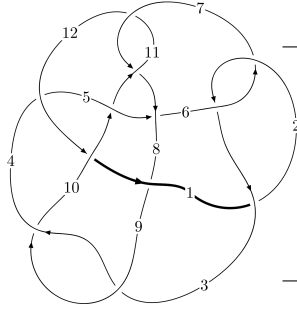
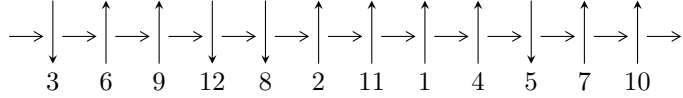


12a₀₄₁₇ (K12a₀₄₁₇)



A knot diagram¹

Linearized knot diagram



Solving Sequence

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

Ideals for irreducible components² of X_{par}

$$I_1^u = \langle -2.58870 \times 10^{914} u^{158} - 4.92785 \times 10^{914} u^{157} + \dots + 4.36446 \times 10^{913} b + 1.82161 \times 10^{918}, \\ 2.79231 \times 10^{918} u^{158} + 5.30945 \times 10^{918} u^{157} + \dots + 3.35758 \times 10^{917} a - 1.96428 \times 10^{922}, \\ u^{159} + 3u^{158} + \dots - 5585u - 7693 \rangle$$

$$I_2^u = \langle 7.78906 \times 10^{28} u^{33} + 9.44633 \times 10^{29} u^{32} + \dots + 1.85295 \times 10^{30} b - 1.18903 \times 10^{30}, \\ 1.56226 \times 10^{30} u^{33} - 2.83996 \times 10^{30} u^{32} + \dots + 1.85295 \times 10^{30} a - 5.33132 \times 10^{30}, u^{34} - 2u^{33} + \dots - 2u + 1 \rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 193 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.

$$\text{I. } I_1^u = \langle -2.59 \times 10^{914} u^{158} - 4.93 \times 10^{914} u^{157} + \dots + 4.36 \times 10^{913} b + 1.82 \times 10^{918}, 2.79 \times 10^{918} u^{158} + 5.31 \times 10^{918} u^{157} + \dots + 3.36 \times 10^{917} a - 1.96 \times 10^{922}, u^{159} + 3u^{158} + \dots - 5585u - 7693 \rangle$$

(i) Arc colorings

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

$$a_9 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

$$a_6 = \begin{pmatrix} -8.31643u^{158} - 15.8133u^{157} + \dots - 10997.8u + 58502.9 \\ 5.93131u^{158} + 11.2908u^{157} + \dots + 7878.72u - 41737.3 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} -8.25706u^{158} - 15.9801u^{157} + \dots - 12458.3u + 59347.6 \\ 6.00813u^{158} + 11.5632u^{157} + \dots + 8821.49u - 42858.5 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -19.1831u^{158} - 36.6088u^{157} + \dots - 25689.8u + 135390. \\ 10.2278u^{158} + 19.5660u^{157} + \dots + 14318.7u - 72582.6 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -2.24894u^{158} - 4.41684u^{157} + \dots - 3636.81u + 16489.2 \\ 6.00813u^{158} + 11.5632u^{157} + \dots + 8821.49u - 42858.5 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -3.49125u^{158} - 6.39222u^{157} + \dots - 2490.36u + 23103.1 \\ -0.614725u^{158} - 1.24739u^{157} + \dots - 1138.27u + 4569.40 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -1.11875u^{158} - 1.93583u^{157} + \dots + 640.468u + 6227.96 \\ -0.643637u^{158} - 1.26257u^{157} + \dots - 951.234u + 4807.22 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -9.07740u^{158} - 17.5307u^{157} + \dots - 13309.7u + 64999.7 \\ 7.16040u^{158} + 13.7852u^{157} + \dots + 10509.8u - 51057.3 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -6.09124u^{158} - 11.8316u^{157} + \dots - 8380.13u + 43680.5 \\ 3.94321u^{158} + 7.58759u^{157} + \dots + 5858.27u - 28047.9 \end{pmatrix}$$

(ii) Obstruction class = -1

(iii) Cusp Shapes = $-19.9314u^{158} - 38.0090u^{157} + \dots - 25810.6u + 139691$.

(iv) u-Polynomials at the component

| Crossings | u-Polynomials at each crossing |
|---------------|---|
| c_1 | $u^{159} + 64u^{158} + \dots - 24822244u - 1203409$ |
| c_2, c_6 | $u^{159} + 32u^{157} + \dots + 7818u - 1097$ |
| c_3, c_9 | $u^{159} + 3u^{158} + \dots - 5585u - 7693$ |
| c_4 | $u^{159} + 5u^{158} + \dots - 284121u - 279029$ |
| c_5 | $u^{159} - 3u^{158} + \dots + 3862280u - 51256$ |
| c_7, c_{11} | $u^{159} - u^{158} + \dots - 4279u - 337$ |
| c_8 | $u^{159} - 3u^{158} + \dots + 1114751u - 152107$ |
| c_{10} | $u^{159} + u^{158} + \dots - 326007u - 55291$ |
| c_{12} | $u^{159} + 17u^{158} + \dots + 17u + 1$ |

(v) Riley Polynomials at the component

| Crossings | Riley Polynomials at each crossing |
|---------------|--|
| c_1 | $y^{159} + 68y^{158} + \dots + 132998993025548y - 1448193221281$ |
| c_2, c_6 | $y^{159} + 64y^{158} + \dots - 24822244y - 1203409$ |
| c_3, c_9 | $y^{159} - 115y^{158} + \dots + 852604607y - 59182249$ |
| c_4 | $y^{159} + 27y^{158} + \dots - 3685160020727y - 77857182841$ |
| c_5 | $y^{159} - 23y^{158} + \dots + 200629593728y - 2627177536$ |
| c_7, c_{11} | $y^{159} + 87y^{158} + \dots + 6123921y - 113569$ |
| c_8 | $y^{159} - 55y^{158} + \dots + 877102825123y - 23136539449$ |
| c_{10} | $y^{159} - 35y^{158} + \dots - 245150469517y - 3057094681$ |
| c_{12} | $y^{159} - 21y^{158} + \dots - 11y - 1$ |

