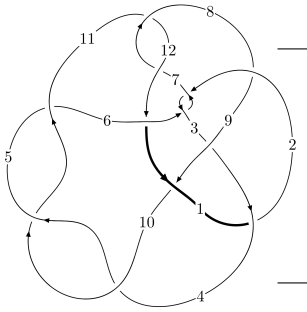
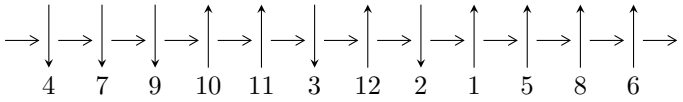
## $12a_{1049}$ $(K12a_{1049})$




A knot diagram[1]

**Linearized knot diagam**




**Solving Sequence**

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

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

$$\begin{aligned} I_1^u = \langle & 3.93920 \times 10^{654} u^{144} - 5.11511 \times 10^{654} u^{143} + \cdots + 4.99948 \times 10^{655} b - 1.30043 \times 10^{657}, \\ & 6.67458 \times 10^{656} u^{144} - 2.62279 \times 10^{657} u^{143} + \cdots + 2.63273 \times 10^{659} a - 2.78924 \times 10^{661}, \\ & u^{145} - u^{144} + \cdots - 16062u + 2633 \rangle \\ I_2^u = \langle & -362172324953570 u^{37} - 2982250257830 u^{36} + \cdots + 725327520909 89 b - 1020843727622321, \\ & 1.47266 \times 10^{18} u^{37} - 5.12596 \times 10^{17} u^{36} + \cdots + 1.04955 \times 10^{17} a + 1.03174 \times 10^{19}, \ u^{38} - 2u^{37} + \cdots - 2u + 1 \rangle \end{aligned}$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 183 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.** $\boldsymbol{I_1^u = \langle 3.94 \times 10^{654} u^{144} - 5.12 \times 10^{654} u^{143} + \cdots + 5.00 \times 10^{655} b - 1.30 \times 10^{657},\ 6.67 \times 10^{656} u^{144} - 2.62 \times 10^{657} u^{143} + \cdots + 2.63 \times 10^{659} a - 2.79 \times 10^{661},\ u^{145} - u^{144} + \cdots - 16062u + 2633 \rangle}$

**(i) Arc colorings**

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

$$a_{12} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -0.00253523u^{144} + 0.00996226u^{143} + \cdots - 687.422u + 105.945 \\ -0.0787922u^{144} + 0.102313u^{143} + \cdots - 394.382u + 26.0113 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} -0.0813275u^{144} + 0.112275u^{143} + \cdots - 1081.80u + 131.956 \\ -0.0787922u^{144} + 0.102313u^{143} + \cdots - 394.382u + 26.0113 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -0.0156513u^{144} + 0.00321289u^{143} + \cdots - 1.16336u + 27.2456 \\ -0.0333935u^{144} + 0.0238342u^{143} + \cdots + 458.330u - 85.3090 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -0.0917059u^{144} + 0.0792602u^{143} + \cdots - 1383.07u + 97.5660 \\ -0.0653164u^{144} + 0.120138u^{143} + \cdots - 420.405u + 53.7737 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0.00702213u^{144} - 0.0568846u^{143} + \cdots - 131.329u + 23.4287 \\ -0.0346254u^{144} - 0.0368177u^{143} + \cdots + 1417.40u - 234.089 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -0.0542114u^{144} + 0.0364899u^{143} + \cdots + 666.046u - 67.6965 \\ -0.0683835u^{144} + 0.168362u^{143} + \cdots - 1380.22u + 183.560 \end{pmatrix}$$

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

$$a_5 = \begin{pmatrix} -0.0269487u^{144} - 0.0728494u^{143} + \cdots + 881.150u - 149.718 \\ -0.0476591u^{144} + 0.00887131u^{143} + \cdots + 1117.54u - 192.423 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -0.0356556u^{144} - 0.00733218u^{143} + \cdots + 1458.74u - 297.707 \\ -0.0774097u^{144} + 0.0610850u^{143} + \cdots + 1344.70u - 235.204 \end{pmatrix}$$

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

**(iii) Cusp Shapes** $= -0.436067u^{144} + 0.275264u^{143} + \cdots + 7010.50u - 1340.34$

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

| Crossings | u-Polynomials at each crossing |
|---|---|
| $c_1$ | $u^{145} - 11u^{144} + \cdots - 734954u + 73421$ |
| $c_2, c_6$ | $u^{145} - u^{144} + \cdots - 3830u - 803$ |
| $c_3$ | $u^{145} + u^{144} + \cdots - 192u - 16$ |
| $c_4, c_5, c_{10}$ | $u^{145} - u^{144} + \cdots - 58u - 3$ |
| $c_7, c_{11}$ | $u^{145} + u^{144} + \cdots - 16062u - 2633$ |
| $c_8$ | $u^{145} - u^{144} + \cdots - 38691220u - 1160044$ |
| $c_9$ | $u^{145} - 5u^{144} + \cdots - 62879u + 16999$ |
| $c_{12}$ | $u^{145} + u^{144} + \cdots + 151613u - 160147$ |

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

| Crossings | Riley Polynomials at each crossing |
|---|---|
| $c_1$ | $y^{145} + 47y^{144} + \cdots - 203428626426y - 5390643241$ |
| $c_2, c_6$ | $y^{145} + 79y^{144} + \cdots - 29939356y - 644809$ |
| $c_3$ | $y^{145} - 13y^{144} + \cdots + 15136y - 256$ |
| $c_4, c_5, c_{10}$ | $y^{145} - 153y^{144} + \cdots - 50y - 9$ |
| $c_7, c_{11}$ | $y^{145} + 69y^{144} + \cdots - 222903276y - 6932689$ |
| $c_8$ | $y^{145} + 25y^{144} + \cdots + 139705969316016y - 1345702081936$ |
| $c_9$ | $y^{145} - 41y^{144} + \cdots + 9501766269y - 288966001$ |
| $c_{12}$ | $y^{145} - 21y^{144} + \cdots - 603561410741y - 25647061609$ |

