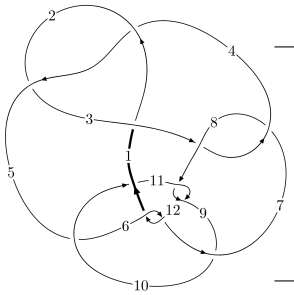
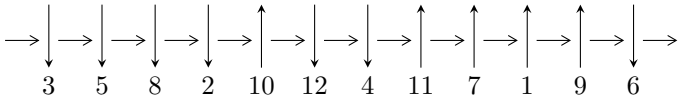
$12a_{0101}$ $(K12a_{0101})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned} I_1^u = \langle & 1.17649 \times 10^{609} u^{124} - 3.36190 \times 10^{609} u^{123} + \cdots + 1.03048 \times 10^{610} b + 8.64846 \times 10^{610}, \\ & - 1.13257 \times 10^{610} u^{124} + 3.05226 \times 10^{610} u^{123} + \cdots + 9.27430 \times 10^{610} a - 4.30072 \times 10^{612}, \\ & u^{125} - 4u^{124} + \cdots - 2358u - 81 \rangle \\ I_2^u = \langle & b,\ -u^8 + 2u^7 + u^6 - 4u^5 + u^4 + 2u^3 - 2u^2 + a + 2u - 1,\ u^9 - u^8 - 2u^7 + 3u^6 + u^5 - 3u^4 + 2u^3 - u + 1 \rangle \\ I_3^u = \langle & b + 3a + 2,\ 9a^2 + 15a + 5,\ u + 1 \rangle \end{aligned}$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 136 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. $\boldsymbol{I_1^u = \langle 1.18 \times 10^{609} u^{124} - 3.36 \times 10^{609} u^{123} + \cdots + 1.03 \times 10^{610} b + 8.65 \times 10^{610},\ -1.13 \times 10^{610} u^{124} + 3.05 \times 10^{610} u^{123} + \cdots + 9.27 \times 10^{610} a - 4.30 \times 10^{612},\ u^{125} - 4u^{124} + \cdots - 2358u - 81 \rangle}$

