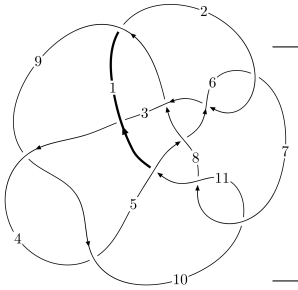
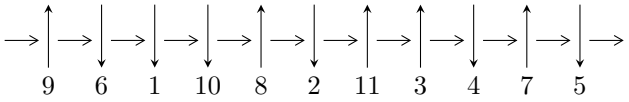
# $11a_{315}$ $(K11a_{315})$




A knot diagram[1]

**Linearized knot diagam**




**Solving Sequence**

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

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

$$\begin{aligned} I_1^u = \langle & 8.35047 \times 10^{320} u^{95} + 1.44029 \times 10^{321} u^{94} + \cdots + 5.77122 \times 10^{319} b + 5.39671 \times 10^{323}, \\ & - 1.01480 \times 10^{325} u^{95} - 2.15677 \times 10^{325} u^{94} + \cdots + 6.33103 \times 10^{322} a - 4.64333 \times 10^{327}, \\ & 3u^{96} + 4u^{95} + \cdots - 590u - 1097 \rangle \\ I_2^u = \langle & 350076u^{17} + 452234u^{16} + \cdots + 2209b - 230492, \\ & - 350919u^{17} - 309072u^{16} + \cdots + 2209a + 93665,\ 3u^{18} + 5u^{17} + \cdots - 5u - 1 \rangle \end{aligned}$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 114 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.** $\boldsymbol{I_1^u = \langle 8.35 \times 10^{320} u^{95} + 1.44 \times 10^{321} u^{94} + \cdots + 5.77 \times 10^{319} b + 5.40 \times 10^{323},\ -1.01 \times 10^{325} u^{95} - 2.16 \times 10^{325} u^{94} + \cdots + 6.33 \times 10^{322} a - 4.64 \times 10^{327},\ 3u^{96} + 4u^{95} + \cdots - 590u - 1097 \rangle}$

**(i) Arc colorings**

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

$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_5 = \begin{pmatrix} 160.290u^{95} + 340.667u^{94} + \cdots + 130465.u + 73342.4 \\ -14.4692u^{95} - 24.9564u^{94} + \cdots - 19464.1u - 9351.07 \end{pmatrix}$$

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

$$a_6 = \begin{pmatrix} 121.168u^{95} + 262.638u^{94} + \cdots + 92069.5u + 53087.6 \\ -38.4280u^{95} - 76.1368u^{94} + \cdots - 38467.4u - 20147.5 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 227.445u^{95} + 495.753u^{94} + \cdots + 167945.u + 98005.3 \\ 103.416u^{95} + 224.825u^{94} + \cdots + 76598.4u + 44698.8 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 145.821u^{95} + 315.710u^{94} + \cdots + 111001.u + 63991.3 \\ -14.4692u^{95} - 24.9564u^{94} + \cdots - 19464.1u - 9351.07 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -107.797u^{95} - 237.291u^{94} + \cdots - 77403.3u - 45591.1 \\ -107.406u^{95} - 226.853u^{94} + \cdots - 89699.9u - 49898.8 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -126.324u^{95} - 267.369u^{94} + \cdots - 103887.u - 58210.5 \\ -202.923u^{95} - 460.629u^{94} + \cdots - 122530.u - 78021.3 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 34.4592u^{95} + 79.3873u^{94} + \cdots + 20523.0u + 13006.7 \\ -30.5692u^{95} - 75.0027u^{94} + \cdots - 10427.5u - 8966.06 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 34.4592u^{95} + 79.3873u^{94} + \cdots + 20523.0u + 13006.7 \\ -30.5692u^{95} - 75.0027u^{94} + \cdots - 10427.5u - 8966.06 \end{pmatrix}$$

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

**(iii) Cusp Shapes** $= -2023.30u^{95} - 4712.54u^{94} + \cdots - 1.06232 \times 10^6 u - 721227.$

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

| Crossings | u-Polynomials at each crossing |
|---|---|
| $c_1$ | $u^{96} - 5u^{95} + \cdots - 21760u - 2097$ |
| $c_2, c_6$ | $3(3u^{96} + 7u^{95} + \cdots + 3339u - 297)$ |
| $c_3$ | $9(9u^{96} - 134u^{95} + \cdots - 15u + 1)$ |
| $c_4, c_9$ | $u^{96} - 6u^{95} + \cdots + 6966u - 1849$ |
| $c_5$ | $u^{96} + 6u^{95} + \cdots + 1962842u + 272431$ |
| $c_7, c_{10}$ | $3(3u^{96} + 4u^{95} + \cdots - 590u - 1097)$ |
| $c_8$ | $u^{96} - u^{95} + \cdots + 56419u - 24573$ |
| $c_{11}$ | $u^{96} + 2u^{95} + \cdots + 89272u - 13803$ |

