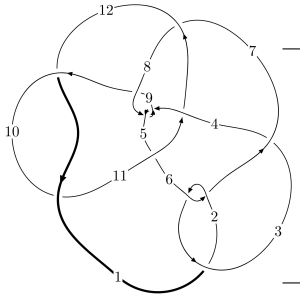
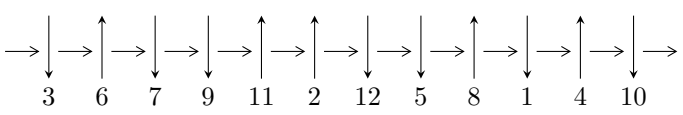
$12a_{0224}$ $(K12a_{0224})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 5.54139 \times 10^{211} u^{118} - 1.77953 \times 10^{212} u^{117} + \cdots + 1.16640 \times 10^{212} b + 2.45569 \times 10^{210},$$
$$1.48602 \times 10^{212} u^{118} - 2.52384 \times 10^{212} u^{117} + \cdots + 1.16640 \times 10^{212} a - 2.66943 \times 10^{212},\ u^{119} - 2u^{118} + \cdots +$$
$$I_2^u = \langle -2u^3 - 10u^2 + 13b - 7u - 19,\ -7u^3 - 9u^2 + 13a - 18u - 21,\ u^4 + u^3 + 3u^2 + 2u + 1 \rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 123 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. $\boldsymbol{I_1^u = \langle 5.54 \times 10^{211} u^{118} - 1.78 \times 10^{212} u^{117} + \cdots + 1.17 \times 10^{212} b + 2.46 \times 10^{210},\ 1.49 \times 10^{212} u^{118} - 2.52 \times 10^{212} u^{117} + \cdots + 1.17 \times 10^{212} a - 2.67 \times 10^{212},\ u^{119} - 2u^{118} + \cdots + 4u - 1 \rangle}$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

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

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

$$a_{12} = \begin{pmatrix} -1.27402u^{118} + 2.16379u^{117} + \cdots + 3.90194u + 2.28861 \\ -0.475087u^{118} + 1.52566u^{117} + \cdots + 3.68582u - 0.0210536 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -1.05425u^{118} + 1.73753u^{117} + \cdots + 2.83349u + 1.51971 \\ -0.511788u^{118} + 1.44255u^{117} + \cdots + 3.26316u + 0.148729 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 5.78938u^{118} - 9.05492u^{117} + \cdots - 16.0766u + 1.50354 \\ 2.96804u^{118} - 7.67244u^{117} + \cdots - 18.0668u + 4.40843 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 0.800386u^{118} - 0.654146u^{117} + \cdots - 2.68625u + 1.50085 \\ 1.52874u^{118} - 2.03781u^{117} + \cdots - 4.20547u + 1.56993 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -1.24679u^{118} + 2.17866u^{117} + \cdots + 4.01135u + 2.22723 \\ -0.409852u^{118} + 1.43273u^{117} + \cdots + 3.54515u - 0.0131086 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -4.27793u^{118} + 6.86729u^{117} + \cdots + 26.0602u - 4.12891 \\ -2.27112u^{118} + 6.74915u^{117} + \cdots + 21.1757u - 5.07591 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.0164683u^{118} + 0.631381u^{117} + \cdots + 3.64517u + 0.716005 \\ -0.625567u^{118} + 1.59469u^{117} + \cdots + 0.143061u + 0.960630 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 8.20464u^{118} - 9.79230u^{117} + \cdots - 12.0561u - 5.30921$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{119}+60u^{118}+\cdots-4u-1$