(vi) Complex Volumes and Cusp Shapes

| Solutions to I_1^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|--|---------------------------------------|------------|
| $u = -0.998230 + 0.056604I$ $a = -0.305260 - 0.965415I$ $b = 0.12662 + 1.68847I$ | $-4.32266 - 0.19712I$ | 0 |
| $u = -0.998230 - 0.056604I$ $a = -0.305260 + 0.965415I$ $b = 0.12662 - 1.68847I$ | $-4.32266 + 0.19712I$ | 0 |
| $u = 0.755548 + 0.696782I$ $a = 0.875163 + 0.305869I$ $b = -0.303629 - 1.264010I$ | $-2.06960 + 2.68354I$ | 0 |
| $u = 0.755548 - 0.696782I$ $a = 0.875163 - 0.305869I$ $b = -0.303629 + 1.264010I$ | $-2.06960 - 2.68354I$ | 0 |
| $u = 0.594627 + 0.762529I$ $a = 0.039425 + 0.356201I$ $b = -0.634948 + 0.986166I$ | $-3.22180 - 5.85086I$ | 0 |
| $u = 0.594627 - 0.762529I$ $a = 0.039425 - 0.356201I$ $b = -0.634948 - 0.986166I$ | $-3.22180 + 5.85086I$ | 0 |
| $u = -0.210807 + 1.034010I$ $a = -0.546647 - 0.382654I$ $b = 0.026452 - 1.210650I$ | $-7.96372 + 6.45459I$ | 0 |
| $u = -0.210807 - 1.034010I$ $a = -0.546647 + 0.382654I$ $b = 0.026452 + 1.210650I$ | $-7.96372 - 6.45459I$ | 0 |
| $u = 0.331910 + 0.876335I$ $a = -0.560436 + 0.166825I$ $b = 0.685940 - 0.528350I$ | $0.69405 + 3.27940I$ | 0 |
| $u = 0.331910 - 0.876335I$ $a = -0.560436 - 0.166825I$ $b = 0.685940 + 0.528350I$ | $0.69405 - 3.27940I$ | 0 |

| Solutions to I_1^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|--|---------------------------------------|------------|
| $u = -0.927144 + 0.530437I$ $a = 1.44593 - 0.37956I$ $b = -0.64661 + 1.26742I$ | $-3.01406 - 2.12101I$ | 0 |
| $u = -0.927144 - 0.530437I$ $a = 1.44593 + 0.37956I$ $b = -0.64661 - 1.26742I$ | $-3.01406 + 2.12101I$ | 0 |
| $u = 1.07110$ $a = 0.943144$ $b = -0.495655$ | 1.59479 | 0 |
| $u = 1.034070 + 0.301640I$ $a = -0.546057 - 0.645865I$ $b = 0.034883 - 0.926985I$ | $1.95234 + 2.25098I$ | 0 |
| $u = 1.034070 - 0.301640I$ $a = -0.546057 + 0.645865I$ $b = 0.034883 + 0.926985I$ | $1.95234 - 2.25098I$ | 0 |
| $u = -0.260741 + 1.047610I$ $a = -1.072750 - 0.613680I$ $b = 0.620672 - 1.030020I$ | $-0.74335 - 8.33939I$ | 0 |
| $u = -0.260741 - 1.047610I$ $a = -1.072750 + 0.613680I$ $b = 0.620672 + 1.030020I$ | $-0.74335 + 8.33939I$ | 0 |
| $u = -1.029520 + 0.327415I$ $a = -0.189237 - 1.014620I$ $b = 0.762322 + 0.552008I$ | $-0.47895 - 4.92362I$ | 0 |
| $u = -1.029520 - 0.327415I$ $a = -0.189237 + 1.014620I$ $b = 0.762322 - 0.552008I$ | $-0.47895 + 4.92362I$ | 0 |
| $u = -0.989286 + 0.434947I$ $a = -0.34060 + 1.60831I$ $b = -0.146775 + 0.702020I$ | $-0.40731 - 7.03209I$ | 0 |

| Solutions to I_1^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|--|---------------------------------------|------------|
| $u = -0.989286 - 0.434947I$ $a = -0.34060 - 1.60831I$ $b = -0.146775 - 0.702020I$ | $-0.40731 + 7.03209I$ | 0 |
| $u = 1.007980 + 0.391765I$ $a = -2.14801 + 0.97630I$ $b = 0.658038 + 1.048600I$ | $-1.93511 + 10.31950I$ | 0 |
| $u = 1.007980 - 0.391765I$ $a = -2.14801 - 0.97630I$ $b = 0.658038 - 1.048600I$ | $-1.93511 - 10.31950I$ | 0 |
| $u = -1.084210 + 0.005524I$ $a = -2.25931 + 0.90723I$ $b = 0.914933 - 0.929006I$ | $0.72668 - 2.58040I$ | 0 |
| $u = -1.084210 - 0.005524I$ $a = -2.25931 - 0.90723I$ $b = 0.914933 + 0.929006I$ | $0.72668 + 2.58040I$ | 0 |
| $u = -1.068790 + 0.214090I$ $a = 0.0044551 + 0.0808453I$ $b = -0.182360 - 1.328580I$ | $-5.29763 - 0.05849I$ | 0 |
| $u = -1.068790 - 0.214090I$ $a = 0.0044551 - 0.0808453I$ $b = -0.182360 + 1.328580I$ | $-5.29763 + 0.05849I$ | 0 |
| $u = -0.226550 + 1.068610I$ $a = -0.818317 + 0.037390I$ $b = 0.819079 + 0.477351I$ | $-2.06232 - 8.57163I$ | 0 |
| $u = -0.226550 - 1.068610I$ $a = -0.818317 - 0.037390I$ $b = 0.819079 - 0.477351I$ | $-2.06232 + 8.57163I$ | 0 |
| $u = 0.846723 + 0.301804I$ $a = 0.765013 - 0.917829I$ $b = 0.004476 - 1.127320I$ | $-6.11695 + 3.56799I$ | 0 |

| Solutions to I_1^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|-----------------------------|---------------------------------------|------------|
| $u = 0.846723 - 0.301804I$ | | |
| $a = 0.765013 + 0.917829I$ | $-6.11695 - 3.56799I$ | 0 |
| $b = 0.004476 + 1.127320I$ | | |
| $u = -1.028450 + 0.403819I$ | | |
| $a = 0.986638 + 0.435321I$ | $-1.13088 - 2.45330I$ | 0 |
| $b = -0.225840 + 0.967325I$ | | |
| $u = -1.028450 - 0.403819I$ | | |
| $a = 0.986638 - 0.435321I$ | $-1.13088 + 2.45330I$ | 0 |
| $b = -0.225840 - 0.967325I$ | | |
| $u = 0.770144 + 0.439668I$ | | |
| $a = 2.15042 - 0.12942I$ | $-6.40260 - 0.41866I$ | 0 |
| $b = -0.127552 - 0.974758I$ | | |
| $u = 0.770144 - 0.439668I$ | | |
| $a = 2.15042 + 0.12942I$ | $-6.40260 + 0.41866I$ | 0 |
| $b = -0.127552 + 0.974758I$ | | |
| $u = -0.107615 + 0.875901I$ | | |
| $a = -0.243278 + 0.940188I$ | $-6.21376 + 3.91050I$ | 0 |
| $b = 0.480889 + 1.034830I$ | | |
| $u = -0.107615 - 0.875901I$ | | |
| $a = -0.243278 - 0.940188I$ | $-6.21376 - 3.91050I$ | 0 |
| $b = 0.480889 - 1.034830I$ | | |
| $u = -1.119340 + 0.010498I$ | | |
| $a = 3.31565 - 0.12505I$ | $1.56961 - 4.22958I$ | 0 |
| $b = -0.609534 - 0.817153I$ | | |
| $u = -1.119340 - 0.010498I$ | | |
| $a = 3.31565 + 0.12505I$ | $1.56961 + 4.22958I$ | 0 |
| $b = -0.609534 + 0.817153I$ | | |
| $u = -0.463833 + 0.744719I$ | | |
| $a = 0.553671 + 0.798452I$ | $-2.24861 + 0.78017I$ | 0 |
| $b = -0.663530 + 0.663223I$ | | |