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

| Crossings | Riley Polynomials at each crossing |
|---|---|
| $c_1$ | $y^{96} + 13y^{95} + \cdots + 33993176y + 4397409$ |
| $c_2, c_6$ | $9(9y^{96} + 593y^{95} + \cdots + 7914915y + 88209)$ |
| $c_3$ | $81(81y^{96} - 1972y^{95} + \cdots + 55y + 1)$ |
| $c_4, c_9$ | $y^{96} - 58y^{95} + \cdots - 92290986y + 3418801$ |
| $c_5$ | $y^{96} - 30y^{95} + \cdots - 473184951454y + 74218649761$ |
| $c_7, c_{10}$ | $9(9y^{96} - 460y^{95} + \cdots - 3.09412 \times 10^7 y + 1203409)$ |
| $c_8$ | $y^{96} - 17y^{95} + \cdots - 17758136197y + 603832329$ |
| $c_{11}$ | $y^{96} + 6y^{95} + \cdots + 6944044184y + 190522809$ |

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

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 0.981699 + 0.203846I$<br>$a = -0.765999 - 0.642364I$<br>$b = 0.619183 + 0.535394I$ | $1.73174 + 0.39177I$ | 0 |
| $u = 0.981699 - 0.203846I$<br>$a = -0.765999 + 0.642364I$<br>$b = 0.619183 - 0.535394I$ | $1.73174 - 0.39177I$ | 0 |
| $u = -0.871405 + 0.497037I$<br>$a = 0.61654 - 1.54991I$<br>$b = 1.226230 + 0.283662I$ | $-1.24057 - 4.70878I$ | 0 |
| $u = -0.871405 - 0.497037I$<br>$a = 0.61654 + 1.54991I$<br>$b = 1.226230 - 0.283662I$ | $-1.24057 + 4.70878I$ | 0 |
| $u = 0.090963 + 1.000610I$<br>$a = -0.489137 - 0.013925I$<br>$b = -0.125344 - 0.881334I$ | $3.36615 + 6.57501I$ | 0 |
| $u = 0.090963 - 1.000610I$<br>$a = -0.489137 + 0.013925I$<br>$b = -0.125344 + 0.881334I$ | $3.36615 - 6.57501I$ | 0 |
| $u = 0.965186 + 0.211216I$<br>$a = -1.61395 - 0.61196I$<br>$b = -1.297100 + 0.157095I$ | $0.98928 + 7.38324I$ | 0 |
| $u = 0.965186 - 0.211216I$<br>$a = -1.61395 + 0.61196I$<br>$b = -1.297100 - 0.157095I$ | $0.98928 - 7.38324I$ | 0 |
| $u = -0.914796 + 0.473612I$<br>$a = 0.48676 - 2.03126I$<br>$b = 1.197990 + 0.173924I$ | $-1.35126 - 4.74042I$ | 0 |
| $u = -0.914796 - 0.473612I$<br>$a = 0.48676 + 2.03126I$<br>$b = 1.197990 - 0.173924I$ | $-1.35126 + 4.74042I$ | 0 |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 0.098776 + 0.963630I$<br>$a = 0.521804 - 0.256520I$<br>$b = 1.307520 + 0.337320I$ | $-4.14708 - 6.10322I$ | 0 |
| $u = 0.098776 - 0.963630I$<br>$a = 0.521804 + 0.256520I$<br>$b = 1.307520 - 0.337320I$ | $-4.14708 + 6.10322I$ | 0 |
| $u = 1.018150 + 0.172235I$<br>$a = 0.844362 - 0.938562I$<br>$b = -1.94470 + 0.12581I$ | $1.66864 + 3.14014I$ | 0 |
| $u = 1.018150 - 0.172235I$<br>$a = 0.844362 + 0.938562I$<br>$b = -1.94470 - 0.12581I$ | $1.66864 - 3.14014I$ | 0 |
| $u = 0.842592 + 0.418933I$<br>$a = -0.533871 - 1.018780I$<br>$b = 0.081476 + 0.967865I$ | $2.34632 + 0.52578I$ | 0 |
| $u = 0.842592 - 0.418933I$<br>$a = -0.533871 + 1.018780I$<br>$b = 0.081476 - 0.967865I$ | $2.34632 - 0.52578I$ | 0 |
| $u = -1.028940 + 0.280146I$<br>$a = 0.90713 + 1.66872I$<br>$b = -1.266760 - 0.610244I$ | $-2.08843 - 5.19122I$ | 0 |
| $u = -1.028940 - 0.280146I$<br>$a = 0.90713 - 1.66872I$<br>$b = -1.266760 + 0.610244I$ | $-2.08843 + 5.19122I$ | 0 |
| $u = -0.817841 + 0.715844I$<br>$a = 1.19222 - 1.12383I$<br>$b = 0.892547 + 0.020136I$ | $3.09922 - 2.44564I$ | 0 |
