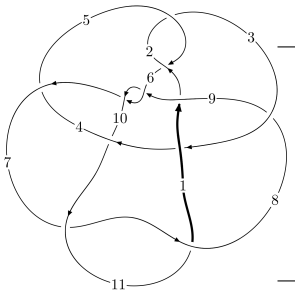
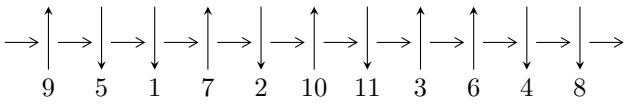
# $11a_{289}$ $(K11a_{289})$




A knot diagram[1]

**Linearized knot diagam**




**Solving Sequence**

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

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

$$\begin{aligned} I_1^u = \langle & -2.33884 \times 10^{224} u^{90} + 2.00374 \times 10^{224} u^{89} + \cdots + 1.85594 \times 10^{224} b - 1.47160 \times 10^{225}, \\ & - 6.91616 \times 10^{224} u^{90} - 7.19072 \times 10^{224} u^{89} + \cdots + 1.85594 \times 10^{224} a + 1.27904 \times 10^{226}, \\ & u^{91} + u^{90} + \cdots - 38u - 1 \rangle \\ I_2^u = \langle & -21753030 u^{18} + 6745274 u^{17} + \cdots + 4200133 b - 80944935, \\ & 2155133 u^{18} - 644977 u^{17} + \cdots + 85717 a + 7203604,\ u^{19} - 7u^{17} + \cdots + 4u + 1 \rangle \end{aligned}$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 110 representations.

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

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

**I.** $\boldsymbol{I_1^u = \langle -2.34 \times 10^{224} u^{90} + 2.00 \times 10^{224} u^{89} + \cdots + 1.86 \times 10^{224} b - 1.47 \times 10^{225},\ -6.92 \times 10^{224} u^{90} - 7.19 \times 10^{224} u^{89} + \cdots + 1.86 \times 10^{224} a + 1.28 \times 10^{226},\ u^{91} + u^{90} + \cdots - 38u - 1 \rangle}$

**(i) Arc colorings**

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

$$a_{11} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} 3.72650u^{90} + 3.87443u^{89} + \cdots - 1799.70u - 68.9163 \\ 1.26019u^{90} - 1.07963u^{89} + \cdots + 176.719u + 7.92913 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 4.76767u^{90} + 3.17976u^{89} + \cdots - 1632.33u - 61.1351 \\ 3.22294u^{90} - 1.26978u^{89} + \cdots + 111.798u + 6.19329 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 7.99747u^{90} + 1.78196u^{89} + \cdots - 1075.61u - 44.5830 \\ 6.35087u^{90} - 0.377320u^{89} + \cdots - 261.022u - 6.24056 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u \\ u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 6.40251u^{90} + 3.66084u^{89} + \cdots - 1896.70u - 71.4040 \\ 3.93620u^{90} - 1.29323u^{89} + \cdots + 79.7178u + 5.44137 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -1.49138u^{90} + 0.843199u^{89} + \cdots + 578.943u + 31.1708 \\ -1.35638u^{90} + 0.0358487u^{89} + \cdots + 49.5120u + 0.205445 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 5.66600u^{90} - 1.49334u^{89} + \cdots + 485.280u + 37.8985 \\ 8.67471u^{90} + 0.525243u^{89} + \cdots - 589.369u - 19.3718 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -5.66191u^{90} - 2.29724u^{89} + \cdots + 1339.51u + 68.3501 \\ -2.09349u^{90} + 1.35317u^{89} + \cdots - 175.967u - 8.47779 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -5.66191u^{90} - 2.29724u^{89} + \cdots + 1339.51u + 68.3501 \\ -2.09349u^{90} + 1.35317u^{89} + \cdots - 175.967u - 8.47779 \end{pmatrix}$$

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

**(iii) Cusp Shapes** $= -17.9996u^{90} - 14.8667u^{89} + \cdots + 4221.76u + 150.087$

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

| Crossings | u-Polynomials at each crossing |
|---|---|
| $c_1$ | $u^{91} - 5u^{90} + \cdots + 244460u - 108400$ |
| $c_2, c_5$ | $u^{91} + 6u^{90} + \cdots + 757u + 1751$ |
| $c_3$ | $u^{91} - 10u^{90} + \cdots - 36u + 1$ |
| $c_4$ | $u^{91} + 9u^{90} + \cdots + 25u + 1$ |
| $c_6, c_9$ | $u^{91} - 2u^{90} + \cdots - 37u + 1117$ |
| $c_7, c_{11}$ | $u^{91} + u^{90} + \cdots - 38u - 1$ |
| $c_8$ | $u^{91} + u^{90} + \cdots + 80u + 37$ |
| $c_{10}$ | $u^{91} + 2u^{90} + \cdots - 46u + 4$ |

