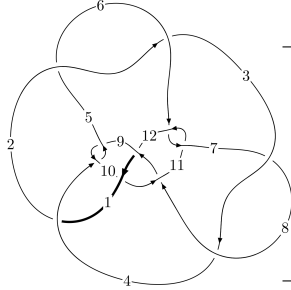
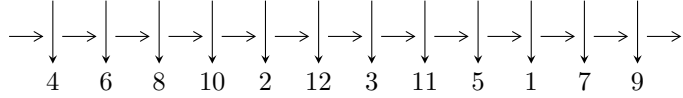


12a₀₉₀₀ (K12a₀₉₀₀)



A knot diagram¹

Linearized knot diagram



Solving Sequence

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

Ideals for irreducible components² of X_{par}

$$I_1^u = \langle 8.52837 \times 10^{1076} u^{168} + 9.95193 \times 10^{1076} u^{167} + \dots + 5.83099 \times 10^{1076} b - 7.56901 \times 10^{1081}, \\ 7.17815 \times 10^{1082} u^{168} + 8.07968 \times 10^{1082} u^{167} + \dots + 2.21108 \times 10^{1082} a - 6.04767 \times 10^{1087}, \\ u^{169} + 2u^{168} + \dots - 373810u - 75839 \rangle$$

$$I_2^u = \langle -6.31697 \times 10^{64} u^{45} - 2.06195 \times 10^{65} u^{44} + \dots + 7.62817 \times 10^{64} b - 3.63136 \times 10^{65}, \\ -1.17290 \times 10^{66} u^{45} - 1.34273 \times 10^{66} u^{44} + \dots + 3.81409 \times 10^{65} a + 1.51650 \times 10^{66}, u^{46} + u^{45} + \dots - 4u - \dots \rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 215 representations.

¹The 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>).

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

$$\mathbf{I. } I_1^u = \langle 8.53 \times 10^{1076} u^{168} + 9.95 \times 10^{1076} u^{167} + \dots + 5.83 \times 10^{1076} b - 7.57 \times 10^{1081}, 7.18 \times 10^{1082} u^{168} + 8.08 \times 10^{1082} u^{167} + \dots + 2.21 \times 10^{1082} a - 6.05 \times 10^{1087}, u^{169} + 2u^{168} + \dots - 373810u - 75839 \rangle$$

(i) Arc colorings

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

$$a_7 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

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

$$a_{12} = \begin{pmatrix} -3.24644u^{168} - 3.65417u^{167} + \dots + 1.05369 \times 10^6 u + 273516. \\ -1.46259u^{168} - 1.70673u^{167} + \dots + 491774.u + 129807. \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -1.43362u^{168} - 1.83638u^{167} + \dots + 526370.u + 144064. \\ -0.217014u^{168} - 0.678800u^{167} + \dots + 186090.u + 61996.7 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -2.16396u^{168} - 2.54382u^{167} + \dots + 731440.u + 193639. \\ 0.821662u^{168} + 0.668477u^{167} + \dots - 197557.u - 43523.6 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -1.70674u^{168} - 2.18349u^{167} + \dots + 624681.u + 170586. \\ 0.971008u^{168} + 0.901172u^{167} + \dots - 263253.u - 62493.9 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -1.14675u^{168} - 1.51928u^{167} + \dots + 432623.u + 120017. \\ -2.14197u^{168} - 2.47607u^{167} + \dots + 714895.u + 187876. \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -4.70903u^{168} - 5.36090u^{167} + \dots + 1.54547 \times 10^6 u + 403323. \\ -1.46259u^{168} - 1.70673u^{167} + \dots + 491774.u + 129807. \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.225879u^{168} + 0.766581u^{167} + \dots - 213899.u - 72749.7 \\ 0.107099u^{168} + 0.0596876u^{167} + \dots - 17426.1u - 2380.89 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -2.78009u^{168} - 2.70356u^{167} + \dots + 797029.u + 193308. \\ -0.108139u^{168} - 0.159883u^{167} + \dots + 42772.8u + 11675.4 \end{pmatrix}$$

(ii) Obstruction class = -1

(iii) Cusp Shapes = $-5.62131u^{168} - 6.90171u^{167} + \dots + 1.99401 \times 10^6 u + 538459.$

(iv) u-Polynomials at the component

| Crossings | u-Polynomials at each crossing |
|---------------|---|
| c_1 | $u^{169} - 10u^{168} + \dots - 8577u + 415$ |
| c_2, c_5 | $5(5u^{169} - 24u^{168} + \dots + 3.48029 \times 10^8 u + 2.48668 \times 10^7)$ |
| c_3, c_7 | $u^{169} - 2u^{168} + \dots - 373810u + 75839$ |
| c_4, c_9 | $u^{169} - u^{168} + \dots - 1899u + 373$ |
| c_6, c_{11} | $u^{169} + 2u^{168} + \dots + 184u + 193$ |
| c_8 | $5(5u^{169} - 83u^{168} + \dots - 1136881u + 191311)$ |
| c_{10} | $5(5u^{169} - 13u^{168} + \dots - 845357u + 161671)$ |
| c_{12} | $u^{169} + 3u^{168} + \dots - 19434u + 2711$ |

(v) Riley Polynomials at the component

| Crossings | Riley Polynomials at each crossing |
|---------------|--|
| c_1 | $y^{169} - 14y^{168} + \dots - 98510671y - 172225$ |
| c_2, c_5 | $25 \cdot (25y^{169} - 3896y^{168} + \dots + 10579956017594239y - 618357294637681)$ |
| c_3, c_7 | $y^{169} - 100y^{168} + \dots + 233540843658y - 5751553921$ |
| c_4, c_9 | $y^{169} + 95y^{168} + \dots - 4640829y - 139129$ |
| c_6, c_{11} | $y^{169} + 80y^{168} + \dots - 1198642y - 37249$ |
| c_8 | $25(25y^{169} + 1011y^{168} + \dots - 2.93882 \times 10^{12}y - 3.65999 \times 10^{10})$ |
| c_{10} | $25(25y^{169} + 1711y^{168} + \dots - 3.11859 \times 10^{11}y - 2.61375 \times 10^{10})$ |
| c_{12} | $y^{169} + 35y^{168} + \dots + 1287952826y - 7349521$ |

(vi) Complex Volumes and Cusp Shapes

| Solutions to I_1^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---------------------------------------|------------|
| $u = 0.784708 + 0.613924I$ $a = -0.643559 + 0.808589I$ $b = 0.37279 - 1.37564I$ | $5.44300 - 3.46467I$ | 0 |
| $u = 0.784708 - 0.613924I$ $a = -0.643559 - 0.808589I$ $b = 0.37279 + 1.37564I$ | $5.44300 + 3.46467I$ | 0 |
| $u = 0.920244 + 0.377047I$ $a = 1.60054 + 0.02840I$ $b = -0.097204 + 0.531932I$ | $-1.33676 - 1.43995I$ | 0 |
| $u = 0.920244 - 0.377047I$ $a = 1.60054 - 0.02840I$ $b = -0.097204 - 0.531932I$ | $-1.33676 + 1.43995I$ | 0 |
| $u = 0.915176 + 0.374176I$ $a = -0.881069 + 0.421708I$ $b = -0.665475 + 0.344780I$ | $-1.61762 - 3.68106I$ | 0 |
| $u = 0.915176 - 0.374176I$ $a = -0.881069 - 0.421708I$ $b = -0.665475 - 0.344780I$ | $-1.61762 + 3.68106I$ | 0 |
| $u = -0.911314 + 0.371165I$ $a = -0.962164 - 0.086599I$ $b = -0.296551 + 1.206580I$ | $4.32077 - 5.45772I$ | 0 |
| $u = -0.911314 - 0.371165I$ $a = -0.962164 + 0.086599I$ $b = -0.296551 - 1.206580I$ | $4.32077 + 5.45772I$ | 0 |
| $u = 0.830216 + 0.518276I$ $a = -1.09985 + 1.20733I$ $b = -0.662634 - 1.196350I$ | $5.28936 - 1.07756I$ | 0 |
| $u = 0.830216 - 0.518276I$ $a = -1.09985 - 1.20733I$ $b = -0.662634 + 1.196350I$ | $5.28936 + 1.07756I$ | 0 |