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

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u=-0.345803+0.954006I$<br>$a=\ 0.405855-0.158222I$<br>$b=\ 1.199700-0.554323I$ | $-2.42257-2.18881I$ | 0 |
| $u=-0.345803-0.954006I$<br>$a=\ 0.405855+0.158222I$<br>$b=\ 1.199700+0.554323I$ | $-2.42257+2.18881I$ | 0 |
| $u=-0.328025+0.927715I$<br>$a=-2.69856+0.12274I$<br>$b=-0.268401-1.175380I$ | $9.26433-6.68590I$ | 0 |
| $u=-0.328025-0.927715I$<br>$a=-2.69856-0.12274I$<br>$b=-0.268401+1.175380I$ | $9.26433+6.68590I$ | 0 |
| $u=\ 0.324152+0.977516I$<br>$a=\ 0.192792+0.548668I$<br>$b=\ 1.126410+0.338613I$ | $-3.59244+1.03408I$ | 0 |
| $u=\ 0.324152-0.977516I$<br>$a=\ 0.192792-0.548668I$<br>$b=\ 1.126410-0.338613I$ | $-3.59244-1.03408I$ | 0 |
| $u=-0.588801+0.763843I$<br>$a=\ 1.68959-1.03593I$<br>$b=\ 0.380153+1.264270I$ | $11.25430+3.12129I$ | 0 |
| $u=-0.588801-0.763843I$<br>$a=\ 1.68959+1.03593I$<br>$b=\ 0.380153-1.264270I$ | $11.25430-3.12129I$ | 0 |
| $u=-0.557369+0.883050I$<br>$a=-0.391018+1.270450I$<br>$b=\ 0.22442-1.53873I$ | $10.89490-7.65848I$ | 0 |
| $u=-0.557369-0.883050I$<br>$a=-0.391018-1.270450I$<br>$b=\ 0.22442+1.53873I$ | $10.89490+7.65848I$ | 0 |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u=-0.734129+0.604314I$<br>$a=\ \ 0.203457-0.892143I$<br>$b=-0.372220+1.070590I$ | $2.05754-0.26115I$ | 0 |
| $u=-0.734129-0.604314I$<br>$a=\ \ 0.203457+0.892143I$<br>$b=-0.372220-1.070590I$ | $2.05754+0.26115I$ | 0 |
| $u=-0.556442+0.895770I$<br>$a=-1.06457+1.12076I$<br>$b=-0.757358-1.022820I$ | $1.26728-4.74488I$ | 0 |
| $u=-0.556442-0.895770I$<br>$a=-1.06457-1.12076I$<br>$b=-0.757358+1.022820I$ | $1.26728+4.74488I$ | 0 |
| $u=\ \ 0.340241+1.002790I$<br>$a=-0.399127+0.016272I$<br>$b=\ \ 0.742111+0.658754I$ | $-2.25285-0.78087I$ | 0 |
| $u=\ \ 0.340241-1.002790I$<br>$a=-0.399127-0.016272I$<br>$b=\ \ 0.742111-0.658754I$ | $-2.25285+0.78087I$ | 0 |
| $u=-0.888985+0.297233I$<br>$a=-0.176531-1.010800I$<br>$b=\ \ 0.846576+0.135584I$ | $7.00493+7.38643I$ | 0 |
| $u=-0.888985-0.297233I$<br>$a=-0.176531+1.010800I$<br>$b=\ \ 0.846576-0.135584I$ | $7.00493-7.38643I$ | 0 |
| $u=-0.284744+0.878018I$<br>$a=\ \ 0.019213+0.567381I$<br>$b=-1.15865+0.85075I$ | $0.61703+2.26391I$ | 0 |
| $u=-0.284744-0.878018I$<br>$a=\ \ 0.019213-0.567381I$<br>$b=-1.15865-0.85075I$ | $0.61703-2.26391I$ | 0 |

| | Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|---|
| $u=$ | $0.604047+0.901518I$ | | |
| $a=$ | $0.67281+1.57252I$ | $-2.00786+4.37308I$ | 0 |
| $b=$ | $0.600521-0.752227I$ | | |
| $u=$ | $0.604047-0.901518I$ | | |
| $a=$ | $0.67281-1.57252I$ | $-2.00786-4.37308I$ | 0 |
| $b=$ | $0.600521+0.752227I$ | | |
| $u=$ | $-0.261266+0.871926I$ | | |
| $a=$ | $0.501018-0.072340I$ | $-1.94634-0.41173I$ | 0 |
| $b=$ | $1.210590-0.073871I$ | | |
| $u=$ | $-0.261266-0.871926I$ | | |
| $a=$ | $0.501018+0.072340I$ | $-1.94634+0.41173I$ | 0 |
| $b=$ | $1.210590+0.073871I$ | | |
| $u=$ | $-0.350231+0.838408I$ | | |
| $a=$ | $0.33774-2.26170I$ | $9.55110+3.78182I$ | 0 |
| $b=$ | $-0.19744+1.45081I$ | | |
| $u=$ | $-0.350231-0.838408I$ | | |
| $a=$ | $0.33774+2.26170I$ | $9.55110-3.78182I$ | 0 |
| $b=$ | $-0.19744-1.45081I$ | | |
| $u=$ | $0.867409+0.664015I$ | | |
| $a=$ | $1.33358+1.18745I$ | $9.02544+4.66895I$ | 0 |
| $b=$ | $0.511867-0.916704I$ | | |
| $u=$ | $0.867409-0.664015I$ | | |
| $a=$ | $1.33358-1.18745I$ | $9.02544-4.66895I$ | 0 |
| $b=$ | $0.511867+0.916704I$ | | |
| $u=$ | $0.440100+1.006090I$ | | |
| $a=$ | $-1.224450-0.325949I$ | $7.75099+3.57028I$ | 0 |
| $b=$ | $-0.750553+1.077560I$ | | |
| $u=$ | $0.440100-1.006090I$ | | |
| $a=$ | $-1.224450+0.325949I$ | $7.75099-3.57028I$ | 0 |
| $b=$ | $-0.750553-1.077560I$ | | |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 0.505174 + 0.975773I$<br>$a = -1.062970 - 0.821190I$<br>$b = -0.440321 + 1.236690I$ | $3.50637 + 0.15818I$ | 0 |
| $u = 0.505174 - 0.975773I$<br>$a = -1.062970 + 0.821190I$<br>$b = -0.440321 - 1.236690I$ | $3.50637 - 0.15818I$ | 0 |
| $u = -0.816047 + 0.351664I$<br>$a = 0.62662 - 1.97885I$<br>$b = -0.441672 + 1.272420I$ | $7.22642 + 4.50090I$ | 0 |
| $u = -0.816047 - 0.351664I$<br>$a = 0.62662 + 1.97885I$<br>$b = -0.441672 - 1.272420I$ | $7.22642 - 4.50090I$ | 0 |
| $u = 0.172003 + 0.868140I$<br>$a = 1.41511 + 1.61234I$<br>$b = 0.512901 - 1.028200I$ | $-1.65149 + 2.70585I$ | 0 |
| $u = 0.172003 - 0.868140I$<br>$a = 1.41511 - 1.61234I$<br>$b = 0.512901 + 1.028200I$ | $-1.65149 - 2.70585I$ | 0 |
| $u = 0.520176 + 0.987540I$<br>$a = 1.87632 + 0.28971I$<br>$b = -0.013147 - 0.914276I$ | $8.38341 + 2.22541I$ | 0 |
| $u = 0.520176 - 0.987540I$<br>$a = 1.87632 - 0.28971I$<br>$b = -0.013147 + 0.914276I$ | $8.38341 - 2.22541I$ | 0 |
| $u = -0.613687 + 0.955832I$<br>$a = -1.11690 + 1.01099I$<br>$b = -0.105898 - 0.657996I$ | $-0.20713 - 2.36351I$ | 0 |
| $u = -0.613687 - 0.955832I$<br>$a = -1.11690 - 1.01099I$<br>$b = -0.105898 + 0.657996I$ | $-0.20713 + 2.36351I$ | 0 |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 1.097380 + 0.301946I$<br>$a = 0.332759 + 1.297620I$<br>$b = -0.471455 - 1.199170I$ | $3.35249 - 8.83135I$ | 0 |
| $u = 1.097380 - 0.301946I$<br>$a = 0.332759 - 1.297620I$<br>$b = -0.471455 + 1.199170I$ | $3.35249 + 8.83135I$ | 0 |
| $u = 0.878396 + 0.726590I$<br>$a = 0.395276 - 0.928259I$<br>$b = 0.279022 + 1.012780I$ | $8.81024 + 1.64508I$ | 0 |
| $u = 0.878396 - 0.726590I$<br>$a = 0.395276 + 0.928259I$<br>$b = 0.279022 - 1.012780I$ | $8.81024 - 1.64508I$ | 0 |
| $u = -0.792951 + 0.819837I$<br>$a = -0.26165 + 1.84386I$<br>$b = -0.752024 - 0.886463I$ | $3.39079 - 5.74867I$ | 0 |
| $u = -0.792951 - 0.819837I$<br>$a = -0.26165 - 1.84386I$<br>$b = -0.752024 + 0.886463I$ | $3.39079 + 5.74867I$ | 0 |
| $u = 0.850767 + 0.116954I$<br>$a = 0.617587 + 0.606455I$<br>$b = 0.136051 + 0.150315I$ | $7.82911 + 1.59133I$ | 0 |
| $u = 0.850767 - 0.116954I$<br>$a = 0.617587 - 0.606455I$<br>$b = 0.136051 - 0.150315I$ | $7.82911 - 1.59133I$ | 0 |
| $u = -0.345604 + 1.091530I$<br>$a = -1.26749 + 1.72713I$<br>$b = -0.378450 - 1.032900I$ | $-2.33621 - 5.74083I$ | 0 |
| $u = -0.345604 - 1.091530I$<br>$a = -1.26749 - 1.72713I$<br>$b = -0.378450 + 1.032900I$ | $-2.33621 + 5.74083I$ | 0 |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u=-0.058524+1.144490I$<br>$a=\ 0.158625+0.369848I$<br>$b=\ 0.588702+0.442272I$ | $-3.31707-1.65297I$ | 0 |
| $u=-0.058524-1.144490I$<br>$a=\ 0.158625-0.369848I$<br>$b=\ 0.588702-0.442272I$ | $-3.31707+1.65297I$ | 0 |
| $u=\ 0.514670+0.679083I$<br>$a=\ 0.55502-1.91482I$<br>$b=-0.062270+1.239280I$ | $9.41329+2.00087I$ | 0 |
| $u=\ 0.514670-0.679083I$<br>$a=\ 0.55502+1.91482I$<br>$b=-0.062270-1.239280I$ | $9.41329-2.00087I$ | 0 |
| $u=-1.104570+0.365918I$<br>$a=-0.386339+1.298760I$<br>$b=\ 0.107291-1.129670I$ | $4.88864-0.23143I$ | 0 |
| $u=-1.104570-0.365918I$<br>$a=-0.386339-1.298760I$<br>$b=\ 0.107291+1.129670I$ | $4.88864+0.23143I$ | 0 |
| $u=-0.823066+0.076417I$<br>$a=-0.466418+1.242360I$<br>$b=\ 0.364043-1.223700I$ | $3.18766+4.05776I$ | 0 |
| $u=-0.823066-0.076417I$<br>$a=-0.466418-1.242360I$<br>$b=\ 0.364043+1.223700I$ | $3.18766-4.05776I$ | 0 |
| $u=\ 0.388068+1.107490I$<br>$a=-0.71969-1.40256I$<br>$b=-0.392541+0.823385I$ | $-3.11646-1.04761I$ | 0 |