| $u = -0.817841 - 0.715844I$<br>$a = 1.19222 + 1.12383I$<br>$b = 0.892547 - 0.020136I$ | $3.09922 + 2.44564I$ | 0 |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u=-0.951281+0.526119I$<br>$a=-0.16190-2.14760I$<br>$b=\ \ 1.27437+0.65713I$ | $-1.23108-9.17111I$ | 0 |
| $u=-0.951281-0.526119I$<br>$a=-0.16190+2.14760I$<br>$b=\ \ 1.27437-0.65713I$ | $-1.23108+9.17111I$ | 0 |
| $u=-0.641118+0.642560I$<br>$a=\ \ 0.081903-0.128435I$<br>$b=-1.35052+0.45439I$ | $-2.17740+4.59275I$ | 0 |
| $u=-0.641118-0.642560I$<br>$a=\ \ 0.081903+0.128435I$<br>$b=-1.35052-0.45439I$ | $-2.17740-4.59275I$ | 0 |
| $u=\ \ 1.039460+0.439875I$<br>$a=-0.786780-1.134370I$<br>$b=\ \ 0.053630+0.729782I$ | $3.11184+1.53766I$ | 0 |
| $u=\ \ 1.039460-0.439875I$<br>$a=-0.786780+1.134370I$<br>$b=\ \ 0.053630-0.729782I$ | $3.11184-1.53766I$ | 0 |
| $u=-0.536552+0.995291I$<br>$a=-0.376159+0.160481I$<br>$b=-1.284320+0.385123I$ | $-3.47528+0.56323I$ | 0 |
| $u=-0.536552-0.995291I$<br>$a=-0.376159-0.160481I$<br>$b=-1.284320-0.385123I$ | $-3.47528-0.56323I$ | 0 |
| $u=\ \ 1.091180+0.302734I$<br>$a=\ \ 1.03585-1.71671I$<br>$b=-1.039180+0.060714I$ | $-2.34256+1.03453I$ | 0 |
| $u=\ \ 1.091180-0.302734I$<br>$a=\ \ 1.03585+1.71671I$<br>$b=-1.039180-0.060714I$ | $-2.34256-1.03453I$ | 0 |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 0.864487 + 0.067288I$<br>$a = -1.03372 - 3.46440I$<br>$b = 0.45199 + 2.41206I$ | $1.23627 + 2.13659I$ | 0 |
| $u = 0.864487 - 0.067288I$<br>$a = -1.03372 + 3.46440I$<br>$b = 0.45199 - 2.41206I$ | $1.23627 - 2.13659I$ | 0 |
| $u = 0.851982$<br>$a = 2.42297$<br>$b = 1.30404$ | $-4.16838$ | 0 |
| $u = -0.768204 + 0.361730I$<br>$a = -0.24125 + 1.42284I$<br>$b = -0.913672 + 0.081730I$ | $-1.51493 + 0.74030I$ | 0 |
| $u = -0.768204 - 0.361730I$<br>$a = -0.24125 - 1.42284I$<br>$b = -0.913672 - 0.081730I$ | $-1.51493 - 0.74030I$ | 0 |
| $u = 0.802721 + 0.215010I$<br>$a = -1.52539 + 3.03816I$<br>$b = 0.958660 + 0.109699I$ | $0.46559 - 5.39912I$ | 0 |
| $u = 0.802721 - 0.215010I$<br>$a = -1.52539 - 3.03816I$<br>$b = 0.958660 - 0.109699I$ | $0.46559 + 5.39912I$ | 0 |
| $u = 0.812674 + 0.102586I$<br>$a = -1.67755 + 1.62069I$<br>$b = 1.65825 - 0.25745I$ | $0.84537 - 1.76194I$ | 0 |
| $u = 0.812674 - 0.102586I$<br>$a = -1.67755 - 1.62069I$<br>$b = 1.65825 + 0.25745I$ | $0.84537 + 1.76194I$ | 0 |
| $u = 0.014816 + 0.815458I$<br>$a = -0.091044 + 0.703341I$<br>$b = 0.922119 - 0.223860I$ | $1.88316 + 3.59766I$ | 0 |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 0.014816 - 0.815458I$<br>$a = -0.091044 - 0.703341I$<br>$b = 0.922119 + 0.223860I$ | $1.88316 - 3.59766I$ | 0 |
| $u = 1.126380 + 0.366436I$<br>$a = 0.591656 + 1.278550I$<br>$b = -0.695441 - 0.685522I$ | $6.30161 + 3.91490I$ | 0 |
| $u = 1.126380 - 0.366436I$<br>$a = 0.591656 - 1.278550I$<br>$b = -0.695441 + 0.685522I$ | $6.30161 - 3.91490I$ | 0 |
| $u = -0.792268 + 0.032149I$<br>$a = -0.136736 + 0.425099I$<br>$b = 1.54012 - 0.27260I$ | $-3.57314 + 3.55716I$ | 0 |
| $u = -0.792268 - 0.032149I$<br>$a = -0.136736 - 0.425099I$<br>$b = 1.54012 + 0.27260I$ | $-3.57314 - 3.55716I$ | 0 |
