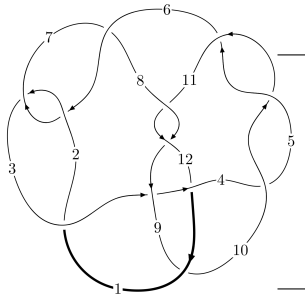
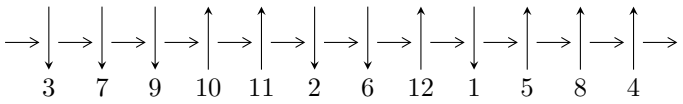
## $12a_{0573}$ $(K12a_{0573})$




A knot diagram[1]

**Linearized knot diagam**




**Solving Sequence**

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

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

$$\begin{aligned} I_1^u = \langle & 7.55432 \times 10^{231} u^{94} - 3.94979 \times 10^{231} u^{93} + \cdots + 5.03123 \times 10^{233} b + 8.02484 \times 10^{234}, \\ & - 6.27990 \times 10^{234} u^{94} + 4.91845 \times 10^{234} u^{93} + \cdots + 3.84051 \times 10^{235} a - 5.98614 \times 10^{237}, \\ & u^{95} - u^{94} + \cdots + 998u - 229 \rangle \\ I_2^u = \langle & -u^{21} + 12u^{19} + \cdots + b + 1,\ -u^{23} + 13u^{21} + \cdots + a + u,\ u^{24} - 14u^{22} + \cdots + 2u - 1 \rangle \end{aligned}$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 119 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.** $\boldsymbol{I_1^u = \langle 7.55 \times 10^{231} u^{94} - 3.95 \times 10^{231} u^{93} + \cdots + 5.03 \times 10^{233} b + 8.02 \times 10^{234},\ -6.28 \times 10^{234} u^{94} + 4.92 \times 10^{234} u^{93} + \cdots + 3.84 \times 10^{235} a - 5.99 \times 10^{237},\ u^{95} - u^{94} + \cdots + 998u - 229 \rangle}$

**(i) Arc colorings**

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

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

$$a_1 = \begin{pmatrix} 0.163517u^{94} - 0.128068u^{93} + \cdots - 9.60245u + 155.869 \\ -0.0150148u^{94} + 0.00785054u^{93} + \cdots + 7.03716u - 15.9501 \end{pmatrix}$$

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

$$a_9 = \begin{pmatrix} 0.149130u^{94} - 0.101058u^{93} + \cdots - 50.2226u + 125.337 \\ -0.0388424u^{94} + 0.0317280u^{93} + \cdots + 9.44989u - 34.1884 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -0.199431u^{94} + 0.152151u^{93} + \cdots + 59.9789u - 181.897 \\ 0.0125942u^{94} - 0.0169786u^{93} + \cdots + 12.7547u + 21.1136 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.242375u^{94} - 0.182145u^{93} + \cdots - 44.1731u + 223.500 \\ -0.00939841u^{94} + 0.00780443u^{93} + \cdots - 6.28912u - 14.2852 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 0.178532u^{94} - 0.135918u^{93} + \cdots - 16.6396u + 171.819 \\ -0.0150148u^{94} + 0.00785054u^{93} + \cdots + 7.03716u - 15.9501 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.0921952u^{94} + 0.0767583u^{93} + \cdots + 13.7278u - 100.851 \\ -4.09274 \times 10^{-6} u^{94} + 0.00284681u^{93} + \cdots + 4.30488u - 3.91892 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -0.0978961u^{94} + 0.0863550u^{93} + \cdots + 12.3830u - 113.021 \\ -0.00892542u^{94} + 0.0100792u^{93} + \cdots + 13.6694u - 5.66045 \end{pmatrix}$$

**(ii) Obstruction class** $= -1$

**(iii) Cusp Shapes** $= -0.418076u^{94} + 0.342082u^{93} + \cdots - 2.01058u - 379.553$

**(iv) u-Polynomials at the component**

| Crossings | u-Polynomials at each crossing |
|---|---|
| $c_1, c_7$ | $u^{95} + 27u^{94} + \cdots + 25u + 1$ |
| $c_2, c_6$ | $u^{95} - u^{94} + \cdots + u + 1$ |
| $c_3$ | $u^{95} - u^{94} + \cdots - 3835u + 845$ |
| $c_4, c_5, c_{10}$ | $u^{95} + u^{94} + \cdots + 998u + 229$ |
| $c_8, c_{11}$ | $u^{95} + u^{94} + \cdots - 18u + 1$ |
| $c_9$ | $u^{95} + 7u^{94} + \cdots - 15768u + 1413$ |
| $c_{12}$ | $u^{95} + 8u^{94} + \cdots + 17711u + 2447$ |