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

| Crossings | Riley Polynomials at each crossing |
|---|---|
| $c_1$ | $y^{91} - 37y^{90} + \cdots + 248464929200y - 11750560000$ |
| $c_2, c_5$ | $y^{91} + 58y^{90} + \cdots - 43405067y - 3066001$ |
| $c_3$ | $y^{91} - 10y^{90} + \cdots + 128y - 1$ |
| $c_4$ | $y^{91} - 3y^{90} + \cdots + 353y - 1$ |
| $c_6, c_9$ | $y^{91} - 74y^{90} + \cdots - 20772597y - 1247689$ |
| $c_7, c_{11}$ | $y^{91} - 65y^{90} + \cdots + 218y - 1$ |
| $c_8$ | $y^{91} + 13y^{90} + \cdots - 186888y - 1369$ |
| $c_{10}$ | $y^{91} + 48y^{89} + \cdots - 1780y - 16$ |

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

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 0.154514 + 1.000430I$<br>$a = 0.105188 + 0.509185I$<br>$b = 0.600669 - 0.721061I$ | $3.06412 + 2.24647I$ | 0 |
| $u = 0.154514 - 1.000430I$<br>$a = 0.105188 - 0.509185I$<br>$b = 0.600669 + 0.721061I$ | $3.06412 - 2.24647I$ | 0 |
| $u = -0.925483 + 0.337630I$<br>$a = 2.22116 + 0.06041I$<br>$b = -0.113347 - 0.257600I$ | $5.58118 + 7.27652I$ | 0 |
| $u = -0.925483 - 0.337630I$<br>$a = 2.22116 - 0.06041I$<br>$b = -0.113347 + 0.257600I$ | $5.58118 - 7.27652I$ | 0 |
| $u = 1.021280 + 0.097812I$<br>$a = 0.013238 + 0.538865I$<br>$b = 0.028178 - 1.308020I$ | $4.96637 + 0.14906I$ | 0 |
| $u = 1.021280 - 0.097812I$<br>$a = 0.013238 - 0.538865I$<br>$b = 0.028178 + 1.308020I$ | $4.96637 - 0.14906I$ | 0 |
| $u = 0.242468 + 1.000660I$<br>$a = 0.286579 - 0.228220I$<br>$b = -0.338311 + 0.628821I$ | $1.90649 + 1.11668I$ | 0 |
| $u = 0.242468 - 1.000660I$<br>$a = 0.286579 + 0.228220I$<br>$b = -0.338311 - 0.628821I$ | $1.90649 - 1.11668I$ | 0 |
| $u = 0.177856 + 0.940264I$<br>$a = -0.0109358 - 0.0657220I$<br>$b = 0.615843 + 1.111660I$ | $4.35772 - 5.92655I$ | 0 |
| $u = 0.177856 - 0.940264I$<br>$a = -0.0109358 + 0.0657220I$<br>$b = 0.615843 - 1.111660I$ | $4.35772 + 5.92655I$ | 0 |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 0.853700 + 0.606656I$<br>$a = 0.672847 + 0.305259I$<br>$b = -0.160836 + 0.461008I$ | $2.01129 + 0.63862I$ | 0 |
| $u = 0.853700 - 0.606656I$<br>$a = 0.672847 - 0.305259I$<br>$b = -0.160836 - 0.461008I$ | $2.01129 - 0.63862I$ | 0 |
| $u = -0.254816 + 0.881587I$<br>$a = 0.137178 - 0.146852I$<br>$b = 0.310437 - 0.630125I$ | $0.01106 + 2.05657I$ | 0 |
| $u = -0.254816 - 0.881587I$<br>$a = 0.137178 + 0.146852I$<br>$b = 0.310437 + 0.630125I$ | $0.01106 - 2.05657I$ | 0 |
| $u = -0.638896 + 0.646429I$<br>$a = -0.178496 + 1.303700I$<br>$b = 0.198949 - 0.951481I$ | $6.40508 - 3.26778I$ | 0 |
| $u = -0.638896 - 0.646429I$<br>$a = -0.178496 - 1.303700I$<br>$b = 0.198949 + 0.951481I$ | $6.40508 + 3.26778I$ | 0 |
| $u = 0.445566 + 0.776682I$<br>$a = -0.420019 - 0.743253I$<br>$b = 0.648716 - 1.061710I$ | $8.11082 + 3.81719I$ | 0 |
| $u = 0.445566 - 0.776682I$<br>$a = -0.420019 + 0.743253I$<br>$b = 0.648716 + 1.061710I$ | $8.11082 - 3.81719I$ | 0 |