| Solutions to I_1^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|--|---------------------------------------|------------|
| $u = -0.463833 - 0.744719I$ $a = 0.553671 - 0.798452I$ $b = -0.663530 - 0.663223I$ | $-2.24861 - 0.78017I$ | 0 |
| $u = 1.121500 + 0.240629I$ $a = -1.72268 - 0.17644I$ $b = 1.301470 + 0.287043I$ | $1.31700 + 7.23660I$ | 0 |
| $u = 1.121500 - 0.240629I$ $a = -1.72268 + 0.17644I$ $b = 1.301470 - 0.287043I$ | $1.31700 - 7.23660I$ | 0 |
| $u = 1.145460 + 0.096382I$ $a = -2.08745 - 0.91525I$ $b = 0.876025 + 1.046550I$ | $0.37825 + 4.24541I$ | 0 |
| $u = 1.145460 - 0.096382I$ $a = -2.08745 + 0.91525I$ $b = 0.876025 - 1.046550I$ | $0.37825 - 4.24541I$ | 0 |
| $u = 1.170950 + 0.120289I$ $a = 2.56337 - 0.84885I$ $b = -0.580563 - 0.945554I$ | $5.02421 + 3.04131I$ | 0 |
| $u = 1.170950 - 0.120289I$ $a = 2.56337 + 0.84885I$ $b = -0.580563 + 0.945554I$ | $5.02421 - 3.04131I$ | 0 |
| $u = -0.800888 + 0.093377I$ $a = 0.879486 + 0.160390I$ $b = -0.789295 - 0.645792I$ | $-0.26494 + 2.40988I$ | 0 |
| $u = -0.800888 - 0.093377I$ $a = 0.879486 - 0.160390I$ $b = -0.789295 + 0.645792I$ | $-0.26494 - 2.40988I$ | 0 |
| $u = -0.101398 + 1.195570I$ $a = 0.755610 - 0.083206I$ $b = -0.657040 - 0.877020I$ | $0.31857 + 1.63483I$ | 0 |

| Solutions to I_1^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|--|---------------------------------------|------------|
| $u = -0.101398 - 1.195570I$ $a = 0.755610 + 0.083206I$ $b = -0.657040 + 0.877020I$ | $0.31857 - 1.63483I$ | 0 |
| $u = -1.163570 + 0.319002I$ $a = 1.206670 - 0.445892I$ $b = -0.238517 - 0.522046I$ | $-0.14787 + 3.09757I$ | 0 |
| $u = -1.163570 - 0.319002I$ $a = 1.206670 + 0.445892I$ $b = -0.238517 + 0.522046I$ | $-0.14787 - 3.09757I$ | 0 |
| $u = -0.019567 + 0.792817I$ $a = -0.397181 + 1.272620I$ $b = 0.058253 + 1.040860I$ | $-4.19818 - 2.06289I$ | 0 |
| $u = -0.019567 - 0.792817I$ $a = -0.397181 - 1.272620I$ $b = 0.058253 - 1.040860I$ | $-4.19818 + 2.06289I$ | 0 |
| $u = 1.209160 + 0.106868I$ $a = 1.57776 - 0.14188I$ $b = -0.627327 - 1.163320I$ | $4.87807 + 4.15319I$ | 0 |
| $u = 1.209160 - 0.106868I$ $a = 1.57776 + 0.14188I$ $b = -0.627327 + 1.163320I$ | $4.87807 - 4.15319I$ | 0 |
| $u = 0.055245 + 0.777935I$ $a = 1.122840 - 0.737605I$ $b = -0.655588 - 0.932531I$ | $-0.08140 + 3.07582I$ | 0 |
| $u = 0.055245 - 0.777935I$ $a = 1.122840 + 0.737605I$ $b = -0.655588 + 0.932531I$ | $-0.08140 - 3.07582I$ | 0 |
| $u = 1.240920 + 0.011755I$ $a = -1.86456 - 0.33830I$ $b = 0.662989 + 0.919664I$ | $4.23313 + 0.35055I$ | 0 |

| Solutions to I_1^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|--|---------------------------------------|------------|
| $u = 1.240920 - 0.011755I$ $a = -1.86456 + 0.33830I$ $b = 0.662989 - 0.919664I$ | $4.23313 - 0.35055I$ | 0 |
| $u = 1.241290 + 0.049732I$ $a = 1.30674 + 2.17756I$ $b = -0.602910 - 0.889713I$ | $1.33788 + 9.00851I$ | 0 |
| $u = 1.241290 - 0.049732I$ $a = 1.30674 - 2.17756I$ $b = -0.602910 + 0.889713I$ | $1.33788 - 9.00851I$ | 0 |
| $u = 1.245610 + 0.055066I$ $a = 1.35726 - 0.68550I$ $b = -1.108180 + 0.495846I$ | $4.06139 + 4.47431I$ | 0 |
| $u = 1.245610 - 0.055066I$ $a = 1.35726 + 0.68550I$ $b = -1.108180 - 0.495846I$ | $4.06139 - 4.47431I$ | 0 |
| $u = -1.253840 + 0.171329I$ $a = -2.62849 + 0.37107I$ $b = 0.699047 - 0.918884I$ | $4.38909 - 5.88148I$ | 0 |
| $u = -1.253840 - 0.171329I$ $a = -2.62849 - 0.37107I$ $b = 0.699047 + 0.918884I$ | $4.38909 + 5.88148I$ | 0 |
| $u = 1.261490 + 0.131560I$ $a = -1.35271 + 1.60138I$ $b = 0.724564 - 0.780989I$ | $4.80669 + 0.44565I$ | 0 |
| $u = 1.261490 - 0.131560I$ $a = -1.35271 - 1.60138I$ $b = 0.724564 + 0.780989I$ | $4.80669 - 0.44565I$ | 0 |
| $u = -1.268540 + 0.079334I$ $a = 0.18558 + 2.09686I$ $b = -0.540326 - 0.776382I$ | $5.61646 + 1.44960I$ | 0 |