| Solutions to I_1^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---------------------------------------|------------|
| $u = 0.267064 + 0.928594I$ $a = 0.78004 - 1.30401I$ $b = -0.476011 + 0.994886I$ | $-1.29765 + 2.45359I$ | 0 |
| $u = 0.267064 - 0.928594I$ $a = 0.78004 + 1.30401I$ $b = -0.476011 - 0.994886I$ | $-1.29765 - 2.45359I$ | 0 |
| $u = 0.865667 + 0.411875I$ $a = 1.023270 - 0.122811I$ $b = 0.332039 + 0.960787I$ | $0.593196 + 0.743247I$ | 0 |
| $u = 0.865667 - 0.411875I$ $a = 1.023270 + 0.122811I$ $b = 0.332039 - 0.960787I$ | $0.593196 - 0.743247I$ | 0 |
| $u = 0.268756 + 1.009500I$ $a = -0.41582 + 1.58361I$ $b = 0.429135 - 0.496965I$ | $-2.14568 - 2.88218I$ | 0 |
| $u = 0.268756 - 1.009500I$ $a = -0.41582 - 1.58361I$ $b = 0.429135 + 0.496965I$ | $-2.14568 + 2.88218I$ | 0 |
| $u = 0.260589 + 0.911776I$ $a = -0.51091 - 1.51427I$ $b = -0.086537 + 1.184460I$ | $7.21873 - 2.31414I$ | 0 |
| $u = 0.260589 - 0.911776I$ $a = -0.51091 + 1.51427I$ $b = -0.086537 - 1.184460I$ | $7.21873 + 2.31414I$ | 0 |
| $u = -0.928179 + 0.185085I$ $a = -1.31562 - 1.02496I$ $b = -0.496072 + 0.506207I$ | $-3.28092 + 0.65320I$ | 0 |
| $u = -0.928179 - 0.185085I$ $a = -1.31562 + 1.02496I$ $b = -0.496072 - 0.506207I$ | $-3.28092 - 0.65320I$ | 0 |

| Solutions to I_1^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---------------------------------------|------------|
| $u = -0.722890 + 0.603420I$ $a = -0.332399 + 0.483389I$ $b = -0.243722 - 0.338431I$ | $2.71954 + 3.65187I$ | 0 |
| $u = -0.722890 - 0.603420I$ $a = -0.332399 - 0.483389I$ $b = -0.243722 + 0.338431I$ | $2.71954 - 3.65187I$ | 0 |
| $u = -1.019350 + 0.308406I$ $a = -1.96904 + 0.11380I$ $b = 0.078671 + 0.716499I$ | $-1.352700 - 0.345590I$ | 0 |
| $u = -1.019350 - 0.308406I$ $a = -1.96904 - 0.11380I$ $b = 0.078671 - 0.716499I$ | $-1.352700 + 0.345590I$ | 0 |
| $u = 0.933309 + 0.043329I$ $a = 2.70551 - 5.68153I$ $b = 0.118826 + 1.029770I$ | $0.182079 - 0.083509I$ | 0 |
| $u = 0.933309 - 0.043329I$ $a = 2.70551 + 5.68153I$ $b = 0.118826 - 1.029770I$ | $0.182079 + 0.083509I$ | 0 |
| $u = 0.741521 + 0.766665I$ $a = -0.80312 + 1.48660I$ $b = -0.791649 - 0.938174I$ | $2.65700 - 8.59855I$ | 0 |
| $u = 0.741521 - 0.766665I$ $a = -0.80312 - 1.48660I$ $b = -0.791649 + 0.938174I$ | $2.65700 + 8.59855I$ | 0 |
| $u = 1.084770 + 0.075835I$ $a = 0.676752 - 0.593636I$ $b = 0.635917 + 0.164215I$ | $-1.44974 + 2.38111I$ | 0 |
| $u = 1.084770 - 0.075835I$ $a = 0.676752 + 0.593636I$ $b = 0.635917 - 0.164215I$ | $-1.44974 - 2.38111I$ | 0 |

| Solutions to I_1^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|--|---------------------------------------|------------|
| $u = -0.967024 + 0.504518I$ $a = 0.636371 + 0.801048I$ $b = 0.821785 - 0.053503I$ | $1.22501 + 8.45758I$ | 0 |
| $u = -0.967024 - 0.504518I$ $a = 0.636371 - 0.801048I$ $b = 0.821785 + 0.053503I$ | $1.22501 - 8.45758I$ | 0 |
| $u = -1.089940 + 0.203333I$ $a = 1.71443 + 0.58971I$ $b = 0.354122 - 1.083020I$ | $1.79023 + 0.79732I$ | 0 |
| $u = -1.089940 - 0.203333I$ $a = 1.71443 - 0.58971I$ $b = 0.354122 + 1.083020I$ | $1.79023 - 0.79732I$ | 0 |
| $u = -0.665123 + 0.890537I$ $a = 0.284939 + 0.666179I$ $b = -0.540626 - 0.822974I$ | $2.50535 + 3.30834I$ | 0 |
| $u = -0.665123 - 0.890537I$ $a = 0.284939 - 0.666179I$ $b = -0.540626 + 0.822974I$ | $2.50535 - 3.30834I$ | 0 |
| $u = -0.873663 + 0.146201I$ $a = -0.083774 - 1.203770I$ $b = 0.01017 + 1.81847I$ | $4.92828 + 7.63290I$ | 0 |
| $u = -0.873663 - 0.146201I$ $a = -0.083774 + 1.203770I$ $b = 0.01017 - 1.81847I$ | $4.92828 - 7.63290I$ | 0 |
| $u = -0.844903 + 0.254381I$ $a = 0.398836 - 1.045490I$ $b = 0.33666 + 1.42613I$ | $4.42997 - 1.35438I$ | 0 |
| $u = -0.844903 - 0.254381I$ $a = 0.398836 + 1.045490I$ $b = 0.33666 - 1.42613I$ | $4.42997 + 1.35438I$ | 0 |