| $u = -1.102810 + 0.120356I$<br>$a = 1.112970 + 0.716630I$<br>$b = 1.03514 + 1.52926I$ | $-0.86513 + 3.43410I$ | 0 |
| $u = -1.102810 - 0.120356I$<br>$a = 1.112970 - 0.716630I$<br>$b = 1.03514 - 1.52926I$ | $-0.86513 - 3.43410I$ | 0 |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 1.036080 + 0.399219I$<br>$a = -1.86514 - 0.23806I$<br>$b = -1.39914 - 1.31114I$ | $6.27718 - 8.20883I$ | 0 |
| $u = 1.036080 - 0.399219I$<br>$a = -1.86514 + 0.23806I$<br>$b = -1.39914 + 1.31114I$ | $6.27718 + 8.20883I$ | 0 |
| $u = -1.122850 + 0.028210I$<br>$a = -1.87730 + 0.53457I$<br>$b = -1.36440 + 1.26320I$ | $-3.52236 + 1.23004I$ | 0 |
| $u = -1.122850 - 0.028210I$<br>$a = -1.87730 - 0.53457I$<br>$b = -1.36440 - 1.26320I$ | $-3.52236 - 1.23004I$ | 0 |
| $u = 1.088340 + 0.354136I$<br>$a = 1.88933 - 0.00662I$<br>$b = 0.689405 + 0.508116I$ | $1.41670 - 5.22000I$ | 0 |
| $u = 1.088340 - 0.354136I$<br>$a = 1.88933 + 0.00662I$<br>$b = 0.689405 - 0.508116I$ | $1.41670 + 5.22000I$ | 0 |
| $u = 0.107319 + 1.155390I$<br>$a = -0.0450787 + 0.0302813I$<br>$b = -0.666347 - 1.032170I$ | $8.3586 - 11.6518I$ | 0 |
| $u = 0.107319 - 1.155390I$<br>$a = -0.0450787 - 0.0302813I$<br>$b = -0.666347 + 1.032170I$ | $8.3586 + 11.6518I$ | 0 |
| $u = -1.160610 + 0.125188I$<br>$a = 2.07171 + 0.76197I$<br>$b = 0.835112 - 0.755768I$ | $2.65519 + 7.24321I$ | 0 |
| $u = -1.160610 - 0.125188I$<br>$a = 2.07171 - 0.76197I$<br>$b = 0.835112 + 0.755768I$ | $2.65519 - 7.24321I$ | 0 |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u=-1.18021$<br>$a=-2.85483$<br>$b=-1.34979$ | $-2.49691$ | 0 |
| $u=1.186300+0.048699I$<br>$a=-1.59766-0.40123I$<br>$b=-0.878174+0.318552I$ | $-4.89749-1.53348I$ | 0 |
| $u=1.186300-0.048699I$<br>$a=-1.59766+0.40123I$<br>$b=-0.878174-0.318552I$ | $-4.89749+1.53348I$ | 0 |
| $u=-1.182020+0.116137I$<br>$a=1.273900-0.281879I$<br>$b=1.120750-0.771869I$ | $-2.65839+0.87469I$ | 0 |
| $u=-1.182020-0.116137I$<br>$a=1.273900+0.281879I$<br>$b=1.120750+0.771869I$ | $-2.65839-0.87469I$ | 0 |
| $u=1.180210+0.162238I$<br>$a=1.040030-0.496367I$<br>$b=0.644086+0.744559I$ | $-2.79141-4.21603I$ | 0 |
| $u=1.180210-0.162238I$<br>$a=1.040030+0.496367I$<br>$b=0.644086-0.744559I$ | $-2.79141+4.21603I$ | 0 |
| $u=-0.652969+0.474285I$<br>$a=-1.09565-1.00396I$<br>$b=-0.972670+0.215028I$ | $1.29512+2.45316I$ | 0 |
| $u=-0.652969-0.474285I$<br>$a=-1.09565+1.00396I$<br>$b=-0.972670-0.215028I$ | $1.29512-2.45316I$ | 0 |
| $u=1.189900+0.165844I$<br>$a=1.98196-0.66468I$<br>$b=2.04084-0.86369I$ | $2.09247-7.92588I$ | 0 |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 1.189900 - 0.165844I$<br>$a = 1.98196 + 0.66468I$<br>$b = 2.04084 + 0.86369I$ | $2.09247 + 7.92588I$ | 0 |
| $u = -1.157580 + 0.336921I$<br>$a = -0.556616 - 0.531666I$<br>$b = -0.493201 - 0.788878I$ | $-1.22092 + 2.30068I$ | 0 |
| $u = -1.157580 - 0.336921I$<br>$a = -0.556616 + 0.531666I$<br>$b = -0.493201 + 0.788878I$ | $-1.22092 - 2.30068I$ | 0 |