| $u=\ 0.388068-1.107490I$<br>$a=-0.71969+1.40256I$<br>$b=-0.392541-0.823385I$ | $-3.11646+1.04761I$ | 0 |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u=-0.103494+1.176310I$<br>$a=-0.027478-0.268860I$<br>$b=-0.668246+0.907658I$ | $1.94861+1.75934I$ | 0 |
| $u=-0.103494-1.176310I$<br>$a=-0.027478+0.268860I$<br>$b=-0.668246-0.907658I$ | $1.94861-1.75934I$ | 0 |
| $u=-0.385175+1.120460I$<br>$a=-0.267590+0.748356I$<br>$b=-1.034940-0.199358I$ | $0.03735-3.82786I$ | 0 |
| $u=-0.385175-1.120460I$<br>$a=-0.267590-0.748356I$<br>$b=-1.034940+0.199358I$ | $0.03735+3.82786I$ | 0 |
| $u=-0.621640+1.016660I$<br>$a=\ \ 0.662878-0.166057I$<br>$b=-0.913543+0.603537I$ | $2.56176+0.24638I$ | 0 |
| $u=-0.621640-1.016660I$<br>$a=\ \ 0.662878+0.166057I$<br>$b=-0.913543-0.603537I$ | $2.56176-0.24638I$ | 0 |
| $u=\ \ 0.495869+1.084730I$<br>$a=-0.127005-0.065732I$<br>$b=-0.957253+0.085270I$ | $4.87201+5.66450I$ | 0 |
| $u=\ \ 0.495869-1.084730I$<br>$a=-0.127005+0.065732I$<br>$b=-0.957253-0.085270I$ | $4.87201-5.66450I$ | 0 |
| $u=\ \ 0.693662+0.407460I$<br>$a=-0.71838-1.41457I$<br>$b=\ \ 0.408383+1.171800I$ | $1.48479-2.67185I$ | 0 |
| $u=\ \ 0.693662-0.407460I$<br>$a=-0.71838+1.41457I$<br>$b=\ \ 0.408383-1.171800I$ | $1.48479+2.67185I$ | 0 |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u=-0.230026+0.767257I$<br>$a=-0.970699+0.672864I$<br>$b=-1.024820-0.662801I$ | $0.79432-4.66034I$ | 0 |
| $u=-0.230026-0.767257I$<br>$a=-0.970699-0.672864I$<br>$b=-1.024820+0.662801I$ | $0.79432+4.66034I$ | 0 |
| $u=0.478404+1.100890I$<br>$a=-0.110896-0.242408I$<br>$b=-1.168450-0.365893I$ | $-2.53806+8.45885I$ | 0 |
| $u=0.478404-1.100890I$<br>$a=-0.110896+0.242408I$<br>$b=-1.168450+0.365893I$ | $-2.53806-8.45885I$ | 0 |
| $u=-0.393115+1.134770I$<br>$a=-0.451919+0.056708I$<br>$b=-0.662117+0.337658I$ | $-1.49516-2.91040I$ | 0 |
| $u=-0.393115-1.134770I$<br>$a=-0.451919-0.056708I$<br>$b=-0.662117-0.337658I$ | $-1.49516+2.91040I$ | 0 |
| $u=0.392411+1.142680I$<br>$a=1.48660+0.54049I$<br>$b=0.394496-1.133540I$ | $1.80870+6.32768I$ | 0 |
| $u=0.392411-1.142680I$<br>$a=1.48660-0.54049I$<br>$b=0.394496+1.133540I$ | $1.80870-6.32768I$ | 0 |
| $u=-0.705793+0.990562I$<br>$a=0.28312-1.65201I$<br>$b=0.304649+0.976604I$ | $-0.23839-3.04514I$ | 0 |
| $u=-0.705793-0.990562I$<br>$a=0.28312+1.65201I$<br>$b=0.304649-0.976604I$ | $-0.23839+3.04514I$ | 0 |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 0.555300 + 1.087380I$<br>$a = 1.06919 + 1.35907I$<br>$b = 0.67238 - 1.28571I$ | $-0.52019 + 7.48497I$ | 0 |
| $u = 0.555300 - 1.087380I$<br>$a = 1.06919 - 1.35907I$<br>$b = 0.67238 + 1.28571I$ | $-0.52019 - 7.48497I$ | 0 |
| $u = 0.385611 + 0.675496I$<br>$a = -0.165168 + 0.873153I$<br>$b = -0.50627 - 1.42083I$ | $8.91007 - 0.02541I$ | 0 |
| $u = 0.385611 - 0.675496I$<br>$a = -0.165168 - 0.873153I$<br>$b = -0.50627 + 1.42083I$ | $8.91007 + 0.02541I$ | 0 |
| $u = 0.469606 + 0.565157I$<br>$a = 0.529296 + 1.185220I$<br>$b = -0.04133 - 1.46739I$ | $4.76124 + 3.98622I$ | 0 |
| $u = 0.469606 - 0.565157I$<br>$a = 0.529296 - 1.185220I$<br>$b = -0.04133 + 1.46739I$ | $4.76124 - 3.98622I$ | 0 |
| $u = -0.036072 + 0.729429I$<br>$a = 2.82162 - 0.62144I$<br>$b = 0.115132 + 0.590894I$ | $-0.48013 + 3.62987I$ | 0 |
| $u = -0.036072 - 0.729429I$<br>$a = 2.82162 + 0.62144I$<br>$b = 0.115132 - 0.590894I$ | $-0.48013 - 3.62987I$ | 0 |
| $u = -0.591497 + 1.129730I$<br>$a = -1.14298 + 1.62756I$<br>$b = -0.57681 - 1.41821I$ | $4.92365 - 9.73455I$ | 0 |
| $u = -0.591497 - 1.129730I$<br>$a = -1.14298 - 1.62756I$<br>$b = -0.57681 + 1.41821I$ | $4.92365 + 9.73455I$ | 0 |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u=-1.202830+0.456594I$<br>$a=-0.301957+1.347280I$<br>$b=\ \ 0.526033-1.214390I$ | $10.2118+12.4061I$ | 0 |
| $u=-1.202830-0.456594I$<br>$a=-0.301957-1.347280I$<br>$b=\ \ 0.526033+1.214390I$ | $10.2118-12.4061I$ | 0 |
| $u=\ \ 0.439555+1.213620I$<br>$a=\ \ 1.34068+1.84618I$<br>$b=\ \ 0.305634-1.064010I$ | $4.05655+8.00567I$ | 0 |
| $u=\ \ 0.439555-1.213620I$<br>$a=\ \ 1.34068-1.84618I$<br>$b=\ \ 0.305634+1.064010I$ | $4.05655-8.00567I$ | 0 |
| $u=-0.708359$<br>$a=\ \ 0.928437$<br>$b=-0.819861$ | 3.35565 | 0 |
| $u=-0.538987+1.194050I$<br>$a=\ \ 0.913305-0.910907I$<br>$b=\ \ 0.71204+1.24596I$ | $0.03098-9.00112I$ | 0 |
| $u=-0.538987-1.194050I$<br>$a=\ \ 0.913305+0.910907I$<br>$b=\ \ 0.71204-1.24596I$ | $0.03098+9.00112I$ | 0 |
| $u=-0.601955+1.165980I$<br>$a=-0.044068-0.317938I$<br>$b=\ \ 1.154840-0.281181I$ | $4.42380-12.82880I$ | 0 |
| $u=-0.601955-1.165980I$<br>$a=-0.044068+0.317938I$<br>$b=\ \ 1.154840+0.281181I$ | $4.42380+12.82880I$ | 0 |
| $u=-0.169508+1.304990I$<br>$a=-0.156883+0.369284I$<br>$b=-0.346648+0.528750I$ | $-3.90414-2.47493I$ | 0 |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u=-0.169508-1.304990I$<br>$a=-0.156883-0.369284I$<br>$b=-0.346648-0.528750I$ | $-3.90414+2.47493I$ | 0 |
