} - 10y^{63} + \cdots - 254506y + 2401)$
c_2, c_5	$(y^4 - 8y^3 + 18y^2 - 13y + 1)(y^{10} - 7y^9 + \cdots - 8y + 1)$ $\cdot (y^{64} - 18y^{63} + \cdots - 60y + 1)$
c_3, c_7	$(y-1)^4$ $\cdot (y^{10} - 10y^9 + 33y^8 - 43y^7 + 42y^6 - 76y^5 + 53y^4 - 21y^3 - 9y + 1)$ $\cdot (y^{64} - 21y^{63} + \cdots - 3056y + 49)$
c_4, c_{10}	$(y^4 - 7y^3 + 13y^2 - 7y + 1)$ $\cdot (y^{10} - 6y^9 + 13y^8 - 11y^7 - 2y^6 + 12y^5 - 7y^4 - 5y^3 + 8y^2 - 5y + 1)$ $\cdot (y^{64} - 28y^{63} + \cdots - 464395y + 529)$
c_6, c_{11}	$(y^4 - 7y^3 + 13y^2 - 7y + 1)$ $\cdot (y^{10} - 5y^9 + 8y^8 - 5y^7 - 7y^6 + 12y^5 - 2y^4 - 11y^3 + 13y^2 - 6y + 1)$ $\cdot (y^{64} - 51y^{63} + \cdots - 312y + 1)$
c_8, c_9, c_{12}	$((y^2 - 3y + 1)^2)(y^{10} - 13y^9 + \cdots - 12y + 1)$ $\cdot (y^{64} - 58y^{63} + \cdots + 39y + 1)$