| $u = 1.21568$<br>$a = -2.64009$<br>$b = -2.59413$ | $-3.13944$ | 0 |
| $u = 0.384760 + 0.675310I$<br>$a = -0.278767 - 0.486904I$<br>$b = -0.344151 + 0.878398I$ | $3.59264 + 1.28182I$ | $5.23084 + 0.I$ |
| $u = 0.384760 - 0.675310I$<br>$a = -0.278767 + 0.486904I$<br>$b = -0.344151 - 0.878398I$ | $3.59264 - 1.28182I$ | $5.23084 + 0.I$ |
| $u = 0.742449 + 0.188337I$<br>$a = -1.55951 - 1.79492I$<br>$b = -0.000176 - 0.473465I$ | $5.66154 - 1.41791I$ | $1.45782 + 3.29961I$ |
| $u = 0.742449 - 0.188337I$<br>$a = -1.55951 + 1.79492I$<br>$b = -0.000176 + 0.473465I$ | $5.66154 + 1.41791I$ | $1.45782 - 3.29961I$ |
| $u = -1.206280 + 0.364725I$<br>$a = 2.03871 - 0.29594I$<br>$b = 1.30237 - 1.17332I$ | $5.59028 + 4.35769I$ | 0 |
| $u = -1.206280 - 0.364725I$<br>$a = 2.03871 + 0.29594I$<br>$b = 1.30237 + 1.17332I$ | $5.59028 - 4.35769I$ | 0 |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u=-0.111033+0.728216I$<br>$a=\ \ 0.126141-0.073845I$<br>$b=-0.716226-1.210120I$ | $8.95711-0.33313I$ | $8.32553+0.37349I$ |
| $u=-0.111033-0.728216I$<br>$a=\ \ 0.126141+0.073845I$<br>$b=-0.716226+1.210120I$ | $8.95711+0.33313I$ | $8.32553-0.37349I$ |
| $u=-0.108439+0.723146I$<br>$a=\ \ 1.007320-0.414367I$<br>$b=-0.285144+0.976899I$ | $3.40759+0.78642I$ | $2.69705-0.95790I$ |
| $u=-0.108439-0.723146I$<br>$a=\ \ 1.007320+0.414367I$<br>$b=-0.285144-0.976899I$ | $3.40759-0.78642I$ | $2.69705+0.95790I$ |
| $u=-1.252140+0.238107I$<br>$a=-0.889184+0.812716I$<br>$b=-0.0532821+0.1257370I$ | $-0.24585+2.81188I$ | $0$ |
| $u=-1.252140-0.238107I$<br>$a=-0.889184-0.812716I$<br>$b=-0.0532821-0.1257370I$ | $-0.24585-2.81188I$ | $0$ |
| $u=-0.076027+1.282950I$<br>$a=\ \ 0.011447+0.142790I$<br>$b=-0.464789+0.521507I$ | $2.33628+5.25645I$ | $0$ |
| $u=-0.076027-1.282950I$<br>$a=\ \ 0.011447-0.142790I$<br>$b=-0.464789-0.521507I$ | $2.33628-5.25645I$ | $0$ |
| $u=\ \ 1.275300+0.163827I$<br>$a=\ \ 0.688235+1.032460I$<br>$b=\ \ 0.55547+1.93773I$ | $-1.17722-3.75603I$ | $0$ |
| $u=\ \ 1.275300-0.163827I$<br>$a=\ \ 0.688235-1.032460I$<br>$b=\ \ 0.55547-1.93773I$ | $-1.17722+3.75603I$ | $0$ |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 1.307530 + 0.476334I$<br>$a = 1.246040 - 0.069703I$<br>$b = 0.898713 + 1.080480I$ | $-1.76672 - 6.33798I$ | 0 |
| $u = 1.307530 - 0.476334I$<br>$a = 1.246040 + 0.069703I$<br>$b = 0.898713 - 1.080480I$ | $-1.76672 + 6.33798I$ | 0 |
| $u = 1.31886 + 0.56606I$<br>$a = -1.308320 + 0.259548I$<br>$b = -0.787261 - 1.024100I$ | $-0.57560 - 7.98468I$ | 0 |
| $u = 1.31886 - 0.56606I$<br>$a = -1.308320 - 0.259548I$<br>$b = -0.787261 + 1.024100I$ | $-0.57560 + 7.98468I$ | 0 |
| $u = 1.37950 + 0.43905I$<br>$a = -1.370230 - 0.119084I$<br>$b = -1.078280 - 0.817964I$ | $-4.95903 - 6.92588I$ | 0 |
| $u = 1.37950 - 0.43905I$<br>$a = -1.370230 + 0.119084I$<br>$b = -1.078280 + 0.817964I$ | $-4.95903 + 6.92588I$ | 0 |