**(v) Riley Polynomials at the component**

| Crossings | Riley Polynomials at each crossing |
|---|---|
| $c_1, c_7$ | $y^{95} + 93y^{94} + \cdots + 225y - 1$ |
| $c_2, c_6$ | $y^{95} - 27y^{94} + \cdots + 25y - 1$ |
| $c_3$ | $y^{95} + 31y^{94} + \cdots - 12307425y - 714025$ |
| $c_4, c_5, c_{10}$ | $y^{95} - 109y^{94} + \cdots + 3539736y - 52441$ |
| $c_8, c_{11}$ | $y^{95} - 93y^{94} + \cdots + 92y - 1$ |
| $c_9$ | $y^{95} + 35y^{94} + \cdots + 42933762y - 1996569$ |
| $c_{12}$ | $y^{95} - 36y^{94} + \cdots + 298346619y - 5987809$ |

**(vi) Complex Volumes and Cusp Shapes**

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u=-0.993324+0.113886I$<br>$a=-0.211155-0.035291I$<br>$b=\ \ 0.474145+0.672640I$ | $1.75972-0.04833I$ | 0 |
| $u=-0.993324-0.113886I$<br>$a=-0.211155+0.035291I$<br>$b=\ \ 0.474145-0.672640I$ | $1.75972+0.04833I$ | 0 |
| $u=\ \ 0.996175+0.200215I$<br>$a=\ \ 0.444838-0.245934I$<br>$b=\ \ 0.027663-0.803448I$ | $1.26759+4.32682I$ | 0 |
| $u=\ \ 0.996175-0.200215I$<br>$a=\ \ 0.444838+0.245934I$<br>$b=\ \ 0.027663+0.803448I$ | $1.26759-4.32682I$ | 0 |
| $u=-0.696166+0.748256I$<br>$a=\ \ 0.582098-0.191531I$<br>$b=\ \ 0.767229+0.497403I$ | $1.18820+2.86171I$ | 0 |
| $u=-0.696166-0.748256I$<br>$a=\ \ 0.582098+0.191531I$<br>$b=\ \ 0.767229-0.497403I$ | $1.18820-2.86171I$ | 0 |
| $u=-0.535987+0.636878I$<br>$a=\ \ 0.234758-1.306110I$<br>$b=\ \ 1.134930-0.783701I$ | $0.91102-7.57603I$ | 0 |
| $u=-0.535987-0.636878I$<br>$a=\ \ 0.234758+1.306110I$<br>$b=\ \ 1.134930+0.783701I$ | $0.91102+7.57603I$ | 0 |
| $u=\ \ 0.731945+0.345316I$<br>$a=\ \ 0.008581-1.276130I$<br>$b=-1.14528-0.86552I$ | $3.71584+3.90274I$ | 0 |
| $u=\ \ 0.731945-0.345316I$<br>$a=\ \ 0.008581+1.276130I$<br>$b=-1.14528+0.86552I$ | $3.71584-3.90274I$ | 0 |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 0.225383 + 0.749670I$<br>$a = -1.118140 - 0.145739I$<br>$b = -0.758397 + 0.405896I$ | $1.56332 - 0.38085I$ | 0 |
| $u = 0.225383 - 0.749670I$<br>$a = -1.118140 + 0.145739I$<br>$b = -0.758397 - 0.405896I$ | $1.56332 + 0.38085I$ | 0 |
| $u = -0.777312 + 0.950438I$<br>$a = 0.270161 - 1.108820I$<br>$b = 1.087020 - 0.803080I$ | $8.6020 - 12.0514I$ | 0 |
| $u = -0.777312 - 0.950438I$<br>$a = 0.270161 + 1.108820I$<br>$b = 1.087020 + 0.803080I$ | $8.6020 + 12.0514I$ | 0 |
| $u = 0.840314 + 0.900458I$<br>$a = -0.241403 - 1.100060I$<br>$b = -1.089160 - 0.808193I$ | $9.11645 + 5.73244I$ | 0 |
| $u = 0.840314 - 0.900458I$<br>$a = -0.241403 + 1.100060I$<br>$b = -1.089160 + 0.808193I$ | $9.11645 - 5.73244I$ | 0 |
| $u = -0.757972 + 0.007541I$<br>$a = -0.829238 + 0.252949I$<br>$b = 0.532454 - 0.236617I$ | $1.67673 - 0.14877I$ | 0 |
| $u = -0.757972 - 0.007541I$<br>$a = -0.829238 - 0.252949I$<br>$b = 0.532454 + 0.236617I$ | $1.67673 + 0.14877I$ | 0 |
| $u = 0.623797 + 0.414333I$<br>$a = 0.228053 + 1.275920I$<br>$b = -0.95365 + 1.12669I$ | $8.09696 - 1.35610I$ | 0 |
| $u = 0.623797 - 0.414333I$<br>$a = 0.228053 - 1.275920I$<br>$b = -0.95365 - 1.12669I$ | $8.09696 + 1.35610I$ | 0 |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u=-0.527293+0.500564I$<br>$a=-0.206299+1.273140I$<br>$b=\ \ 0.89031+1.16063I$ | $7.47429-5.04540I$ | 0 |
| $u=-0.527293-0.500564I$<br>$a=-0.206299-1.273140I$<br>$b=\ \ 0.89031-1.16063I$ | $7.47429+5.04540I$ | 0 |
| $u=-0.549773+0.459183I$<br>$a=-2.27573-0.21620I$<br>$b=\ \ 0.733117-0.391883I$ | $7.54560+1.65750I$ | $8.73859+0.I$ |
| $u=-0.549773-0.459183I$<br>$a=-2.27573+0.21620I$<br>$b=\ \ 0.733117+0.391883I$ | $7.54560-1.65750I$ | $8.73859+0.I$ |
| $u=-0.526692+0.472816I$<br>$a=-1.214460+0.533716I$<br>$b=-0.693000+0.127743I$ | $3.39672-0.91258I$ | $0.+5.79505I$ |
| $u=-0.526692-0.472816I$<br>$a=-1.214460-0.533716I$<br>$b=-0.693000-0.127743I$ | $3.39672+0.91258I$ | $0.-5.79505I$ |
| $u=\ \ 0.485680+1.199540I$<br>$a=-0.768169+0.079709I$<br>$b=-0.843819+0.441106I$ | $7.84874+1.09621I$ | 0 |
| $u=\ \ 0.485680-1.199540I$<br>$a=-0.768169-0.079709I$<br>$b=-0.843819-0.441106I$ | $7.84874-1.09621I$ | 0 |
| $u=\ \ 0.586251+0.391592I$<br>$a=-0.06845+2.24487I$<br>$b=\ \ 0.797329+0.528318I$ | $2.92370+7.46960I$ | $0.-9.77082I$ |
| $u=\ \ 0.586251-0.391592I$<br>$a=-0.06845-2.24487I$<br>$b=\ \ 0.797329-0.528318I$ | $2.92370-7.46960I$ | $0.+9.77082I$ |

| | Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|---|
| $u=$ | $0.569131+0.398506I$ | | |
| $a=$ | $1.329510+0.475836I$ | $2.74972-4.66676I$ | 0 |
| $b=$ | $0.707955+0.063430I$ | | |
| $u=$ | $0.569131-0.398506I$ | | |
| $a=$ | $1.329510-0.475836I$ | $2.74972+4.66676I$ | 0 |
| $b=$ | $0.707955-0.063430I$ | | |
| $u=$ | $-0.569144+1.190100I$ | | |
| $a=$ | $0.732157+0.070791I$ | $7.77827+5.11561I$ | 0 |
| $b=$ | $0.845166+0.455105I$ | | |
| $u=$ | $-0.569144-1.190100I$ | | |
| $a=$ | $0.732157-0.070791I$ | $7.77827-5.11561I$ | 0 |
| $b=$ | $0.845166-0.455105I$ | | |
| $u=$ | $1.317630+0.080427I$ | | |
| $a=$ | $0.367515-1.052560I$ | $4.85394+3.18451I$ | 0 |
| $b=$ | $-1.004110-0.841707I$ | | |
| $u=$ | $1.317630-0.080427I$ | | |
| $a=$ | $0.367515+1.052560I$ | $4.85394-3.18451I$ | 0 |
| $b=$ | $-1.004110+0.841707I$ | | |
| $u=$ | $1.314690+0.245234I$ | | |
| $a=$ | $0.194689-0.877843I$ | $4.92156+3.67064I$ | 0 |
| $b=$ | $-1.060160-0.841163I$ | | |
| $u=$ | $1.314690-0.245234I$ | | |
| $a=$ | $0.194689+0.877843I$ | $4.92156-3.67064I$ | 0 |
| $b=$ | $-1.060160+0.841163I$ | | |
| $u=$ | $0.355208+0.557436I$ | | |
| $a=$ | $0.29330+1.68999I$ | $-2.52906+3.25489I$ | $-5.36852-7.70712I$ |
| $b=$ | $0.660249+0.621988I$ | | |
| $u=$ | $0.355208-0.557436I$ | | |
| $a=$ | $0.29330-1.68999I$ | $-2.52906-3.25489I$ | $-5.36852+7.70712I$ |
| $b=$ | $0.660249-0.621988I$ | | |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u=-1.341290+0.156139I$<br>$a=-0.409309-0.555943I$<br>$b=\ 1.19066-0.80574I$ | $2.86230-0.93905I$ | 0 |
| $u=-1.341290-0.156139I$<br>$a=-0.409309+0.555943I$<br>$b=\ 1.19066+0.80574I$ | $2.86230+0.93905I$ | 0 |
| $u=\ 0.461528+0.457013I$<br>$a=\ 2.56177-0.19449I$<br>$b=-0.721443-0.392720I$ | $7.56513+4.46649I$ | $8.81708-7.74250I$ |
| $u=\ 0.461528-0.457013I$<br>$a=\ 2.56177+0.19449I$<br>$b=-0.721443+0.392720I$ | $7.56513-4.46649I$ | $8.81708+7.74250I$ |
| $u=\ 0.580018+0.245313I$<br>$a=\ 0.910584-0.070935I$<br>$b=\ 0.410463-0.198520I$ | $-1.77575-0.09596I$ | $-5.41324-1.06240I$ |
| $u=\ 0.580018-0.245313I$<br>$a=\ 0.910584+0.070935I$<br>$b=\ 0.410463+0.198520I$ | $-1.77575+0.09596I$ | $-5.41324+1.06240I$ |
| $u=-0.526602+0.306350I$<br>$a=-0.04969+2.53351I$<br>$b=-0.772656+0.489239I$ | $3.42392-1.76238I$ | $3.82353+4.55359I$ |
| $u=-0.526602-0.306350I$<br>$a=-0.04969-2.53351I$<br>$b=-0.772656-0.489239I$ | $3.42392+1.76238I$ | $3.82353-4.55359I$ |
| $u=\ 0.079977+0.559249I$<br>$a=\ 0.133715+1.223310I$<br>$b=\ 0.377541+0.807990I$ | $-1.49124-1.49233I$ | $-5.62608+3.32257I$ |
