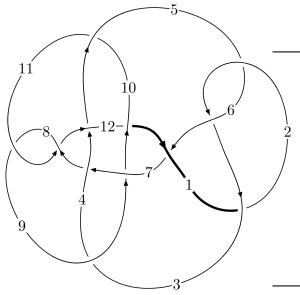
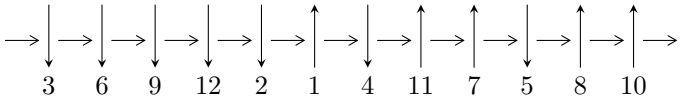
$12a_{0413}$ $(K12a_{0413})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -1.42965 \times 10^{227} u^{80} - 1.46174 \times 10^{227} u^{79} + \cdots + 3.55353 \times 10^{227} b - 1.26641 \times 10^{227},$$
$$3.52326 \times 10^{227} u^{80} + 1.26641 \times 10^{227} u^{79} + \cdots + 3.55353 \times 10^{227} a + 1.44105 \times 10^{228},\ u^{81} - 24u^{79} + \cdots + 5u$$
$$I_2^u = \langle 1.14895 \times 10^{438} u^{95} - 2.47031 \times 10^{438} u^{94} + \cdots + 3.83896 \times 10^{439} b + 6.50354 \times 10^{438},$$
$$- 2.04308 \times 10^{439} u^{95} + 6.01402 \times 10^{439} u^{94} + \cdots + 3.83896 \times 10^{439} a - 8.80804 \times 10^{438},$$
$$u^{96} - 3u^{95} + \cdots + 16u^2 + 2\rangle$$
$$I_3^u = \langle -1.02996 \times 10^{27} u^{33} - 6.93582 \times 10^{26} u^{32} + \cdots + 5.98975 \times 10^{27} b + 1.50476 \times 10^{27},$$
$$- 3.25125 \times 10^{27} u^{33} + 1.50476 \times 10^{27} u^{32} + \cdots + 5.98975 \times 10^{27} a + 2.04748 \times 10^{27},\ u^{34} + 6u^{32} + \cdots - u +$$
$$I_4^u = \langle -u^3 - u^2 + b - 1,\ u^3 + 2u^2 + 2a + u,\ u^4 + 2u^3 - u^2 - 2u + 2\rangle$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 215 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. $\boldsymbol{I_1^u = \langle -1.43 \times 10^{227} u^{80} - 1.46 \times 10^{227} u^{79} + \cdots + 3.55 \times 10^{227} b - 1.27 \times 10^{227},\ 3.52 \times 10^{227} u^{80} + 1.27 \times 10^{227} u^{79} + \cdots + 3.55 \times 10^{227} a + 1.44 \times 10^{228},\ u^{81} - 24 u^{79} + \cdots + 5u - 1 \rangle}$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.991483u^{80} - 0.356381u^{79} + \cdots - 65.8302u - 4.05525 \\ 0.402319u^{80} + 0.411350u^{79} + \cdots + 0.209580u + 0.356381 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -0.991483u^{80} - 0.356381u^{79} + \cdots - 64.8302u - 4.05525 \\ 0.402319u^{80} + 0.411350u^{79} + \cdots + 0.209580u + 0.356381 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 1.07654u^{80} + 0.931549u^{79} + \cdots - 83.1510u + 0.150529 \\ -0.127897u^{80} + 0.0324780u^{79} + \cdots + 3.79078u - 0.575168 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 2.59787u^{80} + 1.73504u^{79} + \cdots - 168.401u + 2.68154 \\ -0.947267u^{80} - 0.463794u^{79} + \cdots + 9.86812u - 2.31021 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -5.73123u^{80} - 1.06854u^{79} + \cdots + 39.9455u - 17.0848 \\ 0.433762u^{80} - 0.169396u^{79} + \cdots - 3.97706u + 3.13069 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.948644u^{80} + 0.964026u^{79} + \cdots - 79.3602u - 0.424639 \\ -0.127897u^{80} + 0.0324780u^{79} + \cdots + 3.79078u - 0.575168 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -2.13921u^{80} - 0.0773816u^{79} + \cdots + 95.7701u - 7.62114 \\ 0.208044u^{80} - 0.323011u^{79} + \cdots - 3.13771u + 1.93467 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -12.5649u^{80} - 1.86559u^{79} + \cdots - 8.88741u - 70.4314 \\ 0.506624u^{80} + 0.0528748u^{79} + \cdots + 9.81585u + 3.89395 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -16.1275u^{80} - 3.64845u^{79} + \cdots - 7.40160u - 63.9727 \\ 1.38353u^{80} + 0.167871u^{79} + \cdots + 1.18482u + 6.65535 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 4.39444u^{80} + 0.0171805u^{79} + \cdots - 42.0156u + 41.6462$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{81} + 40u^{80} + \cdots + 25u + 4$
c_2, c_5	$u^{81} + 8u^{80} + \cdots + 17u + 2$
c_3, c_{10}	$u^{81} - u^{79} + \cdots - 166u + 43$
c_4, c_7	$u^{81} - 24u^{79} + \cdots + 5u + 1$
c_6	$u^{81} + 24u^{80} + \cdots + 358010u + 19264$
c_8, c_{11}	$u^{81} + 20u^{80} + \cdots + 11513u + 416$
c_9, c_{12}	$u^{81} + 2u^{80} + \cdots + 5u + 2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{81} + 8y^{80} + \cdots - 239y - 16$
c_2, c_5	$y^{81} - 40y^{80} + \cdots + 25y - 4$
c_3, c_{10}	$y^{81} - 2y^{80} + \cdots + 40714y - 1849$
c_4, c_7	$y^{81} - 48y^{80} + \cdots + 141y - 1$
c_6	$y^{81} + 24y^{80} + \cdots + 2334897828y - 371101696$
c_8, c_{11}	$y^{81} + 44y^{80} + \cdots + 10855025y - 173056$
c_9, c_{12}	$y^{81} + 44y^{80} + \cdots - 283y - 4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.903079 + 0.550850I$ $a = 0.429159 - 0.337361I$ $b = 0.347652 + 0.296638I$	$-1.95520 - 1.19929I$	0