(i) Arc colorings

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

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

$$a_9 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 0.122120u^{124} - 0.329110u^{123} + \cdots + 830.926u + 46.3724 \\ -0.114169u^{124} + 0.326247u^{123} + \cdots - 267.251u - 8.39267 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} 0.00795030u^{124} - 0.00286248u^{123} + \cdots + 563.675u + 37.9797 \\ -0.114169u^{124} + 0.326247u^{123} + \cdots - 267.251u - 8.39267 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -0.0897427u^{124} + 0.263504u^{123} + \cdots - 662.051u - 35.8488 \\ 0.165533u^{124} - 0.472119u^{123} + \cdots + 397.821u + 12.7393 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.0447494u^{124} - 0.159277u^{123} + \cdots - 891.931u - 40.9827 \\ -0.0497440u^{124} + 0.142055u^{123} + \cdots - 80.7797u - 3.74242 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0.114516u^{124} - 0.320981u^{123} + \cdots - 240.354u - 21.7764 \\ 0.107402u^{124} - 0.302520u^{123} + \cdots + 254.621u + 7.97521 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -0.0581366u^{124} + 0.249551u^{123} + \cdots + 1107.65u + 46.5213 \\ -0.0948218u^{124} + 0.265936u^{123} + \cdots - 149.169u - 3.89415 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 0.106209u^{124} - 0.294233u^{123} + \cdots + 57.8710u - 7.77602 \\ 0.0561392u^{124} - 0.160305u^{123} + \cdots + 133.289u + 4.09848 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.115742u^{124} - 0.290456u^{123} + \cdots + 744.384u + 37.5680 \\ -0.0561392u^{124} + 0.160305u^{123} + \cdots - 133.289u - 4.09848 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 0.594099u^{124} - 1.86176u^{123} + \cdots + 270.776u - 11.5444$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{125}+63u^{124}+\cdots+271u+1$
c_2, c_4	$u^{125}-11u^{124}+\cdots-9u-1$
c_3, c_7	$u^{125}+2u^{124}+\cdots+512u+512$
c_5	$u^{125}-2u^{124}+\cdots-756u+324$
c_6, c_{12}	$u^{125}-3u^{124}+\cdots+3u-1$
c_8, c_{11}	$u^{125}+4u^{124}+\cdots-2358u+81$
c_9	$9(9u^{125}-12u^{124}+\cdots+2.83664\times10^{9}u+2.59859\times10^{8})$
c_{10}	$9(9u^{125}-21u^{124}+\cdots+1.22889\times10^{8}u+5290529)$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{125} + 9y^{124} + \cdots + 91007y - 1$
c_2, c_4	$y^{125} - 63y^{124} + \cdots + 271y - 1$
c_3, c_7	$y^{125} + 54y^{124} + \cdots - 1572864y - 262144$
c_5	$y^{125} - 12y^{124} + \cdots + 16685352y - 104976$
c_6, c_{12}	$y^{125} + 85y^{124} + \cdots + 31y - 1$
c_8, c_{11}	$y^{125} - 90y^{124} + \cdots + 665982y - 6561$
c_9	$81(81y^{125} - 3294y^{124} + \cdots + 2.87254 \times 10^{18}y - 6.75265 \times 10^{16})$
c_{10}	$81 \cdot (81y^{125} - 4023y^{124} + \cdots + 7567318376329835y - 27989697099841)$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.00462$ $a = 1.20830$ $b = -1.62729$	-7.22833	0
$u = -1.019800 + 0.033143I$ $a = -7.66625 + 0.65119I$ $b = -0.634089 + 0.498710I$	$1.42901 - 1.00847I$	0
$u = -1.019800 - 0.033143I$ $a = -7.66625 - 0.65119I$ $b = -0.634089 - 0.498710I$	$1.42901 + 1.00847I$	0
$u = 0.553570 + 0.776320I$ $a = -0.580852 - 0.370960I$ $b = -0.495636 + 0.814877I$	$-4.15405 + 3.73457I$	0