| Solutions to I_1^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---------------------------------------|------------|
| $u = -0.807222 + 0.336582I$ $a = -1.070950 - 0.039143I$ $b = -0.651460 + 0.967818I$ | $4.35010 + 4.01737I$ | 0 |
| $u = -0.807222 - 0.336582I$ $a = -1.070950 + 0.039143I$ $b = -0.651460 - 0.967818I$ | $4.35010 - 4.01737I$ | 0 |
| $u = -0.208446 + 0.846554I$ $a = -0.68762 - 1.46932I$ $b = 0.543847 + 1.119410I$ | $0.17317 - 6.34643I$ | 0 |
| $u = -0.208446 - 0.846554I$ $a = -0.68762 + 1.46932I$ $b = 0.543847 - 1.119410I$ | $0.17317 + 6.34643I$ | 0 |
| $u = -0.862498 + 0.731446I$ $a = -0.31807 - 1.82238I$ $b = -0.510474 + 0.892164I$ | $-3.31588 + 2.03557I$ | 0 |
| $u = -0.862498 - 0.731446I$ $a = -0.31807 + 1.82238I$ $b = -0.510474 - 0.892164I$ | $-3.31588 - 2.03557I$ | 0 |
| $u = -0.528278 + 0.683581I$ $a = 0.459538 + 1.239740I$ $b = -0.094965 - 1.184460I$ | $3.30392 + 1.21744I$ | 0 |
| $u = -0.528278 - 0.683581I$ $a = 0.459538 - 1.239740I$ $b = -0.094965 + 1.184460I$ | $3.30392 - 1.21744I$ | 0 |
| $u = -0.850837 + 0.148530I$ $a = -1.44220 - 1.52687I$ $b = -0.635119 + 0.854070I$ | $-3.31379 + 1.12851I$ | 0 |
| $u = -0.850837 - 0.148530I$ $a = -1.44220 + 1.52687I$ $b = -0.635119 - 0.854070I$ | $-3.31379 - 1.12851I$ | 0 |

| Solutions to I_1^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|--|---------------------------------------|------------|
| $u = 1.113610 + 0.236527I$ $a = -0.0081692 - 0.1312360I$ $b = -1.50389 + 0.58738I$ | $-4.64578 + 0.86236I$ | 0 |
| $u = 1.113610 - 0.236527I$ $a = -0.0081692 + 0.1312360I$ $b = -1.50389 - 0.58738I$ | $-4.64578 - 0.86236I$ | 0 |
| $u = 0.231656 + 0.829785I$ $a = -0.05951 - 1.61145I$ $b = -0.299929 + 1.307960I$ | $7.72074 + 8.11198I$ | 0 |
| $u = 0.231656 - 0.829785I$ $a = -0.05951 + 1.61145I$ $b = -0.299929 - 1.307960I$ | $7.72074 - 8.11198I$ | 0 |
| $u = 0.853699 + 0.104903I$ $a = 0.95430 - 1.54712I$ $b = 0.68482 + 1.28338I$ | $-1.92543 - 4.84905I$ | 0 |
| $u = 0.853699 - 0.104903I$ $a = 0.95430 + 1.54712I$ $b = 0.68482 - 1.28338I$ | $-1.92543 + 4.84905I$ | 0 |
| $u = -0.847346 + 0.133559I$ $a = 1.63878 - 0.39556I$ $b = 0.276780 + 0.779594I$ | $3.11053 - 0.19176I$ | 0 |
| $u = -0.847346 - 0.133559I$ $a = 1.63878 + 0.39556I$ $b = 0.276780 - 0.779594I$ | $3.11053 + 0.19176I$ | 0 |
| $u = -0.022376 + 0.855453I$ $a = 0.90417 - 1.31054I$ $b = -0.429783 + 1.209360I$ | $1.59238 + 4.23637I$ | 0 |
| $u = -0.022376 - 0.855453I$ $a = 0.90417 + 1.31054I$ $b = -0.429783 - 1.209360I$ | $1.59238 - 4.23637I$ | 0 |

| Solutions to I_1^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|--|---------------------------------------|------------|
| $u = 0.839044 + 0.145941I$ $a = -0.08746 - 1.42549I$ $b = 0.00710 + 1.56514I$ | $1.27540 - 3.22857I$ | 0 |
| $u = 0.839044 - 0.145941I$ $a = -0.08746 + 1.42549I$ $b = 0.00710 - 1.56514I$ | $1.27540 + 3.22857I$ | 0 |
| $u = -0.277337 + 0.804585I$ $a = 0.164515 - 1.317430I$ $b = 0.274774 + 1.190640I$ | $3.45365 - 3.41412I$ | 0 |
| $u = -0.277337 - 0.804585I$ $a = 0.164515 + 1.317430I$ $b = 0.274774 - 1.190640I$ | $3.45365 + 3.41412I$ | 0 |
| $u = 1.120720 + 0.336689I$ $a = 0.003701 + 0.171555I$ $b = -1.271420 + 0.543908I$ | $-5.42015 - 4.37598I$ | 0 |
| $u = 1.120720 - 0.336689I$ $a = 0.003701 - 0.171555I$ $b = -1.271420 - 0.543908I$ | $-5.42015 + 4.37598I$ | 0 |
| $u = -1.011570 + 0.588491I$ $a = 0.880891 + 1.061040I$ $b = 0.495034 - 1.040080I$ | $1.87354 + 3.75211I$ | 0 |
| $u = -1.011570 - 0.588491I$ $a = 0.880891 - 1.061040I$ $b = 0.495034 + 1.040080I$ | $1.87354 - 3.75211I$ | 0 |
| $u = -1.187150 + 0.225281I$ $a = -0.084077 - 0.115206I$ $b = 1.387830 + 0.195997I$ | $-6.25555 + 1.65412I$ | 0 |
| $u = -1.187150 - 0.225281I$ $a = -0.084077 + 0.115206I$ $b = 1.387830 - 0.195997I$ | $-6.25555 - 1.65412I$ | 0 |

| Solutions to I_1^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|--|---------------------------------------|------------|
| $u = -0.204359 + 0.762631I$ $a = 0.65317 + 1.81794I$ $b = -0.544913 - 0.241877I$ | $0.55143 + 9.06486I$ | 0 |
| $u = -0.204359 - 0.762631I$ $a = 0.65317 - 1.81794I$ $b = -0.544913 + 0.241877I$ | $0.55143 - 9.06486I$ | 0 |
| $u = -0.049278 + 0.780179I$ $a = -0.780221 - 1.046110I$ $b = 0.472046 + 1.129250I$ | $1.32461 - 2.32482I$ | 0 |
| $u = -0.049278 - 0.780179I$ $a = -0.780221 + 1.046110I$ $b = 0.472046 - 1.129250I$ | $1.32461 + 2.32482I$ | 0 |
| $u = -1.175890 + 0.326749I$ $a = -0.180592 + 0.035328I$ $b = 1.176990 + 0.557577I$ | $-6.59949 + 1.11760I$ | 0 |
| $u = -1.175890 - 0.326749I$ $a = -0.180592 - 0.035328I$ $b = 1.176990 - 0.557577I$ | $-6.59949 - 1.11760I$ | 0 |
| $u = -0.966156 + 0.783023I$ $a = 0.68210 + 1.26288I$ $b = 0.724741 - 0.867423I$ | $1.63076 + 2.82752I$ | 0 |
| $u = -0.966156 - 0.783023I$ $a = 0.68210 - 1.26288I$ $b = 0.724741 + 0.867423I$ | $1.63076 - 2.82752I$ | 0 |
| $u = 1.229220 + 0.244301I$ $a = -0.801288 + 0.253368I$ $b = -0.499729 - 1.033100I$ | $-1.69948 - 3.50347I$ | 0 |
| $u = 1.229220 - 0.244301I$ $a = -0.801288 - 0.253368I$ $b = -0.499729 + 1.033100I$ | $-1.69948 + 3.50347I$ | 0 |