| $u=-1.289440+0.280109I$<br>$a=-0.062415-1.325730I$<br>$b=-0.266590+0.977527I$ | $4.18624+0.94522I$ | 0 |
| $u=-1.289440-0.280109I$<br>$a=-0.062415+1.325730I$<br>$b=-0.266590-0.977527I$ | $4.18624-0.94522I$ | 0 |
| $u=-0.643415+1.171640I$<br>$a=0.707992-1.121450I$<br>$b=0.460605+1.275380I$ | $2.32392-5.81231I$ | 0 |
| $u=-0.643415-1.171640I$<br>$a=0.707992+1.121450I$<br>$b=0.460605-1.275380I$ | $2.32392+5.81231I$ | 0 |
| $u=-0.091486+1.381420I$<br>$a=0.513358-0.822625I$<br>$b=0.600974+0.683418I$ | $1.23433+3.68448I$ | 0 |
| $u=-0.091486-1.381420I$<br>$a=0.513358+0.822625I$<br>$b=0.600974-0.683418I$ | $1.23433-3.68448I$ | 0 |
| $u=1.391550+0.047334I$<br>$a=0.161483-1.138750I$<br>$b=0.111054+0.710115I$ | $8.33476-1.74074I$ | 0 |
| $u=1.391550-0.047334I$<br>$a=0.161483+1.138750I$<br>$b=0.111054-0.710115I$ | $8.33476+1.74074I$ | 0 |
| $u=0.625069+1.245760I$<br>$a=0.1407580+0.0100075I$<br>$b=0.750814+0.328497I$ | $4.47210+3.99067I$ | 0 |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 0.625069 - 1.245760I$<br>$a = 0.1407580 - 0.0100075I$<br>$b = 0.750814 - 0.328497I$ | $4.47210 - 3.99067I$ | 0 |
| $u = 0.222261 + 0.561021I$<br>$a = -2.20669 - 0.58949I$<br>$b = -0.629023 - 0.819056I$ | $7.05607 - 2.06302I$ | $4.89158 + 2.47548I$ |
| $u = 0.222261 - 0.561021I$<br>$a = -2.20669 + 0.58949I$<br>$b = -0.629023 + 0.819056I$ | $7.05607 + 2.06302I$ | $4.89158 - 2.47548I$ |
| $u = 1.215480 + 0.699480I$<br>$a = 0.467435 + 1.232210I$<br>$b = -0.296032 - 1.110470I$ | $10.74500 - 3.42747I$ | 0 |
| $u = 1.215480 - 0.699480I$<br>$a = 0.467435 - 1.232210I$<br>$b = -0.296032 + 1.110470I$ | $10.74500 + 3.42747I$ | 0 |
| $u = 0.647896 + 1.246130I$<br>$a = -0.90290 - 1.18174I$<br>$b = -0.68168 + 1.27194I$ | $0.3866 + 15.0092I$ | 0 |
| $u = 0.647896 - 1.246130I$<br>$a = -0.90290 + 1.18174I$<br>$b = -0.68168 - 1.27194I$ | $0.3866 - 15.0092I$ | 0 |
| $u = 0.33818 + 1.39086I$<br>$a = 0.269297 + 0.393801I$<br>$b = 0.270102 + 0.633118I$ | $2.54991 + 5.38075I$ | 0 |
| $u = 0.33818 - 1.39086I$<br>$a = 0.269297 - 0.393801I$<br>$b = 0.270102 - 0.633118I$ | $2.54991 - 5.38075I$ | 0 |
| $u = 0.80176 + 1.18603I$<br>$a = -0.65389 - 1.37682I$<br>$b = -0.476159 + 1.274310I$ | $8.95941 + 10.59710I$ | 0 |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 0.80176 - 1.18603I$<br>$a = -0.65389 + 1.37682I$<br>$b = -0.476159 - 1.274310I$ | $8.95941 - 10.59710I$ | 0 |
| $u = 0.092808 + 0.553424I$<br>$a = -5.71826 - 1.96761I$<br>$b = -0.024806 + 0.712561I$ | $7.07374 - 5.24790I$ | $5.63019 - 3.54213I$ |
| $u = 0.092808 - 0.553424I$<br>$a = -5.71826 + 1.96761I$<br>$b = -0.024806 - 0.712561I$ | $7.07374 + 5.24790I$ | $5.63019 + 3.54213I$ |
| $u = 0.212048 + 0.506310I$<br>$a = -0.31682 - 2.46535I$<br>$b = 0.188620 + 1.374690I$ | $4.12511 - 3.28456I$ | $16.4715 - 6.7726I$ |
| $u = 0.212048 - 0.506310I$<br>$a = -0.31682 + 2.46535I$<br>$b = 0.188620 - 1.374690I$ | $4.12511 + 3.28456I$ | $16.4715 + 6.7726I$ |
| $u = -0.65741 + 1.29533I$<br>$a = -0.95566 + 1.06162I$<br>$b = -0.535496 - 1.111750I$ | $0.76477 - 7.58284I$ | 0 |
| $u = -0.65741 - 1.29533I$<br>$a = -0.95566 - 1.06162I$<br>$b = -0.535496 + 1.111750I$ | $0.76477 + 7.58284I$ | 0 |
| $u = 0.523584 + 0.152822I$<br>$a = -0.18200 - 1.59445I$<br>$b = -0.727053 - 0.007259I$ | $-0.03447 - 4.40157I$ | $3.14700 + 5.85331I$ |
| $u = 0.523584 - 0.152822I$<br>$a = -0.18200 + 1.59445I$<br>$b = -0.727053 + 0.007259I$ | $-0.03447 + 4.40157I$ | $3.14700 - 5.85331I$ |
| $u = -0.73675 + 1.25432I$<br>$a = 0.92669 - 1.36132I$<br>$b = 0.66085 + 1.29215I$ | $7.6185 - 19.2555I$ | 0 |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u=-0.73675-1.25432I$<br>$a=\ \ 0.92669+1.36132I$<br>$b=\ \ 0.66085-1.29215I$ | $7.6185+19.2555I$ | 0 |
| $u=-0.480237+0.234582I$<br>$a=-0.375118-0.018821I$<br>$b=-0.295874+0.287064I$ | $1.021370-0.466038I$ | $8.14171+1.88483I$ |
| $u=-0.480237-0.234582I$<br>$a=-0.375118+0.018821I$<br>$b=-0.295874-0.287064I$ | $1.021370+0.466038I$ | $8.14171-1.88483I$ |
| $u=-0.43867+1.41165I$<br>$a=-0.450257+0.204236I$<br>$b=\ \ 0.168962-0.809336I$ | $-1.099940-0.850315I$ | 0 |
| $u=-0.43867-1.41165I$<br>$a=-0.450257-0.204236I$<br>$b=\ \ 0.168962+0.809336I$ | $-1.099940+0.850315I$ | 0 |
| $u=\ \ 0.11903+1.49702I$<br>$a=-0.026180+0.143171I$<br>$b=-0.305262-0.805600I$ | $-3.31162-4.19271I$ | 0 |
| $u=\ \ 0.11903-1.49702I$<br>$a=-0.026180-0.143171I$<br>$b=-0.305262+0.805600I$ | $-3.31162+4.19271I$ | 0 |
| $u=\ \ 1.43342+0.46967I$<br>$a=-0.029346-1.364290I$<br>$b=\ \ 0.386152+1.009200I$ | $9.80632-0.98006I$ | 0 |
| $u=\ \ 1.43342-0.46967I$<br>$a=-0.029346+1.364290I$<br>$b=\ \ 0.386152-1.009200I$ | $9.80632+0.98006I$ | 0 |
| $u=\ \ 0.12757+1.56326I$<br>$a=\ \ 0.323689+0.383358I$<br>$b=\ \ 0.460855-0.875376I$ | $1.78418+7.91629I$ | 0 |

| | Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|---|
| $u=$ | $0.12757-1.56326I$ | | |
| $a=$ | $0.323689-0.383358I$ | $1.78418-7.91629I$ | 0 |
| $b=$ | $0.460855+0.875376I$ | | |
| $u=$ | $0.83963+1.36765I$ | | |
| $a=$ | $0.83266+1.24337I$ | $6.78833+8.90117I$ | 0 |
| $b=$ | $0.553484-1.117410I$ | | |
| $u=$ | $0.83963-1.36765I$ | | |
| $a=$ | $0.83266-1.24337I$ | $6.78833-8.90117I$ | 0 |
| $b=$ | $0.553484+1.117410I$ | | |
| $u=$ | $0.218657+0.169963I$ | | |
| $a=$ | $-1.77650-0.96773I$ | $-1.17962-0.99556I$ | $-2.00169+1.52521I$ |
| $b=$ | $0.574300+0.265634I$ | | |
| $u=$ | $0.218657-0.169963I$ | | |
| $a=$ | $-1.77650+0.96773I$ | $-1.17962+0.99556I$ | $-2.00169-1.52521I$ |
| $b=$ | $0.574300-0.265634I$ | | |

**II.**

$\boldsymbol{I_2^u = \langle -3.62\times10^{14}u^{37}-2.98\times10^{12}u^{36}+\cdots+7.25\times10^{13}b-1.02\times10^{15},\ 1.47\times10^{18}u^{37}-5.13\times10^{17}u^{36}+\cdots+1.05\times10^{17}a+1.03\times10^{19},\ u^{38}-2u^{37}+\cdots-2u+1\rangle}$

**(i) Arc colorings**

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

$$a_{12} = \begin{pmatrix}0\\u\end{pmatrix}$$

$$a_3 = \begin{pmatrix}-14.0313u^{37}+4.88397u^{36}+\cdots+146.753u-98.3034\\4.99322u^{37}+0.0411159u^{36}+\cdots-19.0974u+14.0742\end{pmatrix}$$

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

$$a_2 = \begin{pmatrix}-9.03812u^{37}+4.92508u^{36}+\cdots+127.656u-84.2292\\4.99322u^{37}+0.0411159u^{36}+\cdots-19.0974u+14.0742\end{pmatrix}$$

$$a_9 = \begin{pmatrix}-75.6584u^{37}+152.041u^{36}+\cdots-218.571u-32.1504\\19.8361u^{37}-48.6777u^{36}+\cdots+72.7011u-11.7856\end{pmatrix}$$

$$a_4 = \begin{pmatrix}-20.5906u^{37}+23.6730u^{36}+\cdots-102.447u-20.7979\\-15.9100u^{37}+15.6491u^{36}+\cdots+97.5284u-64.4548\end{pmatrix}$$

$$a_6 = \begin{pmatrix}37.0556u^{37}-79.9036u^{36}+\cdots+176.543u-1.83582\\-11.9502u^{37}+26.6200u^{36}+\cdots-41.4503u+8.71292\end{pmatrix}$$

$$a_1 = \begin{pmatrix}-66.0396u^{37}+168.125u^{36}+\cdots-649.821u+176.744\\-14.3942u^{37}-4.49476u^{36}+\cdots+166.779u-101.848\end{pmatrix}$$

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

$$a_5 = \begin{pmatrix}38.4744u^{37}-83.0531u^{36}+\cdots+181.446u+3.36074\\-10.5323u^{37}+24.2087u^{36}+\cdots-44.3115u+3.20447\end{pmatrix}$$

$$a_{10} = \begin{pmatrix}77.5254u^{37}-157.111u^{36}+\cdots+400.913u-46.7830\\-22.5221u^{37}+43.4874u^{36}+\cdots-120.877u+30.7000\end{pmatrix}$$

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

**(iii) Cusp Shapes** $= \frac{21354481039747811937}{104954892275661083}u^{37}-\frac{34594268770816226803}{104954892275661083}u^{36}+\cdots+\frac{46578911406556738133}{104954892275661083}u+\frac{17039115265124385250}{104954892275661083}$