$u = 0.553570 - 0.776320I$ $a = -0.580852 + 0.370960I$ $b = -0.495636 - 0.814877I$	$-4.15405 - 3.73457I$	0
$u = -0.942125 + 0.068730I$ $a = 4.37119 + 1.11654I$ $b = -0.523784 + 1.069500I$	$3.20788 + 5.56394I$	0
$u = -0.942125 - 0.068730I$ $a = 4.37119 - 1.11654I$ $b = -0.523784 - 1.069500I$	$3.20788 - 5.56394I$	0
$u = -1.007240 + 0.321358I$ $a = -0.005539 - 0.814282I$ $b = 0.828223 - 0.376343I$	$0.06073 - 2.33875I$	0
$u = -1.007240 - 0.321358I$ $a = -0.005539 + 0.814282I$ $b = 0.828223 + 0.376343I$	$0.06073 + 2.33875I$	0
$u = -0.185640 + 0.922819I$ $a = -0.853594 - 0.485251I$ $b = -0.750828 + 0.154017I$	$1.33029 - 2.74208I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.185640-0.922819I$ $a=-0.853594+0.485251I$ $b=-0.750828-0.154017I$	$1.33029+2.74208I$	0
$u=0.116638+0.927275I$ $a=-0.451443+0.206067I$ $b=-0.675422-1.130710I$	$-1.80399-8.86816I$	0
$u=0.116638-0.927275I$ $a=-0.451443-0.206067I$ $b=-0.675422+1.130710I$	$-1.80399+8.86816I$	0
$u=-0.897003+0.223487I$ $a=2.41978-2.54927I$ $b=0.327090+0.526695I$	$-0.596246-0.416978I$	0
$u=-0.897003-0.223487I$ $a=2.41978+2.54927I$ $b=0.327090-0.526695I$	$-0.596246+0.416978I$	0
$u=0.882115+0.621544I$ $a=0.394622+0.050709I$ $b=-0.277864-0.645271I$	$-3.17582+1.37189I$	0
$u=0.882115-0.621544I$ $a=0.394622-0.050709I$ $b=-0.277864+0.645271I$	$-3.17582-1.37189I$	0
$u=-0.679856+0.613009I$ $a=-0.028106-0.438962I$ $b=0.442173-1.054840I$	$1.15542+3.12032I$	0
$u=-0.679856-0.613009I$ $a=-0.028106+0.438962I$ $b=0.442173+1.054840I$	$1.15542-3.12032I$	0
$u=1.015900+0.407589I$ $a=0.100594+0.423342I$ $b=0.599973-0.683518I$	$1.14990+7.95106I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.015900 - 0.407589I$ $a = 0.100594 - 0.423342I$ $b = 0.599973 + 0.683518I$	$1.14990 - 7.95106I$	0
$u = -1.106370 + 0.091912I$ $a = -0.07489 + 1.53113I$ $b = -0.699810 - 0.253258I$	$0.621061 + 0.585081I$	0
$u = -1.106370 - 0.091912I$ $a = -0.07489 - 1.53113I$ $b = -0.699810 + 0.253258I$	$0.621061 - 0.585081I$	0
$u = -0.068597 + 1.117030I$ $a = 0.747329 - 1.138740I$ $b = 0.422750 + 0.821064I$	$-1.03348 - 4.20848I$	0
$u = -0.068597 - 1.117030I$ $a = 0.747329 + 1.138740I$ $b = 0.422750 - 0.821064I$	$-1.03348 + 4.20848I$	0
$u = 0.492983 + 0.726321I$ $a = -0.733517 - 0.012243I$ $b = 0.235520 + 0.777319I$	$-0.40273 - 3.66473I$	0
$u = 0.492983 - 0.726321I$ $a = -0.733517 + 0.012243I$ $b = 0.235520 - 0.777319I$	$-0.40273 + 3.66473I$	0
$u = -0.877189$ $a = -0.512937$ $b = -0.239647$	1.26613	0
$u = 0.301986 + 1.083050I$ $a = 0.658017 + 0.117846I$ $b = 0.413672 - 0.836934I$	$-0.983702 - 0.642828I$	0
$u = 0.301986 - 1.083050I$ $a = 0.658017 - 0.117846I$ $b = 0.413672 + 0.836934I$	$-0.983702 + 0.642828I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.120200 + 0.229947I$ $a = -0.611354 + 0.118039I$ $b = 1.185770 + 0.210987I$	$0.98816 + 1.89695I$	0
$u = 1.120200 - 0.229947I$ $a = -0.611354 - 0.118039I$ $b = 1.185770 - 0.210987I$	$0.98816 - 1.89695I$	0
$u = 1.169660 + 0.122507I$ $a = 0.21593 - 1.74311I$ $b = 0.585773 + 1.136850I$	$2.57218 + 2.94748I$	0
$u = 1.169660 - 0.122507I$ $a = 0.21593 + 1.74311I$ $b = 0.585773 - 1.136850I$	$2.57218 - 2.94748I$	0