$u = 0.903079 - 0.550850I$ $a = 0.429159 + 0.337361I$ $b = 0.347652 - 0.296638I$	$-1.95520 + 1.19929I$	0
$u = -1.083920 + 0.041793I$ $a = -0.579989 + 1.117260I$ $b = -0.50474 - 1.32145I$	$-8.88772 - 0.47155I$	0
$u = -1.083920 - 0.041793I$ $a = -0.579989 - 1.117260I$ $b = -0.50474 + 1.32145I$	$-8.88772 + 0.47155I$	0
$u = -0.878110 + 0.192771I$ $a = 0.12922 - 1.46095I$ $b = -0.478343 + 1.308730I$	$-3.72693 - 2.92513I$	0
$u = -0.878110 - 0.192771I$ $a = 0.12922 + 1.46095I$ $b = -0.478343 - 1.308730I$	$-3.72693 + 2.92513I$	0
$u = 0.893405 + 0.013006I$ $a = 0.43587 - 1.65249I$ $b = 0.50718 + 1.32157I$	$-10.03340 + 0.38814I$	0
$u = 0.893405 - 0.013006I$ $a = 0.43587 + 1.65249I$ $b = 0.50718 - 1.32157I$	$-10.03340 - 0.38814I$	0
$u = 0.969990 + 0.536933I$ $a = -0.460171 - 0.857076I$ $b = 0.37753 + 1.57558I$	$-3.51679 - 0.43160I$	0
$u = 0.969990 - 0.536933I$ $a = -0.460171 + 0.857076I$ $b = 0.37753 - 1.57558I$	$-3.51679 + 0.43160I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.006130+0.470317I$ $a=-0.293775-0.438445I$ $b=-0.358781+0.539142I$	$-4.68916-3.35217I$	0
$u=-1.006130-0.470317I$ $a=-0.293775+0.438445I$ $b=-0.358781-0.539142I$	$-4.68916+3.35217I$	0
$u=-0.861433+0.051722I$ $a=-0.26645-1.73774I$ $b=-0.509575+1.312850I$	$-5.94203-3.76063I$	0
$u=-0.861433-0.051722I$ $a=-0.26645+1.73774I$ $b=-0.509575-1.312850I$	$-5.94203+3.76063I$	0
$u=-0.980345+0.615042I$ $a=-0.518246-0.465904I$ $b=-0.116475+0.261615I$	$-5.91291+4.69549I$	0
$u=-0.980345-0.615042I$ $a=-0.518246+0.465904I$ $b=-0.116475-0.261615I$	$-5.91291-4.69549I$	0
$u=0.839001+0.031227I$ $a=0.32065-1.84947I$ $b=0.516689+1.314510I$	$-8.62816+8.54082I$	0
$u=0.839001-0.031227I$ $a=0.32065+1.84947I$ $b=0.516689-1.314510I$	$-8.62816-8.54082I$	0
$u=1.162140+0.230832I$ $a=0.156751-0.894141I$ $b=0.479067+1.306700I$	$-3.03442-0.89093I$	0
$u=1.162140-0.230832I$ $a=0.156751+0.894141I$ $b=0.479067-1.306700I$	$-3.03442+0.89093I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.970022+0.698699I$ $a=-0.805602-0.341776I$ $b=-0.141996-0.238556I$	$1.96549+7.02940I$	0
$u=-0.970022-0.698699I$ $a=-0.805602+0.341776I$ $b=-0.141996+0.238556I$	$1.96549-7.02940I$	0
$u=0.960828+0.712083I$ $a=0.753196-0.275712I$ $b=0.270124-0.203842I$	$1.55787-1.96344I$	0
$u=0.960828-0.712083I$ $a=0.753196+0.275712I$ $b=0.270124+0.203842I$	$1.55787+1.96344I$	0
$u=-1.141990+0.355379I$ $a=-0.022029-0.642644I$ $b=-0.594423+1.094440I$	$-4.74824-3.47457I$	0
$u=-1.141990-0.355379I$ $a=-0.022029+0.642644I$ $b=-0.594423-1.094440I$	$-4.74824+3.47457I$	0
$u=-0.974870+0.694526I$ $a=-0.843489-0.462950I$ $b=0.046789-0.231017I$	$-0.32356+9.29303I$	0
$u=-0.974870-0.694526I$ $a=-0.843489+0.462950I$ $b=0.046789+0.231017I$	$-0.32356-9.29303I$	0
$u=0.978304+0.690962I$ $a=0.785381-0.489695I$ $b=-0.060443-0.135945I$	$-4.99194-6.09651I$	0
$u=0.978304-0.690962I$ $a=0.785381+0.489695I$ $b=-0.060443+0.135945I$	$-4.99194+6.09651I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.975319 + 0.696384I$ $a = 0.862768 - 0.491837I$ $b = -0.095096 - 0.246252I$	$-2.8881 - 14.4050I$	0
$u = 0.975319 - 0.696384I$ $a = 0.862768 + 0.491837I$ $b = -0.095096 + 0.246252I$	$-2.8881 + 14.4050I$	0
$u = -1.200610 + 0.135296I$ $a = -0.663574 + 0.864477I$ $b = -0.53709 - 1.31057I$	$-6.37178 - 8.44892I$	0
$u = -1.200610 - 0.135296I$ $a = -0.663574 - 0.864477I$ $b = -0.53709 + 1.31057I$	$-6.37178 + 8.44892I$	0
$u = 1.219070 + 0.053782I$ $a = 0.544832 + 0.888452I$ $b = 0.52746 - 1.33544I$	$-4.07346 + 3.22609I$	0
$u = 1.219070 - 0.053782I$ $a = 0.544832 - 0.888452I$ $b = 0.52746 + 1.33544I$	$-4.07346 - 3.22609I$	0
$u = -1.169330 + 0.379709I$ $a = 0.231493 - 0.620798I$ $b = -0.90121 + 1.34461I$	$-5.09366 + 3.39097I$	0
$u = -1.169330 - 0.379709I$ $a = 0.231493 + 0.620798I$ $b = -0.90121 - 1.34461I$	$-5.09366 - 3.39097I$	0
$u = 1.152460 + 0.435758I$ $a = -0.305450 - 0.699799I$ $b = 0.79728 + 1.53911I$	$-3.10119 + 0.19958I$	0
$u = 1.152460 - 0.435758I$ $a = -0.305450 + 0.699799I$ $b = 0.79728 - 1.53911I$	$-3.10119 - 0.19958I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.613617 + 0.423176I$ $a = -1.03569 - 1.08690I$ $b = 0.253643 + 1.175650I$	$-3.80121 - 0.19494I$	0
$u = 0.613617 - 0.423176I$ $a = -1.03569 + 1.08690I$ $b = 0.253643 - 1.175650I$	$-3.80121 + 0.19494I$	0
$u = 1.158590 + 0.508165I$ $a = -0.384496 - 0.720116I$ $b = 0.72748 + 1.74159I$	$-3.49408 + 0.28112I$	0