| $u=\ 0.079977-0.559249I$<br>$a=\ 0.133715-1.223310I$<br>$b=\ 0.377541-0.807990I$ | $-1.49124+1.49233I$ | $-5.62608-3.32257I$ |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u=-1.42584+0.19357I$<br>$a=-0.586636-0.963582I$<br>$b=\ \ 0.984999-0.752996I$ | $3.21152-5.95296I$ | 0 |
| $u=-1.42584-0.19357I$<br>$a=-0.586636+0.963582I$<br>$b=\ \ 0.984999+0.752996I$ | $3.21152+5.95296I$ | 0 |
| $u=-0.247811+0.438822I$<br>$a=-0.85477+1.26768I$<br>$b=-0.551665+0.453931I$ | $0.242670-1.208790I$ | $2.95131+5.26404I$ |
| $u=-0.247811-0.438822I$<br>$a=-0.85477-1.26768I$<br>$b=-0.551665-0.453931I$ | $0.242670+1.208790I$ | $2.95131-5.26404I$ |
| $u=-1.49976+0.01728I$<br>$a=\ \ 0.810271+0.854161I$<br>$b=-0.805895+0.092612I$ | $7.49239+2.42085I$ | 0 |
| $u=-1.49976-0.01728I$<br>$a=\ \ 0.810271-0.854161I$<br>$b=-0.805895-0.092612I$ | $7.49239-2.42085I$ | 0 |
| $u=\ \ 1.53993+0.02243I$<br>$a=-0.351125+0.474031I$<br>$b=\ \ 1.94756+1.32394I$ | $6.51260+1.23119I$ | 0 |
| $u=\ \ 1.53993-0.02243I$<br>$a=-0.351125-0.474031I$<br>$b=\ \ 1.94756-1.32394I$ | $6.51260-1.23119I$ | 0 |
| $u=-1.54816+0.13261I$<br>$a=\ \ 1.34405-0.84465I$<br>$b=-0.748690-0.097086I$ | $14.3987-6.5613I$ | 0 |
| $u=-1.54816-0.13261I$<br>$a=\ \ 1.34405+0.84465I$<br>$b=-0.748690+0.097086I$ | $14.3987+6.5613I$ | 0 |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u=-1.55206+0.22023I$<br>$a=\ \ 0.222873+0.723008I$<br>$b=-0.861005+0.084857I$ | $7.73078-3.20289I$ | 0 |
| $u=-1.55206-0.22023I$<br>$a=\ \ 0.222873-0.723008I$<br>$b=-0.861005-0.084857I$ | $7.73078+3.20289I$ | 0 |
| $u=\ \ 1.57112+0.07499I$<br>$a=\ \ 0.567488-1.165570I$<br>$b=-0.917156-0.802718I$ | $10.66090+3.06605I$ | 0 |
| $u=\ \ 1.57112-0.07499I$<br>$a=\ \ 0.567488+1.165570I$<br>$b=-0.917156+0.802718I$ | $10.66090-3.06605I$ | 0 |
| $u=\ \ 1.56317+0.17546I$<br>$a=-0.503473+0.755596I$<br>$b=\ \ 1.55777+0.93066I$ | $7.95394+10.44560I$ | 0 |
| $u=\ \ 1.56317-0.17546I$<br>$a=-0.503473-0.755596I$<br>$b=\ \ 1.55777-0.93066I$ | $7.95394-10.44560I$ | 0 |
| $u=\ \ 1.56634+0.14849I$<br>$a=-0.039530-0.517153I$<br>$b=\ \ 1.16585-1.79493I$ | $14.5760+7.3982I$ | 0 |
| $u=\ \ 1.56634-0.14849I$<br>$a=-0.039530+0.517153I$<br>$b=\ \ 1.16585+1.79493I$ | $14.5760-7.3982I$ | 0 |
| $u=\ \ 1.57870+0.11756I$<br>$a=-1.35070-0.73522I$<br>$b=\ \ 0.746770-0.084627I$ | $14.8325+0.3716I$ | 0 |
| $u=\ \ 1.57870-0.11756I$<br>$a=-1.35070+0.73522I$<br>$b=\ \ 0.746770+0.084627I$ | $14.8325-0.3716I$ | 0 |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u=-1.58417+0.11388I$<br>$a=-0.597493-1.158790I$<br>$b=\ \ 0.913257-0.790219I$ | $10.36980-9.31906I$ | 0 |
| $u=-1.58417-0.11388I$<br>$a=-0.597493+1.158790I$<br>$b=\ \ 0.913257+0.790219I$ | $10.36980+9.31906I$ | 0 |