$u = 1.177470 + 0.040674I$ $a = -0.451479 + 0.498059I$ $b = 1.212360 - 0.646222I$	$3.33646 - 0.19030I$	0
$u = 1.177470 - 0.040674I$ $a = -0.451479 - 0.498059I$ $b = 1.212360 + 0.646222I$	$3.33646 + 0.19030I$	0
$u = 1.129450 + 0.338053I$ $a = -0.66428 - 2.18288I$ $b = -0.380832 + 1.099280I$	$-1.50629 + 4.23005I$	0
$u = 1.129450 - 0.338053I$ $a = -0.66428 + 2.18288I$ $b = -0.380832 - 1.099280I$	$-1.50629 - 4.23005I$	0
$u = -1.122780 + 0.361086I$ $a = -1.36902 + 1.80748I$ $b = -0.349086 - 1.109990I$	$4.36419 - 2.43164I$	0
$u = -1.122780 - 0.361086I$ $a = -1.36902 - 1.80748I$ $b = -0.349086 + 1.109990I$	$4.36419 + 2.43164I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.148820+0.276283I$ $a=\ 0.363713+0.676943I$ $b=\ 0.234925+0.344834I$	$4.30327-1.14568I$	0
$u=-1.148820-0.276283I$ $a=\ 0.363713-0.676943I$ $b=\ 0.234925-0.344834I$	$4.30327+1.14568I$	0
$u=\ 0.041879+0.816044I$ $a=\ 0.269286-0.269487I$ $b=\ 0.505552+1.083710I$	$0.63717-3.65490I$	0
$u=\ 0.041879-0.816044I$ $a=\ 0.269286+0.269487I$ $b=\ 0.505552-1.083710I$	$0.63717+3.65490I$	0
$u=-1.103650+0.458723I$ $a=\ 1.44919-1.57677I$ $b=\ 0.581083+1.144450I$	$2.41939-7.59298I$	0
$u=-1.103650-0.458723I$ $a=\ 1.44919+1.57677I$ $b=\ 0.581083-1.144450I$	$2.41939+7.59298I$	0
$u=-0.790545+0.019933I$ $a=-2.56910+1.61319I$ $b=\ 0.189225+0.989929I$	$4.85915-0.90928I$	0
$u=-0.790545-0.019933I$ $a=-2.56910-1.61319I$ $b=\ 0.189225-0.989929I$	$4.85915+0.90928I$	0
$u=\ 1.202640+0.156735I$ $a=\ 0.32002+1.71886I$ $b=\ 0.79848-1.26772I$	$5.49346+7.52898I$	0
$u=\ 1.202640-0.156735I$ $a=\ 0.32002-1.71886I$ $b=\ 0.79848+1.26772I$	$5.49346-7.52898I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.210680+0.161896I$ $a=-0.85895+2.04089I$ $b=\ \ 0.248400-1.101470I$	$4.76652+0.18641I$	0
$u=-1.210680-0.161896I$ $a=-0.85895-2.04089I$ $b=\ \ 0.248400+1.101470I$	$4.76652-0.18641I$	0
$u=-0.093015+1.226720I$ $a=\ \ 0.818202+0.177043I$ $b=\ \ 0.962365-0.485559I$	$-0.31912-6.67340I$	0
$u=-0.093015-1.226720I$ $a=\ \ 0.818202-0.177043I$ $b=\ \ 0.962365+0.485559I$	$-0.31912+6.67340I$	0
$u=\ \ 1.244620+0.045072I$ $a=-0.21770-1.70656I$ $b=-0.69181+1.30600I$	$8.30974+1.49559I$	0
$u=\ \ 1.244620-0.045072I$ $a=-0.21770+1.70656I$ $b=-0.69181-1.30600I$	$8.30974-1.49559I$	0
$u=\ \ 1.187700+0.381857I$ $a=\ \ 0.554894-0.073688I$ $b=-1.156140-0.507162I$	$-0.51148+7.10641I$	0
$u=\ \ 1.187700-0.381857I$ $a=\ \ 0.554894+0.073688I$ $b=-1.156140+0.507162I$	$-0.51148-7.10641I$	0
$u=\ \ 0.160915+0.733050I$ $a=-1.081860-0.619622I$ $b=-0.918385+0.543413I$	$-3.67094-2.96823I$	0
$u=\ \ 0.160915-0.733050I$ $a=-1.081860+0.619622I$ $b=-0.918385-0.543413I$	$-3.67094+2.96823I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.232930 + 0.206914I$ $a = 0.297530 - 0.400461I$ $b = -1.112620 + 0.422938I$	$5.54144 + 5.18578I$	0
$u = 1.232930 - 0.206914I$ $a = 0.297530 + 0.400461I$ $b = -1.112620 - 0.422938I$	$5.54144 - 5.18578I$	0
$u = -1.250040 + 0.092802I$ $a = 0.72374 - 1.97517I$ $b = -0.521373 + 1.124290I$	$3.12453 + 5.20896I$	0
$u = -1.250040 - 0.092802I$ $a = 0.72374 + 1.97517I$ $b = -0.521373 - 1.124290I$	$3.12453 - 5.20896I$	0
$u = -0.412931 + 0.603388I$ $a = -0.095407 + 0.251832I$ $b = -0.080750 + 1.051060I$	$2.33153 - 1.50993I$	0