| Solutions to I_1^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|-----------------------------|---------------------------------------|------------|
| $u = -1.234680 + 0.277061I$ | | |
| $a = 0.99756 + 1.58457I$ | $-2.72337 + 10.53720I$ | 0 |
| $b = 0.489008 - 1.112440I$ | | |
| $u = -1.234680 - 0.277061I$ | | |
| $a = 0.99756 - 1.58457I$ | $-2.72337 - 10.53720I$ | 0 |
| $b = 0.489008 + 1.112440I$ | | |
| $u = 0.914174 + 0.878055I$ | | |
| $a = -0.318771 + 0.651893I$ | $2.23701 + 2.52987I$ | 0 |
| $b = 0.630963 - 1.009040I$ | | |
| $u = 0.914174 - 0.878055I$ | | |
| $a = -0.318771 - 0.651893I$ | $2.23701 - 2.52987I$ | 0 |
| $b = 0.630963 + 1.009040I$ | | |
| $u = 0.273246 + 1.238690I$ | | |
| $a = 0.026142 + 1.339540I$ | $7.55549 - 1.54678I$ | 0 |
| $b = -0.100077 - 1.138070I$ | | |
| $u = 0.273246 - 1.238690I$ | | |
| $a = 0.026142 - 1.339540I$ | $7.55549 + 1.54678I$ | 0 |
| $b = -0.100077 + 1.138070I$ | | |
| $u = -1.243950 + 0.288511I$ | | |
| $a = -0.173414 - 0.135763I$ | $-6.34008 + 1.34512I$ | 0 |
| $b = 0.984332 + 0.308673I$ | | |
| $u = -1.243950 - 0.288511I$ | | |
| $a = -0.173414 + 0.135763I$ | $-6.34008 - 1.34512I$ | 0 |
| $b = 0.984332 - 0.308673I$ | | |
| $u = 1.275850 + 0.167588I$ | | |
| $a = -0.043975 - 0.157354I$ | $-4.24168 - 4.68064I$ | 0 |
| $b = -0.920866 - 0.483509I$ | | |
| $u = 1.275850 - 0.167588I$ | | |
| $a = -0.043975 + 0.157354I$ | $-4.24168 + 4.68064I$ | 0 |
| $b = -0.920866 + 0.483509I$ | | |

| Solutions to I_1^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|-----------------------------|---------------------------------------|------------|
| $u = 0.710178 + 0.032326I$ | | |
| $a = 1.49756 + 0.26139I$ | $-2.78206 - 2.35655I$ | 0 |
| $b = 1.316290 + 0.027298I$ | | |
| $u = 0.710178 - 0.032326I$ | | |
| $a = 1.49756 - 0.26139I$ | $-2.78206 + 2.35655I$ | 0 |
| $b = 1.316290 - 0.027298I$ | | |
| $u = -0.706628 + 0.038033I$ | | |
| $a = -1.88252 - 0.60845I$ | $-3.88353 + 0.65865I$ | 0 |
| $b = -1.135580 + 0.244864I$ | | |
| $u = -0.706628 - 0.038033I$ | | |
| $a = -1.88252 + 0.60845I$ | $-3.88353 - 0.65865I$ | 0 |
| $b = -1.135580 - 0.244864I$ | | |
| $u = 0.419587 + 0.568542I$ | | |
| $a = 1.37429 - 1.11986I$ | $-2.50872 + 1.64985I$ | 0 |
| $b = -0.525739 + 0.566558I$ | | |
| $u = 0.419587 - 0.568542I$ | | |
| $a = 1.37429 + 1.11986I$ | $-2.50872 - 1.64985I$ | 0 |
| $b = -0.525739 - 0.566558I$ | | |
| $u = -0.336968 + 0.584671I$ | | |
| $a = 0.257670 - 0.354689I$ | $2.93185 - 4.25246I$ | 0 |
| $b = -0.791991 - 0.225991I$ | | |
| $u = -0.336968 - 0.584671I$ | | |
| $a = 0.257670 + 0.354689I$ | $2.93185 + 4.25246I$ | 0 |
| $b = -0.791991 + 0.225991I$ | | |
| $u = 1.229950 + 0.505940I$ | | |
| $a = 1.21373 - 0.79773I$ | $4.59681 - 13.07660I$ | 0 |
| $b = 0.505515 + 1.190320I$ | | |
| $u = 1.229950 - 0.505940I$ | | |
| $a = 1.21373 + 0.79773I$ | $4.59681 + 13.07660I$ | 0 |
| $b = 0.505515 - 1.190320I$ | | |

| Solutions to I_1^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---------------------------------------|------------|
| $u = 1.254070 + 0.452267I$ $a = -0.0717085 - 0.0096982I$ $b = 1.275460 - 0.413555I$ | $-3.43263 - 13.45390I$ | 0 |
| $u = 1.254070 - 0.452267I$ $a = -0.0717085 + 0.0096982I$ $b = 1.275460 + 0.413555I$ | $-3.43263 + 13.45390I$ | 0 |
| $u = -1.219820 + 0.547229I$ $a = -0.84466 - 1.25709I$ $b = -0.75383 + 1.27190I$ | $-2.88770 + 11.52210I$ | 0 |
| $u = -1.219820 - 0.547229I$ $a = -0.84466 + 1.25709I$ $b = -0.75383 - 1.27190I$ | $-2.88770 - 11.52210I$ | 0 |
| $u = 1.142900 + 0.704290I$ $a = 0.44210 - 1.49246I$ $b = 0.625808 + 1.112300I$ | $-4.03602 - 6.95926I$ | 0 |
| $u = 1.142900 - 0.704290I$ $a = 0.44210 + 1.49246I$ $b = 0.625808 - 1.112300I$ | $-4.03602 + 6.95926I$ | 0 |
| $u = -1.238850 + 0.517663I$ $a = -1.044670 - 0.688179I$ $b = -0.557236 + 1.069290I$ | $0.38173 + 8.41877I$ | 0 |
| $u = -1.238850 - 0.517663I$ $a = -1.044670 + 0.688179I$ $b = -0.557236 - 1.069290I$ | $0.38173 - 8.41877I$ | 0 |
| $u = 1.258750 + 0.473353I$ $a = 0.442243 - 0.266057I$ $b = -0.560804 + 0.722902I$ | $-3.81271 + 2.29405I$ | 0 |
| $u = 1.258750 - 0.473353I$ $a = 0.442243 + 0.266057I$ $b = -0.560804 - 0.722902I$ | $-3.81271 - 2.29405I$ | 0 |