| $u=-1.59785+0.07643I$<br>$a=\ \ 0.028419-0.523663I$<br>$b=\ \ 0.991167-0.861468I$ | $10.40840+3.06913I$ | 0 |
| $u=-1.59785-0.07643I$<br>$a=\ \ 0.028419+0.523663I$<br>$b=\ \ 0.991167+0.861468I$ | $10.40840-3.06913I$ | 0 |
| $u=\ \ 1.59349+0.14165I$<br>$a=-0.017656-0.572531I$<br>$b=-1.012300-0.857871I$ | $10.74830+3.27026I$ | 0 |
| $u=\ \ 1.59349-0.14165I$<br>$a=-0.017656+0.572531I$<br>$b=-1.012300+0.857871I$ | $10.74830-3.27026I$ | 0 |
| $u=-1.59903+0.10260I$<br>$a=\ \ 0.105523-0.545341I$<br>$b=-1.34677-1.67664I$ | $15.7568-0.4814I$ | 0 |
| $u=-1.59903-0.10260I$<br>$a=\ \ 0.105523+0.545341I$<br>$b=-1.34677+1.67664I$ | $15.7568+0.4814I$ | 0 |
| $u=-1.60642+0.09615I$<br>$a=\ \ 0.379213+0.671654I$<br>$b=-1.60005+1.12283I$ | $11.67530-5.54466I$ | 0 |
| $u=-1.60642-0.09615I$<br>$a=\ \ 0.379213-0.671654I$<br>$b=-1.60005-1.12283I$ | $11.67530+5.54466I$ | 0 |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u=-0.365909+0.100941I$<br>$a=-0.32398-1.55574I$<br>$b=\ \ 1.40999-0.94117I$ | $-0.161589-0.831554I$ | $5.75339+10.80698I$ |
| $u=-0.365909-0.100941I$<br>$a=-0.32398+1.55574I$<br>$b=\ \ 1.40999+0.94117I$ | $-0.161589+0.831554I$ | $5.75339-10.80698I$ |
| $u=\ \ 1.64398$<br>$a=-0.845264$<br>$b=\ \ 0.801737$ | $10.0916$ | $0$ |
| $u=\ \ 1.65548+0.07001I$<br>$a=-0.496986+0.319634I$<br>$b=\ \ 0.840569+0.037887I$ | $10.15280+0.15676I$ | $0$ |
| $u=\ \ 1.65548-0.07001I$<br>$a=-0.496986-0.319634I$<br>$b=\ \ 0.840569-0.037887I$ | $10.15280-0.15676I$ | $0$ |
| $u=\ \ 1.65913+0.30071I$<br>$a=-0.408789+0.936143I$<br>$b=\ \ 1.35310+0.94377I$ | $16.6298+16.7549I$ | $0$ |
| $u=\ \ 1.65913-0.30071I$<br>$a=-0.408789-0.936143I$<br>$b=\ \ 1.35310-0.94377I$ | $16.6298-16.7549I$ | $0$ |
| $u=-1.67341+0.26685I$<br>$a=\ \ 0.390471+0.904092I$<br>$b=-1.36919+0.97309I$ | $17.4854-10.1473I$ | $0$ |
| $u=-1.67341-0.26685I$<br>$a=\ \ 0.390471-0.904092I$<br>$b=-1.36919-0.97309I$ | $17.4854+10.1473I$ | $0$ |
| $u=\ \ 0.243236+0.006215I$<br>$a=\ \ 1.57504-4.32600I$<br>$b=-0.694360+0.394916I$ | $1.46420-2.55510I$ | $5.02686+10.79108I$ |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 0.243236 - 0.006215I$<br>$a = 1.57504 + 4.32600I$<br>$b = -0.694360 - 0.394916I$ | $1.46420 + 2.55510I$ | $5.02686 - 10.79108I$ |
| $u = -1.71967 + 0.41859I$<br>$a = -0.120337 + 0.511463I$<br>$b = -0.903718 + 0.083096I$ | $15.0760 - 7.3587I$ | 0 |
| $u = -1.71967 - 0.41859I$<br>$a = -0.120337 - 0.511463I$<br>$b = -0.903718 - 0.083096I$ | $15.0760 + 7.3587I$ | 0 |
| $u = 1.76133 + 0.37373I$<br>$a = 0.085143 + 0.455559I$<br>$b = 0.904333 + 0.074033I$ | $15.5208 + 1.0744I$ | 0 |
| $u = 1.76133 - 0.37373I$<br>$a = 0.085143 - 0.455559I$<br>$b = 0.904333 - 0.074033I$ | $15.5208 - 1.0744I$ | 0 |