c_2, c_6	$u^{119}-2u^{118}+\cdots+2u-1$
c_3	$u^{119}+2u^{118}+\cdots-391360u-162248$
c_4, c_8	$u^{119}+2u^{118}+\cdots+4u+1$
c_5	$13(13u^{119}+45u^{118}+\cdots-9.53716\times10^7u+8.13301\times10^7)$
c_7	$13(13u^{119}+72u^{118}+\cdots+3.83586\times10^7u+1.67631\times10^7)$
c_9	$u^{119}-48u^{118}+\cdots-4u+1$
c_{10}, c_{12}	$u^{119}-5u^{118}+\cdots+4638u+169$
c_{11}	$u^{119}-5u^{118}+\cdots-3016u+2704$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{119} + 120y^{117} + \cdots + 8y - 1$
c_2, c_6	$y^{119} + 60y^{118} + \cdots - 4y - 1$
c_3	$y^{119} - 60y^{118} + \cdots - 1006938781552y - 26324413504$
c_4, c_8	$y^{119} + 48y^{118} + \cdots - 4y - 1$
c_5	$169(169y^{119} + 20465y^{118} + \cdots - 3.94300 \times 10^{17}y - 6.61458 \times 10^{15})$
c_7	169 $\cdot (169y^{119} + 1134y^{118} + \cdots + 560619390409464y - 281003063817316)$
c_9	$y^{119} + 48y^{118} + \cdots - 112y - 1$
c_{10}, c_{12}	$y^{119} - 93y^{118} + \cdots + 1876286y - 28561$
c_{11}	$y^{119} + 27y^{118} + \cdots - 531184576y - 7311616$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.539418 + 0.840998I$ $a = -1.41285 - 3.92453I$ $b = 2.86930 - 3.88516I$	$-1.82418 - 1.97603I$	0
$u = 0.539418 - 0.840998I$ $a = -1.41285 + 3.92453I$ $b = 2.86930 + 3.88516I$	$-1.82418 + 1.97603I$	0
$u = 0.046971 + 1.018560I$ $a = -0.028457 - 0.767848I$ $b = -0.679310 + 1.026440I$	$0.75162 + 6.45433I$	0
$u = 0.046971 - 1.018560I$ $a = -0.028457 + 0.767848I$ $b = -0.679310 - 1.026440I$	$0.75162 - 6.45433I$	0
$u = -0.078413 + 1.020000I$ $a = 0.003241 + 0.649226I$ $b = -0.534367 - 0.951411I$	$3.26046 - 1.73121I$	0
$u = -0.078413 - 1.020000I$ $a = 0.003241 - 0.649226I$ $b = -0.534367 + 0.951411I$	$3.26046 + 1.73121I$	0
$u = -0.659946 + 0.783354I$ $a = 1.283510 - 0.311392I$ $b = 0.969241 + 0.277435I$	$-5.03562 + 0.41103I$	0
$u = -0.659946 - 0.783354I$ $a = 1.283510 + 0.311392I$ $b = 0.969241 - 0.277435I$	$-5.03562 - 0.41103I$	0
$u = 0.673685 + 0.775129I$ $a = 1.55336 + 0.38532I$ $b = 1.037470 - 0.181769I$	$-8.13975 + 3.86403I$	0
$u = 0.673685 - 0.775129I$ $a = 1.55336 - 0.38532I$ $b = 1.037470 + 0.181769I$	$-8.13975 - 3.86403I$	0

	Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=$	$0.671736+0.796619I$		
$a=$	$1.240250+0.644710I$	$-8.40527-4.37677I$	0
$b=$	$0.855354-0.170542I$		
$u=$	$0.671736-0.796619I$		
$a=$	$1.240250-0.644710I$	$-8.40527+4.37677I$	0
$b=$	$0.855354+0.170542I$		
$u=$	$-0.608259+0.726692I$		
$a=$	$1.55701+0.53379I$	$-3.42582-0.69701I$	0
$b=$	$1.251790+0.275028I$		