| Solutions to I_1^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|-----------------------------|---------------------------------------|------------|
| $u = -1.268540 - 0.079334I$ | | |
| $a = 0.18558 - 2.09686I$ | $5.61646 - 1.44960I$ | 0 |
| $b = -0.540326 + 0.776382I$ | | |
| $u = -1.259180 + 0.185861I$ | | |
| $a = 1.81294 - 0.21631I$ | $1.92301 - 11.09530I$ | 0 |
| $b = -0.754992 + 1.181590I$ | | |
| $u = -1.259180 - 0.185861I$ | | |
| $a = 1.81294 + 0.21631I$ | $1.92301 + 11.09530I$ | 0 |
| $b = -0.754992 - 1.181590I$ | | |
| $u = -0.263817 + 0.668835I$ | | |
| $a = 0.588389 + 0.026754I$ | $0.36170 + 1.89276I$ | 0 |
| $b = -0.608365 - 0.811386I$ | | |
| $u = -0.263817 - 0.668835I$ | | |
| $a = 0.588389 - 0.026754I$ | $0.36170 - 1.89276I$ | 0 |
| $b = -0.608365 + 0.811386I$ | | |
| $u = -1.283580 + 0.012359I$ | | |
| $a = 0.839158 - 0.724273I$ | $7.02134 - 1.27085I$ | 0 |
| $b = -0.808124 + 0.465228I$ | | |
| $u = -1.283580 - 0.012359I$ | | |
| $a = 0.839158 + 0.724273I$ | $7.02134 + 1.27085I$ | 0 |
| $b = -0.808124 - 0.465228I$ | | |
| $u = 1.280260 + 0.114855I$ | | |
| $a = -1.45072 + 0.78969I$ | $4.51874 - 0.16581I$ | 0 |
| $b = 0.800436 - 0.852565I$ | | |
| $u = 1.280260 - 0.114855I$ | | |
| $a = -1.45072 - 0.78969I$ | $4.51874 + 0.16581I$ | 0 |
| $b = 0.800436 + 0.852565I$ | | |
| $u = 0.205143 + 1.270010I$ | | |
| $a = -0.953570 + 0.304264I$ | $-3.8636 + 14.0598I$ | 0 |
| $b = 0.650565 + 1.088450I$ | | |

| Solutions to I_1^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|-----------------------------|---------------------------------------|------------|
| $u = 0.205143 - 1.270010I$ | | |
| $a = -0.953570 - 0.304264I$ | $-3.8636 - 14.0598I$ | 0 |
| $b = 0.650565 - 1.088450I$ | | |
| $u = 1.249030 + 0.313432I$ | | |
| $a = 0.800746 - 0.476986I$ | $-0.14374 + 3.65613I$ | 0 |
| $b = -0.824676 + 0.214340I$ | | |
| $u = 1.249030 - 0.313432I$ | | |
| $a = 0.800746 + 0.476986I$ | $-0.14374 - 3.65613I$ | 0 |
| $b = -0.824676 - 0.214340I$ | | |
| $u = 1.236870 + 0.372862I$ | | |
| $a = -0.493892 + 0.126708I$ | $-0.39157 + 6.26546I$ | 0 |
| $b = 0.041339 + 1.196340I$ | | |
| $u = 1.236870 - 0.372862I$ | | |
| $a = -0.493892 - 0.126708I$ | $-0.39157 - 6.26546I$ | 0 |
| $b = 0.041339 - 1.196340I$ | | |
| $u = -1.278050 + 0.229073I$ | | |
| $a = -2.00152 + 0.44928I$ | $4.32573 - 5.61032I$ | 0 |
| $b = 0.739935 - 0.905459I$ | | |
| $u = -1.278050 - 0.229073I$ | | |
| $a = -2.00152 - 0.44928I$ | $4.32573 + 5.61032I$ | 0 |
| $b = 0.739935 + 0.905459I$ | | |
| $u = -1.198420 + 0.511893I$ | | |
| $a = -0.683459 + 0.146140I$ | $-4.85586 - 11.87490I$ | 0 |
| $b = 0.174514 - 1.327100I$ | | |
| $u = -1.198420 - 0.511893I$ | | |
| $a = -0.683459 - 0.146140I$ | $-4.85586 + 11.87490I$ | 0 |
| $b = 0.174514 + 1.327100I$ | | |
| $u = -1.238580 + 0.417998I$ | | |
| $a = 1.73426 + 0.47324I$ | $-2.68541 - 8.54615I$ | 0 |
| $b = -0.561304 + 1.106100I$ | | |

| Solutions to I_1^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|--|---------------------------------------|------------|
| $u = -1.238580 - 0.417998I$ $a = 1.73426 - 0.47324I$ $b = -0.561304 - 1.106100I$ | $-2.68541 + 8.54615I$ | 0 |
| $u = -0.015696 + 0.684873I$ $a = 0.043489 + 0.639741I$ $b = 0.544402 + 0.177566I$ | $-4.00879 - 0.00094I$ | 0 |
| $u = -0.015696 - 0.684873I$ $a = 0.043489 - 0.639741I$ $b = 0.544402 - 0.177566I$ | $-4.00879 + 0.00094I$ | 0 |
| $u = 1.285200 + 0.298812I$ $a = -0.530389 - 1.181650I$ $b = -0.308619 + 0.784211I$ | $-0.42326 + 5.17727I$ | 0 |
| $u = 1.285200 - 0.298812I$ $a = -0.530389 + 1.181650I$ $b = -0.308619 - 0.784211I$ | $-0.42326 - 5.17727I$ | 0 |
| $u = 0.358641 + 0.573632I$ $a = 1.035120 + 0.380710I$ $b = -0.368695 + 0.030136I$ | $0.872410 + 0.982789I$ | 0 |
| $u = 0.358641 - 0.573632I$ $a = 1.035120 - 0.380710I$ $b = -0.368695 - 0.030136I$ | $0.872410 - 0.982789I$ | 0 |
| $u = -1.329220 + 0.226197I$ $a = -1.084910 + 0.254471I$ $b = 0.674735 - 0.248436I$ | $4.98883 - 4.27401I$ | 0 |
| $u = -1.329220 - 0.226197I$ $a = -1.084910 - 0.254471I$ $b = 0.674735 + 0.248436I$ | $4.98883 + 4.27401I$ | 0 |
| $u = -0.375116 + 0.515641I$ $a = -2.30431 - 0.56324I$ $b = 0.307512 - 1.083760I$ | $-7.33839 - 2.83916I$ | 0 |

| Solutions to I_1^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|--|---------------------------------------|------------|
| $u = -0.375116 - 0.515641I$ $a = -2.30431 + 0.56324I$ $b = 0.307512 + 1.083760I$ | $-7.33839 + 2.83916I$ | 0 |
| $u = -0.175734 + 0.581083I$ $a = 0.763350 - 0.171263I$ $b = 0.268253 + 1.071510I$ | $-4.73018 - 1.86025I$ | 0 |
| $u = -0.175734 - 0.581083I$ $a = 0.763350 + 0.171263I$ $b = 0.268253 - 1.071510I$ | $-4.73018 + 1.86025I$ | 0 |
| $u = -1.385180 + 0.155061I$ $a = 0.802320 + 0.298138I$ $b = -0.235301 + 0.611966I$ | $-0.28888 - 3.13725I$ | 0 |
| $u = -1.385180 - 0.155061I$ $a = 0.802320 - 0.298138I$ $b = -0.235301 - 0.611966I$ | $-0.28888 + 3.13725I$ | 0 |
| $u = -1.42109 + 0.10749I$ $a = -1.107990 + 0.769973I$ $b = 0.599310 - 0.722376I$ | $4.87228 - 4.68602I$ | 0 |
| $u = -1.42109 - 0.10749I$ $a = -1.107990 - 0.769973I$ $b = 0.599310 + 0.722376I$ | $4.87228 + 4.68602I$ | 0 |
| $u = -1.38287 + 0.42808I$ $a = -1.251540 - 0.599889I$ $b = 0.980732 + 0.486269I$ | $6.16081 - 5.31879I$ | 0 |
| $u = -1.38287 - 0.42808I$ $a = -1.251540 + 0.599889I$ $b = 0.980732 - 0.486269I$ | $6.16081 + 5.31879I$ | 0 |
| $u = 1.41457 + 0.38947I$ $a = -1.14148 + 0.87019I$ $b = 0.909295 - 0.681033I$ | $6.58811 + 1.81713I$ | 0 |