| $u = -1.38281 + 0.43401I$<br>$a = -1.61543 + 0.36310I$<br>$b = -1.15059 + 1.32568I$ | $-0.50912 + 10.85460I$ | 0 |
| $u = -1.38281 - 0.43401I$<br>$a = -1.61543 - 0.36310I$<br>$b = -1.15059 - 1.32568I$ | $-0.50912 - 10.85460I$ | 0 |
| $u = -1.42369 + 0.35800I$<br>$a = 0.945721 - 0.055490I$<br>$b = 0.859159 - 0.722591I$ | $-3.55361 + 0.99335I$ | 0 |
| $u = -1.42369 - 0.35800I$<br>$a = 0.945721 + 0.055490I$<br>$b = 0.859159 + 0.722591I$ | $-3.55361 - 0.99335I$ | 0 |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u=-1.36659+0.56938I$<br>$a=-0.664984-0.131205I$<br>$b=-0.556829-0.042970I$ | $-1.16547+2.61720I$ | 0 |
| $u=-1.36659-0.56938I$<br>$a=-0.664984+0.131205I$<br>$b=-0.556829+0.042970I$ | $-1.16547-2.61720I$ | 0 |
| $u=-1.29894+0.73144I$<br>$a=\ 0.745343+0.279706I$<br>$b=\ 0.921207-0.133086I$ | $-0.26793+3.39964I$ | 0 |
| $u=-1.29894-0.73144I$<br>$a=\ 0.745343-0.279706I$<br>$b=\ 0.921207+0.133086I$ | $-0.26793-3.39964I$ | 0 |
| $u=-1.40518+0.52888I$<br>$a=\ 1.50498-0.17996I$<br>$b=\ 1.09047-1.26911I$ | $3.6407+17.5515I$ | 0 |
| $u=-1.40518-0.52888I$<br>$a=\ 1.50498+0.17996I$<br>$b=\ 1.09047+1.26911I$ | $3.6407-17.5515I$ | 0 |
| $u=\ 1.40186+0.55296I$<br>$a=\ 1.263570+0.016688I$<br>$b=\ 1.12314+0.88528I$ | $-2.28030-11.49490I$ | 0 |
| $u=\ 1.40186-0.55296I$<br>$a=\ 1.263570-0.016688I$<br>$b=\ 1.12314-0.88528I$ | $-2.28030+11.49490I$ | 0 |
| $u=\ 1.53245+0.10660I$<br>$a=\ 0.161918-0.793466I$<br>$b=\ 0.293938-0.826547I$ | $3.82025-2.68111I$ | 0 |
| $u=\ 1.53245-0.10660I$<br>$a=\ 0.161918+0.793466I$<br>$b=\ 0.293938+0.826547I$ | $3.82025+2.68111I$ | 0 |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u=-1.44221+0.56336I$<br>$a=-0.816698-0.016295I$<br>$b=-0.598691+0.733628I$ | $-3.54164+5.12239I$ | 0 |
| $u=-1.44221-0.56336I$<br>$a=-0.816698+0.016295I$<br>$b=-0.598691-0.733628I$ | $-3.54164-5.12239I$ | 0 |
| $u=-0.368779+0.110817I$<br>$a=-1.79536-2.58891I$<br>$b=-0.816998-0.117532I$ | $1.19636+2.45261I$ | $-0.717024-0.766803I$ |
| $u=-0.368779-0.110817I$<br>$a=-1.79536+2.58891I$<br>$b=-0.816998+0.117532I$ | $1.19636-2.45261I$ | $-0.717024+0.766803I$ |
| $u=1.38721+1.01014I$<br>$a=-0.186583-0.220285I$<br>$b=0.172084-0.445375I$ | $4.73531+4.60663I$ | 0 |
| $u=1.38721-1.01014I$<br>$a=-0.186583+0.220285I$<br>$b=0.172084+0.445375I$ | $4.73531-4.60663I$ | 0 |
| $u=-0.178246+0.041738I$<br>$a=1.23300-3.24629I$<br>$b=0.634063-0.439863I$ | $-1.14670+1.01760I$ | $-7.01569-3.15061I$ |
| $u=-0.178246-0.041738I$<br>$a=1.23300+3.24629I$<br>$b=0.634063+0.439863I$ | $-1.14670-1.01760I$ | $-7.01569+3.15061I$ |
| $u=-0.0746543+0.0952110I$<br>$a=1.77275+9.76874I$<br>$b=-1.077510+0.073135I$ | $5.66062+6.42858I$ | $4.18077-5.08743I$ |
| $u=-0.0746543-0.0952110I$<br>$a=1.77275-9.76874I$<br>$b=-1.077510-0.073135I$ | $5.66062-6.42858I$ | $4.18077+5.08743I$ |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = -0.0762905$ | | |
| $a = -9.34370$ | 0.594707 | 14.6100 |
| $b = \ \ 1.33912$ | | |