**II. $I_2^u =$**
**$\langle -u^{21}+12u^{19}+\cdots+b+1,\ -u^{23}+13u^{21}+\cdots+a+u,\ u^{24}-14u^{22}+\cdots+2u-1\rangle$**

**(i) Arc colorings**

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} u \\ -u^3+u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^{23}-13u^{21}+\cdots-2u^2-u \\ u^{21}-12u^{19}+\cdots-2u-1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -u^2+1 \\ u^4-2u^2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} u^{23}-12u^{21}+\cdots+2u^4+3u^3 \\ -u^{23}+13u^{21}+\cdots+2u^2+u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u^{23}+2u^{22}+\cdots-3u+3 \\ -u^{22}+12u^{20}+\cdots-2u^3-3u^2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 2u^{22}-u^{21}+\cdots-2u+3 \\ u^{23}-u^{22}+\cdots-3u^2-1 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} u^{23}-14u^{21}+\cdots+u+1 \\ u^{21}-12u^{19}+\cdots-2u-1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} u^{21}-13u^{19}+\cdots+5u^2-1 \\ u^{19}-11u^{17}+\cdots+3u+1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u^{21}-12u^{19}+\cdots+2u^2+u \\ -u^{23}+12u^{21}+\cdots+2u+1 \end{pmatrix}$$

**(ii) Obstruction class** $= 1$

**(iii) Cusp Shapes** $= 7u^{23}-91u^{21}-9u^{20}+499u^{19}+104u^{18}-1486u^{17}-503u^{16}+2560u^{15}+1308u^{14}-2447u^{13}-1942u^{12}+948u^{11}+1573u^{10}+371u^9-510u^8-550u^7-146u^6+214u^5+169u^4-12u^3-46u^2-7u+9$

**(iv) u-Polynomials at the component**

| Crossings | u-Polynomials at each crossing |
|---|---|
| $c_1$ | $u^{24} - 10u^{23} + \cdots - 17u + 1$ |
| $c_2$ | $u^{24} - 5u^{22} + \cdots + u + 1$ |
| $c_3$ | $u^{24} + 4u^{22} + \cdots - u - 1$ |
| $c_4, c_5$ | $u^{24} - 14u^{22} + \cdots + 2u - 1$ |
| $c_6$ | $u^{24} - 5u^{22} + \cdots - u + 1$ |
| $c_7$ | $u^{24} + 10u^{23} + \cdots + 17u + 1$ |
| $c_8$ | $u^{24} - 4u^{23} + \cdots - 4u + 1$ |
| $c_9$ | $u^{24} + 4u^{22} + \cdots - 2u + 1$ |
| $c_{10}$ | $u^{24} - 14u^{22} + \cdots - 2u - 1$ |
| $c_{11}$ | $u^{24} + 4u^{23} + \cdots + 4u + 1$ |
| $c_{12}$ | $u^{24} - 3u^{23} + \cdots - 3u - 1$ |