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

| Crossings | u-Polynomials at each crossing |
|---|---|
| $c_1$ | $u^{38} - 2u^{37} + \cdots - 2u + 1$ |
| $c_2$ | $u^{38} + 2u^{37} + \cdots + 15u^2 + 1$ |
| $c_3$ | $u^{38} - 4u^{36} + \cdots - 5u^2 + 1$ |
| $c_4, c_5$ | $u^{38} - 22u^{36} + \cdots + 14u^2 + 1$ |
| $c_6$ | $u^{38} - 2u^{37} + \cdots + 15u^2 + 1$ |
| $c_7$ | $u^{38} - 2u^{37} + \cdots - 2u + 1$ |
| $c_8$ | $u^{38} - 3u^{36} + \cdots + 128u + 16$ |
| $c_9$ | $u^{38} - 2u^{37} + \cdots - 5u + 1$ |
| $c_{10}$ | $u^{38} - 22u^{36} + \cdots + 14u^2 + 1$ |
| $c_{11}$ | $u^{38} + 2u^{37} + \cdots + 2u + 1$ |
| $c_{12}$ | $u^{38} - 6u^{36} + \cdots + 65u + 11$ |

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

| Crossings | Riley Polynomials at each crossing |
|---|---|
| $c_1$ | $y^{38} + 16y^{37} + \cdots + 20y + 1$ |
| $c_2, c_6$ | $y^{38} + 20y^{37} + \cdots + 30y + 1$ |
| $c_3$ | $y^{38} - 8y^{37} + \cdots - 10y + 1$ |
| $c_4, c_5, c_{10}$ | $y^{38} - 44y^{37} + \cdots + 28y + 1$ |
| $c_7, c_{11}$ | $y^{38} + 18y^{37} + \cdots + 34y + 1$ |
| $c_8$ | $y^{38} - 6y^{37} + \cdots - 5248y + 256$ |
| $c_9$ | $y^{38} - 20y^{37} + \cdots - 3y + 1$ |
| $c_{12}$ | $y^{38} - 12y^{37} + \cdots + 131y + 121$ |

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

| Solutions to $I_2^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u=-0.251710+0.968066I$<br>$a=-0.1091620-0.0829685I$<br>$b=-0.985028+0.113525I$ | $-2.49070-0.50449I$ | $-3.05265+0.I$ |
| $u=-0.251710-0.968066I$<br>$a=-0.1091620+0.0829685I$<br>$b=-0.985028-0.113525I$ | $-2.49070+0.50449I$ | $-3.05265+0.I$ |
| $u=-0.264840+0.956477I$<br>$a=-0.674966+0.117048I$<br>$b=-1.002830+0.384407I$ | $-2.48107-1.54144I$ | $0.230710+0.332807I$ |
| $u=-0.264840-0.956477I$<br>$a=-0.674966-0.117048I$<br>$b=-1.002830-0.384407I$ | $-2.48107+1.54144I$ | $0.230710-0.332807I$ |
| $u=0.291000+0.994034I$<br>$a=0.788541+0.906950I$<br>$b=1.052900-0.628207I$ | $0.06254+4.79344I$ | $-3.97576-8.81691I$ |
| $u=0.291000-0.994034I$<br>$a=0.788541-0.906950I$<br>$b=1.052900+0.628207I$ | $0.06254-4.79344I$ | $-3.97576+8.81691I$ |
| $u=0.449105+0.969833I$<br>$a=1.384600+0.132662I$<br>$b=0.640854-0.903252I$ | $7.07918+4.17978I$ | $3.56943-7.75680I$ |
| $u=0.449105-0.969833I$<br>$a=1.384600-0.132662I$<br>$b=0.640854+0.903252I$ | $7.07918-4.17978I$ | $3.56943+7.75680I$ |
| $u=0.252638+0.887369I$<br>$a=-0.237235+0.537879I$<br>$b=1.14592+0.89964I$ | $0.51310-2.55360I$ | $-5.02504+13.13041I$ |
| $u=0.252638-0.887369I$<br>$a=-0.237235-0.537879I$<br>$b=1.14592-0.89964I$ | $0.51310+2.55360I$ | $-5.02504-13.13041I$ |

| Solutions to $I_2^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u=-0.713969+0.913534I$<br>$a=-0.45324+1.73043I$<br>$b=-0.418446-0.997981I$ | $-0.23335-4.30653I$ | $4.45669+7.21846I$ |
| $u=-0.713969-0.913534I$<br>$a=-0.45324-1.73043I$<br>$b=-0.418446+0.997981I$ | $-0.23335+4.30653I$ | $4.45669-7.21846I$ |
| $u=0.307150+0.758895I$<br>$a=2.23585+1.39503I$<br>$b=0.376831-0.642907I$ | $-0.52136+4.46488I$ | $3.26137-10.38600I$ |
| $u=0.307150-0.758895I$<br>$a=2.23585-1.39503I$<br>$b=0.376831+0.642907I$ | $-0.52136-4.46488I$ | $3.26137+10.38600I$ |
| $u=1.194830+0.276785I$<br>$a=-0.10962-1.80449I$<br>$b=0.247788+0.956411I$ | $9.27602-2.53187I$ | $10.47108+3.96768I$ |
| $u=1.194830-0.276785I$<br>$a=-0.10962+1.80449I$<br>$b=0.247788-0.956411I$ | $9.27602+2.53187I$ | $10.47108-3.96768I$ |
| $u=1.218440+0.199413I$<br>$a=0.094917-0.851063I$<br>$b=0.245365+0.960509I$ | $9.28884+0.54780I$ | $11.28014+0.I$ |
| $u=1.218440-0.199413I$<br>$a=0.094917+0.851063I$<br>$b=0.245365-0.960509I$ | $9.28884-0.54780I$ | $11.28014+0.I$ |
| $u=-0.554637+1.186440I$<br>$a=-1.05151+1.04300I$<br>$b=-0.544143-1.184310I$ | $0.42557-6.84914I$ | 0 |
| $u=-0.554637-1.186440I$<br>$a=-1.05151-1.04300I$<br>$b=-0.544143+1.184310I$ | $0.42557+6.84914I$ | 0 |