| Solutions to I_1^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|--|---------------------------------------|------------|
| $u = 1.302300 + 0.345035I$ $a = 0.179164 + 0.076775I$ $b = 0.930534 - 0.188920I$ | $-0.69980 - 3.35631I$ | 0 |
| $u = 1.302300 - 0.345035I$ $a = 0.179164 - 0.076775I$ $b = 0.930534 + 0.188920I$ | $-0.69980 + 3.35631I$ | 0 |
| $u = -0.240792 + 1.327560I$ $a = 0.397783 + 1.227430I$ $b = -0.525829 - 1.121740I$ | $2.99047 - 13.53630I$ | 0 |
| $u = -0.240792 - 1.327560I$ $a = 0.397783 - 1.227430I$ $b = -0.525829 + 1.121740I$ | $2.99047 + 13.53630I$ | 0 |
| $u = 1.221660 + 0.586878I$ $a = 0.65830 - 1.32758I$ $b = 0.74303 + 1.24165I$ | $-4.22878 - 7.99722I$ | 0 |
| $u = 1.221660 - 0.586878I$ $a = 0.65830 + 1.32758I$ $b = 0.74303 - 1.24165I$ | $-4.22878 + 7.99722I$ | 0 |
| $u = -0.494647 + 0.399019I$ $a = 0.91470 + 1.43366I$ $b = 0.019305 - 1.253840I$ | $3.25400 + 1.41233I$ | 0 |
| $u = -0.494647 - 0.399019I$ $a = 0.91470 - 1.43366I$ $b = 0.019305 + 1.253840I$ | $3.25400 - 1.41233I$ | 0 |
| $u = -1.287670 + 0.459066I$ $a = 0.0344917 + 0.0654720I$ $b = -1.142430 - 0.439793I$ | $-6.57774 + 7.61800I$ | 0 |
| $u = -1.287670 - 0.459066I$ $a = 0.0344917 - 0.0654720I$ $b = -1.142430 + 0.439793I$ | $-6.57774 - 7.61800I$ | 0 |

| Solutions to I_1^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---------------------------------------|------------|
| $u = -1.268830 + 0.512847I$ $a = -0.598198 - 0.974183I$ $b = -0.87304 + 1.25401I$ | $-2.30878 + 7.20854I$ | 0 |
| $u = -1.268830 - 0.512847I$ $a = -0.598198 + 0.974183I$ $b = -0.87304 - 1.25401I$ | $-2.30878 - 7.20854I$ | 0 |
| $u = 0.464494 + 0.417885I$ $a = 0.389547 - 0.250016I$ $b = 0.593850 - 0.095397I$ | $-0.371617 + 0.181149I$ | 0 |
| $u = 0.464494 - 0.417885I$ $a = 0.389547 + 0.250016I$ $b = 0.593850 + 0.095397I$ | $-0.371617 - 0.181149I$ | 0 |
| $u = 1.295430 + 0.504405I$ $a = 1.114000 - 0.413639I$ $b = 0.388015 + 0.956976I$ | $3.82570 - 2.82547I$ | 0 |
| $u = 1.295430 - 0.504405I$ $a = 1.114000 + 0.413639I$ $b = 0.388015 - 0.956976I$ | $3.82570 + 2.82547I$ | 0 |
| $u = -1.366900 + 0.317845I$ $a = 0.466473 + 0.607457I$ $b = 0.528493 - 1.181530I$ | $1.47867 + 6.93285I$ | 0 |
| $u = -1.366900 - 0.317845I$ $a = 0.466473 - 0.607457I$ $b = 0.528493 + 1.181530I$ | $1.47867 - 6.93285I$ | 0 |
| $u = 1.394320 + 0.192557I$ $a = -0.84720 + 1.30040I$ $b = -0.482826 - 1.070650I$ | $-6.13637 - 3.71187I$ | 0 |
| $u = 1.394320 - 0.192557I$ $a = -0.84720 - 1.30040I$ $b = -0.482826 + 1.070650I$ | $-6.13637 + 3.71187I$ | 0 |

| Solutions to I_1^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|--|---------------------------------------|------------------|
| $u = 0.29182 + 1.39063I$ $a = -0.330028 + 1.175580I$ $b = 0.507639 - 1.039770I$ | $-0.47925 + 6.98931I$ | 0 |
| $u = 0.29182 - 1.39063I$ $a = -0.330028 - 1.175580I$ $b = 0.507639 + 1.039770I$ | $-0.47925 - 6.98931I$ | 0 |
| $u = 1.32037 + 0.53217I$ $a = 0.489703 - 1.078630I$ $b = 0.80695 + 1.40931I$ | $-2.48134 - 9.39382I$ | 0 |
| $u = 1.32037 - 0.53217I$ $a = 0.489703 + 1.078630I$ $b = 0.80695 - 1.40931I$ | $-2.48134 + 9.39382I$ | 0 |
| $u = 1.23017 + 0.74039I$ $a = -0.714822 + 0.963586I$ $b = -0.225835 - 1.061800I$ | $4.62378 - 5.27274I$ | 0 |
| $u = 1.23017 - 0.74039I$ $a = -0.714822 - 0.963586I$ $b = -0.225835 + 1.061800I$ | $4.62378 + 5.27274I$ | 0 |
| $u = -1.35980 + 0.56252I$ $a = 0.34682 + 1.42888I$ $b = 0.472018 - 1.041820I$ | $-2.69097 - 3.40063I$ | 0 |
| $u = -1.35980 - 0.56252I$ $a = 0.34682 - 1.42888I$ $b = 0.472018 + 1.041820I$ | $-2.69097 + 3.40063I$ | 0 |
| $u = -0.165018 + 0.454733I$ $a = 0.323685 + 1.184510I$ $b = -0.350182 + 0.351513I$ | $3.54368 + 0.14114I$ | $-7.79730 + 0.I$ |
| $u = -0.165018 - 0.454733I$ $a = 0.323685 - 1.184510I$ $b = -0.350182 - 0.351513I$ | $3.54368 - 0.14114I$ | $-7.79730 + 0.I$ |

| Solutions to I_1^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|-----------------------------|---------------------------------------|----------------------|
| $u = -1.35879 + 0.68363I$ | | |
| $a = 0.658461 + 1.237440I$ | $-0.6048 + 20.4984I$ | 0 |
| $b = 0.74314 - 1.28555I$ | | |
| $u = -1.35879 - 0.68363I$ | | |
| $a = 0.658461 - 1.237440I$ | $-0.6048 - 20.4984I$ | 0 |
| $b = 0.74314 + 1.28555I$ | | |
| $u = 1.51899 + 0.11938I$ | | |
| $a = 0.089455 - 0.236447I$ | $-4.95976 - 6.38027I$ | 0 |
| $b = 0.495480 - 0.372074I$ | | |
| $u = 1.51899 - 0.11938I$ | | |
| $a = 0.089455 + 0.236447I$ | $-4.95976 + 6.38027I$ | 0 |
| $b = 0.495480 + 0.372074I$ | | |
| $u = -0.419162 + 0.207680I$ | | |
| $a = 3.33342 + 2.85533I$ | $0.72969 + 9.00585I$ | $-13.9907 - 2.3705I$ |
| $b = -0.210137 + 0.305412I$ | | |
| $u = -0.419162 - 0.207680I$ | | |
| $a = 3.33342 - 2.85533I$ | $0.72969 - 9.00585I$ | $-13.9907 + 2.3705I$ |
| $b = -0.210137 - 0.305412I$ | | |
| $u = 1.46937 + 0.46587I$ | | |
| $a = -0.55695 + 1.32312I$ | $-6.27716 - 3.36692I$ | 0 |
| $b = -0.499565 - 1.077370I$ | | |
| $u = 1.46937 - 0.46587I$ | | |
| $a = -0.55695 - 1.32312I$ | $-6.27716 + 3.36692I$ | 0 |
| $b = -0.499565 + 1.077370I$ | | |
| $u = 1.37643 + 0.70310I$ | | |
| $a = -0.634844 + 1.224050I$ | $-4.0551 - 14.2204I$ | 0 |
| $b = -0.71832 - 1.22870I$ | | |
| $u = 1.37643 - 0.70310I$ | | |
| $a = -0.634844 - 1.224050I$ | $-4.0551 + 14.2204I$ | 0 |
| $b = -0.71832 + 1.22870I$ | | |