$u = 1.158590 - 0.508165I$ $a = -0.384496 + 0.720116I$ $b = 0.72748 - 1.74159I$	$-3.49408 - 0.28112I$	0
$u = -1.173590 + 0.570860I$ $a = 0.427375 - 0.725476I$ $b = -0.65087 + 1.90628I$	$-6.45309 + 3.20546I$	0
$u = -1.173590 - 0.570860I$ $a = 0.427375 + 0.725476I$ $b = -0.65087 - 1.90628I$	$-6.45309 - 3.20546I$	0
$u = -1.202720 + 0.521369I$ $a = 0.409907 - 0.693687I$ $b = -0.81427 + 1.85032I$	$-6.07010 - 4.33648I$	0
$u = -1.202720 - 0.521369I$ $a = 0.409907 + 0.693687I$ $b = -0.81427 - 1.85032I$	$-6.07010 + 4.33648I$	0
$u = -0.13101 + 1.42903I$ $a = 0.507329 - 0.241819I$ $b = 0.98685 + 1.12932I$	$2.74929 - 1.56105I$	0
$u = -0.13101 - 1.42903I$ $a = 0.507329 + 0.241819I$ $b = 0.98685 - 1.12932I$	$2.74929 + 1.56105I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.397723+0.375405I$ $a=\ \ 1.72040-0.69997I$ $b=-0.218386+0.901221I$	$0.03236-2.49515I$	$0.44371+2.70738I$
$u=-0.397723-0.375405I$ $a=\ \ 1.72040+0.69997I$ $b=-0.218386-0.901221I$	$0.03236+2.49515I$	$0.44371-2.70738I$
$u=\ \ 0.444303+0.311469I$ $a=-1.84853-1.09502I$ $b=\ \ 0.326808+0.933026I$	$-2.33464+7.11407I$	$-3.06794-6.14015I$
$u=\ \ 0.444303-0.311469I$ $a=-1.84853+1.09502I$ $b=\ \ 0.326808-0.933026I$	$-2.33464-7.11407I$	$-3.06794+6.14015I$
$u=\ \ 0.456913$ $a=\ \ 0.253678$ $b=\ \ 0.403953$	-0.942905	-11.1650
$u=\ \ 0.51889+1.52238I$ $a=-0.446848-0.338033I$ $b=-0.93049+1.53593I$	$2.46516-4.28325I$	0
$u=\ \ 0.51889-1.52238I$ $a=-0.446848+0.338033I$ $b=-0.93049-1.53593I$	$2.46516+4.28325I$	0
$u=-1.28578+1.02589I$ $a=\ \ 0.300936-0.698163I$ $b=\ \ 0.37528+2.23926I$	$-8.73798-0.20568I$	0
$u=-1.28578-1.02589I$ $a=\ \ 0.300936+0.698163I$ $b=\ \ 0.37528-2.23926I$	$-8.73798+0.20568I$	0
$u=-0.172413+0.277440I$ $a=\ \ 2.25399+0.95734I$ $b=-0.157507+0.538306I$	$1.32239-1.55771I$	$2.58702+5.50475I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.172413-0.277440I$ $a=\ \ 2.25399-0.95734I$ $b=-0.157507-0.538306I$	$1.32239+1.55771I$	$2.58702-5.50475I$
$u=\ \ 1.39144+0.93444I$ $a=-0.151774-0.865162I$ $b=-0.69703+2.24874I$	$-6.7665-20.6415I$	0
$u=\ \ 1.39144-0.93444I$ $a=-0.151774+0.865162I$ $b=-0.69703-2.24874I$	$-6.7665+20.6415I$	0
$u=-1.39492+0.93638I$ $a=\ \ 0.148970-0.852295I$ $b=\ \ 0.67232+2.23665I$	$-4.0945+15.3933I$	0
$u=-1.39492-0.93638I$ $a=\ \ 0.148970+0.852295I$ $b=\ \ 0.67232-2.23665I$	$-4.0945-15.3933I$	0
$u=\ \ 1.39156+0.94333I$ $a=-0.170590-0.842332I$ $b=-0.64135+2.27276I$	$-8.9687-11.9497I$	0
$u=\ \ 1.39156-0.94333I$ $a=-0.170590+0.842332I$ $b=-0.64135-2.27276I$	$-8.9687+11.9497I$	0
$u=-1.35748+0.99485I$ $a=\ \ 0.243220-0.748871I$ $b=\ \ 0.45774+2.29058I$	$-10.01880+8.98125I$	0
$u=-1.35748-0.99485I$ $a=\ \ 0.243220+0.748871I$ $b=\ \ 0.45774-2.29058I$	$-10.01880-8.98125I$	0
$u=\ \ 1.34234+1.04798I$ $a=-0.250789-0.693209I$ $b=-0.43153+2.24133I$	$-5.50274-4.90115I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.34234 - 1.04798I$ $a = -0.250789 + 0.693209I$ $b = -0.43153 - 2.24133I$	$-5.50274 + 4.90115I$	0
$u = -1.41876 + 0.94350I$ $a = 0.124214 - 0.801178I$ $b = 0.58669 + 2.17551I$	$-1.24782 + 12.75560I$	0
$u = -1.41876 - 0.94350I$ $a = 0.124214 + 0.801178I$ $b = 0.58669 - 2.17551I$	$-1.24782 - 12.75560I$	0
$u = 1.43602 + 0.96116I$ $a = -0.124783 - 0.763025I$ $b = -0.52826 + 2.17418I$	$-1.39931 - 7.33732I$	0
$u = 1.43602 - 0.96116I$ $a = -0.124783 + 0.763025I$ $b = -0.52826 - 2.17418I$	$-1.39931 + 7.33732I$	0
$u = 0.191879 + 0.136262I$ $a = -4.57848 + 1.23371I$ $b = 0.339950 + 0.353163I$	$0.04190 - 2.04058I$	$2.67481 + 0.29939I$
$u = 0.191879 - 0.136262I$ $a = -4.57848 - 1.23371I$ $b = 0.339950 - 0.353163I$	$0.04190 + 2.04058I$	$2.67481 - 0.29939I$
$u = 0.199528 + 0.058202I$ $a = -6.15885 + 0.67502I$ $b = 0.439537 + 0.176661I$	$0.60362 + 4.61374I$	$6.36261 - 6.48089I$
$u = 0.199528 - 0.058202I$ $a = -6.15885 - 0.67502I$ $b = 0.439537 - 0.176661I$	$0.60362 - 4.61374I$	$6.36261 + 6.48089I$
$u = -0.169065 + 0.033618I$ $a = 6.99710 + 0.79348I$ $b = -0.370174 + 0.091371I$	$2.60987 - 0.42182I$	$12.11739 + 2.00022I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.169065-0.033618I$		
$a=\ \ 6.99710-0.79348I$	$2.60987+0.42182I$	$12.11739-2.00022I$
$b=-0.370174-0.091371I$		