| $u = 0.153234 + 0.753973I$<br>$a = 0.431412 - 0.389245I$<br>$b = 1.245900 - 0.180263I$ | $-5.56839 + 2.63653I$ | 0 |
| $u = 0.153234 - 0.753973I$<br>$a = 0.431412 + 0.389245I$<br>$b = 1.245900 + 0.180263I$ | $-5.56839 - 2.63653I$ | 0 |
| $u = -0.525633 + 0.538766I$<br>$a = -1.122290 + 0.116900I$<br>$b = -1.202910 + 0.107418I$ | $-2.40376 + 0.61006I$ | 0 |
| $u = -0.525633 - 0.538766I$<br>$a = -1.122290 - 0.116900I$<br>$b = -1.202910 - 0.107418I$ | $-2.40376 - 0.61006I$ | 0 |
| $u = 0.275095 + 1.227520I$<br>$a = -0.400852 + 0.116369I$<br>$b = -1.273060 - 0.499899I$ | $-0.21784 - 11.64570I$ | 0 |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 0.275095 - 1.227520I$<br>$a = -0.400852 - 0.116369I$<br>$b = -1.273060 + 0.499899I$ | $-0.21784 + 11.64570I$ | 0 |
| $u = -1.203210 + 0.380922I$<br>$a = 0.38019 - 1.41752I$<br>$b = 0.100944 + 1.031110I$ | $4.01052 - 6.12296I$ | 0 |
| $u = -1.203210 - 0.380922I$<br>$a = 0.38019 + 1.41752I$<br>$b = 0.100944 - 1.031110I$ | $4.01052 + 6.12296I$ | 0 |
| $u = -1.27130$<br>$a = -0.468329$<br>$b = -0.368940$ | 0.742678 | 0 |
| $u = -1.271940 + 0.150627I$<br>$a = -0.028108 + 1.368010I$<br>$b = 0.303727 - 0.826969I$ | $8.74132 - 0.96087I$ | 0 |
| $u = -1.271940 - 0.150627I$<br>$a = -0.028108 - 1.368010I$<br>$b = 0.303727 + 0.826969I$ | $8.74132 + 0.96087I$ | 0 |
| $u = 1.281880 + 0.204070I$<br>$a = 0.348534 + 1.120150I$<br>$b = -0.50519 - 1.36680I$ | $3.57896 + 1.66051I$ | 0 |
| $u = 1.281880 - 0.204070I$<br>$a = 0.348534 - 1.120150I$<br>$b = -0.50519 + 1.36680I$ | $3.57896 - 1.66051I$ | 0 |
| $u = -1.136990 + 0.633869I$<br>$a = 0.13023 - 1.61687I$<br>$b = 1.34921 + 0.52876I$ | $-1.43906 - 6.43123I$ | 0 |
| $u = -1.136990 - 0.633869I$<br>$a = 0.13023 + 1.61687I$<br>$b = 1.34921 - 0.52876I$ | $-1.43906 + 6.43123I$ | 0 |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u=-1.094980+0.714123I$<br>$a=-0.781399+1.023480I$<br>$b=-1.073050-0.225617I$ | $3.99445-3.25658I$ | 0 |
| $u=-1.094980-0.714123I$<br>$a=-0.781399-1.023480I$<br>$b=-1.073050+0.225617I$ | $3.99445+3.25658I$ | 0 |
| $u=-1.229820+0.466528I$<br>$a=\phantom{-}0.42286+1.80682I$<br>$b=-0.946848-0.403711I$ | $5.53218-8.19891I$ | 0 |
| $u=-1.229820-0.466528I$<br>$a=\phantom{-}0.42286-1.80682I$<br>$b=-0.946848+0.403711I$ | $5.53218+8.19891I$ | 0 |
| $u=\phantom{-}0.032764+0.670988I$<br>$a=\phantom{-}0.205854-0.156632I$<br>$b=-0.154795+0.715846I$ | $0.38771+2.27012I$ | 0 |
| $u=\phantom{-}0.032764-0.670988I$<br>$a=\phantom{-}0.205854+0.156632I$<br>$b=-0.154795-0.715846I$ | $0.38771-2.27012I$ | 0 |
| $u=\phantom{-}1.255450+0.478657I$<br>$a=\phantom{-}0.645957+0.272091I$<br>$b=-0.617575-0.245152I$ | $5.48115+1.16165I$ | 0 |
| $u=\phantom{-}1.255450-0.478657I$<br>$a=\phantom{-}0.645957-0.272091I$<br>$b=-0.617575+0.245152I$ | $5.48115-1.16165I$ | 0 |
| $u=-0.358213+1.316130I$<br>$a=\phantom{-}0.356172-0.168187I$<br>$b=\phantom{-}1.043400-0.583502I$ | $-3.32455+2.39582I$ | 0 |
| $u=-0.358213-1.316130I$<br>$a=\phantom{-}0.356172+0.168187I$<br>$b=\phantom{-}1.043400+0.583502I$ | $-3.32455-2.39582I$ | 0 |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u=-1.308980+0.475608I$<br>$a=-0.437485+1.226180I$<br>$b=-0.027467-1.315470I$ | $7.65553-11.67950I$ | 0 |
