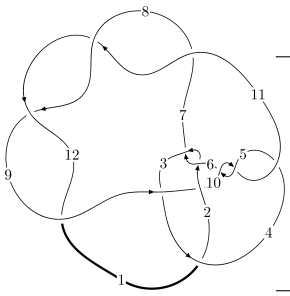
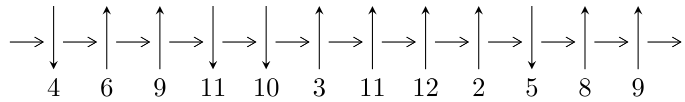
# $12n_{0773}$ ($K12n_{0773}$)




A knot diagram[1]

**Linearized knot diagam**




**Solving Sequence**

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

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

$$\begin{aligned} I_1^u = \langle & -2.99252 \times 10^{54} u^{58} - 4.27398 \times 10^{53} u^{57} + \cdots + 1.08123 \times 10^{55} b - 5.85001 \times 10^{54}, \\ & -8.90269 \times 10^{54} u^{58} + 1.21104 \times 10^{55} u^{57} + \cdots + 1.08123 \times 10^{55} a - 4.30153 \times 10^{56},\ u^{59} - u^{58} + \cdots + 32u - \\ I_2^u = \langle & 2u^{14} - u^{13} - 16u^{12} + 8u^{11} + 49u^{10} - 26u^9 - 67u^8 + 42u^7 + 27u^6 - 31u^5 + 22u^4 + 7u^3 - 18u^2 + b + 2, \\ & -2u^{14} + 2u^{13} + \cdots + a + 1, \\ & u^{15} - 9u^{13} + 32u^{11} - u^{10} - 55u^9 + 6u^8 + 41u^7 - 13u^6 + 13u^4 - 13u^3 - 6u^2 + 2u + 1 \rangle \end{aligned}$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 74 representations.

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

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

**I.**

$\boldsymbol{I_1^u = \langle -2.99\times10^{54}u^{58} - 4.27\times10^{53}u^{57} + \cdots + 1.08\times10^{55}b - 5.85\times10^{54},\ -8.90\times10^{54}u^{58} + 1.21\times10^{55}u^{57} + \cdots + 1.08\times10^{55}a - 4.30\times10^{56},\ u^{59} - u^{58} + \cdots + 32u + 1\rangle}$

**(i) Arc colorings**

$$a_8 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u^2 + 1 \\ u^4 - 2u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0.823385u^{58} - 1.12006u^{57} + \cdots - 182.375u + 39.7837 \\ 0.276770u^{58} + 0.0395289u^{57} + \cdots - 0.767568u + 0.541051 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1.10016u^{58} - 1.08053u^{57} + \cdots - 183.142u + 40.3248 \\ 0.276770u^{58} + 0.0395289u^{57} + \cdots - 0.767568u + 0.541051 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -0.483130u^{58} - 1.09918u^{57} + \cdots - 102.939u + 26.7972 \\ 0.581937u^{58} + 0.395648u^{57} + \cdots - 24.3369u - 0.367973 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1.22082u^{58} - 0.989380u^{57} + \cdots - 182.255u + 40.3858 \\ -0.00126625u^{58} - 0.0204342u^{57} + \cdots + 7.01822u + 0.813889 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1.84485u^{58} - 1.31590u^{57} + \cdots - 229.979u + 52.0102 \\ -0.472356u^{58} - 0.328224u^{57} + \cdots + 6.26065u + 0.900727 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -1.94402u^{58} + 0.476904u^{57} + \cdots + 139.733u - 20.1503 \\ 0.316358u^{58} - 0.0242382u^{57} + \cdots + 0.806174u - 0.303933 \end{pmatrix}$$

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

**(iii) Cusp Shapes** $= 1.27874u^{58} + 0.721176u^{57} + \cdots - 64.5120u - 5.58630$

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

| Crossings | u-Polynomials at each crossing |
|---|---|
| $c_1$ | $u^{59} - 9u^{58} + \cdots - 108u + 61$ |
| $c_2, c_6$ | $u^{59} - 2u^{58} + \cdots + 5154u - 773$ |
| $c_3$ | $u^{59} - u^{58} + \cdots + 23u - 43$ |
| $c_4, c_5, c_{10}$ | $u^{59} - u^{58} + \cdots + 102u + 1$ |
| $c_7, c_8, c_{11}$ $c_{12}$ | $u^{59} - u^{58} + \cdots + 32u + 1$ |
| $c_9$ | $u^{59} + 2u^{58} + \cdots + 1624u - 1291$ |