| Solutions to I_1^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---------------------------------------|-----------------|
| $u = 1.41457 - 0.38947I$ $a = -1.14148 - 0.87019I$ $b = 0.909295 + 0.681033I$ | $6.58811 - 1.81713I$ | 0 |
| $u = -1.41994 + 0.38959I$ $a = 0.994183 + 0.913820I$ $b = -0.873194 - 0.560161I$ | $6.13762 - 7.87850I$ | 0 |
| $u = -1.41994 - 0.38959I$ $a = 0.994183 - 0.913820I$ $b = -0.873194 + 0.560161I$ | $6.13762 + 7.87850I$ | 0 |
| $u = 1.42157 + 0.47243I$ $a = 1.120800 - 0.859041I$ $b = -0.988226 + 0.576306I$ | $3.0579 + 14.0234I$ | 0 |
| $u = 1.42157 - 0.47243I$ $a = 1.120800 + 0.859041I$ $b = -0.988226 - 0.576306I$ | $3.0579 - 14.0234I$ | 0 |
| $u = 0.377555 + 0.328668I$ $a = 1.86659 - 1.42322I$ $b = -0.975459 + 0.687135I$ | $-0.95796 - 4.69135I$ | $0. + 9.65657I$ |
| $u = 0.377555 - 0.328668I$ $a = 1.86659 + 1.42322I$ $b = -0.975459 - 0.687135I$ | $-0.95796 + 4.69135I$ | $0. - 9.65657I$ |
| $u = 0.494676 + 0.039149I$ $a = 0.608157 - 0.438955I$ $b = -0.664879 + 1.095290I$ | $-1.70446 - 3.38880I$ | $4.00000 + 0.I$ |
| $u = 0.494676 - 0.039149I$ $a = 0.608157 + 0.438955I$ $b = -0.664879 - 1.095290I$ | $-1.70446 + 3.38880I$ | $4.00000 + 0.I$ |
| $u = 1.43311 + 0.45810I$ $a = 1.94979 - 0.10603I$ $b = -0.693002 - 1.087090I$ | $4.5317 + 13.6898I$ | 0 |

| Solutions to I_1^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---------------------------------------|----------------------|
| $u = 1.43311 - 0.45810I$ $a = 1.94979 + 0.10603I$ $b = -0.693002 + 1.087090I$ | $4.5317 - 13.6898I$ | 0 |
| $u = -1.43238 + 0.47747I$ $a = -1.90101 + 0.02286I$ $b = 0.750615 - 1.043010I$ | $5.45362 - 7.92777I$ | 0 |
| $u = -1.43238 - 0.47747I$ $a = -1.90101 - 0.02286I$ $b = 0.750615 + 1.043010I$ | $5.45362 + 7.92777I$ | 0 |
| $u = -0.12850 + 1.50976I$ $a = 1.000350 - 0.272130I$ $b = -0.624161 - 0.809222I$ | $0.52767 + 3.38319I$ | 0 |
| $u = -0.12850 - 1.50976I$ $a = 1.000350 + 0.272130I$ $b = -0.624161 + 0.809222I$ | $0.52767 - 3.38319I$ | 0 |
| $u = 0.060754 + 0.475717I$ $a = 0.680605 + 0.814523I$ $b = -0.584284 - 0.472779I$ | $0.61126 + 1.48879I$ | $6.01391 - 4.96004I$ |
| $u = 0.060754 - 0.475717I$ $a = 0.680605 - 0.814523I$ $b = -0.584284 + 0.472779I$ | $0.61126 - 1.48879I$ | $6.01391 + 4.96004I$ |
| $u = 1.42760 + 0.54533I$ $a = -0.795754 + 0.827410I$ $b = 0.781138 - 0.790563I$ | $4.99762 + 4.56492I$ | 0 |
| $u = 1.42760 - 0.54533I$ $a = -0.795754 - 0.827410I$ $b = 0.781138 + 0.790563I$ | $4.99762 - 4.56492I$ | 0 |
| $u = -1.39875 + 0.63574I$ $a = -1.78996 - 0.28475I$ $b = 0.731904 - 0.940504I$ | $4.53033 - 10.27560I$ | 0 |

| Solutions to I_1^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|--|---------------------------------------|-----------------------|
| $u = -1.39875 - 0.63574I$ $a = -1.78996 + 0.28475I$ $b = 0.731904 + 0.940504I$ | $4.53033 + 10.27560I$ | 0 |
| $u = -1.46201 + 0.53500I$ $a = 1.88190 - 0.00198I$ $b = -0.737831 + 1.125560I$ | $1.3350 - 20.3047I$ | 0 |
| $u = -1.46201 - 0.53500I$ $a = 1.88190 + 0.00198I$ $b = -0.737831 - 1.125560I$ | $1.3350 + 20.3047I$ | 0 |
| $u = 1.45420 + 0.57975I$ $a = -1.60649 + 0.33605I$ $b = 0.597537 + 0.922893I$ | $4.65572 + 6.98413I$ | 0 |
| $u = 1.45420 - 0.57975I$ $a = -1.60649 - 0.33605I$ $b = 0.597537 - 0.922893I$ | $4.65572 - 6.98413I$ | 0 |
| $u = 1.47628 + 0.56010I$ $a = -1.67532 - 0.13368I$ $b = 0.707049 + 1.134670I$ | $4.18893 + 11.42150I$ | 0 |
| $u = 1.47628 - 0.56010I$ $a = -1.67532 + 0.13368I$ $b = 0.707049 - 1.134670I$ | $4.18893 - 11.42150I$ | 0 |
| $u = -1.54415 + 0.44438I$ $a = -0.667840 - 0.731079I$ $b = 0.575105 + 0.778621I$ | $5.13375 - 2.31436I$ | 0 |
| $u = -1.54415 - 0.44438I$ $a = -0.667840 + 0.731079I$ $b = 0.575105 - 0.778621I$ | $5.13375 + 2.31436I$ | 0 |
| $u = -0.375435 + 0.064149I$ $a = 5.55414 + 1.85182I$ $b = 0.002629 + 0.664397I$ | $-4.77694 - 1.09489I$ | $-0.60906 + 8.24374I$ |