| $u=-1.308980-0.475608I$<br>$a=-0.437485-1.226180I$<br>$b=-0.027467+1.315470I$ | $7.65553+11.67950I$ | 0 |
| $u=1.281380+0.547670I$<br>$a=0.14355-1.60766I$<br>$b=-1.36818+0.49974I$ | $-0.53270+11.56490I$ | 0 |
| $u=1.281380-0.547670I$<br>$a=0.14355+1.60766I$<br>$b=-1.36818-0.49974I$ | $-0.53270-11.56490I$ | 0 |
| $u=-1.353450+0.402157I$<br>$a=0.191361+0.482472I$<br>$b=0.227166-0.225140I$ | $5.73921-6.56546I$ | 0 |
| $u=-1.353450-0.402157I$<br>$a=0.191361-0.482472I$<br>$b=0.227166+0.225140I$ | $5.73921+6.56546I$ | 0 |
| $u=0.209352+0.539750I$<br>$a=-1.47687+0.49783I$<br>$b=0.389822+0.587934I$ | $0.95940+3.02963I$ | $-2.72169-3.74300I$ |
| $u=0.209352-0.539750I$<br>$a=-1.47687-0.49783I$<br>$b=0.389822-0.587934I$ | $0.95940-3.02963I$ | $-2.72169+3.74300I$ |
| $u=1.39391+0.36350I$<br>$a=-0.488595+1.282830I$<br>$b=1.132440-0.443855I$ | $6.17066+5.58274I$ | 0 |
| $u=1.39391-0.36350I$<br>$a=-0.488595-1.282830I$<br>$b=1.132440+0.443855I$ | $6.17066-5.58274I$ | 0 |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 1.31943 + 0.66297I$<br>$a = 0.05685 + 1.49543I$<br>$b = 1.41644 - 0.60207I$ | $3.1429 + 18.2725I$ | 0 |
| $u = 1.31943 - 0.66297I$<br>$a = 0.05685 - 1.49543I$<br>$b = 1.41644 + 0.60207I$ | $3.1429 - 18.2725I$ | 0 |
| $u = -1.34265 + 0.62859I$<br>$a = -0.053295 + 1.272070I$<br>$b = -1.40190 - 0.70932I$ | $0.20764 - 9.18905I$ | 0 |
| $u = -1.34265 - 0.62859I$<br>$a = -0.053295 - 1.272070I$<br>$b = -1.40190 + 0.70932I$ | $0.20764 + 9.18905I$ | 0 |
| $u = 0.286919 + 0.412561I$<br>$a = -0.71801 + 2.01587I$<br>$b = 0.275542 - 0.539171I$ | $3.76234 - 0.68062I$ | $5.82964 - 1.30237I$ |
| $u = 0.286919 - 0.412561I$<br>$a = -0.71801 - 2.01587I$<br>$b = 0.275542 + 0.539171I$ | $3.76234 + 0.68062I$ | $5.82964 + 1.30237I$ |
| $u = 1.40839 + 0.51152I$<br>$a = 0.311679 + 0.966447I$<br>$b = 0.723215 - 0.913951I$ | $7.43009 - 0.76858I$ | 0 |
| $u = 1.40839 - 0.51152I$<br>$a = 0.311679 - 0.966447I$<br>$b = 0.723215 + 0.913951I$ | $7.43009 + 0.76858I$ | 0 |
| $u = -1.53936 + 0.09461I$<br>$a = -0.278084 + 0.514424I$<br>$b = 0.845658 - 0.595779I$ | $6.82851 + 6.31553I$ | 0 |
| $u = -1.53936 - 0.09461I$<br>$a = -0.278084 - 0.514424I$<br>$b = 0.845658 + 0.595779I$ | $6.82851 - 6.31553I$ | 0 |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 1.37356 + 0.78307I$<br>$a = 0.086482 + 0.930521I$<br>$b = 1.131460 - 0.269948I$ | $3.06332 + 8.99488I$ | 0 |
| $u = 1.37356 - 0.78307I$<br>$a = 0.086482 - 0.930521I$<br>$b = 1.131460 + 0.269948I$ | $3.06332 - 8.99488I$ | 0 |
| $u = -0.350795 + 0.165581I$<br>$a = -0.05684 - 1.65249I$<br>$b = -0.338815 - 0.249348I$ | $-1.14552 - 0.85529I$ | $-6.99439 + 3.24657I$ |
| $u = -0.350795 - 0.165581I$<br>$a = -0.05684 + 1.65249I$<br>$b = -0.338815 + 0.249348I$ | $-1.14552 + 0.85529I$ | $-6.99439 - 3.24657I$ |
| $u = -0.43903 + 1.94371I$<br>$a = -0.144411 + 0.147245I$<br>$b = -1.009720 - 0.045042I$ | $-0.0922815 - 0.0457562I$ | 0 |
| $u = -0.43903 - 1.94371I$<br>$a = -0.144411 - 0.147245I$<br>$b = -1.009720 + 0.045042I$ | $-0.0922815 + 0.0457562I$ | 0 |