$u=$	$-0.608259-0.726692I$		
$a=$	$1.55701-0.53379I$	$-3.42582+0.69701I$	0
$b=$	$1.251790-0.275028I$		
$u=$	$0.559945+0.891958I$		
$a=$	$-2.93671+0.94418I$	$-1.62898-2.41378I$	0
$b=$	$-1.96748-2.48153I$		
$u=$	$0.559945-0.891958I$		
$a=$	$-2.93671-0.94418I$	$-1.62898+2.41378I$	0
$b=$	$-1.96748+2.48153I$		
$u=$	$-0.633152+0.845568I$		
$a=$	$-0.148666-0.555779I$	$-4.67693+2.47706I$	0
$b=$	$0.252806+0.751615I$		
$u=$	$-0.633152-0.845568I$		
$a=$	$-0.148666+0.555779I$	$-4.67693-2.47706I$	0
$b=$	$0.252806-0.751615I$		
$u=$	$-0.446454+0.824660I$		
$a=$	$5.44391-1.11040I$	$-4.00299-1.55704I$	0
$b=$	$1.60652-4.51876I$		
$u=$	$-0.446454-0.824660I$		
$a=$	$5.44391+1.11040I$	$-4.00299+1.55704I$	0
$b=$	$1.60652+4.51876I$		

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.069950 + 0.934961I$ $a = 0.312469 - 0.726574I$ $b = -0.673000 + 0.632241I$	$-0.626086 - 1.186890I$	0
$u = 0.069950 - 0.934961I$ $a = 0.312469 + 0.726574I$ $b = -0.673000 - 0.632241I$	$-0.626086 + 1.186890I$	0
$u = 0.917495 + 0.542434I$ $a = -1.25859 + 0.96564I$ $b = -1.49694 + 0.80766I$	$-9.6630 + 13.1992I$	0
$u = 0.917495 - 0.542434I$ $a = -1.25859 - 0.96564I$ $b = -1.49694 - 0.80766I$	$-9.6630 - 13.1992I$	0
$u = -0.922448 + 0.546566I$ $a = -1.17166 - 0.90511I$ $b = -1.42673 - 0.77297I$	$-6.80262 - 7.99479I$	0
$u = -0.922448 - 0.546566I$ $a = -1.17166 + 0.90511I$ $b = -1.42673 + 0.77297I$	$-6.80262 + 7.99479I$	0
$u = 0.930348 + 0.539182I$ $a = -1.22943 + 0.74279I$ $b = -1.45164 + 0.64689I$	$-11.52010 + 4.26179I$	0
$u = 0.930348 - 0.539182I$ $a = -1.22943 - 0.74279I$ $b = -1.45164 - 0.64689I$	$-11.52010 - 4.26179I$	0
$u = -0.974458 + 0.464052I$ $a = -0.767249 + 0.225407I$ $b = -1.016070 + 0.066000I$	$-9.08388 + 8.22471I$	0
$u = -0.974458 - 0.464052I$ $a = -0.767249 - 0.225407I$ $b = -1.016070 - 0.066000I$	$-9.08388 - 8.22471I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.550074+0.933763I$ $a=\ \ 0.14546-1.56145I$ $b=-1.17975-0.97383I$	$-2.72220-1.73214I$	0
$u=-0.550074-0.933763I$ $a=\ \ 0.14546+1.56145I$ $b=-1.17975+0.97383I$	$-2.72220+1.73214I$	0
$u=-0.551834+0.943079I$ $a=-0.79925-2.16152I$ $b=-2.09153-0.35978I$	$-3.33941+5.68580I$	0
$u=-0.551834-0.943079I$ $a=-0.79925+2.16152I$ $b=-2.09153+0.35978I$	$-3.33941-5.68580I$	0
$u=\ \ 0.659514+0.622337I$ $a=\ \ 1.72648-0.86511I$ $b=\ \ 0.923703-0.477948I$	$-5.12870-0.71737I$	0
$u=\ \ 0.659514-0.622337I$ $a=\ \ 1.72648+0.86511I$ $b=\ \ 0.923703+0.477948I$	$-5.12870+0.71737I$	0
$u=\ \ 0.533310+0.955795I$ $a=-0.355768+1.171140I$ $b=-1.059370+0.421671I$	$-0.16207-2.47699I$	0