| Solutions to I_1^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---------------------------------------|------------------------|
| $u = -0.375435 - 0.064149I$ $a = 5.55414 - 1.85182I$ $b = 0.002629 - 0.664397I$ | $-4.77694 + 1.09489I$ | $-0.60906 - 8.24374I$ |
| $u = 0.238701 + 0.217595I$ $a = 3.00357 - 1.12547I$ $b = 0.528584 - 0.724297I$ | $2.31513 - 1.60194I$ | $7.58569 - 4.88635I$ |
| $u = 0.238701 - 0.217595I$ $a = 3.00357 + 1.12547I$ $b = 0.528584 + 0.724297I$ | $2.31513 + 1.60194I$ | $7.58569 + 4.88635I$ |
| $u = -0.318100 + 0.003896I$ $a = 2.05695 + 0.98958I$ $b = 0.695973 - 0.454890I$ | $-0.38959 + 4.08543I$ | $4.80991 - 2.78422I$ |
| $u = -0.318100 - 0.003896I$ $a = 2.05695 - 0.98958I$ $b = 0.695973 + 0.454890I$ | $-0.38959 - 4.08543I$ | $4.80991 + 2.78422I$ |
| $u = 0.10372 + 1.68534I$ $a = 0.710432 + 0.039211I$ $b = -0.521295 + 0.999211I$ | $-0.93111 - 4.39304I$ | 0 |
| $u = 0.10372 - 1.68534I$ $a = 0.710432 - 0.039211I$ $b = -0.521295 - 0.999211I$ | $-0.93111 + 4.39304I$ | 0 |
| $u = 0.072203 + 0.287898I$ $a = 3.11145 - 0.49790I$ $b = 0.531189 - 0.971492I$ | $1.52091 - 2.70354I$ | $-3.36689 + 10.25142I$ |
| $u = 0.072203 - 0.287898I$ $a = 3.11145 + 0.49790I$ $b = 0.531189 + 0.971492I$ | $1.52091 + 2.70354I$ | $-3.36689 - 10.25142I$ |
| $u = 1.71037 + 0.24675I$ $a = 0.520132 - 0.273181I$ $b = -0.337170 + 0.857973I$ | $-0.812201 + 0.684522I$ | 0 |

| Solutions to I_1^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---------------------------------------|----------------------|
| $u = 1.71037 - 0.24675I$ $a = 0.520132 + 0.273181I$ $b = -0.337170 - 0.857973I$ | $-0.812201 - 0.684522I$ | 0 |
| $u = 0.089842 + 0.243647I$ $a = 1.64776 + 2.66269I$ $b = 0.614847 + 1.077680I$ | $-2.17842 + 9.17430I$ | $1.82314 - 6.56921I$ |
| $u = 0.089842 - 0.243647I$ $a = 1.64776 - 2.66269I$ $b = 0.614847 - 1.077680I$ | $-2.17842 - 9.17430I$ | $1.82314 + 6.56921I$ |
| $u = -1.90614 + 0.21575I$ $a = 1.55686 - 0.17208I$ $b = -0.570536 + 0.806652I$ | $0.903909 + 0.431493I$ | 0 |
| $u = -1.90614 - 0.21575I$ $a = 1.55686 + 0.17208I$ $b = -0.570536 - 0.806652I$ | $0.903909 - 0.431493I$ | 0 |
| $u = 2.00152 + 0.05404I$ $a = 1.281640 - 0.515843I$ $b = -0.574496 + 0.902340I$ | $0.58953 - 4.99476I$ | 0 |
| $u = 2.00152 - 0.05404I$ $a = 1.281640 + 0.515843I$ $b = -0.574496 - 0.902340I$ | $0.58953 + 4.99476I$ | 0 |
| $u = 0.25425 + 2.43540I$ $a = 0.933225 + 0.284927I$ $b = -0.461292 + 0.776100I$ | $-0.056205 + 0.448439I$ | 0 |
| $u = 0.25425 - 2.43540I$ $a = 0.933225 - 0.284927I$ $b = -0.461292 - 0.776100I$ | $-0.056205 - 0.448439I$ | 0 |

II.

$$I_2^u = \langle 7.79 \times 10^{28} u^{33} + 9.45 \times 10^{29} u^{32} + \dots + 1.85 \times 10^{30} b - 1.19 \times 10^{30}, 1.56 \times 10^{30} u^{33} - 2.84 \times 10^{30} u^{32} + \dots + 1.85 \times 10^{30} a - 5.33 \times 10^{30}, u^{34} - 2u^{33} + \dots - 2u + 1 \rangle$$

(i) Arc colorings

$$\begin{aligned} a_3 &= \begin{pmatrix} 1 \\ 0 \end{pmatrix} \\ a_9 &= \begin{pmatrix} 0 \\ u \end{pmatrix} \\ a_4 &= \begin{pmatrix} 1 \\ -u^2 \end{pmatrix} \\ a_6 &= \begin{pmatrix} -0.843122u^{33} + 1.53267u^{32} + \dots - 3.82545u + 2.87721 \\ -0.0420360u^{33} - 0.509800u^{32} + \dots - 4.00410u + 0.641699 \end{pmatrix} \\ a_{10} &= \begin{pmatrix} u \\ -u^3 + u \end{pmatrix} \\ a_2 &= \begin{pmatrix} 0.123433u^{33} - 1.18111u^{32} + \dots - 6.24049u + 2.01955 \\ 0.774671u^{33} - 0.993673u^{32} + \dots + 2.48256u - 1.91740 \end{pmatrix} \\ a_7 &= \begin{pmatrix} 0.293023u^{33} - 1.37709u^{32} + \dots - 2.17885u - 0.692909 \\ -0.168391u^{33} + 1.12477u^{32} + \dots + 1.18168u + 1.03755 \end{pmatrix} \\ a_1 &= \begin{pmatrix} 0.898104u^{33} - 2.17478u^{32} + \dots - 3.75793u + 0.102148 \\ 0.774671u^{33} - 0.993673u^{32} + \dots + 2.48256u - 1.91740 \end{pmatrix} \\ a_8 &= \begin{pmatrix} -1.54514u^{33} + 2.72030u^{32} + \dots + 0.367285u - 0.132372 \\ -0.122956u^{33} + 0.431436u^{32} + \dots + 2.05304u - 1.88832 \end{pmatrix} \\ a_5 &= \begin{pmatrix} -0.574428u^{33} + 1.75434u^{32} + \dots + 7.10548u - 0.260983 \\ -0.456970u^{33} + 0.655203u^{32} + \dots - 0.918090u - 0.578563 \end{pmatrix} \\ a_{12} &= \begin{pmatrix} 0.335647u^{33} - 1.64076u^{32} + \dots - 5.38566u + 1.02002 \\ 1.04455u^{33} - 1.56367u^{32} + \dots + 1.47416u - 1.59042 \end{pmatrix} \\ a_{11} &= \begin{pmatrix} 0.317307u^{33} - 1.83073u^{32} + \dots - 6.85640u - 0.552115 \\ 1.31326u^{33} - 2.17579u^{32} + \dots + 4.44259u - 1.62039 \end{pmatrix} \end{aligned}$$