**II.** $\boldsymbol{I_2^u = \langle 350076u^{17} + 452234u^{16} + \cdots + 2209b - 230492,\ -3.51 \times 10^5 u^{17} - 3.09 \times 10^5 u^{16} + \cdots + 2209a + 9.37 \times 10^4,\ 3u^{18} + 5u^{17} + \cdots - 5u - 1\rangle}$

**(i) Arc colorings**

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

$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_5 = \begin{pmatrix} 158.859u^{17} + 139.915u^{16} + \cdots - 196.269u - 42.4015 \\ -158.477u^{17} - 204.723u^{16} + \cdots + 319.438u + 104.342 \end{pmatrix}$$

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

$$a_6 = \begin{pmatrix} 83.1322u^{17} + 49.3617u^{16} + \cdots - 74.8253u - 4.14984 \\ -208.029u^{17} - 260.851u^{16} + \cdots + 406.694u + 130.708 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 101.260u^{17} + 51.3617u^{16} + \cdots - 89.6976u + 11.4246 \\ -3u^{17} - 2u^{16} + \cdots + 3u + 2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 0.381621u^{17} - 64.8085u^{16} + \cdots + 123.169u + 61.9407 \\ -158.477u^{17} - 204.723u^{16} + \cdots + 319.438u + 104.342 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 46.9516u^{17} + 96.8298u^{16} + \cdots - 144.304u - 53.2499 \\ 1.94749u^{17} + 13.4043u^{16} + \cdots - 52.9461u - 25.5980 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 209.288u^{17} + 260.340u^{16} + \cdots - 487.201u - 160.139 \\ 9.37211u^{17} + 3.53191u^{16} + \cdots + 57.6700u + 23.4617 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -215.627u^{17} - 222.660u^{16} + \cdots + 405.884u + 117.244 \\ -85.9950u^{17} - 63.7021u^{16} + \cdots + 82.4518u + 0.203259 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -215.627u^{17} - 222.660u^{16} + \cdots + 405.884u + 117.244 \\ -85.9950u^{17} - 63.7021u^{16} + \cdots + 82.4518u + 0.203259 \end{pmatrix}$$

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

**(iii) Cusp Shapes** $= -\frac{2181624}{2209}u^{17} - \frac{65819}{47}u^{16} + \cdots + \frac{2035122}{2209}u + \frac{698331}{2209}$