$u=\ \ 0.533310-0.955795I$ $a=-0.355768-1.171140I$ $b=-1.059370-0.421671I$	$-0.16207+2.47699I$	0
$u=-0.973549+0.502306I$ $a=-0.925732-0.061551I$ $b=-1.155010-0.152766I$	$-11.15970-0.90036I$	0
$u=-0.973549-0.502306I$ $a=-0.925732+0.061551I$ $b=-1.155010+0.152766I$	$-11.15970+0.90036I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.130607+1.092120I$ $a=-0.134163+0.411423I$ $b=-0.144643-0.954492I$	$4.94213-0.22183I$	0
$u=-0.130607-1.092120I$ $a=-0.134163-0.411423I$ $b=-0.144643+0.954492I$	$4.94213+0.22183I$	0
$u=0.682031+0.587060I$ $a=1.59450-1.08081I$ $b=0.774323-0.632613I$	$-4.10775+7.30854I$	0
$u=0.682031-0.587060I$ $a=1.59450+1.08081I$ $b=0.774323+0.632613I$	$-4.10775-7.30854I$	0
$u=0.994202+0.476764I$ $a=-0.713312-0.073664I$ $b=-0.978129+0.056427I$	$-6.20252-2.86568I$	0
$u=0.994202-0.476764I$ $a=-0.713312+0.073664I$ $b=-0.978129-0.056427I$	$-6.20252+2.86568I$	0
$u=-0.948881+0.578795I$ $a=-0.737186-0.750921I$ $b=-1.083840-0.714353I$	$-3.26565-5.72258I$	0
$u=-0.948881-0.578795I$ $a=-0.737186+0.750921I$ $b=-1.083840+0.714353I$	$-3.26565+5.72258I$	0
$u=0.663407+0.892584I$ $a=-0.70152+1.69641I$ $b=-0.523674-0.243591I$	$-8.11332-0.79069I$	0
$u=0.663407-0.892584I$ $a=-0.70152-1.69641I$ $b=-0.523674+0.243591I$	$-8.11332+0.79069I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.653196+0.902505I$ $a=-0.96221-1.58214I$ $b=-0.673782+0.386392I$	$-4.67219+4.69161I$	0
$u=-0.653196-0.902505I$ $a=-0.96221+1.58214I$ $b=-0.673782-0.386392I$	$-4.67219-4.69161I$	0
$u=-0.613693+0.933505I$ $a=-1.46824-1.31363I$ $b=-1.142650+0.651183I$	$-2.79223+5.53654I$	0
$u=-0.613693-0.933505I$ $a=-1.46824+1.31363I$ $b=-1.142650-0.651183I$	$-2.79223-5.53654I$	0
$u=-0.658134+0.582283I$ $a=\ \ 1.52930+0.95183I$ $b=\ \ 0.732852+0.515230I$	$-1.37744-2.68961I$	0
$u=-0.658134-0.582283I$ $a=\ \ 1.52930-0.95183I$ $b=\ \ 0.732852-0.515230I$	$-1.37744+2.68961I$	0
$u=\ \ 0.662513+0.909459I$ $a=-1.03375+1.78951I$ $b=-0.765897-0.257992I$	$-7.73252-9.03670I$	0
$u=\ \ 0.662513-0.909459I$ $a=-1.03375-1.78951I$ $b=-0.765897+0.257992I$	$-7.73252+9.03670I$	0
$u=\ \ 0.987963+0.581470I$ $a=-0.596782+0.532091I$ $b=-0.940516+0.566068I$	$-2.98815+0.27290I$	0
$u=\ \ 0.987963-0.581470I$ $a=-0.596782-0.532091I$ $b=-0.940516-0.566068I$	$-2.98815-0.27290I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.351471+0.773470I$ $a=\ \ 2.58714-1.56388I$ $b=-0.30248-2.06274I$	$-3.60723+5.96757I$	0
$u=-0.351471-0.773470I$ $a=\ \ 2.58714+1.56388I$ $b=-0.30248+2.06274I$	$-3.60723-5.96757I$	0
$u=\ \ 0.153792+1.146450I$ $a=-0.197319-0.303202I$ $b=\ \ 0.084898+0.871312I$	$4.36424-4.50432I$	0