**II.**

$\boldsymbol{I_2^u = \langle -2.18\times 10^7 u^{18} + 6.75\times 10^6 u^{17} + \cdots + 4.20\times 10^6 b - 8.09\times 10^7,\ 2.16\times 10^6 u^{18} - 6.45\times 10^5 u^{17} + \cdots + 8.57\times 10^4 a + 7.20\times 10^6,\ u^{19} - 7u^{17} + \cdots + 4u + 1\rangle}$

**(i) Arc colorings**

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

$$a_{11} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} -25.1424u^{18} + 7.52449u^{17} + \cdots - 55.3865u - 84.0394 \\ 5.17913u^{18} - 1.60597u^{17} + \cdots + 15.0703u + 19.2720 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -17.0714u^{18} + 5.18151u^{17} + \cdots - 35.3606u - 57.2429 \\ 6.31136u^{18} - 1.60760u^{17} + \cdots + 16.3713u + 21.6150 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -13.3715u^{18} + 4.54857u^{17} + \cdots - 35.2371u - 43.3166 \\ 1.94298u^{18} - 0.557214u^{17} + \cdots + 8.03710u + 6.25202 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u \\ u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -22.4896u^{18} + 6.87259u^{17} + \cdots - 49.1862u - 74.9089 \\ 7.83195u^{18} - 2.25787u^{17} + \cdots + 21.2706u + 28.4025 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -26.8720u^{18} + 8.45143u^{17} + \cdots - 65.5699u - 88.5854 \\ 8.06329u^{18} - 2.48624u^{17} + \cdots + 20.4130u + 24.7635 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 3.55883u^{18} - 1.36223u^{17} + \cdots + 19.7553u + 11.9319 \\ 1.28891u^{18} - 0.0106904u^{17} + \cdots - 1.10453u + 5.13136 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -9.79070u^{18} + 3.22584u^{17} + \cdots - 31.9356u - 28.8417 \\ -1.34165u^{18} + 0.268330u^{17} + \cdots + 3.99462u - 3.76913 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -9.79070u^{18} + 3.22584u^{17} + \cdots - 31.9356u - 28.8417 \\ -1.34165u^{18} + 0.268330u^{17} + \cdots + 3.99462u - 3.76913 \end{pmatrix}$$

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

**(iii) Cusp Shapes** $= -\frac{15291933}{4200133}u^{18} + \frac{12321059}{4200133}u^{17} + \cdots - \frac{152094849}{4200133}u - \frac{21932593}{4200133}$