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

| Crossings | u-Polynomials at each crossing |
|---|---|
| $c_1$ | $u^{18}+2u^{16}+\cdots+73u-9$ |
| $c_2$ | $3(3u^{18}+2u^{17}+\cdots+2u-1)$ |
| $c_3$ | $9(9u^{18}+43u^{17}+\cdots+2u+1)$ |
| $c_4$ | $u^{18}-u^{17}+\cdots+u-1$ |
| $c_5$ | $u^{18}+5u^{17}+\cdots+5u-1$ |
| $c_6$ | $3(3u^{18}-2u^{17}+\cdots-2u-1)$ |
| $c_7$ | $3(3u^{18}-5u^{17}+\cdots+5u-1)$ |
| $c_8$ | $u^{18}-2u^{17}+\cdots-16u+3$ |
| $c_9$ | $u^{18}+u^{17}+\cdots-u-1$ |
| $c_{10}$ | $3(3u^{18}+5u^{17}+\cdots-5u-1)$ |
| $c_{11}$ | $u^{18}+u^{17}+\cdots+u-3$ |

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

| Crossings | Riley Polynomials at each crossing |
|---|---|
| $c_1$ | $y^{18} + 4y^{17} + \cdots - 1963y + 81$ |
| $c_2, c_6$ | $9(9y^{18} + 92y^{17} + \cdots + 20y + 1)$ |
| $c_3$ | $81(81y^{18} - 337y^{17} + \cdots + 68y + 1)$ |
| $c_4, c_9$ | $y^{18} - 7y^{17} + \cdots + 7y + 1$ |
| $c_5$ | $y^{18} + 5y^{17} + \cdots - 53y + 1$ |
| $c_7, c_{10}$ | $9(9y^{18} - 97y^{17} + \cdots - 19y + 1)$ |
| $c_8$ | $y^{18} + 10y^{17} + \cdots - 124y + 9$ |
| $c_{11}$ | $y^{18} - 11y^{17} + \cdots + 221y + 9$ |

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

| Solutions to $I_2^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 0.780995 + 0.440969I$<br>$a = -1.61273 - 1.14644I$<br>$b = 0.212915 + 0.379437I$ | $4.36134 + 2.18737I$ | $8.80548 - 3.19554I$ |
| $u = 0.780995 - 0.440969I$<br>$a = -1.61273 + 1.14644I$<br>$b = 0.212915 - 0.379437I$ | $4.36134 - 2.18737I$ | $8.80548 + 3.19554I$ |
| $u = -0.339102 + 1.086600I$<br>$a = -0.319782 + 0.346863I$<br>$b = -1.122480 + 0.498735I$ | $-3.88886 + 2.12243I$ | $-8.14463 - 0.96498I$ |
| $u = -0.339102 - 1.086600I$<br>$a = -0.319782 - 0.346863I$<br>$b = -1.122480 - 0.498735I$ | $-3.88886 - 2.12243I$ | $-8.14463 + 0.96498I$ |
| $u = 0.837209 + 0.048554I$<br>$a = -1.36354 - 3.19908I$<br>$b = 0.76892 + 2.11639I$ | $1.21414 + 2.10668I$ | $-22.6892 + 85.4035I$ |
| $u = 0.837209 - 0.048554I$<br>$a = -1.36354 + 3.19908I$<br>$b = 0.76892 - 2.11639I$ | $1.21414 - 2.10668I$ | $-22.6892 - 85.4035I$ |
| $u = 1.23070$<br>$a = 0.0833078$<br>$b = 0.609420$ | 0.310540 | $-5.19690$ |
| $u = -1.125920 + 0.547527I$<br>$a = -0.03613 - 1.67068I$<br>$b = 1.36242 + 0.64729I$ | $-1.14935 - 7.43290I$ | $0.39473 + 7.84303I$ |
| $u = -1.125920 - 0.547527I$<br>$a = -0.03613 + 1.67068I$<br>$b = 1.36242 - 0.64729I$ | $-1.14935 + 7.43290I$ | $0.39473 - 7.84303I$ |
| $u = -0.724029$<br>$a = -2.99527$<br>$b = -1.27402$ | $-4.50458$ | $-17.2590$ |