| Solutions to I_1^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|--|---------------------------------------|------------------------|
| $u = 0.301709 + 0.305751I$ $a = -0.65866 + 3.97939I$ $b = 0.201791 + 0.247158I$ | $-1.91349 - 3.18793I$ | $-20.3303 + 3.5947I$ |
| $u = 0.301709 - 0.305751I$ $a = -0.65866 - 3.97939I$ $b = 0.201791 - 0.247158I$ | $-1.91349 + 3.18793I$ | $-20.3303 - 3.5947I$ |
| $u = -1.43598 + 0.65398I$ $a = 0.614608 + 1.162010I$ $b = 0.588548 - 1.208550I$ | $2.31661 + 8.82051I$ | 0 |
| $u = -1.43598 - 0.65398I$ $a = 0.614608 - 1.162010I$ $b = 0.588548 + 1.208550I$ | $2.31661 - 8.82051I$ | 0 |
| $u = -0.156276 + 0.389985I$ $a = -1.53840 - 1.78639I$ $b = 0.706751 + 0.250418I$ | $-2.26661 + 1.56990I$ | $-12.99135 - 4.46359I$ |
| $u = -0.156276 - 0.389985I$ $a = -1.53840 + 1.78639I$ $b = 0.706751 - 0.250418I$ | $-2.26661 - 1.56990I$ | $-12.99135 + 4.46359I$ |
| $u = -1.42529 + 0.73027I$ $a = -0.316869 - 1.228090I$ $b = -0.48385 + 1.34552I$ | $1.06578 + 9.36259I$ | 0 |
| $u = -1.42529 - 0.73027I$ $a = -0.316869 + 1.228090I$ $b = -0.48385 - 1.34552I$ | $1.06578 - 9.36259I$ | 0 |
| $u = -0.32232 + 1.57592I$ $a = 0.251351 + 1.219410I$ $b = -0.325889 - 0.926755I$ | $6.48750 - 1.31815I$ | 0 |
| $u = -0.32232 - 1.57592I$ $a = 0.251351 - 1.219410I$ $b = -0.325889 + 0.926755I$ | $6.48750 + 1.31815I$ | 0 |

| Solutions to I_1^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---------------------------------------|------------|
| $u = -1.62354 + 0.01233I$ $a = -0.342204 + 0.053930I$ $b = -0.355912 + 0.537478I$ | $-7.94904 + 0.08068I$ | 0 |
| $u = -1.62354 - 0.01233I$ $a = -0.342204 - 0.053930I$ $b = -0.355912 - 0.537478I$ | $-7.94904 - 0.08068I$ | 0 |
| $u = 0.371009$ $a = 0.622778$ $b = 0.328320$ | -0.577669 | -16.8570 |
| $u = -1.68630 + 0.14324I$ $a = -0.123446 + 0.248830I$ $b = -0.431066 - 0.477178I$ | $-8.17453 - 0.68273I$ | 0 |
| $u = -1.68630 - 0.14324I$ $a = -0.123446 - 0.248830I$ $b = -0.431066 + 0.477178I$ | $-8.17453 + 0.68273I$ | 0 |
| $u = 1.84057 + 0.13919I$ $a = -0.034591 + 0.352549I$ $b = 0.276896 - 0.610908I$ | $-4.32983 + 6.91280I$ | 0 |
| $u = 1.84057 - 0.13919I$ $a = -0.034591 - 0.352549I$ $b = 0.276896 + 0.610908I$ | $-4.32983 - 6.91280I$ | 0 |
| $u = -0.33847 + 1.84132I$ $a = -0.387588 - 1.117950I$ $b = 0.241094 + 0.954738I$ | $5.21077 - 0.98103I$ | 0 |
| $u = -0.33847 - 1.84132I$ $a = -0.387588 + 1.117950I$ $b = 0.241094 - 0.954738I$ | $5.21077 + 0.98103I$ | 0 |

II.

$$I_2^u = \langle -6.32 \times 10^{64} u^{45} - 2.06 \times 10^{65} u^{44} + \dots + 7.63 \times 10^{64} b - 3.63 \times 10^{65}, -1.17 \times 10^{66} u^{45} - 1.34 \times 10^{66} u^{44} + \dots + 3.81 \times 10^{65} a + 1.52 \times 10^{66}, u^{46} + u^{45} + \dots - 4u - 1 \rangle$$

(i) Arc colorings

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

$$a_7 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

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

$$a_{12} = \begin{pmatrix} 3.07517u^{45} + 3.52044u^{44} + \dots + 0.0351120u - 3.97606 \\ 0.828110u^{45} + 2.70307u^{44} + \dots + 27.9137u + 4.76046 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -3.95905u^{45} - 3.90820u^{44} + \dots - 8.58268u + 3.40061 \\ -1.70283u^{45} - 1.64681u^{44} + \dots - 6.85481u - 0.560714 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.368133u^{45} - 0.606936u^{44} + \dots - 11.8015u - 5.04021 \\ -2.93569u^{45} - 2.56925u^{44} + \dots - 2.65662u - 0.00923620 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -1.61682u^{45} - 1.39393u^{44} + \dots - 14.8379u - 5.09566 \\ -2.35035u^{45} - 2.06739u^{44} + \dots + 0.977947u + 0.507915 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -2.90364u^{45} - 4.32478u^{44} + \dots + 0.426431u + 1.78570 \\ 2.21317u^{45} + 2.69823u^{44} + \dots + 22.4707u + 3.55173 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 3.90328u^{45} + 6.22351u^{44} + \dots + 27.9488u + 0.784398 \\ 0.828110u^{45} + 2.70307u^{44} + \dots + 27.9137u + 4.76046 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 1.08755u^{45} + 0.808923u^{44} + \dots - 0.205520u - 2.78438 \\ -0.970295u^{45} - 0.436029u^{44} + \dots + 1.62043u + 0.667591 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -3.17619u^{45} - 7.66047u^{44} + \dots - 41.7514u - 10.2838 \\ -1.04386u^{45} - 1.45320u^{44} + \dots - 11.1493u - 1.98333 \end{pmatrix}$$

(ii) Obstruction class = 1

(iii) Cusp Shapes = $-9.77080u^{45} - 14.3760u^{44} + \dots - 67.1522u - 26.2416$

(iv) u -Polynomials at the component

| Crossings | u-Polynomials at each crossing |
|-----------|--|
| c_1 | $u^{46} - 5u^{45} + \dots + 381u - 45$ |
| c_2 | $5(5u^{46} - 29u^{45} + \dots - 5u - 1)$ |
| c_3 | $u^{46} - u^{45} + \dots + 4u - 1$ |
| c_4 | $u^{46} + 12u^{44} + \dots + 13u + 1$ |
| c_5 | $5(5u^{46} + 29u^{45} + \dots + 5u - 1)$ |
| c_6 | $u^{46} + u^{45} + \dots + 2u - 1$ |
| c_7 | $u^{46} + u^{45} + \dots - 4u - 1$ |
| c_8 | $5(5u^{46} - 2u^{45} + \dots + 141u + 27)$ |
| c_9 | $u^{46} + 12u^{44} + \dots - 13u + 1$ |
| c_{10} | $5(5u^{46} - 52u^{45} + \dots - 5u + 1)$ |
| c_{11} | $u^{46} - u^{45} + \dots - 2u - 1$ |
| c_{12} | $u^{46} - 2u^{45} + \dots - 6u + 1$ |