(ii) Obstruction class = 1

(iii) Cusp Shapes = $-0.312721u^{33} - 4.02626u^{32} + \dots - 16.9736u + 4.08663$

(iv) u -Polynomials at the component

| Crossings | u-Polynomials at each crossing |
|-----------|---------------------------------------|
| c_1 | $u^{34} - 17u^{33} + \dots - 11u + 1$ |
| c_2 | $u^{34} - 3u^{33} + \dots - 5u + 1$ |
| c_3 | $u^{34} - 2u^{33} + \dots - 2u + 1$ |
| c_4 | $u^{34} + 2u^{32} + \dots + 12u + 1$ |
| c_5 | $u^{34} - 8u^{33} + \dots - 8u + 8$ |
| c_6 | $u^{34} + 3u^{33} + \dots + 5u + 1$ |
| c_7 | $u^{34} - 4u^{33} + \dots + 2u + 1$ |
| c_8 | $u^{34} - 2u^{33} + \dots + 2u + 1$ |
| c_9 | $u^{34} + 2u^{33} + \dots + 2u + 1$ |
| c_{10} | $u^{34} + 2u^{33} + \dots + 4u + 1$ |
| c_{11} | $u^{34} + 4u^{33} + \dots - 2u + 1$ |
| c_{12} | $u^{34} - 2u^{33} + \dots - 10u + 1$ |

(v) Riley Polynomials at the component

| Crossings | Riley Polynomials at each crossing |
|---------------|---|
| c_1 | $y^{34} + 5y^{33} + \cdots + 35y + 1$ |
| c_2, c_6 | $y^{34} + 17y^{33} + \cdots + 11y + 1$ |
| c_3, c_9 | $y^{34} - 22y^{33} + \cdots - 8y + 1$ |
| c_4 | $y^{34} + 4y^{33} + \cdots + 30y + 1$ |
| c_5 | $y^{34} + 6y^{33} + \cdots - 448y + 64$ |
| c_7, c_{11} | $y^{34} + 16y^{33} + \cdots + 30y + 1$ |
| c_8 | $y^{34} - 30y^{33} + \cdots - 36y + 1$ |
| c_{10} | $y^{34} + 2y^{33} + \cdots + 16y + 1$ |
| c_{12} | $y^{34} - 16y^{33} + \cdots - 18y + 1$ |

(vi) Complex Volumes and Cusp Shapes

| Solutions to I_2^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|--|---------------------------------------|-----------------------|
| $u = -1.037460 + 0.107697I$ $a = 0.024559 - 0.841260I$ $b = 0.05676 + 1.65854I$ | $-4.26208 - 0.47844I$ | $5.1188 + 17.9896I$ |
| $u = -1.037460 - 0.107697I$ $a = 0.024559 + 0.841260I$ $b = 0.05676 - 1.65854I$ | $-4.26208 + 0.47844I$ | $5.1188 - 17.9896I$ |
| $u = -1.039050 + 0.329922I$ $a = -1.60912 - 1.00224I$ $b = 0.604943 - 1.075190I$ | $-1.02241 - 10.39780I$ | $6.03333 + 10.55997I$ |
| $u = -1.039050 - 0.329922I$ $a = -1.60912 + 1.00224I$ $b = 0.604943 + 1.075190I$ | $-1.02241 + 10.39780I$ | $6.03333 - 10.55997I$ |
| $u = 1.132460 + 0.189408I$ $a = -1.44644 - 0.87583I$ $b = 0.890935 + 0.411726I$ | $1.29486 + 6.39221I$ | $4.72662 - 4.68910I$ |
| $u = 1.132460 - 0.189408I$ $a = -1.44644 + 0.87583I$ $b = 0.890935 - 0.411726I$ | $1.29486 - 6.39221I$ | $4.72662 + 4.68910I$ |
| $u = 1.124730 + 0.301055I$ $a = 0.787383 + 0.348836I$ $b = 0.504825 - 0.572465I$ | $0.67211 + 5.72156I$ | $6.80555 - 7.67520I$ |
| $u = 1.124730 - 0.301055I$ $a = 0.787383 - 0.348836I$ $b = 0.504825 + 0.572465I$ | $0.67211 - 5.72156I$ | $6.80555 + 7.67520I$ |
| $u = 1.172190 + 0.100007I$ $a = -2.01129 + 0.45709I$ $b = 0.607915 + 1.072170I$ | $4.39397 + 3.72369I$ | $1.22026 - 2.72712I$ |
| $u = 1.172190 - 0.100007I$ $a = -2.01129 - 0.45709I$ $b = 0.607915 - 1.072170I$ | $4.39397 - 3.72369I$ | $1.22026 + 2.72712I$ |

| Solutions to I_2^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|--|---------------------------------------|-----------------------|
| $u = -1.250160 + 0.054050I$ $a = -0.16783 - 1.84344I$ $b = 0.563659 + 0.674135I$ | $5.72522 + 0.99009I$ | $9.41736 + 5.61794I$ |
| $u = -1.250160 - 0.054050I$ $a = -0.16783 + 1.84344I$ $b = 0.563659 - 0.674135I$ | $5.72522 - 0.99009I$ | $9.41736 - 5.61794I$ |
| $u = 0.504144 + 0.313787I$ $a = 3.83365 - 1.30009I$ $b = -0.179504 - 0.686413I$ | $-4.76543 - 0.57249I$ | $0.00467 - 5.51612I$ |
| $u = 0.504144 - 0.313787I$ $a = 3.83365 + 1.30009I$ $b = -0.179504 + 0.686413I$ | $-4.76543 + 0.57249I$ | $0.00467 + 5.51612I$ |
| $u = -1.39489 + 0.24776I$ $a = -1.016030 + 0.328582I$ $b = 0.414536 - 0.339806I$ | $4.49780 - 3.98143I$ | 0 |
| $u = -1.39489 - 0.24776I$ $a = -1.016030 - 0.328582I$ $b = 0.414536 + 0.339806I$ | $4.49780 + 3.98143I$ | 0 |
| $u = -0.534455 + 0.082802I$ $a = 2.67648 + 0.12779I$ $b = -0.151152 + 1.039410I$ | $-6.25261 - 2.12455I$ | $-1.96588 + 2.83153I$ |
| $u = -0.534455 - 0.082802I$ $a = 2.67648 - 0.12779I$ $b = -0.151152 - 1.039410I$ | $-6.25261 + 2.12455I$ | $-1.96588 - 2.83153I$ |
| $u = 1.30269 + 0.70796I$ $a = 0.717575 - 0.257385I$ $b = -0.198165 - 0.937475I$ | $-0.81936 + 3.42106I$ | $0. - 13.39678I$ |
| $u = 1.30269 - 0.70796I$ $a = 0.717575 + 0.257385I$ $b = -0.198165 + 0.937475I$ | $-0.81936 - 3.42106I$ | $0. + 13.39678I$ |