$u = -0.412931 - 0.603388I$ $a = -0.095407 - 0.251832I$ $b = -0.080750 - 1.051060I$	$2.33153 + 1.50993I$	0
$u = 1.290240 + 0.072671I$ $a = 0.10997 + 1.96088I$ $b = 0.09910 - 1.49843I$	$7.75260 + 3.19534I$	0
$u = 1.290240 - 0.072671I$ $a = 0.10997 - 1.96088I$ $b = 0.09910 + 1.49843I$	$7.75260 - 3.19534I$	0
$u = 0.244690 + 0.651544I$ $a = -0.393078 + 0.825816I$ $b = -0.532227 - 0.797562I$	$-4.18791 - 0.46329I$	0
$u = 0.244690 - 0.651544I$ $a = -0.393078 - 0.825816I$ $b = -0.532227 + 0.797562I$	$-4.18791 + 0.46329I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.581513+1.178610I$ $a=\ \ 0.126337+0.538620I$ $b=\ \ 0.064934-1.160180I$	$5.99018-4.39123I$	0
$u=-0.581513-1.178610I$ $a=\ \ 0.126337-0.538620I$ $b=\ \ 0.064934+1.160180I$	$5.99018+4.39123I$	0
$u=\ \ 1.267760+0.400092I$ $a=\ \ 0.65528+1.83753I$ $b=\ \ 0.60524-1.28225I$	$4.45793+8.07080I$	0
$u=\ \ 1.267760-0.400092I$ $a=\ \ 0.65528-1.83753I$ $b=\ \ 0.60524+1.28225I$	$4.45793-8.07080I$	0
$u=\ \ 1.204790+0.577085I$ $a=-0.241931-0.008506I$ $b=\ \ 0.349910+0.596945I$	$1.92234+6.42207I$	0
$u=\ \ 1.204790-0.577085I$ $a=-0.241931+0.008506I$ $b=\ \ 0.349910-0.596945I$	$1.92234-6.42207I$	0
$u=-0.157172+1.342160I$ $a=-0.519932+0.623225I$ $b=-0.492797-1.146900I$	$4.19431-7.27901I$	0
$u=-0.157172-1.342160I$ $a=-0.519932-0.623225I$ $b=-0.492797+1.146900I$	$4.19431+7.27901I$	0
$u=\ \ 1.274590+0.475627I$ $a=-0.76131-1.73414I$ $b=-0.75063+1.23502I$	$1.84566+13.92260I$	0
$u=\ \ 1.274590-0.475627I$ $a=-0.76131+1.73414I$ $b=-0.75063-1.23502I$	$1.84566-13.92260I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.212427+0.597178I$ $a=-0.79710-1.31566I$ $b=-0.675342-0.102623I$	$1.33240-2.49877I$	$0.+4.74869I$
$u=-0.212427-0.597178I$ $a=-0.79710+1.31566I$ $b=-0.675342+0.102623I$	$1.33240+2.49877I$	$0.-4.74869I$
$u=-0.865830+1.116940I$ $a=-0.279168-0.263603I$ $b=-0.375408+1.108420I$	$5.08150+0.59588I$	0
$u=-0.865830-1.116940I$ $a=-0.279168+0.263603I$ $b=-0.375408-1.108420I$	$5.08150-0.59588I$	0
$u=-0.057273+1.412250I$ $a=0.651883-0.489377I$ $b=0.670642+1.165170I$	$1.83437-12.66320I$	0
$u=-0.057273-1.412250I$ $a=0.651883+0.489377I$ $b=0.670642-1.165170I$	$1.83437+12.66320I$	0
$u=0.333290+0.446397I$ $a=0.481540+1.142050I$ $b=0.666834-0.423916I$	$-1.37803+0.83267I$	$-5.49260-3.40594I$
$u=0.333290-0.446397I$ $a=0.481540-1.142050I$ $b=0.666834+0.423916I$	$-1.37803-0.83267I$	$-5.49260+3.40594I$
$u=1.37538+0.44635I$ $a=0.302307-0.183909I$ $b=-1.090330-0.256832I$	$6.12909+7.71732I$	0
$u=1.37538-0.44635I$ $a=0.302307+0.183909I$ $b=-1.090330+0.256832I$	$6.12909-7.71732I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.44585 + 0.24233I$ $a = 0.12542 + 1.74268I$ $b = -0.15570 - 1.44249I$	$12.41370 + 3.14260I$	0
$u = 1.44585 - 0.24233I$ $a = 0.12542 - 1.74268I$ $b = -0.15570 + 1.44249I$	$12.41370 - 3.14260I$	0
$u = 1.38238 + 0.50485I$ $a = 0.81540 + 1.93506I$ $b = 0.433618 - 1.055720I$	$3.54058 + 9.87816I$	0
$u = 1.38238 - 0.50485I$ $a = 0.81540 - 1.93506I$ $b = 0.433618 + 1.055720I$	$3.54058 - 9.87816I$	0
$u = -1.38774 + 0.55875I$ $a = -0.77889 + 2.27384I$ $b = -0.164951 - 0.699060I$	$3.23791 - 1.80187I$	0