II. $I_2^u = \langle 1.15 \times 10^{438} u^{95} - 2.47 \times 10^{438} u^{94} + \cdots + 3.84 \times 10^{439} b + 6.50 \times 10^{438},\ -2.04 \times 10^{439} u^{95} + 6.01 \times 10^{439} u^{94} + \cdots + 3.84 \times 10^{439} a - 8.81 \times 10^{438},\ u^{96} - 3u^{95} + \cdots + 16u^2 + 2 \rangle$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.532197u^{95} - 1.56658u^{94} + \cdots + 8.79516u + 0.229438 \\ -0.0299288u^{95} + 0.0643484u^{94} + \cdots + 0.269231u - 0.169409 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} \frac{1}{2}u^{95} - \frac{3}{2}u^{94} + \cdots - \frac{41}{2}u^2 + 8u \\ -0.0321972u^{95} + 0.0665767u^{94} + \cdots + 0.204837u - 0.229438 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0.575081u^{95} - 1.66673u^{94} + \cdots + 9.69187u + 0.527136 \\ -0.0360635u^{95} + 0.0883803u^{94} + \cdots + 1.25346u - 0.180674 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 1.15647u^{95} - 3.35032u^{94} + \cdots + 19.4650u + 1.10864 \\ -0.0633405u^{95} + 0.149731u^{94} + \cdots + 1.60421u - 0.283309 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 0.609013u^{95} - 1.98147u^{94} + \cdots + 10.7863u - 0.679440 \\ 0.144780u^{95} - 0.460723u^{94} + \cdots + 1.48348u - 0.352848 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.539018u^{95} - 1.57835u^{94} + \cdots + 10.9453u + 0.346462 \\ -0.0360635u^{95} + 0.0883803u^{94} + \cdots + 1.25346u - 0.180674 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -0.624301u^{95} + 1.78526u^{94} + \cdots - 14.3857u - 1.06687 \\ 0.0271219u^{95} - 0.0569288u^{94} + \cdots - 0.226824u + 0.185505 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.240992u^{95} + 0.679703u^{94} + \cdots - 7.35020u - 1.71513 \\ -0.129481u^{95} + 0.427106u^{94} + \cdots - 0.741908u + 0.241757 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0.107195u^{95} - 0.543300u^{94} + \cdots + 1.75034u - 3.48636 \\ -0.142490u^{95} + 0.417692u^{94} + \cdots - 0.328294u - 0.440229 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 1.18779u^{95} - 3.29337u^{94} + \cdots + 3.37341u + 9.33011$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^{48}+25u^{47}+\cdots+3u+1)^2$
c_2, c_5	$(u^{48}-3u^{47}+\cdots-3u+1)^2$
c_3, c_{10}	$u^{96}-u^{95}+\cdots+3112u+446$
c_4, c_7	$u^{96}+3u^{95}+\cdots+16u^2+2$
c_6	$(u^{48}-15u^{47}+\cdots-536u+48)^2$
c_8, c_{11}	$(u^{48}-15u^{47}+\cdots-19u+3)^2$
c_9, c_{12}	$u^{96}+15u^{95}+\cdots+380u+113$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^{48} - y^{47} + \cdots + 21y + 1)^2$
c_2, c_5	$(y^{48} - 25y^{47} + \cdots - 3y + 1)^2$
c_3, c_{10}	$y^{96} - 15y^{95} + \cdots - 3527960y + 198916$
c_4, c_7	$y^{96} + 9y^{95} + \cdots + 64y + 4$
c_6	$(y^{48} + 21y^{47} + \cdots - 2752y + 2304)^2$
c_8, c_{11}	$(y^{48} + 31y^{47} + \cdots + 281y + 9)^2$
c_9, c_{12}	$y^{96} - 21y^{95} + \cdots - 876866y + 12769$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.642886+0.769233I$ $a=-0.526834+1.245750I$ $b=-0.159604-0.779166I$	$-2.64526+1.62822I$	0
$u=-0.642886-0.769233I$ $a=-0.526834-1.245750I$ $b=-0.159604+0.779166I$	$-2.64526-1.62822I$	0
$u=-0.881612+0.504458I$ $a=-0.284621+1.359290I$ $b=\ \ 0.07887-1.83409I$	$-3.39889+6.05165I$	0
$u=-0.881612-0.504458I$ $a=-0.284621-1.359290I$ $b=\ \ 0.07887+1.83409I$	$-3.39889-6.05165I$	0
$u=-0.550537+0.862614I$ $a=-0.353146+0.068121I$ $b=\ \ 0.658429+0.450242I$	$-4.39871+0.53615I$	0
$u=-0.550537-0.862614I$ $a=-0.353146-0.068121I$ $b=\ \ 0.658429-0.450242I$	$-4.39871-0.53615I$	0
$u=\ \ 0.591865+0.735838I$ $a=-0.530706-0.763908I$ $b=-0.89983+1.90530I$	$2.33675-3.85987I$	0
$u=\ \ 0.591865-0.735838I$ $a=-0.530706+0.763908I$ $b=-0.89983-1.90530I$	$2.33675+3.85987I$	0
$u=\ \ 0.744875+0.808215I$ $a=\ \ 0.499652+1.192210I$ $b=\ \ 0.368377-1.007510I$	$-1.16841-5.60646I$	0
$u=\ \ 0.744875-0.808215I$ $a=\ \ 0.499652-1.192210I$ $b=\ \ 0.368377+1.007510I$	$-1.16841+5.60646I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.692565+0.869229I$ $a=\ 0.403178-0.593267I$ $b=\ 0.98304+1.61871I$	$2.56945-1.35665I$	0
$u=-0.692565-0.869229I$ $a=\ 0.403178+0.593267I$ $b=\ 0.98304-1.61871I$	$2.56945+1.35665I$	0
$u=\ 1.006670+0.476250I$ $a=\ 0.129614+1.347410I$ $b=\ 0.24871-2.14752I$	$-5.00099-3.47007I$	0
$u=\ 1.006670-0.476250I$ $a=\ 0.129614-1.347410I$ $b=\ 0.24871+2.14752I$	$-5.00099+3.47007I$	0
$u=\ 0.466684+1.016830I$ $a=\ 0.512670-0.003710I$ $b=-0.470600+0.326451I$	$0.20357-3.69554I$	0
$u=\ 0.466684-1.016830I$ $a=\ 0.512670+0.003710I$ $b=-0.470600-0.326451I$	$0.20357+3.69554I$	0