$u=\ \ 0.153792-1.146450I$ $a=-0.197319+0.303202I$ $b=\ \ 0.084898-0.871312I$	$4.36424+4.50432I$	0
$u=\ \ 0.428182+0.707297I$ $a=\ \ 2.25893+0.55909I$ $b=\ \ 0.55178+1.36307I$	$-1.00838-1.74591I$	0
$u=\ \ 0.428182-0.707297I$ $a=\ \ 2.25893-0.55909I$ $b=\ \ 0.55178-1.36307I$	$-1.00838+1.74591I$	0
$u=\ \ 0.364581+0.735982I$ $a=\ \ 0.980469+0.160216I$ $b=-0.057859+0.579273I$	$0.01215-1.54922I$	0
$u=\ \ 0.364581-0.735982I$ $a=\ \ 0.980469-0.160216I$ $b=-0.057859-0.579273I$	$0.01215+1.54922I$	0
$u=\ \ 0.630700+0.997407I$ $a=-1.87823+0.89275I$ $b=-1.085260-0.620294I$	$-4.02362-4.33336I$	0
$u=\ \ 0.630700-0.997407I$ $a=-1.87823-0.89275I$ $b=-1.085260+0.620294I$	$-4.02362+4.33336I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.570892 + 1.041270I$ $a = -1.090840 + 0.298866I$ $b = -0.607006 - 0.322725I$	$1.77634 - 2.48623I$	0
$u = 0.570892 - 1.041270I$ $a = -1.090840 - 0.298866I$ $b = -0.607006 + 0.322725I$	$1.77634 + 2.48623I$	0
$u = -0.626255 + 1.012710I$ $a = -1.85586 - 0.63971I$ $b = -0.977706 + 0.667269I$	$-0.12752 + 7.72535I$	0
$u = -0.626255 - 1.012710I$ $a = -1.85586 + 0.63971I$ $b = -0.977706 - 0.667269I$	$-0.12752 - 7.72535I$	0
$u = -0.599316 + 1.030510I$ $a = -1.45023 - 0.37860I$ $b = -0.747793 + 0.523187I$	$1.99991 + 6.77961I$	0
$u = -0.599316 - 1.030510I$ $a = -1.45023 + 0.37860I$ $b = -0.747793 - 0.523187I$	$1.99991 - 6.77961I$	0
$u = 0.635102 + 1.014540I$ $a = -2.01018 + 0.62700I$ $b = -1.012350 - 0.736958I$	$-2.86181 - 12.42930I$	0
$u = 0.635102 - 1.014540I$ $a = -2.01018 - 0.62700I$ $b = -1.012350 + 0.736958I$	$-2.86181 + 12.42930I$	0
$u = -0.608097 + 0.485373I$ $a = 1.122160 + 0.734555I$ $b = 0.347130 + 0.332291I$	$0.49419 - 1.95496I$	0
$u = -0.608097 - 0.485373I$ $a = 1.122160 - 0.734555I$ $b = 0.347130 - 0.332291I$	$0.49419 + 1.95496I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.071841+1.265180I$ $a=-0.355437+0.135357I$ $b=\ \ 0.886169-0.725281I$	$-2.70501+11.17610I$	0
$u=-0.071841-1.265180I$ $a=-0.355437-0.135357I$ $b=\ \ 0.886169+0.725281I$	$-2.70501-11.17610I$	0
$u=\ \ 0.087038+1.275070I$ $a=-0.327605-0.135550I$ $b=\ \ 0.780458+0.645595I$	$0.26047-5.97490I$	0
$u=\ \ 0.087038-1.275070I$ $a=-0.327605+0.135550I$ $b=\ \ 0.780458-0.645595I$	$0.26047+5.97490I$	0
$u=-0.067606+1.303270I$ $a=-0.321966+0.090369I$ $b=\ \ 0.870196-0.448726I$	$-4.44384+2.05586I$	0
$u=-0.067606-1.303270I$ $a=-0.321966-0.090369I$ $b=\ \ 0.870196+0.448726I$	$-4.44384-2.05586I$	0
$u=\ \ 0.701980+1.107930I$ $a=\ \ 1.65747-0.94084I$ $b=\ \ 1.55337+1.05580I$	$-7.9282-19.1536I$	0
$u=\ \ 0.701980-1.107930I$ $a=\ \ 1.65747+0.94084I$ $b=\ \ 1.55337-1.05580I$	$-7.9282+19.1536I$	0