**(v) Riley Polynomials at the component**

| Crossings | Riley Polynomials at each crossing |
|---|---|
| $c_1, c_7$ | $y^{24} + 18y^{23} + \cdots - 21y + 1$ |
| $c_2, c_6$ | $y^{24} - 10y^{23} + \cdots - 17y + 1$ |
| $c_3$ | $y^{24} + 8y^{23} + \cdots - 3y + 1$ |
| $c_4, c_5, c_{10}$ | $y^{24} - 28y^{23} + \cdots - 12y + 1$ |
| $c_8, c_{11}$ | $y^{24} - 24y^{23} + \cdots - 16y + 1$ |
| $c_9$ | $y^{24} + 8y^{23} + \cdots + 14y + 1$ |
| $c_{12}$ | $y^{24} - 11y^{23} + \cdots - 3y + 1$ |

**(vi) Complex Volumes and Cusp Shapes**

| Solutions to $I_2^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 1.230070 + 0.129407I$<br>$a = 0.644352 - 1.071010I$<br>$b = -1.216520 - 0.600965I$ | $5.43238 + 6.88848I$ | $6.83763 - 6.74493I$ |
| $u = 1.230070 - 0.129407I$<br>$a = 0.644352 + 1.071010I$<br>$b = -1.216520 + 0.600965I$ | $5.43238 - 6.88848I$ | $6.83763 + 6.74493I$ |
| $u = -1.228340 + 0.156795I$<br>$a = -0.482987 - 1.194290I$<br>$b = 1.092080 - 0.617370I$ | $5.98051 - 1.92070I$ | $7.90871 + 0.24735I$ |
| $u = -1.228340 - 0.156795I$<br>$a = -0.482987 + 1.194290I$<br>$b = 1.092080 + 0.617370I$ | $5.98051 + 1.92070I$ | $7.90871 - 0.24735I$ |
| $u = -0.615317 + 0.357755I$<br>$a = 1.01722 - 1.07128I$<br>$b = 0.748487 + 0.215306I$ | $3.65993 + 0.05326I$ | $8.06301 - 1.11885I$ |
| $u = -0.615317 - 0.357755I$<br>$a = 1.01722 + 1.07128I$<br>$b = 0.748487 - 0.215306I$ | $3.65993 - 0.05326I$ | $8.06301 + 1.11885I$ |
| $u = -0.048840 + 0.698393I$<br>$a = 0.060103 - 1.169090I$<br>$b = 0.055788 + 0.571780I$ | $7.27713 + 3.12415I$ | $6.44408 - 2.47099I$ |
| $u = -0.048840 - 0.698393I$<br>$a = 0.060103 + 1.169090I$<br>$b = 0.055788 - 0.571780I$ | $7.27713 - 3.12415I$ | $6.44408 + 2.47099I$ |
| $u = -1.295160 + 0.193439I$<br>$a = -0.106169 - 0.988293I$<br>$b = 0.862717 - 0.887500I$ | $4.44804 - 4.30220I$ | $2.60756 + 9.11283I$ |
| $u = -1.295160 - 0.193439I$<br>$a = -0.106169 + 0.988293I$<br>$b = 0.862717 + 0.887500I$ | $4.44804 + 4.30220I$ | $2.60756 - 9.11283I$ |

| Solutions to $I_2^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 1.309930 + 0.117543I$<br>$a = 0.316375 - 0.663440I$<br>$b = -1.34292 - 1.16008I$ | $3.14095 + 1.67218I$ | $5.22475 - 5.27037I$ |
| $u = 1.309930 - 0.117543I$<br>$a = 0.316375 + 0.663440I$<br>$b = -1.34292 + 1.16008I$ | $3.14095 - 1.67218I$ | $5.22475 + 5.27037I$ |
| $u = 0.615545 + 0.285268I$<br>$a = -1.15416 - 0.96062I$<br>$b = -0.825497 + 0.193760I$ | $3.09785 - 5.37231I$ | $7.44446 + 8.13967I$ |
| $u = 0.615545 - 0.285268I$<br>$a = -1.15416 + 0.96062I$<br>$b = -0.825497 - 0.193760I$ | $3.09785 + 5.37231I$ | $7.44446 - 8.13967I$ |
| $u = -0.430788 + 0.491614I$<br>$a = 0.621346 - 1.033540I$<br>$b = 0.580994 + 0.439922I$ | $1.25129 + 1.87641I$ | $1.243241 + 0.649208I$ |
| $u = -0.430788 - 0.491614I$<br>$a = 0.621346 + 1.033540I$<br>$b = 0.580994 - 0.439922I$ | $1.25129 - 1.87641I$ | $1.243241 - 0.649208I$ |
| $u = -1.54136$<br>$a = 0.421027$<br>$b = -1.72637$ | 6.63958 | 5.81920 |
| $u = -1.56893 + 0.19019I$<br>$a = 0.584862 - 0.468778I$<br>$b = -0.412874 - 0.758253I$ | $13.1270 - 6.4884I$ | $4.93291 + 3.21494I$ |
| $u = -1.56893 - 0.19019I$<br>$a = 0.584862 + 0.468778I$<br>$b = -0.412874 + 0.758253I$ | $13.1270 + 6.4884I$ | $4.93291 - 3.21494I$ |
| $u = 0.350431 + 0.225016I$<br>$a = -0.677449 - 0.523119I$<br>$b = -1.095810 + 0.583351I$ | $-0.320379 - 0.358730I$ | $-0.69353 - 3.81560I$ |