$u=-1.121980+0.006018I$ $a=\ 0.496967+0.635037I$ $b=-0.23987-1.42293I$	$0.31882+3.05575I$	0
$u=-1.121980-0.006018I$ $a=\ 0.496967-0.635037I$ $b=-0.23987+1.42293I$	$0.31882-3.05575I$	0
$u=\ 1.052960+0.479633I$ $a=\ 0.050990+1.321560I$ $b=\ 0.45256-2.17603I$	$-4.17993-10.74180I$	0
$u=\ 1.052960-0.479633I$ $a=\ 0.050990-1.321560I$ $b=\ 0.45256+2.17603I$	$-4.17993+10.74180I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.788187 + 0.296245I$ $a = 0.30429 + 1.58700I$ $b = -0.83719 - 2.15789I$	$-8.27561 - 9.88494I$	$-13.0154 + 9.0074I$
$u = 0.788187 - 0.296245I$ $a = 0.30429 - 1.58700I$ $b = -0.83719 + 2.15789I$	$-8.27561 + 9.88494I$	$-13.0154 - 9.0074I$
$u = 0.878872 + 0.755618I$ $a = -0.103691 - 0.300136I$ $b = -0.928283 + 1.060800I$	$-4.39871 + 0.53615I$	0
$u = 0.878872 - 0.755618I$ $a = -0.103691 + 0.300136I$ $b = -0.928283 - 1.060800I$	$-4.39871 - 0.53615I$	0
$u = 1.145610 + 0.196711I$ $a = -0.424922 + 0.824724I$ $b = 0.48997 - 1.53810I$	$-1.75049 - 7.70855I$	0
$u = 1.145610 - 0.196711I$ $a = -0.424922 - 0.824724I$ $b = 0.48997 + 1.53810I$	$-1.75049 + 7.70855I$	0
$u = -0.539373 + 1.036980I$ $a = -0.482926 - 0.045604I$ $b = 0.549913 + 0.228608I$	$-2.36747 + 8.78466I$	0
$u = -0.539373 - 1.036980I$ $a = -0.482926 + 0.045604I$ $b = 0.549913 - 0.228608I$	$-2.36747 - 8.78466I$	0
$u = -1.054550 + 0.505113I$ $a = -0.069236 + 1.271350I$ $b = -0.45452 - 2.06511I$	$-1.83280 + 6.39539I$	0
$u = -1.054550 - 0.505113I$ $a = -0.069236 - 1.271350I$ $b = -0.45452 + 2.06511I$	$-1.83280 - 6.39539I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.744926+0.330366I$ $a=-0.36118+1.57550I$ $b=\ \ 0.86851-1.95808I$	$-5.28131+5.31478I$	$-9.91001-5.90435I$
$u=-0.744926-0.330366I$ $a=-0.36118-1.57550I$ $b=\ \ 0.86851+1.95808I$	$-5.28131-5.31478I$	$-9.91001+5.90435I$
$u=\ \ 0.877709+0.804600I$ $a=-0.079711-0.469464I$ $b=-1.19264+1.20731I$	$-2.36747+8.78466I$	0
$u=\ \ 0.877709-0.804600I$ $a=-0.079711+0.469464I$ $b=-1.19264-1.20731I$	$-2.36747-8.78466I$	0
$u=-0.422974+0.679133I$ $a=-0.484849+1.257640I$ $b=\ \ 0.286203-0.120211I$	$-1.75049+7.70855I$	$-2.00000-9.19551I$
$u=-0.422974-0.679133I$ $a=-0.484849-1.257640I$ $b=\ \ 0.286203+0.120211I$	$-1.75049-7.70855I$	$-2.00000+9.19551I$
$u=-0.885497+0.816043I$ $a=\ \ 0.143990-0.454057I$ $b=\ \ 1.10587+1.27859I$	$0.20357-3.69554I$	0
$u=-0.885497-0.816043I$ $a=\ \ 0.143990+0.454057I$ $b=\ \ 1.10587-1.27859I$	$0.20357+3.69554I$	0
$u=-0.617010+0.458737I$ $a=\ \ 0.510585-1.251970I$ $b=\ \ 1.15497+2.53019I$	$-3.82102+11.41630I$	$-6.42715-12.30916I$
$u=-0.617010-0.458737I$ $a=\ \ 0.510585+1.251970I$ $b=\ \ 1.15497-2.53019I$	$-3.82102-11.41630I$	$-6.42715+12.30916I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.116250+0.523188I$ $a=-0.010373+1.152480I$ $b=-0.59115-1.94086I$	$-1.16841+5.60646I$	0
$u=-1.116250-0.523188I$ $a=-0.010373-1.152480I$ $b=-0.59115+1.94086I$	$-1.16841-5.60646I$	0
$u=0.840551+0.901899I$ $a=0.501532+1.098490I$ $b=0.664576-1.148100I$	$-1.83280-6.39539I$	0
$u=0.840551-0.901899I$ $a=0.501532-1.098490I$ $b=0.664576+1.148100I$	$-1.83280+6.39539I$	0
$u=0.582207+0.492020I$ $a=-0.583632-1.188390I$ $b=-1.04267+2.48467I$	$-1.02590-6.16550I$	$-2.65535+9.33427I$
$u=0.582207-0.492020I$ $a=-0.583632+1.188390I$ $b=-1.04267-2.48467I$	$-1.02590+6.16550I$	$-2.65535-9.33427I$
$u=0.700142+0.267722I$ $a=0.37070+1.66660I$ $b=-1.14715-2.02661I$	$-9.07400-1.45077I$	$-14.9364+2.5761I$
$u=0.700142-0.267722I$ $a=0.37070-1.66660I$ $b=-1.14715+2.02661I$	$-9.07400+1.45077I$	$-14.9364-2.5761I$
$u=0.394288+0.630257I$ $a=0.408579+1.146370I$ $b=-0.453451+0.068064I$	$0.31882-3.05575I$	$1.65755+4.94037I$
$u=0.394288-0.630257I$ $a=0.408579-1.146370I$ $b=-0.453451-0.068064I$	$0.31882+3.05575I$	$1.65755-4.94037I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.166510 + 0.480358I$ $a = -0.090082 + 1.071060I$ $b = 0.65923 - 1.87858I$	$-2.64526 - 1.62822I$	0
$u = 1.166510 - 0.480358I$ $a = -0.090082 - 1.071060I$ $b = 0.65923 + 1.87858I$	$-2.64526 + 1.62822I$	0
$u = -0.837500 + 0.963295I$ $a = -0.538952 + 1.070850I$ $b = -0.796961 - 1.106660I$	$-4.17993 + 10.74180I$	0
$u = -0.837500 - 0.963295I$ $a = -0.538952 - 1.070850I$ $b = -0.796961 + 1.106660I$	$-4.17993 - 10.74180I$	0
$u = 0.157511 + 1.296980I$ $a = 0.600289 - 0.109413I$ $b = 0.257618 + 0.442631I$	$2.56945 - 1.35665I$	0
$u = 0.157511 - 1.296980I$ $a = 0.600289 + 0.109413I$ $b = 0.257618 - 0.442631I$	$2.56945 + 1.35665I$	0