$u = -1.38774 - 0.55875I$ $a = -0.77889 - 2.27384I$ $b = -0.164951 + 0.699060I$	$3.23791 + 1.80187I$	0
$u = 1.41215 + 0.53166I$ $a = -0.334971 + 0.142327I$ $b = 1.124900 + 0.535801I$	$4.42812 + 12.73300I$	0
$u = 1.41215 - 0.53166I$ $a = -0.334971 - 0.142327I$ $b = 1.124900 - 0.535801I$	$4.42812 - 12.73300I$	0
$u = 1.47473 + 0.34073I$ $a = -0.30661 - 1.75055I$ $b = -0.07864 + 1.43412I$	$12.5560 + 9.3062I$	0
$u = 1.47473 - 0.34073I$ $a = -0.30661 + 1.75055I$ $b = -0.07864 - 1.43412I$	$12.5560 - 9.3062I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.45909 + 0.54825I$ $a = -0.77553 - 1.64678I$ $b = -0.612331 + 1.251960I$	$9.2901 + 13.7168I$	0
$u = 1.45909 - 0.54825I$ $a = -0.77553 + 1.64678I$ $b = -0.612331 - 1.251960I$	$9.2901 - 13.7168I$	0
$u = 1.45536 + 0.59783I$ $a = 0.86347 + 1.55441I$ $b = 0.75455 - 1.21679I$	$6.6329 + 19.4885I$	0
$u = 1.45536 - 0.59783I$ $a = 0.86347 - 1.55441I$ $b = 0.75455 + 1.21679I$	$6.6329 - 19.4885I$	0
$u = -1.55646 + 0.40868I$ $a = 0.518712 - 0.265693I$ $b = 0.840842 + 0.156626I$	$4.74563 - 0.17252I$	0
$u = -1.55646 - 0.40868I$ $a = 0.518712 + 0.265693I$ $b = 0.840842 - 0.156626I$	$4.74563 + 0.17252I$	0
$u = -1.46287 + 0.71096I$ $a = -0.371021 + 0.154004I$ $b = -0.913335 + 0.327879I$	$4.24550 - 3.85404I$	0
$u = -1.46287 - 0.71096I$ $a = -0.371021 - 0.154004I$ $b = -0.913335 - 0.327879I$	$4.24550 + 3.85404I$	0
$u = -0.030715 + 0.308294I$ $a = 3.97429 + 3.34727I$ $b = 0.329817 - 0.655522I$	$-0.74776 - 1.32568I$	$-1.37223 - 2.12566I$
$u = -0.030715 - 0.308294I$ $a = 3.97429 - 3.34727I$ $b = 0.329817 + 0.655522I$	$-0.74776 + 1.32568I$	$-1.37223 + 2.12566I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.260858+0.061690I$ $a=-3.63799-2.80332I$ $b=-0.402370-1.037470I$	$3.98203-1.01780I$	$4.25072+0.21693I$
$u=-0.260858-0.061690I$ $a=-3.63799+2.80332I$ $b=-0.402370+1.037470I$	$3.98203+1.01780I$	$4.25072-0.21693I$
$u=-0.115813+0.180186I$ $a=0.86751+4.37451I$ $b=0.615779+1.088750I$	$1.80618-5.96754I$	$-0.06922+4.13588I$
$u=-0.115813-0.180186I$ $a=0.86751-4.37451I$ $b=0.615779-1.088750I$	$1.80618+5.96754I$	$-0.06922-4.13588I$
$u=-1.60735+0.80298I$ $a=0.661431-1.241730I$ $b=0.360615+1.181320I$	$8.85777-3.95009I$	0
$u=-1.60735-0.80298I$ $a=0.661431+1.241730I$ $b=0.360615-1.181320I$	$8.85777+3.95009I$	0
$u=-1.55437+0.93343I$ $a=-0.809344+1.082050I$ $b=-0.585027-1.188980I$	$6.93778-9.34093I$	0
$u=-1.55437-0.93343I$ $a=-0.809344-1.082050I$ $b=-0.585027+1.188980I$	$6.93778+9.34093I$	0
$u=-1.78470+0.47323I$ $a=0.045779-1.243050I$ $b=-0.234448+1.189590I$	$9.39087-0.67963I$	0
$u=-1.78470-0.47323I$ $a=0.045779+1.243050I$ $b=-0.234448-1.189590I$	$9.39087+0.67963I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.114414+0.096397I$ $a=\ 1.63704+7.33370I$ $b=\ 0.807203+0.430889I$	$-0.121971+0.719876I$	$-2.41456-1.33477I$
$u=-0.114414-0.096397I$ $a=\ 1.63704-7.33370I$ $b=\ 0.807203-0.430889I$	$-0.121971-0.719876I$	$-2.41456+1.33477I$
$u=-0.108848$ $a=\ 7.05890$ $b=\ 0.546681$	-1.13268	-9.63470
$u=-1.87167+0.32925I$ $a=\ 0.124876+1.068020I$ $b=\ 0.494783-1.183550I$	$7.89707+4.62521I$	0
$u=-1.87167-0.32925I$ $a=\ 0.124876-1.068020I$ $b=\ 0.494783+1.183550I$	$7.89707-4.62521I$	0