| Solutions to $I_2^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 1.191960 + 0.466111I$<br>$a = 0.567132 + 0.755264I$<br>$b = -0.157242 - 0.316666I$ | $5.97627 + 1.80190I$ | $7.12473 - 2.98531I$ |
| $u = 1.191960 - 0.466111I$<br>$a = 0.567132 - 0.755264I$<br>$b = -0.157242 + 0.316666I$ | $5.97627 - 1.80190I$ | $7.12473 + 2.98531I$ |
| $u = -0.581803 + 0.147990I$<br>$a = 2.71735 - 2.53340I$<br>$b = 1.167760 + 0.264907I$ | $-0.02231 - 6.50584I$ | $-1.20256 + 7.92471I$ |
| $u = -0.581803 - 0.147990I$<br>$a = 2.71735 + 2.53340I$<br>$b = 1.167760 - 0.264907I$ | $-0.02231 + 6.50584I$ | $-1.20256 - 7.92471I$ |
| $u = -1.35199 + 0.47087I$<br>$a = 0.504369 + 1.206670I$<br>$b = -0.940989 - 0.307748I$ | $4.68551 - 7.79285I$ | $-0.53996 + 6.36550I$ |
| $u = -1.35199 - 0.47087I$<br>$a = 0.504369 - 1.206670I$<br>$b = -0.940989 + 0.307748I$ | $4.68551 + 7.79285I$ | $-0.53996 - 6.36550I$ |
| $u = -0.498008 + 0.145181I$<br>$a = 0.999314 - 0.327313I$<br>$b = -1.45900 + 0.31070I$ | $-4.14491 + 3.52032I$ | $-8.96118 - 2.06912I$ |
| $u = -0.498008 - 0.145181I$<br>$a = 0.999314 + 0.327313I$<br>$b = -1.45900 - 0.31070I$ | $-4.14491 - 3.52032I$ | $-8.96118 + 2.06912I$ |

**III. u-Polynomials**

| Crossings | u-Polynomials at each crossing |
|---|---|
| $c_1$ | $(u^{18}+2u^{16}+\cdots+73u-9)(u^{96}-5u^{95}+\cdots-21760u-2097)$ |
| $c_2$ | $9(3u^{18}+2u^{17}+\cdots+2u-1)(3u^{96}+7u^{95}+\cdots+3339u-297)$ |
| $c_3$ | $81(9u^{18}+43u^{17}+\cdots+2u+1)(9u^{96}-134u^{95}+\cdots-15u+1)$ |
| $c_4$ | $(u^{18}-u^{17}+\cdots+u-1)(u^{96}-6u^{95}+\cdots+6966u-1849)$ |
| $c_5$ | $(u^{18}+5u^{17}+\cdots+5u-1)(u^{96}+6u^{95}+\cdots+1962842u+272431)$ |
| $c_6$ | $9(3u^{18}-2u^{17}+\cdots-2u-1)(3u^{96}+7u^{95}+\cdots+3339u-297)$ |
| $c_7$ | $9(3u^{18}-5u^{17}+\cdots+5u-1)(3u^{96}+4u^{95}+\cdots-590u-1097)$ |
| $c_8$ | $(u^{18}-2u^{17}+\cdots-16u+3)(u^{96}-u^{95}+\cdots+56419u-24573)$ |
| $c_9$ | $(u^{18}+u^{17}+\cdots-u-1)(u^{96}-6u^{95}+\cdots+6966u-1849)$ |
| $c_{10}$ | $9(3u^{18}+5u^{17}+\cdots-5u-1)(3u^{96}+4u^{95}+\cdots-590u-1097)$ |
| $c_{11}$ | $(u^{18}+u^{17}+\cdots+u-3)(u^{96}+2u^{95}+\cdots+89272u-13803)$ |

## IV. Riley Polynomials

| Crossings | Riley Polynomials at each crossing |
|---|---|
| $c_1$ | $(y^{18}+4y^{17}+\cdots-1963y+81)$ $\cdot(y^{96}+13y^{95}+\cdots+33993176y+4397409)$ |
| $c_2, c_6$ | $81(9y^{18}+92y^{17}+\cdots+20y+1)$ $\cdot(9y^{96}+593y^{95}+\cdots+7914915y+88209)$ |
| $c_3$ | $6561(81y^{18}-337y^{17}+\cdots+68y+1)$ $\cdot(81y^{96}-1972y^{95}+\cdots+55y+1)$ |
| $c_4, c_9$ | $(y^{18}-7y^{17}+\cdots+7y+1)$ $\cdot(y^{96}-58y^{95}+\cdots-92290986y+3418801)$ |
| $c_5$ | $(y^{18}+5y^{17}+\cdots-53y+1)$ $\cdot(y^{96}-30y^{95}+\cdots-473184951454y+74218649761)$ |
| $c_7, c_{10}$ | $81(9y^{18}-97y^{17}+\cdots-19y+1)$ $\cdot(9y^{96}-460y^{95}+\cdots-30941236y+1203409)$ |
| $c_8$ | $(y^{18}+10y^{17}+\cdots-124y+9)$ $\cdot(y^{96}-17y^{95}+\cdots-17758136197y+603832329)$ |
| $c_{11}$ | $(y^{18}-11y^{17}+\cdots+221y+9)$ $\cdot(y^{96}+6y^{95}+\cdots+6944044184y+190522809)$ |