$u = -0.671540 + 0.083180I$ $a = 1.140730 - 0.312113I$ $b = -0.145785 + 0.759806I$	$1.36929 - 1.70556I$	$1.97914 + 5.99044I$
$u = -0.671540 - 0.083180I$ $a = 1.140730 + 0.312113I$ $b = -0.145785 - 0.759806I$	$1.36929 + 1.70556I$	$1.97914 - 5.99044I$
$u = -0.498384 + 0.440768I$ $a = 0.77114 - 1.30300I$ $b = 0.88548 + 2.70801I$	$-5.85125 + 2.47327I$	$-7.62799 - 9.67832I$
$u = -0.498384 - 0.440768I$ $a = 0.77114 + 1.30300I$ $b = 0.88548 - 2.70801I$	$-5.85125 - 2.47327I$	$-7.62799 + 9.67832I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.941314+0.963403I$ $a=-0.487817+1.007280I$ $b=-0.84079-1.31864I$	$-5.00099+3.47007I$	0
$u=-0.941314-0.963403I$ $a=-0.487817-1.007280I$ $b=-0.84079+1.31864I$	$-5.00099-3.47007I$	0
$u=-0.274245+0.532196I$ $a=-1.13951+0.85490I$ $b=1.41801+0.47506I$	$-4.30194+0.88213I$	$-1.07264-5.83713I$
$u=-0.274245-0.532196I$ $a=-1.13951-0.85490I$ $b=1.41801-0.47506I$	$-4.30194-0.88213I$	$-1.07264+5.83713I$
$u=0.325884+0.493774I$ $a=-0.259522+1.327550I$ $b=-0.280013+0.349388I$	$1.36929-1.70556I$	$1.97914+5.99044I$
$u=0.325884-0.493774I$ $a=-0.259522-1.327550I$ $b=-0.280013-0.349388I$	$1.36929+1.70556I$	$1.97914-5.99044I$
$u=1.13913+0.87034I$ $a=0.327320+0.927958I$ $b=0.78160-1.65470I$	$-3.39889-6.05165I$	0
$u=1.13913-0.87034I$ $a=0.327320-0.927958I$ $b=0.78160+1.65470I$	$-3.39889+6.05165I$	0
$u=0.490861+0.153450I$ $a=-1.74121+1.04697I$ $b=0.421596-0.432102I$	$0.10142+2.05601I$	$0.137930+0.873851I$
$u=0.490861-0.153450I$ $a=-1.74121-1.04697I$ $b=0.421596+0.432102I$	$0.10142-2.05601I$	$0.137930-0.873851I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.114659+0.466798I$ $a=\ 0.00540+2.17381I$ $b=\ 0.259270+0.292223I$	$0.10142-2.05601I$	$0.137930-0.873851I$
$u=-0.114659-0.466798I$ $a=\ 0.00540-2.17381I$ $b=\ 0.259270-0.292223I$	$0.10142+2.05601I$	$0.137930+0.873851I$
$u=\ 0.351745+0.304220I$ $a=-1.69203+1.85365I$ $b=\ 0.515101-0.142675I$	$0.59444-4.56975I$	$2.71553+7.39575I$
$u=\ 0.351745-0.304220I$ $a=-1.69203-1.85365I$ $b=\ 0.515101+0.142675I$	$0.59444+4.56975I$	$2.71553-7.39575I$
$u=\ 0.065642+0.447008I$ $a=-0.67332+2.49409I$ $b=\ 0.366472+0.222908I$	$0.59444+4.56975I$	$2.71553-7.39575I$
$u=\ 0.065642-0.447008I$ $a=-0.67332-2.49409I$ $b=\ 0.366472-0.222908I$	$0.59444-4.56975I$	$2.71553+7.39575I$
$u=-0.13300+1.58906I$ $a=-0.539562-0.110912I$ $b=-0.714161+0.229672I$	$2.33675-3.85987I$	0
$u=-0.13300-1.58906I$ $a=-0.539562+0.110912I$ $b=-0.714161-0.229672I$	$2.33675+3.85987I$	0
$u=-0.250425+0.276302I$ $a=\ 1.90195+2.34062I$ $b=-0.399041-0.058517I$	$2.59741+0.40649I$	$8.69780-2.37814I$
$u=-0.250425-0.276302I$ $a=\ 1.90195-2.34062I$ $b=-0.399041+0.058517I$	$2.59741-0.40649I$	$8.69780+2.37814I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.101058+0.353624I$ $a=\ \ 0.99755+2.89065I$ $b=-0.342472+0.126951I$	$2.59741-0.40649I$	$8.69780+2.37814I$
$u=-0.101058-0.353624I$ $a=\ \ 0.99755-2.89065I$ $b=-0.342472-0.126951I$	$2.59741+0.40649I$	$8.69780-2.37814I$
$u=\ \ 1.48296+1.07800I$ $a=\ \ 0.303733+0.651079I$ $b=\ \ 1.02175-1.97671I$	$-5.28131-5.31478I$	0
$u=\ \ 1.48296-1.07800I$ $a=\ \ 0.303733-0.651079I$ $b=\ \ 1.02175+1.97671I$	$-5.28131+5.31478I$	0
$u=-1.41597+1.16916I$ $a=-0.368256+0.642979I$ $b=-1.10576-1.92579I$	$-8.27561+9.88494I$	0
$u=-1.41597-1.16916I$ $a=-0.368256-0.642979I$ $b=-1.10576+1.92579I$	$-8.27561-9.88494I$	0
$u=\ \ 1.90461+0.62984I$ $a=-0.199040-0.375683I$ $b=-0.53252+2.22350I$	$-4.30194+0.88213I$	0
$u=\ \ 1.90461-0.62984I$ $a=-0.199040+0.375683I$ $b=-0.53252-2.22350I$	$-4.30194-0.88213I$	0
$u=-1.61679+1.19012I$ $a=-0.298993+0.563009I$ $b=-1.10844-2.09261I$	$-9.07400+1.45077I$	0
$u=-1.61679-1.19012I$ $a=-0.298993-0.563009I$ $b=-1.10844+2.09261I$	$-9.07400-1.45077I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.41836+2.03517I$ $a=-0.485295-0.020582I$ $b=-1.307860-0.416026I$	$-1.02590-6.16550I$	0
$u=-0.41836-2.03517I$ $a=-0.485295+0.020582I$ $b=-1.307860+0.416026I$	$-1.02590+6.16550I$	0
$u=\ 0.53318+2.02799I$ $a=\ 0.495751+0.002483I$ $b=\ 1.28632-0.60384I$	$-3.82102+11.41630I$	0
$u=\ 0.53318-2.02799I$ $a=\ 0.495751-0.002483I$ $b=\ 1.28632+0.60384I$	$-3.82102-11.41630I$	0
$u=\ 0.35474+2.29871I$ $a=\ 0.432812-0.015862I$ $b=\ 1.70830-0.34692I$	$-5.85125+2.47327I$	0
$u=\ 0.35474-2.29871I$ $a=\ 0.432812+0.015862I$ $b=\ 1.70830+0.34692I$	$-5.85125-2.47327I$	0

III.