| Solutions to $I_2^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u=-0.034889+1.325930I$<br>$a=-0.531723-0.093528I$<br>$b=-0.028539+0.455443I$ | $-3.38492-3.07672I$ | 0 |
| $u=-0.034889-1.325930I$<br>$a=-0.531723+0.093528I$<br>$b=-0.028539-0.455443I$ | $-3.38492+3.07672I$ | 0 |
| $u=-1.307500+0.231145I$<br>$a=-0.000551-1.291600I$<br>$b=-0.240443+0.958114I$ | $3.96523+0.97239I$ | 0 |
| $u=-1.307500-0.231145I$<br>$a=-0.000551+1.291600I$<br>$b=-0.240443-0.958114I$ | $3.96523-0.97239I$ | 0 |
| $u=0.253650+0.620721I$<br>$a=1.06676-1.08548I$<br>$b=0.428435+1.302540I$ | $8.60757-0.51017I$ | $5.00152+3.82724I$ |
| $u=0.253650-0.620721I$<br>$a=1.06676+1.08548I$<br>$b=0.428435-1.302540I$ | $8.60757+0.51017I$ | $5.00152-3.82724I$ |
| $u=-0.483136+1.281960I$<br>$a=0.510258-0.374680I$<br>$b=-0.270749+0.650315I$ | $-1.61717-0.93629I$ | 0 |
| $u=-0.483136-1.281960I$<br>$a=0.510258+0.374680I$<br>$b=-0.270749-0.650315I$ | $-1.61717+0.93629I$ | 0 |
| $u=-0.199456+0.593308I$<br>$a=-5.23049+1.34315I$<br>$b=-0.175252-0.686120I$ | $7.01094-5.71416I$ | $3.26382+12.73766I$ |
| $u=-0.199456-0.593308I$<br>$a=-5.23049-1.34315I$<br>$b=-0.175252+0.686120I$ | $7.01094+5.71416I$ | $3.26382-12.73766I$ |

| Solutions to $I_2^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 0.609900 + 1.268000I$<br>$a = 1.08315 + 1.39670I$<br>$b = 0.468571 - 1.221280I$ | $5.55552 + 8.69998I$ | 0 |
| $u = 0.609900 - 1.268000I$<br>$a = 1.08315 - 1.39670I$<br>$b = 0.468571 + 1.221280I$ | $5.55552 - 8.69998I$ | 0 |
| $u = 0.28240 + 1.41809I$<br>$a = 0.611465 + 0.177019I$<br>$b = 0.153759 + 0.581674I$ | $2.64872 + 5.82927I$ | 0 |
| $u = 0.28240 - 1.41809I$<br>$a = 0.611465 - 0.177019I$<br>$b = 0.153759 - 0.581674I$ | $2.64872 - 5.82927I$ | 0 |
| $u = -0.090979 + 0.535107I$<br>$a = 0.82379 - 1.95731I$<br>$b = -0.14834 + 1.41184I$ | $3.90841 + 3.45716I$ | $-6.41354 - 10.49578I$ |
| $u = -0.090979 - 0.535107I$<br>$a = 0.82379 + 1.95731I$<br>$b = -0.14834 - 1.41184I$ | $3.90841 - 3.45716I$ | $-6.41354 + 10.49578I$ |
| $u = 0.042001 + 0.466620I$<br>$a = -3.20084 - 2.47635I$<br>$b = 0.053344 + 1.337490I$ | $9.95964 - 5.11739I$ | $8.77088 + 5.50998I$ |
| $u = 0.042001 - 0.466620I$<br>$a = -3.20084 + 2.47635I$<br>$b = 0.053344 - 1.337490I$ | $9.95964 + 5.11739I$ | $8.77088 - 5.50998I$ |

**III. u-Polynomials**

| Crossings | u-Polynomials at each crossing |
|---|---|
| $c_1$ | $(u^{38}-2u^{37}+\cdots-2u+1)(u^{145}-11u^{144}+\cdots-734954u+73421)$ |
| $c_2$ | $(u^{38}+2u^{37}+\cdots+15u^2+1)(u^{145}-u^{144}+\cdots-3830u-803)$ |
| $c_3$ | $(u^{38}-4u^{36}+\cdots-5u^2+1)(u^{145}+u^{144}+\cdots-192u-16)$ |
| $c_4, c_5$ | $(u^{38}-22u^{36}+\cdots+14u^2+1)(u^{145}-u^{144}+\cdots-58u-3)$ |
| $c_6$ | $(u^{38}-2u^{37}+\cdots+15u^2+1)(u^{145}-u^{144}+\cdots-3830u-803)$ |
| $c_7$ | $(u^{38}-2u^{37}+\cdots-2u+1)(u^{145}+u^{144}+\cdots-16062u-2633)$ |
| $c_8$ | $(u^{38}-3u^{36}+\cdots+128u+16)$ $\cdot(u^{145}-u^{144}+\cdots-38691220u-1160044)$ |
| $c_9$ | $(u^{38}-2u^{37}+\cdots-5u+1)(u^{145}-5u^{144}+\cdots-62879u+16999)$ |
| $c_{10}$ | $(u^{38}-22u^{36}+\cdots+14u^2+1)(u^{145}-u^{144}+\cdots-58u-3)$ |
| $c_{11}$ | $(u^{38}+2u^{37}+\cdots+2u+1)(u^{145}+u^{144}+\cdots-16062u-2633)$ |
| $c_{12}$ | $(u^{38}-6u^{36}+\cdots+65u+11)(u^{145}+u^{144}+\cdots+151613u-160147)$ |

**IV. Riley Polynomials**

| Crossings | Riley Polynomials at each crossing |
|---|---|
| $c_1$ | $(y^{38}+16y^{37}+\cdots+20y+1)$ $\cdot(y^{145}+47y^{144}+\cdots-203428626426y-5390643241)$ |
| $c_2, c_6$ | $(y^{38}+20y^{37}+\cdots+30y+1)$ $\cdot(y^{145}+79y^{144}+\cdots-29939356y-644809)$ |
| $c_3$ | $(y^{38}-8y^{37}+\cdots-10y+1)(y^{145}-13y^{144}+\cdots+15136y-256)$ |
| $c_4, c_5, c_{10}$ | $(y^{38}-44y^{37}+\cdots+28y+1)(y^{145}-153y^{144}+\cdots-50y-9)$ |
| $c_7, c_{11}$ | $(y^{38}+18y^{37}+\cdots+34y+1)$ $\cdot(y^{145}+69y^{144}+\cdots-222903276y-6932689)$ |
| $c_8$ | $(y^{38}-6y^{37}+\cdots-5248y+256)$ $\cdot(y^{145}+25y^{144}+\cdots+139705969316016y-1345702081936)$ |
| $c_9$ | $(y^{38}-20y^{37}+\cdots-3y+1)$ $\cdot(y^{145}-41y^{144}+\cdots+9501766269y-288966001)$ |
| $c_{12}$ | $(y^{38}-12y^{37}+\cdots+131y+121)$ $\cdot(y^{145}-21y^{144}+\cdots-603561410741y-25647061609)$ |