(v) Riley Polynomials at the component

| Crossings | Riley Polynomials at each crossing |
|---------------|--|
| c_1 | $y^{46} - 29y^{45} + \dots - 85491y + 2025$ |
| c_2, c_5 | $25(25y^{46} - 1291y^{45} + \dots + 87y + 1)$ |
| c_3, c_7 | $y^{46} - 27y^{45} + \dots - 28y + 1$ |
| c_4, c_9 | $y^{46} + 24y^{45} + \dots - 61y + 1$ |
| c_6, c_{11} | $y^{46} + 21y^{45} + \dots + 20y + 1$ |
| c_8 | $25(25y^{46} + 156y^{45} + \dots + 2961y + 729)$ |
| c_{10} | $25(25y^{46} + 456y^{45} + \dots + 31y + 1)$ |
| c_{12} | $y^{46} + 40y^{45} + \dots - 128y + 1$ |

(vi) Complex Volumes and Cusp Shapes

| Solutions to I_2^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|--|---------------------------------------|------------------------|
| $u = -0.759965 + 0.615331I$ $a = 0.378826 + 1.226440I$ $b = -0.249538 - 1.138700I$ | $4.12941 + 2.44020I$ | $-7.32891 - 3.86342I$ |
| $u = -0.759965 - 0.615331I$ $a = 0.378826 - 1.226440I$ $b = -0.249538 + 1.138700I$ | $4.12941 - 2.44020I$ | $-7.32891 + 3.86342I$ |
| $u = 0.931327 + 0.070775I$ $a = 2.84214 - 4.58130I$ $b = 0.140739 + 1.013170I$ | $0.194745 - 0.116599I$ | $2.9220 + 82.8813I$ |
| $u = 0.931327 - 0.070775I$ $a = 2.84214 + 4.58130I$ $b = 0.140739 - 1.013170I$ | $0.194745 + 0.116599I$ | $2.9220 - 82.8813I$ |
| $u = -0.314615 + 0.825539I$ $a = -0.768293 - 0.926594I$ $b = 0.524033 + 1.160380I$ | $0.35083 - 3.81303I$ | $-11.81487 + 3.53813I$ |
| $u = -0.314615 - 0.825539I$ $a = -0.768293 + 0.926594I$ $b = 0.524033 - 1.160380I$ | $0.35083 + 3.81303I$ | $-11.81487 - 3.53813I$ |
| $u = -1.124520 + 0.184209I$ $a = -0.0617338 + 0.0211337I$ $b = 1.281670 + 0.050335I$ | $-4.48275 + 3.04871I$ | $-14.6371 - 3.6880I$ |
| $u = -1.124520 - 0.184209I$ $a = -0.0617338 - 0.0211337I$ $b = 1.281670 - 0.050335I$ | $-4.48275 - 3.04871I$ | $-14.6371 + 3.6880I$ |
| $u = 0.725486 + 0.429787I$ $a = 0.341424 + 0.616367I$ $b = 0.344508 - 1.276250I$ | $4.94472 + 1.48067I$ | $-0.92704 - 2.07489I$ |
| $u = 0.725486 - 0.429787I$ $a = 0.341424 - 0.616367I$ $b = 0.344508 + 1.276250I$ | $4.94472 - 1.48067I$ | $-0.92704 + 2.07489I$ |

| Solutions to I_2^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---------------------------------------|------------------------|
| $u = 1.138440 + 0.286250I$ $a = 0.157514 - 0.051212I$ $b = -1.36556 + 0.43065I$ | $-5.70494 - 1.01538I$ | $-12.00000 + 0.I$ |
| $u = 1.138440 - 0.286250I$ $a = 0.157514 + 0.051212I$ $b = -1.36556 - 0.43065I$ | $-5.70494 + 1.01538I$ | $-12.00000 + 0.I$ |
| $u = -1.066310 + 0.538677I$ $a = 1.27908 + 0.75361I$ $b = 0.428833 - 0.845999I$ | $3.22687 + 2.04204I$ | $-12.00000 + 0.I$ |
| $u = -1.066310 - 0.538677I$ $a = 1.27908 - 0.75361I$ $b = 0.428833 + 0.845999I$ | $3.22687 - 2.04204I$ | $-12.00000 + 0.I$ |
| $u = -0.784232 + 0.094828I$ $a = -1.60633 - 0.16619I$ $b = -1.195670 - 0.277234I$ | $-3.06323 - 1.85882I$ | $-15.8030 - 0.6054I$ |
| $u = -0.784232 - 0.094828I$ $a = -1.60633 + 0.16619I$ $b = -1.195670 + 0.277234I$ | $-3.06323 + 1.85882I$ | $-15.8030 + 0.6054I$ |
| $u = -0.695446 + 0.349672I$ $a = -2.02642 - 0.86298I$ $b = 0.104294 + 0.443019I$ | $-2.48398 + 0.08786I$ | $-12.94904 - 1.25593I$ |
| $u = -0.695446 - 0.349672I$ $a = -2.02642 + 0.86298I$ $b = 0.104294 - 0.443019I$ | $-2.48398 - 0.08786I$ | $-12.94904 + 1.25593I$ |
| $u = 0.410512 + 0.626152I$ $a = -0.19819 + 3.24676I$ $b = -0.232805 - 0.626962I$ | $-1.45648 - 3.49012I$ | $-7.34431 + 10.93615I$ |
| $u = 0.410512 - 0.626152I$ $a = -0.19819 - 3.24676I$ $b = -0.232805 + 0.626962I$ | $-1.45648 + 3.49012I$ | $-7.34431 - 10.93615I$ |

| Solutions to I_2^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|--|---------------------------------------|-----------------------|
| $u = -0.584281 + 0.448127I$ $a = 1.91297 + 2.94195I$ $b = 0.423883 - 0.605968I$ | $0.85461 + 9.55799I$ | $-11.2303 - 15.6993I$ |
| $u = -0.584281 - 0.448127I$ $a = 1.91297 - 2.94195I$ $b = 0.423883 + 0.605968I$ | $0.85461 - 9.55799I$ | $-11.2303 + 15.6993I$ |
| $u = 1.131570 + 0.646272I$ $a = -0.543841 + 0.777131I$ $b = -0.517868 - 0.927064I$ | $3.13671 - 5.81126I$ | 0 |
| $u = 1.131570 - 0.646272I$ $a = -0.543841 - 0.777131I$ $b = -0.517868 + 0.927064I$ | $3.13671 + 5.81126I$ | 0 |
| $u = 0.672359 + 0.155073I$ $a = 1.91058 - 0.59861I$ $b = 1.206820 + 0.069668I$ | $-3.74702 - 1.02516I$ | $-12.3946 + 11.9932I$ |
| $u = 0.672359 - 0.155073I$ $a = 1.91058 + 0.59861I$ $b = 1.206820 - 0.069668I$ | $-3.74702 + 1.02516I$ | $-12.3946 - 11.9932I$ |
| $u = -1.244570 + 0.536903I$ $a = -0.592342 - 1.107730I$ $b = -0.83991 + 1.34043I$ | $-2.67755 + 8.80359I$ | 0 |
| $u = -1.244570 - 0.536903I$ $a = -0.592342 + 1.107730I$ $b = -0.83991 - 1.34043I$ | $-2.67755 - 8.80359I$ | 0 |
| $u = 0.088786 + 1.376940I$ $a = -0.397745 + 1.242650I$ $b = 0.104797 - 0.976334I$ | $6.91682 + 0.42500I$ | 0 |
| $u = 0.088786 - 1.376940I$ $a = -0.397745 - 1.242650I$ $b = 0.104797 + 0.976334I$ | $6.91682 - 0.42500I$ | 0 |