II.

$\boldsymbol{I_2^u = \langle b,\ -u^8+2u^7+\cdots+a-1,\ u^9-u^8-2u^7+3u^6+u^5-3u^4+2u^3-u+1\rangle}$

(i) Arc colorings

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

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

$$a_9 = \begin{pmatrix}1\\-u^2\end{pmatrix}$$

$$a_4 = \begin{pmatrix}u^8-2u^7-u^6+4u^5-u^4-2u^3+2u^2-2u+1\\0\end{pmatrix}$$

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

$$a_3 = \begin{pmatrix}u^8-2u^7-u^6+4u^5-u^4-2u^3+2u^2-2u+1\\0\end{pmatrix}$$

$$a_7 = \begin{pmatrix}1\\0\end{pmatrix}$$

$$a_{10} = \begin{pmatrix}-u^2+1\\-u^2\end{pmatrix}$$

$$a_6 = \begin{pmatrix}u^4-u^2+1\\-u^6+2u^4-u^2\end{pmatrix}$$

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

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

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= u^8-9u^7+2u^6+15u^5-11u^4-11u^3+10u^2-11u-1$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y-1)^9$
c_3, c_7	y^9
c_5, c_{10}	$y^9 + 3y^8 + 8y^7 + 13y^6 + 17y^5 + 17y^4 + 12y^3 + 6y^2 + y - 1$
c_6, c_{12}	$y^9 + 7y^8 + 20y^7 + 25y^6 + 5y^5 - 15y^4 + 22y^2 + 13y - 1$
c_8, c_{11}	$y^9 - 5y^8 + 12y^7 - 15y^6 + 9y^5 + y^4 - 4y^3 + 2y^2 + y - 1$
c_9	$y^9 - y^8 + 12y^7 - 7y^6 + 37y^5 + y^4 - 10y^2 + 5y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.772920 + 0.510351I$ $a = -0.483566 - 0.305056I$ $b = 0$	$-3.42837 + 2.09337I$	$-7.05683 - 6.62869I$
$u = 0.772920 - 0.510351I$ $a = -0.483566 + 0.305056I$ $b = 0$	$-3.42837 - 2.09337I$	$-7.05683 + 6.62869I$
$u = -0.825933$ $a = 3.56378$ $b = 0$	-0.446489	13.4320
$u = -1.173910 + 0.391555I$ $a = -1.23246 + 1.62704I$ $b = 0$	$2.72642 - 1.33617I$	$-1.90921 - 3.07774I$
$u = -1.173910 - 0.391555I$ $a = -1.23246 - 1.62704I$ $b = 0$	$2.72642 + 1.33617I$	$-1.90921 + 3.07774I$
$u = 0.141484 + 0.739668I$ $a = 1.022450 + 0.246780I$ $b = 0$	$-1.02799 - 2.45442I$	$-3.88318 + 3.00529I$
$u = 0.141484 - 0.739668I$ $a = 1.022450 - 0.246780I$ $b = 0$	$-1.02799 + 2.45442I$	$-3.88318 - 3.00529I$
$u = 1.172470 + 0.500383I$ $a = 0.411691 + 0.129409I$ $b = 0$	$1.95319 + 7.08493I$	$2.13339 - 8.87891I$
$u = 1.172470 - 0.500383I$ $a = 0.411691 - 0.129409I$ $b = 0$	$1.95319 - 7.08493I$	$2.13339 + 8.87891I$