| Solutions to $I_2^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = \ 0.350431 - 0.225016I$<br>$a = -0.677449 + 0.523119I$<br>$b = -1.095810 - 0.583351I$ | $-0.320379 + 0.358730I$ | $-0.69353 + 3.81560I$ |
| $u = \ 1.61370 + 0.15698I$<br>$a = -0.658388 - 0.364034I$<br>$b = \ 0.549354 - 0.583456I$ | $13.74470 + 0.17618I$ | $5.50808 + 2.02702I$ |
| $u = \ 1.61370 - 0.15698I$<br>$a = -0.658388 + 0.364034I$<br>$b = \ 0.549354 + 0.583456I$ | $13.74470 - 0.17618I$ | $5.50808 - 2.02702I$ |
| $u = \ 1.67680$<br>$a = -0.751232$<br>$b = \ 0.734771$ | 9.85602 | $-14.8610$ |

**III. u-Polynomials**

| Crossings | u-Polynomials at each crossing |
|---|---|
| $c_1$ | $(u^{24}-10u^{23}+\cdots-17u+1)(u^{95}+27u^{94}+\cdots+25u+1)$ |
| $c_2$ | $(u^{24}-5u^{22}+\cdots+u+1)(u^{95}-u^{94}+\cdots+u+1)$ |
| $c_3$ | $(u^{24}+4u^{22}+\cdots-u-1)(u^{95}-u^{94}+\cdots-3835u+845)$ |
| $c_4, c_5$ | $(u^{24}-14u^{22}+\cdots+2u-1)(u^{95}+u^{94}+\cdots+998u+229)$ |
| $c_6$ | $(u^{24}-5u^{22}+\cdots-u+1)(u^{95}-u^{94}+\cdots+u+1)$ |
| $c_7$ | $(u^{24}+10u^{23}+\cdots+17u+1)(u^{95}+27u^{94}+\cdots+25u+1)$ |
| $c_8$ | $(u^{24}-4u^{23}+\cdots-4u+1)(u^{95}+u^{94}+\cdots-18u+1)$ |
| $c_9$ | $(u^{24}+4u^{22}+\cdots-2u+1)(u^{95}+7u^{94}+\cdots-15768u+1413)$ |
| $c_{10}$ | $(u^{24}-14u^{22}+\cdots-2u-1)(u^{95}+u^{94}+\cdots+998u+229)$ |
| $c_{11}$ | $(u^{24}+4u^{23}+\cdots+4u+1)(u^{95}+u^{94}+\cdots-18u+1)$ |
| $c_{12}$ | $(u^{24}-3u^{23}+\cdots-3u-1)(u^{95}+8u^{94}+\cdots+17711u+2447)$ |

**IV. Riley Polynomials**

| Crossings | Riley Polynomials at each crossing |
|---|---|
| $c_1, c_7$ | $(y^{24}+18y^{23}+\cdots-21y+1)(y^{95}+93y^{94}+\cdots+225y-1)$ |
| $c_2, c_6$ | $(y^{24}-10y^{23}+\cdots-17y+1)(y^{95}-27y^{94}+\cdots+25y-1)$ |
| $c_3$ | $(y^{24}+8y^{23}+\cdots-3y+1)(y^{95}+31y^{94}+\cdots-1.23074\times10^{7}y-714025)$ |
| $c_4, c_5, c_{10}$ | $(y^{24}-28y^{23}+\cdots-12y+1)$ $\cdot(y^{95}-109y^{94}+\cdots+3539736y-52441)$ |
| $c_8, c_{11}$ | $(y^{24}-24y^{23}+\cdots-16y+1)(y^{95}-93y^{94}+\cdots+92y-1)$ |
| $c_9$ | $(y^{24}+8y^{23}+\cdots+14y+1)$ $\cdot(y^{95}+35y^{94}+\cdots+42933762y-1996569)$ |
| $c_{12}$ | $(y^{24}-11y^{23}+\cdots-3y+1)$ $\cdot(y^{95}-36y^{94}+\cdots+298346619y-5987809)$ |