$\boldsymbol{I_3^u = \langle -1.03\times 10^{27}u^{33} - 6.94\times 10^{26}u^{32} + \cdots + 5.99\times 10^{27}b + 1.50\times 10^{27},\ -3.25\times 10^{27}u^{33} + 1.50\times 10^{27}u^{32} + \cdots + 5.99\times 10^{27}a + 2.05\times 10^{27},\ u^{34} + 6u^{32} + \cdots - u + 1\rangle}$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.542802u^{33} - 0.251223u^{32} + \cdots - 7.53898u - 0.341831 \\ 0.171955u^{33} + 0.115795u^{32} + \cdots - 0.205975u - 0.251223 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0.542802u^{33} - 0.251223u^{32} + \cdots - 8.53898u - 0.341831 \\ 0.171955u^{33} + 0.115795u^{32} + \cdots - 0.205975u - 0.251223 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -0.576385u^{33} - 0.909392u^{32} + \cdots - 7.25965u + 1.35157 \\ 0.457198u^{33} + 0.251223u^{32} + \cdots + 0.538981u - 0.658169 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -2.54912u^{33} - 2.60279u^{32} + \cdots - 12.8894u + 4.80790 \\ 1.29114u^{33} + 0.773964u^{32} + \cdots - 0.485310u - 1.94462 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -9.51283u^{33} - 6.25014u^{32} + \cdots + 8.83020u + 15.8107 \\ 2.51171u^{33} + 1.68159u^{32} + \cdots - 2.35329u - 4.39660 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -0.119187u^{33} - 0.658169u^{32} + \cdots - 6.72066u + 0.693397 \\ 0.457198u^{33} + 0.251223u^{32} + \cdots + 0.538981u - 0.658169 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 3.85380u^{33} + 2.76293u^{32} + \cdots + 3.33199u - 6.40806 \\ -1.85354u^{33} - 1.03523u^{32} + \cdots + 2.09086u + 2.76293 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 28.8164u^{33} + 13.5114u^{32} + \cdots - 50.1688u - 53.5858 \\ -3.73654u^{33} - 1.38453u^{32} + \cdots + 9.57389u + 7.50993 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 23.9720u^{33} + 12.4863u^{32} + \cdots - 39.6641u - 37.8422 \\ -6.11197u^{33} - 3.30169u^{32} + \cdots + 8.60080u + 9.97463 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -19.0859u^{33} - 9.51134u^{32} + \cdots + 12.5905u + 3.71374$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{34} - 17u^{33} + \cdots - 7u + 1$
c_2	$u^{34} + 5u^{33} + \cdots + 5u + 1$
c_3, c_{10}	$u^{34} - 7u^{32} + \cdots - 4u^2 + 1$
c_4, c_7	$u^{34} + 6u^{32} + \cdots - u + 1$
c_5	$u^{34} - 5u^{33} + \cdots - 5u + 1$
c_6	$u^{34} - 15u^{33} + \cdots - 253u + 41$
c_8	$u^{34} + 17u^{33} + \cdots + 182u + 13$
c_9, c_{12}	$u^{34} - 2u^{33} + \cdots - 2u + 1$
c_{11}	$u^{34} - 17u^{33} + \cdots - 182u + 13$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{34}+7y^{33}+\cdots+17y+1$
c_2, c_5	$y^{34}-17y^{33}+\cdots-7y+1$
c_3, c_{10}	$y^{34}-14y^{33}+\cdots-8y+1$
c_4, c_7	$y^{34}+12y^{33}+\cdots-15y+1$
c_6	$y^{34}+3y^{33}+\cdots-16039y+1681$
c_8, c_{11}	$y^{34}+15y^{33}+\cdots+1144y+169$
c_9, c_{12}	$y^{34}-20y^{33}+\cdots+6y+1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.076965+0.959190I$ $a=\ 0.199225+0.316284I$ $b=\ 0.212383-0.640653I$	$3.01771+2.35559I$	$5.29885-4.36590I$
$u=-0.076965-0.959190I$ $a=\ 0.199225-0.316284I$ $b=\ 0.212383+0.640653I$	$3.01771-2.35559I$	$5.29885+4.36590I$
$u=-0.221363+1.051030I$ $a=-0.698305-0.023770I$ $b=-0.50475-1.40105I$	$-3.23998-10.01620I$	$-5.90505+7.69289I$
$u=-0.221363-1.051030I$ $a=-0.698305+0.023770I$ $b=-0.50475+1.40105I$	$-3.23998+10.01620I$	$-5.90505-7.69289I$
$u=\ 0.910809+0.570273I$ $a=\ 0.25175+1.40507I$ $b=\ 0.42183-1.54046I$	$-4.12026-2.43542I$	$-5.73530+1.04188I$
$u=\ 0.910809-0.570273I$ $a=\ 0.25175-1.40507I$ $b=\ 0.42183+1.54046I$	$-4.12026+2.43542I$	$-5.73530-1.04188I$
$u=\ 0.744415+0.819249I$ $a=\ 0.773157+0.987622I$ $b=\ 0.55068-1.64672I$	$-6.62866-9.86389I$	$-7.02161+9.02410I$
$u=\ 0.744415-0.819249I$ $a=\ 0.773157-0.987622I$ $b=\ 0.55068+1.64672I$	$-6.62866+9.86389I$	$-7.02161-9.02410I$
$u=\ 0.216752+1.094920I$ $a=\ 0.650118+0.031422I$ $b=\ 0.54701-1.36730I$	$-0.54668+4.75082I$	$-3.33000-4.96647I$
$u=\ 0.216752-1.094920I$ $a=\ 0.650118-0.031422I$ $b=\ 0.54701+1.36730I$	$-0.54668-4.75082I$	$-3.33000+4.96647I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.903788+0.664614I$ $a=-0.392135+1.248020I$ $b=-0.44841-1.60386I$	$-2.47123+5.82267I$	$-1.63689-7.40519I$
$u=-0.903788-0.664614I$ $a=-0.392135-1.248020I$ $b=-0.44841+1.60386I$	$-2.47123-5.82267I$	$-1.63689+7.40519I$
$u=1.026410+0.507331I$ $a=-0.000680+1.282540I$ $b=0.30984-1.52769I$	$-3.62865-8.99227I$	$-5.79625+8.92125I$
$u=1.026410-0.507331I$ $a=-0.000680-1.282540I$ $b=0.30984+1.52769I$	$-3.62865+8.99227I$	$-5.79625-8.92125I$
$u=-0.306702+1.109860I$ $a=-0.720577+0.136270I$ $b=-0.60588-1.44538I$	$-5.48119-1.27072I$	$-10.02892+2.21325I$
$u=-0.306702-1.109860I$ $a=-0.720577-0.136270I$ $b=-0.60588+1.44538I$	$-5.48119+1.27072I$	$-10.02892-2.21325I$
$u=0.708053+0.959890I$ $a=0.745477+0.726510I$ $b=0.59263-1.66805I$	$-7.45480-1.41493I$	$-9.16439+2.56140I$
$u=0.708053-0.959890I$ $a=0.745477-0.726510I$ $b=0.59263+1.66805I$	$-7.45480+1.41493I$	$-9.16439-2.56140I$
$u=-0.819992+0.874421I$ $a=-0.621157+0.908271I$ $b=-0.53979-1.68142I$	$-3.64019+5.34500I$	$-3.82482-5.95522I$