$u=-0.430980+0.536340I$ $a=\ \ 2.05565-1.34242I$ $b=\ \ 0.327938-1.261390I$	$-3.62566+6.02987I$	$-6.64015-6.08277I$
$u=-0.430980-0.536340I$ $a=\ \ 2.05565+1.34242I$ $b=\ \ 0.327938+1.261390I$	$-3.62566-6.02987I$	$-6.64015+6.08277I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.705292+1.107790I$ $a=\ 1.58262+0.88581I$ $b=\ 1.47278-1.03154I$	$-5.0786+13.9740I$	0
$u=-0.705292-1.107790I$ $a=\ 1.58262-0.88581I$ $b=\ 1.47278+1.03154I$	$-5.0786-13.9740I$	0
$u=\ 0.604663+0.318299I$ $a=\ 0.757036-0.480378I$ $b=\ 0.020954-0.223471I$	$-0.04814-2.08809I$	$-0.78344+4.16869I$
$u=\ 0.604663-0.318299I$ $a=\ 0.757036+0.480378I$ $b=\ 0.020954+0.223471I$	$-0.04814+2.08809I$	$-0.78344-4.16869I$
$u=-0.722645+1.101000I$ $a=\ 1.36579+0.56182I$ $b=\ 1.12117-1.04638I$	$-1.64257+11.82940I$	0
$u=-0.722645-1.101000I$ $a=\ 1.36579-0.56182I$ $b=\ 1.12117+1.04638I$	$-1.64257-11.82940I$	0
$u=\ 0.706409+1.113310I$ $a=\ 1.46286-0.98081I$ $b=\ 1.47651+0.89383I$	$-9.7571-10.2648I$	0
$u=\ 0.706409-1.113310I$ $a=\ 1.46286+0.98081I$ $b=\ 1.47651-0.89383I$	$-9.7571+10.2648I$	0
$u=\ 0.738011+1.104240I$ $a=\ 1.162980-0.466020I$ $b=\ 0.945749+0.947625I$	$-1.36081-6.52452I$	0
$u=\ 0.738011-1.104240I$ $a=\ 1.162980+0.466020I$ $b=\ 0.945749-0.947625I$	$-1.36081+6.52452I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.037590 + 0.666994I$ $a = 1.34528 + 0.72369I$ $b = -0.355360 + 0.201184I$	$0.22453 - 1.54530I$	$1.17875 + 5.54371I$
$u = 0.037590 - 0.666994I$ $a = 1.34528 - 0.72369I$ $b = -0.355360 - 0.201184I$	$0.22453 + 1.54530I$	$1.17875 - 5.54371I$
$u = -0.723615 + 1.144220I$ $a = 0.758451 + 0.855169I$ $b = 1.019340 - 0.459558I$	$-9.20080 + 7.07762I$	0
$u = -0.723615 - 1.144220I$ $a = 0.758451 - 0.855169I$ $b = 1.019340 + 0.459558I$	$-9.20080 - 7.07762I$	0
$u = 0.291072 + 0.557749I$ $a = 2.10548 + 1.04899I$ $b = 0.170539 + 0.954018I$	$-0.99783 - 1.71399I$	$-3.04526 + 3.23022I$
$u = 0.291072 - 0.557749I$ $a = 2.10548 - 1.04899I$ $b = 0.170539 - 0.954018I$	$-0.99783 + 1.71399I$	$-3.04526 - 3.23022I$
$u = 0.742996 + 1.167790I$ $a = 0.551376 - 0.625292I$ $b = 0.755847 + 0.427035I$	$-4.10574 - 3.43456I$	0
$u = 0.742996 - 1.167790I$ $a = 0.551376 + 0.625292I$ $b = 0.755847 - 0.427035I$	$-4.10574 + 3.43456I$	0
$u = -0.719081 + 1.183370I$ $a = 0.364011 + 0.735086I$ $b = 0.743183 - 0.244699I$	$-6.89898 - 2.04706I$	0
$u = -0.719081 - 1.183370I$ $a = 0.364011 - 0.735086I$ $b = 0.743183 + 0.244699I$	$-6.89898 + 2.04706I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.359766+0.405439I$ $a=\ \ 2.54808-1.18763I$ $b=\ \ 0.664409-1.001360I$	$-4.28515-1.65584I$	$-8.74963+1.62245I$