| Solutions to I_2^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|--|---------------------------------------|-----------------------|
| $u = 0.341394 + 0.320665I$ $a = 2.07448 - 0.15009I$ $b = -0.724108 - 1.132880I$ | $-2.13505 + 3.78900I$ | $-4.81674 - 7.68990I$ |
| $u = 0.341394 - 0.320665I$ $a = 2.07448 + 0.15009I$ $b = -0.724108 + 1.132880I$ | $-2.13505 - 3.78900I$ | $-4.81674 + 7.68990I$ |
| $u = -1.46437 + 0.48235I$ $a = -0.924427 - 0.680646I$ $b = 0.746388 + 0.682948I$ | $5.72804 - 3.48847I$ | 0 |
| $u = -1.46437 - 0.48235I$ $a = -0.924427 + 0.680646I$ $b = 0.746388 - 0.682948I$ | $5.72804 + 3.48847I$ | 0 |
| $u = 1.44874 + 0.59266I$ $a = -1.74982 + 0.09589I$ $b = 0.704911 + 1.002670I$ | $4.77060 + 9.04248I$ | 0 |
| $u = 1.44874 - 0.59266I$ $a = -1.74982 - 0.09589I$ $b = 0.704911 - 1.002670I$ | $4.77060 - 9.04248I$ | 0 |
| $u = 0.176370 + 0.387871I$ $a = -1.34170 + 0.49120I$ $b = -0.551173 + 0.883307I$ | $1.77136 - 2.19523I$ | $5.07992 - 0.09369I$ |
| $u = 0.176370 - 0.387871I$ $a = -1.34170 - 0.49120I$ $b = -0.551173 - 0.883307I$ | $1.77136 + 2.19523I$ | $5.07992 + 0.09369I$ |
| $u = -0.215349 + 0.350732I$ $a = 2.71519 + 0.77963I$ $b = -0.815001 + 0.885612I$ | $-1.40857 - 2.69226I$ | $-3.02491 + 3.37682I$ |
| $u = -0.215349 - 0.350732I$ $a = 2.71519 - 0.77963I$ $b = -0.815001 - 0.885612I$ | $-1.40857 + 2.69226I$ | $-3.02491 - 3.37682I$ |

| Solutions to I_2^u | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|-----------------------------|---------------------------------------|------------|
| $u = 1.23113 + 1.03828I$ | $0.12957 - 3.35586I$ | 0 |
| $a = 1.050780 + 0.179318I$ | | |
| $b = -0.538363 + 0.666254I$ | | |
| $u = 1.23113 - 1.03828I$ | $0.12957 + 3.35586I$ | 0 |
| $a = 1.050780 - 0.179318I$ | | |
| $b = -0.538363 - 0.666254I$ | | |
| $u = -0.49812 + 2.01443I$ | $-0.093366 - 0.479430I$ | 0 |
| $a = 0.886567 - 0.316831I$ | | |
| $b = -0.437408 - 0.762400I$ | | |
| $u = -0.49812 - 2.01443I$ | $-0.093366 + 0.479430I$ | 0 |
| $a = 0.886567 + 0.316831I$ | | |
| $b = -0.437408 + 0.762400I$ | | |

III. u-Polynomials

| Crossings | u-Polynomials at each crossing |
|-----------|--|
| c_1 | $(u^{34} - 17u^{33} + \dots - 11u + 1)$ $\cdot (u^{159} + 64u^{158} + \dots - 24822244u - 1203409)$ |
| c_2 | $(u^{34} - 3u^{33} + \dots - 5u + 1)(u^{159} + 32u^{157} + \dots + 7818u - 1097)$ |
| c_3 | $(u^{34} - 2u^{33} + \dots - 2u + 1)(u^{159} + 3u^{158} + \dots - 5585u - 7693)$ |
| c_4 | $(u^{34} + 2u^{32} + \dots + 12u + 1)(u^{159} + 5u^{158} + \dots - 284121u - 279029)$ |
| c_5 | $(u^{34} - 8u^{33} + \dots - 8u + 8)(u^{159} - 3u^{158} + \dots + 3862280u - 51256)$ |
| c_6 | $(u^{34} + 3u^{33} + \dots + 5u + 1)(u^{159} + 32u^{157} + \dots + 7818u - 1097)$ |
| c_7 | $(u^{34} - 4u^{33} + \dots + 2u + 1)(u^{159} - u^{158} + \dots - 4279u - 337)$ |
| c_8 | $(u^{34} - 2u^{33} + \dots + 2u + 1)(u^{159} - 3u^{158} + \dots + 1114751u - 152107)$ |
| c_9 | $(u^{34} + 2u^{33} + \dots + 2u + 1)(u^{159} + 3u^{158} + \dots - 5585u - 7693)$ |
| c_{10} | $(u^{34} + 2u^{33} + \dots + 4u + 1)(u^{159} + u^{158} + \dots - 326007u - 55291)$ |
| c_{11} | $(u^{34} + 4u^{33} + \dots - 2u + 1)(u^{159} - u^{158} + \dots - 4279u - 337)$ |
| c_{12} | $(u^{34} - 2u^{33} + \dots - 10u + 1)(u^{159} + 17u^{158} + \dots + 17u + 1)$ |

IV. Riley Polynomials

| Crossings | Riley Polynomials at each crossing |
|---------------|--|
| c_1 | $(y^{34} + 5y^{33} + \dots + 35y + 1)$ $\cdot (y^{159} + 68y^{158} + \dots + 132998993025548y - 1448193221281)$ |
| c_2, c_6 | $(y^{34} + 17y^{33} + \dots + 11y + 1)$ $\cdot (y^{159} + 64y^{158} + \dots - 24822244y - 1203409)$ |
| c_3, c_9 | $(y^{34} - 22y^{33} + \dots - 8y + 1)$ $\cdot (y^{159} - 115y^{158} + \dots + 852604607y - 59182249)$ |
| c_4 | $(y^{34} + 4y^{33} + \dots + 30y + 1)$ $\cdot (y^{159} + 27y^{158} + \dots - 3685160020727y - 77857182841)$ |
| c_5 | $(y^{34} + 6y^{33} + \dots - 448y + 64)$ $\cdot (y^{159} - 23y^{158} + \dots + 200629593728y - 2627177536)$ |
| c_7, c_{11} | $(y^{34} + 16y^{33} + \dots + 30y + 1)$ $\cdot (y^{159} + 87y^{158} + \dots + 6123921y - 113569)$ |
| c_8 | $(y^{34} - 30y^{33} + \dots - 36y + 1)$ $\cdot (y^{159} - 55y^{158} + \dots + 877102825123y - 23136539449)$ |
| c_{10} | $(y^{34} + 2y^{33} + \dots + 16y + 1)$ $\cdot (y^{159} - 35y^{158} + \dots - 245150469517y - 3057094681)$ |
| c_{12} | $(y^{34} - 16y^{33} + \dots - 18y + 1)(y^{159} - 21y^{158} + \dots - 11y - 1)$ |