$u=-0.819992-0.874421I$ $a=-0.621157-0.908271I$ $b=-0.53979+1.68142I$	$-3.64019-5.34500I$	$-3.82482+5.95522I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.097760+0.622980I$ $a=-0.098367+1.085070I$ $b=-0.30600-1.64399I$	$-1.99445+4.85533I$	$-2.92313-3.18673I$
$u=-1.097760-0.622980I$ $a=-0.098367-1.085070I$ $b=-0.30600+1.64399I$	$-1.99445-4.85533I$	$-2.92313+3.18673I$
$u=-0.515077+0.372282I$ $a=\ \ 1.57892+0.43037I$ $b=\ \ 0.149961+0.178715I$	$1.000570-0.744743I$	$-1.95626-4.02928I$
$u=-0.515077-0.372282I$ $a=\ \ 1.57892-0.43037I$ $b=\ \ 0.149961-0.178715I$	$1.000570+0.744743I$	$-1.95626+4.02928I$
$u=\ \ 0.570770+0.142323I$ $a=-2.25846-0.09273I$ $b=\ \ 0.104173+0.252933I$	$-0.35565-2.26022I$	$-13.9823+8.9210I$
$u=\ \ 0.570770-0.142323I$ $a=-2.25846+0.09273I$ $b=\ \ 0.104173-0.252933I$	$-0.35565+2.26022I$	$-13.9823-8.9210I$
$u=\ \ 0.549236+0.056659I$ $a=-2.65564-0.14508I$ $b=\ \ 0.234310+0.151924I$	$0.26818+4.54432I$	$-17.1303-1.6797I$
$u=\ \ 0.549236-0.056659I$ $a=-2.65564+0.14508I$ $b=\ \ 0.234310-0.151924I$	$0.26818-4.54432I$	$-17.1303+1.6797I$
$u=-0.506040+0.041856I$ $a=\ \ 2.71268-0.00120I$ $b=-0.183809+0.073362I$	$2.33418-0.36984I$	$-16.4229-3.2359I$
$u=-0.506040-0.041856I$ $a=\ \ 2.71268+0.00120I$ $b=-0.183809-0.073362I$	$2.33418+0.36984I$	$-16.4229+3.2359I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.23699 + 1.52014I$ $a = 0.479159 + 0.229975I$ $b = 1.00905 - 1.34686I$	$2.66327 + 1.73847I$	$-14.9980 - 19.9197I$
$u = 0.23699 - 1.52014I$ $a = 0.479159 - 0.229975I$ $b = 1.00905 + 1.34686I$	$2.66327 - 1.73847I$	$-14.9980 + 19.9197I$
$u = -0.51575 + 1.61254I$ $a = -0.445169 + 0.312529I$ $b = -1.04324 - 1.62347I$	$2.31395 + 4.27658I$	0
$u = -0.51575 - 1.61254I$ $a = -0.445169 - 0.312529I$ $b = -1.04324 + 1.62347I$	$2.31395 - 4.27658I$	0

IV. $I_4^u = \langle -u^3 - u^2 + b - 1,\ u^3 + 2u^2 + 2a + u,\ u^4 + 2u^3 - u^2 - 2u + 2 \rangle$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -\frac{1}{2}u^3 - u^2 - \frac{1}{2}u \\ u^3 + u^2 + 1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -\frac{1}{2}u^3 - u^2 + \frac{1}{2}u + 1 \\ 1 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -\frac{1}{2}u^3 - u^2 + \frac{1}{2}u + 1 \\ u^3 + 2u^2 - 1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0 \\ u^3 + u^2 - u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} \frac{1}{2}u^3 + u^2 + \frac{1}{2}u \\ u^3 + 2u^2 - 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} \frac{1}{2}u^3 + u^2 - \frac{1}{2}u - 1 \\ -1 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} \frac{1}{2}u^3 + u^2 - \frac{1}{2}u \\ -1 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -\frac{1}{2}u^3 - u^2 + \frac{1}{2}u + 1 \\ 1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.693897 + 0.418797I$ $a = -0.637550 - 1.056350I$ $b = 1.27510 + 1.11269I$	-4.93480	-12.0000
$u = 0.693897 - 0.418797I$ $a = -0.637550 + 1.056350I$ $b = 1.27510 - 1.11269I$	-4.93480	-12.0000
$u = -1.69390 + 0.41880I$ $a = 0.137550 - 0.556347I$ $b = -0.27510 + 2.11269I$	-4.93480	-12.0000
$u = -1.69390 - 0.41880I$ $a = 0.137550 + 0.556347I$ $b = -0.27510 - 2.11269I$	-4.93480	-12.0000

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^4)(u^{34}-17u^{33}+\cdots-7u+1)(u^{48}+25u^{47}+\cdots+3u+1)^2$ $\cdot(u^{81}+40u^{80}+\cdots+25u+4)$
c_2	$((u-1)^4)(u^{34}+5u^{33}+\cdots+5u+1)(u^{48}-3u^{47}+\cdots-3u+1)^2$ $\cdot(u^{81}+8u^{80}+\cdots+17u+2)$
c_3, c_{10}	$(u^4+3u^2+2u+2)(u^{34}-7u^{32}+\cdots-4u^2+1)$ $\cdot(u^{81}-u^{79}+\cdots-166u+43)(u^{96}-u^{95}+\cdots+3112u+446)$
c_4, c_7	$(u^4+2u^3-u^2-2u+2)(u^{34}+6u^{32}+\cdots-u+1)$ $\cdot(u^{81}-24u^{79}+\cdots+5u+1)(u^{96}+3u^{95}+\cdots+16u^2+2)$
c_5	$((u+1)^4)(u^{34}-5u^{33}+\cdots-5u+1)(u^{48}-3u^{47}+\cdots-3u+1)^2$ $\cdot(u^{81}+8u^{80}+\cdots+17u+2)$
c_6	$u^4(u^{34}-15u^{33}+\cdots-253u+41)(u^{48}-15u^{47}+\cdots-536u+48)^2$ $\cdot(u^{81}+24u^{80}+\cdots+358010u+19264)$
c_8	$((u^2+1)^2)(u^{34}+17u^{33}+\cdots+182u+13)$ $\cdot((u^{48}-15u^{47}+\cdots-19u+3)^2)(u^{81}+20u^{80}+\cdots+11513u+416)$
c_9, c_{12}	$((u^2+1)^2)(u^{34}-2u^{33}+\cdots-2u+1)(u^{81}+2u^{80}+\cdots+5u+2)$ $\cdot(u^{96}+15u^{95}+\cdots+380u+113)$
c_{11}	$((u^2+1)^2)(u^{34}-17u^{33}+\cdots-182u+13)$ $\cdot((u^{48}-15u^{47}+\cdots-19u+3)^2)(u^{81}+20u^{80}+\cdots+11513u+416)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^4)(y^{34}+7y^{33}+\cdots+17y+1)(y^{48}-y^{47}+\cdots+21y+1)^2$ $\cdot(y^{81}+8y^{80}+\cdots-239y-16)$
c_2, c_5	$((y-1)^4)(y^{34}-17y^{33}+\cdots-7y+1)(y^{48}-25y^{47}+\cdots-3y+1)^2$ $\cdot(y^{81}-40y^{80}+\cdots+25y-4)$
c_3, c_{10}	$(y^4+6y^3+13y^2+8y+4)(y^{34}-14y^{33}+\cdots-8y+1)$ $\cdot(y^{81}-2y^{80}+\cdots+40714y-1849)$ $\cdot(y^{96}-15y^{95}+\cdots-3527960y+198916)$
c_4, c_7	$(y^4-6y^3+13y^2-8y+4)(y^{34}+12y^{33}+\cdots-15y+1)$ $\cdot(y^{81}-48y^{80}+\cdots+141y-1)(y^{96}+9y^{95}+\cdots+64y+4)$
c_6	$y^4(y^{34}+3y^{33}+\cdots-16039y+1681)$ $\cdot(y^{48}+21y^{47}+\cdots-2752y+2304)^2$ $\cdot(y^{81}+24y^{80}+\cdots+2334897828y-371101696)$
c_8, c_{11}	$((y+1)^4)(y^{34}+15y^{33}+\cdots+1144y+169)$ $\cdot(y^{48}+31y^{47}+\cdots+281y+9)^2$ $\cdot(y^{81}+44y^{80}+\cdots+10855025y-173056)$
c_9, c_{12}	$((y+1)^4)(y^{34}-20y^{33}+\cdots+6y+1)(y^{81}+44y^{80}+\cdots-283y-4)$ $\cdot(y^{96}-21y^{95}+\cdots-876866y+12769)$