$u=-0.359766-0.405439I$ $a=\ \ 2.54808+1.18763I$ $b=\ \ 0.664409+1.001360I$	$-4.28515+1.65584I$	$-8.74963-1.62245I$
$u=\ \ 0.08688+1.57899I$ $a=-0.159136-0.031227I$ $b=\ \ 0.409318+0.066953I$	$5.08219-3.21414I$	0
$u=\ \ 0.08688-1.57899I$ $a=-0.159136+0.031227I$ $b=\ \ 0.409318-0.066953I$	$5.08219+3.21414I$	0
$u=-0.377517+0.035731I$ $a=\ \ 3.80534-0.17960I$ $b=\ \ 1.63596-0.13954I$	$-5.66161+3.95732I$	$-6.96836-3.31121I$
$u=-0.377517-0.035731I$ $a=\ \ 3.80534+0.17960I$ $b=\ \ 1.63596+0.13954I$	$-5.66161-3.95732I$	$-6.96836+3.31121I$
$u=\ \ 0.321909$ $a=\ \ 3.57094$ $b=\ \ 1.45256$	-2.65593	-2.13400
$u=\ \ 0.233250+0.182366I$ $a=\ \ 3.07453+0.43541I$ $b=\ \ 1.062060+0.348490I$	$-2.08724-0.78753I$	$-7.27534-2.81901I$
$u=\ \ 0.233250-0.182366I$ $a=\ \ 3.07453-0.43541I$ $b=\ \ 1.062060-0.348490I$	$-2.08724+0.78753I$	$-7.27534+2.81901I$

II. $I_2^u =$
$\langle -2u^3-10u^2+13b-7u-19,\ -7u^3-9u^2+13a-18u-21,\ u^4+u^3+3u^2+2u+1\rangle$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

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

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

$$a_{12} = \begin{pmatrix} 0.538462u^3 + 0.692308u^2 + 1.38462u + 1.61538 \\ 0.153846u^3 + 0.769231u^2 + 0.538462u + 1.46154 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.538462u^3 - 0.307692u^2 + 1.38462u + 0.615385 \\ 0.153846u^3 - 0.230769u^2 + 0.538462u + 1.46154 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} u \\ u^3+u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -0.644970u^3 - 0.994083u^2 - 1.75740u - 1.01183 \\ -0.118343u^3 - 0.668639u^2 - 0.414201u - 1.66272 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 0.449704u^3 - 0.0591716u^2 + 0.573964u + 0.118343 \\ 0.183432u^3 - 0.313609u^2 - 0.857988u - 0.372781 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0.538462u^3 + 0.692308u^2 + 1.38462u + 1.61538 \\ 0.153846u^3 + 0.769231u^2 + 0.538462u + 1.46154 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.0473373u^3 - 0.467456u^2 - 0.165680u - 1.06509 \\ 0.349112u^3 - 0.177515u^2 + 1.72189u - 0.644970 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 1.04734u^3 + 0.467456u^2 + 2.16568u + 1.06509 \\ 0.650888u^3 + 1.17751u^2 + 1.27811u + 1.64497 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -\frac{2907}{169}u^3 - \frac{3927}{169}u^2 - \frac{4682}{169}u - \frac{1948}{169}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^4 - u^3 + 3u^2 - 2u + 1$
c_2	$u^4 - u^3 + u^2 + 1$
c_3	$u^4 + u^3 + 5u^2 - u + 2$