| Solutions to I_2^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---------------------------------------|-----------------------|
| $u = 1.50682$ $a = -0.140304$ $b = -0.624244$ | -8.28794 | 0 |
| $u = 1.40911 + 0.54379I$ $a = 0.456293 - 1.181880I$ $b = 0.52854 + 1.33458I$ | $0.28379 - 9.06984I$ | 0 |
| $u = 1.40911 - 0.54379I$ $a = 0.456293 + 1.181880I$ $b = 0.52854 - 1.33458I$ | $0.28379 + 9.06984I$ | 0 |
| $u = -1.48517 + 0.28208I$ $a = -0.71090 - 1.26682I$ $b = -0.476877 + 1.074080I$ | $-5.86122 + 3.55096I$ | 0 |
| $u = -1.48517 - 0.28208I$ $a = -0.71090 + 1.26682I$ $b = -0.476877 - 1.074080I$ | $-5.86122 - 3.55096I$ | 0 |
| $u = 0.481596 + 0.075115I$ $a = 0.385331 - 0.389381I$ $b = -0.03992 - 1.62142I$ | $5.66401 - 7.16274I$ | $-5.71563 + 4.13368I$ |
| $u = 0.481596 - 0.075115I$ $a = 0.385331 + 0.389381I$ $b = -0.03992 + 1.62142I$ | $5.66401 + 7.16274I$ | $-5.71563 - 4.13368I$ |
| $u = -0.462806$ $a = -2.66413$ $b = 0.296742$ | -2.56548 | -14.2180 |
| $u = -0.211948 + 0.231852I$ $a = 1.189010 - 0.598971I$ $b = 0.073592 - 1.346370I$ | $2.12631 + 2.83155I$ | $-9.95669 - 1.82826I$ |
| $u = -0.211948 - 0.231852I$ $a = 1.189010 + 0.598971I$ $b = 0.073592 + 1.346370I$ | $2.12631 - 2.83155I$ | $-9.95669 + 1.82826I$ |

| Solutions to I_2^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|-----------------------------|---------------------------------------|------------|
| $u = 1.69555 + 0.01087I$ | | |
| $a = -0.327167 + 0.083308I$ | $-7.72616 - 0.08966I$ | 0 |
| $b = -0.299745 - 0.576356I$ | | |
| $u = 1.69555 - 0.01087I$ | | |
| $a = -0.327167 - 0.083308I$ | $-7.72616 + 0.08966I$ | 0 |
| $b = -0.299745 + 0.576356I$ | | |
| $u = -1.73828 + 0.01558I$ | | |
| $a = 0.254122 + 0.232227I$ | $-4.15464 - 6.43454I$ | 0 |
| $b = 0.005183 - 0.511956I$ | | |
| $u = -1.73828 - 0.01558I$ | | |
| $a = 0.254122 - 0.232227I$ | $-4.15464 + 6.43454I$ | 0 |
| $b = 0.005183 + 0.511956I$ | | |
| $u = 0.30258 + 1.85023I$ | | |
| $a = 0.327896 - 1.135670I$ | $5.08625 + 1.16461I$ | 0 |
| $b = -0.285231 + 0.940956I$ | | |
| $u = 0.30258 - 1.85023I$ | | |
| $a = 0.327896 + 1.135670I$ | $5.08625 - 1.16461I$ | 0 |
| $b = -0.285231 - 0.940956I$ | | |

III. u-Polynomials

| Crossings | u-Polynomials at each crossing |
|-----------|---|
| c_1 | $(u^{46} - 5u^{45} + \dots + 381u - 45)(u^{169} - 10u^{168} + \dots - 8577u + 415)$ |
| c_2 | $25(5u^{46} - 29u^{45} + \dots - 5u - 1)$ $\cdot (5u^{169} - 24u^{168} + \dots + 348028723u + 24866791)$ |
| c_3 | $(u^{46} - u^{45} + \dots + 4u - 1)(u^{169} - 2u^{168} + \dots - 373810u + 75839)$ |
| c_4 | $(u^{46} + 12u^{44} + \dots + 13u + 1)(u^{169} - u^{168} + \dots - 1899u + 373)$ |
| c_5 | $25(5u^{46} + 29u^{45} + \dots + 5u - 1)$ $\cdot (5u^{169} - 24u^{168} + \dots + 348028723u + 24866791)$ |
| c_6 | $(u^{46} + u^{45} + \dots + 2u - 1)(u^{169} + 2u^{168} + \dots + 184u + 193)$ |
| c_7 | $(u^{46} + u^{45} + \dots - 4u - 1)(u^{169} - 2u^{168} + \dots - 373810u + 75839)$ |
| c_8 | $25(5u^{46} - 2u^{45} + \dots + 141u + 27)$ $\cdot (5u^{169} - 83u^{168} + \dots - 1136881u + 191311)$ |
| c_9 | $(u^{46} + 12u^{44} + \dots - 13u + 1)(u^{169} - u^{168} + \dots - 1899u + 373)$ |
| c_{10} | $25(5u^{46} - 52u^{45} + \dots - 5u + 1)$ $\cdot (5u^{169} - 13u^{168} + \dots - 845357u + 161671)$ |
| c_{11} | $(u^{46} - u^{45} + \dots - 2u - 1)(u^{169} + 2u^{168} + \dots + 184u + 193)$ |
| c_{12} | $(u^{46} - 2u^{45} + \dots - 6u + 1)(u^{169} + 3u^{168} + \dots - 19434u + 2711)$ |

IV. Riley Polynomials

| Crossings | Riley Polynomials at each crossing |
|---------------|--|
| c_1 | $(y^{46} - 29y^{45} + \dots - 85491y + 2025)$ $\cdot (y^{169} - 14y^{168} + \dots - 98510671y - 172225)$ |
| c_2, c_5 | $625(25y^{46} - 1291y^{45} + \dots + 87y + 1)$ $\cdot (25y^{169} - 3896y^{168} + \dots + 10579956017594239y - 618357294637681)$ |
| c_3, c_7 | $(y^{46} - 27y^{45} + \dots - 28y + 1)$ $\cdot (y^{169} - 100y^{168} + \dots + 233540843658y - 5751553921)$ |
| c_4, c_9 | $(y^{46} + 24y^{45} + \dots - 61y + 1)$ $\cdot (y^{169} + 95y^{168} + \dots - 4640829y - 139129)$ |
| c_6, c_{11} | $(y^{46} + 21y^{45} + \dots + 20y + 1)$ $\cdot (y^{169} + 80y^{168} + \dots - 1198642y - 37249)$ |
| c_8 | $625(25y^{46} + 156y^{45} + \dots + 2961y + 729)$ $\cdot (25y^{169} + 1011y^{168} + \dots - 2938824164827y - 36599898721)$ |
| c_{10} | $625(25y^{46} + 456y^{45} + \dots + 31y + 1)$ $\cdot (25y^{169} + 1711y^{168} + \dots - 311859199249y - 26137512241)$ |
| c_{12} | $(y^{46} + 40y^{45} + \dots - 128y + 1)$ $\cdot (y^{169} + 35y^{168} + \dots + 1287952826y - 7349521)$ |