III. $I_3^u = \langle b+3a+2,\ 9a^2+15a+5,\ u+1\rangle$

(i) Arc colorings

$$a_8 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}0\\-1\end{pmatrix}$$
$$a_9 = \begin{pmatrix}1\\-1\end{pmatrix}$$
$$a_4 = \begin{pmatrix}a\\-3a-2\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}-1\\0\end{pmatrix}$$
$$a_3 = \begin{pmatrix}-2a-2\\-3a-2\end{pmatrix}$$
$$a_7 = \begin{pmatrix}-3a-\frac{2}{3}\\3a+1\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}a+\frac{11}{9}\\-a-\frac{4}{3}\end{pmatrix}$$
$$a_6 = \begin{pmatrix}0.333333\\3a+1\end{pmatrix}$$
$$a_1 = \begin{pmatrix}-a-\frac{4}{3}\\9a+4\end{pmatrix}$$
$$a_5 = \begin{pmatrix}0.333333\\3a+1\end{pmatrix}$$
$$a_2 = \begin{pmatrix}-3a-\frac{8}{3}\\3a+1\end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 560a + \frac{2255}{9}$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_6, c_{12}	$y^2 - 7y + 1$
c_2, c_3, c_4 c_7	$y^2 - 3y + 1$
c_5	y^2
c_8, c_{11}	$(y-1)^2$
c_9	$81(9y-1)^2$
c_{10}	$81(81y^2 - 63y + 1)$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.00000$ $a=-1.20601$ $b=\ \ 1.61803$	-7.23771	-424.810
$u=-1.00000$ $a=-0.460655$ $b=-0.618034$	0.657974	-7.41140

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^9)(u^2-3u+1)(u^{125}+63u^{124}+\cdots+271u+1)$
c_2	$((u-1)^9)(u^2+u-1)(u^{125}-11u^{124}+\cdots-9u-1)$
c_3	$u^9(u^2+u-1)(u^{125}+2u^{124}+\cdots+512u+512)$
c_4	$((u+1)^9)(u^2-u-1)(u^{125}-11u^{124}+\cdots-9u-1)$
c_5	$u^2(u^9-u^8+2u^7-u^6+3u^5-u^4+2u^3+u+1)$ $\cdot(u^{125}-2u^{124}+\cdots-756u+324)$
c_6	$(u^2+3u+1)(u^9-3u^8+\cdots+u+1)$ $\cdot(u^{125}-3u^{124}+\cdots+3u-1)$
c_7	$u^9(u^2-u-1)(u^{125}+2u^{124}+\cdots+512u+512)$
c_8	$(u+1)^2(u^9-u^8-2u^7+3u^6+u^5-3u^4+2u^3-u+1)$ $\cdot(u^{125}+4u^{124}+\cdots-2358u+81)$
c_9	$81(3u-1)^2(u^9-5u^8+\cdots+u-1)$ $\cdot(9u^{125}-12u^{124}+\cdots+2836642102u+259858639)$
c_{10}	$81(9u^2+9u+1)(u^9-u^8+2u^7-u^6+3u^5-u^4+2u^3+u+1)$ $\cdot(9u^{125}-21u^{124}+\cdots+122889219u+5290529)$
c_{11}	$(u-1)^2(u^9+u^8-2u^7-3u^6+u^5+3u^4+2u^3-u-1)$ $\cdot(u^{125}+4u^{124}+\cdots-2358u+81)$
c_{12}	$(u^2-3u+1)(u^9+3u^8+\cdots+u-1)$ $\cdot(u^{125}-3u^{124}+\cdots+3u-1)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^9)(y^2-7y+1)(y^{125}+9y^{124}+\cdots+91007y-1)$
c_2, c_4	$((y-1)^9)(y^2-3y+1)(y^{125}-63y^{124}+\cdots+271y-1)$
c_3, c_7	$y^9(y^2-3y+1)(y^{125}+54y^{124}+\cdots-1572864y-262144)$
c_5	$y^2(y^9+3y^8+8y^7+13y^6+17y^5+17y^4+12y^3+6y^2+y-1)$ $\cdot(y^{125}-12y^{124}+\cdots+16685352y-104976)$
c_6, c_{12}	$(y^2-7y+1)(y^9+7y^8+\cdots+13y-1)$ $\cdot(y^{125}+85y^{124}+\cdots+31y-1)$
c_8, c_{11}	$(y-1)^2(y^9-5y^8+12y^7-15y^6+9y^5+y^4-4y^3+2y^2+y-1)$ $\cdot(y^{125}-90y^{124}+\cdots+665982y-6561)$
c_9	$6561(9y-1)^2(y^9-y^8+12y^7-7y^6+37y^5+y^4-10y^2+5y-1)$ $\cdot(81y^{125}-3294y^{124}+\cdots+2.87\times10^{18}y-6.75\times10^{16})$
c_{10}	$6561(81y^2-63y+1)$ $\cdot(y^9+3y^8+8y^7+13y^6+17y^5+17y^4+12y^3+6y^2+y-1)$ $\cdot(81y^{125}-4023y^{124}+\cdots+7567318376329835y-27989697099841)$