c_5	$13(13u^4 - 16u^3 + 7u^2 - u + 1)$
c_6	$u^4 + u^3 + u^2 + 1$
c_7	$13(13u^4 - 23u^3 + 9u + 2)$
c_8	$u^4 + u^3 + 3u^2 + 2u + 1$
c_9	$u^4 - 5u^3 + 7u^2 - 2u + 1$
c_{10}	$(u-1)^4$
c_{11}	u^4
c_{12}	$(u+1)^4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_8	$y^4 + 5y^3 + 7y^2 + 2y + 1$
c_2, c_6	$y^4 + y^3 + 3y^2 + 2y + 1$
c_3	$y^4 + 9y^3 + 31y^2 + 19y + 4$
c_5	$169(169y^4 - 74y^3 + 43y^2 + 13y + 1)$
c_7	$169(169y^4 - 529y^3 + 466y^2 - 81y + 4)$
c_9	$y^4 - 11y^3 + 31y^2 + 10y + 1$
c_{10}, c_{12}	$(y - 1)^4$
c_{11}	y^4

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.395123+0.506844I$ $a=\ \ 1.129280+0.482208I$ $b=\ \ 1.208620-0.018695I$	$-1.85594+1.41510I$	$-2.41540-6.57837I$
$u=-0.395123-0.506844I$ $a=\ \ 1.129280-0.482208I$ $b=\ \ 1.208620+0.018695I$	$-1.85594-1.41510I$	$-2.41540+6.57837I$
$u=-0.10488+1.55249I$ $a=\ \ 0.216875-0.063104I$ $b=-0.324008+0.017675I$	$5.14581+3.16396I$	$34.1047+28.0396I$
$u=-0.10488-1.55249I$ $a=\ \ 0.216875+0.063104I$ $b=-0.324008-0.017675I$	$5.14581-3.16396I$	$34.1047-28.0396I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^4-u^3+3u^2-2u+1)(u^{119}+60u^{118}+\cdots-4u-1)$
c_2	$(u^4-u^3+u^2+1)(u^{119}-2u^{118}+\cdots+2u-1)$
c_3	$(u^4+u^3+5u^2-u+2)(u^{119}+2u^{118}+\cdots-391360u-162248)$
c_4	$(u^4-u^3+3u^2-2u+1)(u^{119}+2u^{118}+\cdots+4u+1)$
c_5	$169(13u^4-16u^3+7u^2-u+1)$ $\cdot(13u^{119}+45u^{118}+\cdots-95371633u+81330053)$
c_6	$(u^4+u^3+u^2+1)(u^{119}-2u^{118}+\cdots+2u-1)$
c_7	$169(13u^4-23u^3+9u+2)$ $\cdot(13u^{119}+72u^{118}+\cdots+38358566u+16763146)$
c_8	$(u^4+u^3+3u^2+2u+1)(u^{119}+2u^{118}+\cdots+4u+1)$
c_9	$(u^4-5u^3+7u^2-2u+1)(u^{119}-48u^{118}+\cdots-4u+1)$
c_{10}	$((u-1)^4)(u^{119}-5u^{118}+\cdots+4638u+169)$
c_{11}	$u^4(u^{119}-5u^{118}+\cdots-3016u+2704)$
c_{12}	$((u+1)^4)(u^{119}-5u^{118}+\cdots+4638u+169)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y^4+5y^3+7y^2+2y+1)(y^{119}+120y^{117}+\cdots+8y-1)$
c_2, c_6	$(y^4+y^3+3y^2+2y+1)(y^{119}+60y^{118}+\cdots-4y-1)$
c_3	$(y^4+9y^3+31y^2+19y+4)$ $\cdot(y^{119}-60y^{118}+\cdots-1006938781552y-26324413504)$
c_4, c_8	$(y^4+5y^3+7y^2+2y+1)(y^{119}+48y^{118}+\cdots-4y-1)$
c_5	$28561(169y^4-74y^3+43y^2+13y+1)$ $\cdot(169y^{119}+2.05\times10^4y^{118}+\cdots-3.94\times10^{17}y-6.61\times10^{15})$
c_7	$28561(169y^4-529y^3+466y^2-81y+4)$ $\cdot(169y^{119}+1134y^{118}+\cdots+560619390409464y-281003063817316)$
c_9	$(y^4-11y^3+31y^2+10y+1)(y^{119}+48y^{118}+\cdots-112y-1)$
c_{10}, c_{12}	$((y-1)^4)(y^{119}-93y^{118}+\cdots+1876286y-28561)$
c_{11}	$y^4(y^{119}+27y^{118}+\cdots-5.31185\times10^8y-7311616)$