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

| Crossings | u-Polynomials at each crossing |
|---|---|
| $c_1$ | $u^{19} - u^{17} + \cdots - 6u + 1$ |
| $c_2$ | $u^{19} - 7u^{18} + \cdots + 3u - 1$ |
| $c_3$ | $u^{19} + 3u^{18} + \cdots + 2u + 1$ |
| $c_4$ | $u^{19} + 2u^{18} + \cdots + u - 1$ |
| $c_5$ | $u^{19} + 7u^{18} + \cdots + 3u + 1$ |
| $c_6$ | $u^{19} - u^{18} + \cdots + 5u + 1$ |
| $c_7$ | $u^{19} - 7u^{17} + \cdots + 4u - 1$ |
| $c_8$ | $u^{19} + 2u^{17} + \cdots - 4u - 1$ |
| $c_9$ | $u^{19} + u^{18} + \cdots + 5u - 1$ |
| $c_{10}$ | $u^{19} + u^{18} + \cdots - 3u - 1$ |
| $c_{11}$ | $u^{19} - 7u^{17} + \cdots + 4u + 1$ |

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

| Crossings | Riley Polynomials at each crossing |
|---|---|
| $c_1$ | $y^{19} - 2y^{18} + \cdots + 46y - 1$ |
| $c_2, c_5$ | $y^{19} + 9y^{18} + \cdots - 15y - 1$ |
| $c_3$ | $y^{19} - 11y^{18} + \cdots - 4y - 1$ |
| $c_4$ | $y^{19} - 4y^{18} + \cdots + 13y - 1$ |
| $c_6, c_9$ | $y^{19} - 15y^{18} + \cdots + 31y - 1$ |
| $c_7, c_{11}$ | $y^{19} - 14y^{18} + \cdots + 34y - 1$ |
| $c_8$ | $y^{19} + 4y^{18} + \cdots + 20y - 1$ |
| $c_{10}$ | $y^{19} - 5y^{18} + \cdots + 7y - 1$ |

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

| Solutions to $I_2^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u=-0.902050+0.440922I$<br>$a=\ 1.29528+0.89523I$<br>$b=\ 0.885527+0.260151I$ | $1.07481+3.59303I$ | $1.85303-6.27936I$ |
| $u=-0.902050-0.440922I$<br>$a=\ 1.29528-0.89523I$<br>$b=\ 0.885527-0.260151I$ | $1.07481-3.59303I$ | $1.85303+6.27936I$ |
| $u=\ 1.046970+0.221511I$<br>$a=\ 2.62393-0.46352I$<br>$b=\ 1.231950+0.460773I$ | $4.18748-7.46692I$ | $0.68601+7.12186I$ |
| $u=\ 1.046970-0.221511I$<br>$a=\ 2.62393+0.46352I$<br>$b=\ 1.231950-0.460773I$ | $4.18748+7.46692I$ | $0.68601-7.12186I$ |
| $u=\ 0.181662+1.102620I$<br>$a=\ 0.045455+0.295621I$<br>$b=\ 0.374502-0.679785I$ | $1.52252+1.49664I$ | $-3.89516-6.49895I$ |
| $u=\ 0.181662-1.102620I$<br>$a=\ 0.045455-0.295621I$<br>$b=\ 0.374502+0.679785I$ | $1.52252-1.49664I$ | $-3.89516+6.49895I$ |
| $u=\ 1.15625$<br>$a=-2.93116$<br>$b=-1.75912$ | $-2.00951$ | $6.42100$ |
| $u=-1.20332$<br>$a=-2.14423$<br>$b=-1.89620$ | $-4.29705$ | $-11.5820$ |
| $u=-1.190800+0.183606I$<br>$a=\ 0.356038-0.628895I$<br>$b=\ 0.22938-1.46060I$ | $-2.76558+2.81350I$ | $-6.40568-3.99689I$ |
| $u=-1.190800-0.183606I$<br>$a=\ 0.356038+0.628895I$<br>$b=\ 0.22938+1.46060I$ | $-2.76558-2.81350I$ | $-6.40568+3.99689I$ |

| Solutions to $I_2^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = \ 1.074980 + 0.774345I$<br>$a = \ 0.107142 - 0.133196I$<br>$b = -0.376064 + 0.262990I$ | $4.37500 + 4.45907I$ | $-2.91018 - 2.82289I$ |
| $u = \ 1.074980 - 0.774345I$<br>$a = \ 0.107142 + 0.133196I$<br>$b = -0.376064 - 0.262990I$ | $4.37500 - 4.45907I$ | $-2.91018 + 2.82289I$ |
| $u = \ 1.34582 + 0.53742I$<br>$a = -1.229490 + 0.069469I$<br>$b = -0.819545 - 1.038970I$ | $-2.28215 - 7.33988I$ | $-2.94229 + 7.63490I$ |
| $u = \ 1.34582 - 0.53742I$<br>$a = -1.229490 - 0.069469I$<br>$b = -0.819545 + 1.038970I$ | $-2.28215 + 7.33988I$ | $-2.94229 - 7.63490I$ |
| $u = \ 0.396490$<br>$a = -0.627182$<br>$b = \ 1.04929$ | $0.209729$ | $-6.87110$ |
| $u = -1.43107 + 0.74517I$<br>$a = -0.566803 - 0.131223I$<br>$b = -0.593080 + 0.191455I$ | $-1.39573 + 2.97014I$ | $-10.6875 - 11.6449I$ |
| $u = -1.43107 - 0.74517I$<br>$a = -0.566803 + 0.131223I$<br>$b = -0.593080 - 0.191455I$ | $-1.39573 - 2.97014I$ | $-10.6875 + 11.6449I$ |
| $u = -0.300228 + 0.011192I$<br>$a = -1.28027 - 4.35057I$<br>$b = -0.129658 + 1.005580I$ | $6.55674 - 0.70090I$ | $7.81789 - 0.38025I$ |
| $u = -0.300228 - 0.011192I$<br>$a = -1.28027 + 4.35057I$<br>$b = -0.129658 - 1.005580I$ | $6.55674 + 0.70090I$ | $7.81789 + 0.38025I$ |

## III. u-Polynomials

| Crossings | u-Polynomials at each crossing |
|---|---|
| $c_1$ | $(u^{19}-u^{17}+\cdots-6u+1)(u^{91}-5u^{90}+\cdots+244460u-108400)$ |
| $c_2$ | $(u^{19}-7u^{18}+\cdots+3u-1)(u^{91}+6u^{90}+\cdots+757u+1751)$ |
| $c_3$ | $(u^{19}+3u^{18}+\cdots+2u+1)(u^{91}-10u^{90}+\cdots-36u+1)$ |
| $c_4$ | $(u^{19}+2u^{18}+\cdots+u-1)(u^{91}+9u^{90}+\cdots+25u+1)$ |
| $c_5$ | $(u^{19}+7u^{18}+\cdots+3u+1)(u^{91}+6u^{90}+\cdots+757u+1751)$ |
| $c_6$ | $(u^{19}-u^{18}+\cdots+5u+1)(u^{91}-2u^{90}+\cdots-37u+1117)$ |
| $c_7$ | $(u^{19}-7u^{17}+\cdots+4u-1)(u^{91}+u^{90}+\cdots-38u-1)$ |
| $c_8$ | $(u^{19}+2u^{17}+\cdots-4u-1)(u^{91}+u^{90}+\cdots+80u+37)$ |
| $c_9$ | $(u^{19}+u^{18}+\cdots+5u-1)(u^{91}-2u^{90}+\cdots-37u+1117)$ |
| $c_{10}$ | $(u^{19}+u^{18}+\cdots-3u-1)(u^{91}+2u^{90}+\cdots-46u+4)$ |
| $c_{11}$ | $(u^{19}-7u^{17}+\cdots+4u+1)(u^{91}+u^{90}+\cdots-38u-1)$ |

**IV. Riley Polynomials**

| Crossings | Riley Polynomials at each crossing |
|---|---|
| $c_1$ | $(y^{19}-2y^{18}+\cdots+46y-1)$ $\cdot(y^{91}-37y^{90}+\cdots+248464929200y-11750560000)$ |
| $c_2, c_5$ | $(y^{19}+9y^{18}+\cdots-15y-1)$ $\cdot(y^{91}+58y^{90}+\cdots-43405067y-3066001)$ |
| $c_3$ | $(y^{19}-11y^{18}+\cdots-4y-1)(y^{91}-10y^{90}+\cdots+128y-1)$ |
| $c_4$ | $(y^{19}-4y^{18}+\cdots+13y-1)(y^{91}-3y^{90}+\cdots+353y-1)$ |
| $c_6, c_9$ | $(y^{19}-15y^{18}+\cdots+31y-1)$ $\cdot(y^{91}-74y^{90}+\cdots-20772597y-1247689)$ |
| $c_7, c_{11}$ | $(y^{19}-14y^{18}+\cdots+34y-1)(y^{91}-65y^{90}+\cdots+218y-1)$ |
| $c_8$ | $(y^{19}+4y^{18}+\cdots+20y-1)(y^{91}+13y^{90}+\cdots-186888y-1369)$ |
| $c_{10}$ | $(y^{19}-5y^{18}+\cdots+7y-1)(y^{91}+48y^{89}+\cdots-1780y-16)$ |