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

| Crossings | Riley Polynomials at each crossing |
|---|---|
| $c_1$ | $y^{59} - 33y^{58} + \cdots + 229434y - 3721$ |
| $c_2, c_6$ | $y^{59} - 40y^{58} + \cdots + 18677570y - 597529$ |
| $c_3$ | $y^{59} + 31y^{58} + \cdots - 87965y - 1849$ |
| $c_4, c_5, c_{10}$ | $y^{59} + 59y^{58} + \cdots + 10138y - 1$ |
| $c_7, c_8, c_{11}$ $c_{12}$ | $y^{59} - 53y^{58} + \cdots + 1298y - 1$ |
| $c_9$ | $y^{59} - 32y^{58} + \cdots + 37592492y - 1666681$ |

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

| Solutions to $I_1^u$ | $\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u=-0.264830+0.931382I$<br>$a=-0.880909+0.866071I$<br>$b=-0.36110-1.47905I$ | $3.66563-9.89323I$ | $7.43337+6.27116I$ |
| $u=-0.264830-0.931382I$<br>$a=-0.880909-0.866071I$<br>$b=-0.36110+1.47905I$ | $3.66563+9.89323I$ | $7.43337-6.27116I$ |
| $u=\ \ 0.119168+0.889846I$<br>$a=-0.474592-0.195483I$<br>$b=-0.924980+0.347695I$ | $-2.19237+5.25619I$ | $4.23819-5.61197I$ |
| $u=\ \ 0.119168-0.889846I$<br>$a=-0.474592+0.195483I$<br>$b=-0.924980-0.347695I$ | $-2.19237-5.25619I$ | $4.23819+5.61197I$ |
| $u=-0.056257+0.894737I$<br>$a=\ \ 0.654957-0.276427I$<br>$b=\ \ 0.165353+1.327120I$ | $0.33927-2.65716I$ | $7.07647+3.01945I$ |
| $u=-0.056257-0.894737I$<br>$a=\ \ 0.654957+0.276427I$<br>$b=\ \ 0.165353-1.327120I$ | $0.33927+2.65716I$ | $7.07647-3.01945I$ |
| $u=\ \ 1.110480+0.149176I$<br>$a=-0.444606+1.134310I$<br>$b=-0.394307-0.923884I$ | $1.42201+0.91602I$ | 0 |
| $u=\ \ 1.110480-0.149176I$<br>$a=-0.444606-1.134310I$<br>$b=-0.394307+0.923884I$ | $1.42201-0.91602I$ | 0 |
| $u=\ \ 0.876618$<br>$a=-0.237869$<br>$b=\ \ 0.547477$ | 1.47441 | 6.10400 |
| $u=-0.946025+0.638857I$<br>$a=-0.59515+1.28359I$<br>$b=\ \ 0.31286-1.38423I$ | $5.77333+4.51012I$ | 0 |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = -0.946025 - 0.638857I$<br>$a = -0.59515 - 1.28359I$<br>$b = 0.31286 + 1.38423I$ | $5.77333 - 4.51012I$ | $0$ |
| $u = -1.140520 + 0.188136I$<br>$a = 0.22857 - 1.65457I$<br>$b = 0.284860 + 0.755221I$ | $3.89321 - 2.91811I$ | $0$ |
| $u = -1.140520 - 0.188136I$<br>$a = 0.22857 + 1.65457I$<br>$b = 0.284860 - 0.755221I$ | $3.89321 + 2.91811I$ | $0$ |
| $u = -0.102126 + 0.801805I$<br>$a = 0.688121 - 0.400215I$<br>$b = 0.498536 - 0.055398I$ | $-4.03916 + 0.26803I$ | $-0.184983 + 0.165110I$ |
| $u = -0.102126 - 0.801805I$<br>$a = 0.688121 + 0.400215I$<br>$b = 0.498536 + 0.055398I$ | $-4.03916 - 0.26803I$ | $-0.184983 - 0.165110I$ |
| $u = 0.373831 + 0.712271I$<br>$a = 1.14505 + 1.41925I$<br>$b = 0.142122 - 1.261840I$ | $-0.31798 + 2.01882I$ | $8.09002 - 3.66839I$ |
| $u = 0.373831 - 0.712271I$<br>$a = 1.14505 - 1.41925I$<br>$b = 0.142122 + 1.261840I$ | $-0.31798 - 2.01882I$ | $8.09002 + 3.66839I$ |
| $u = 1.115350 + 0.452791I$<br>$a = -0.361726 + 0.339593I$<br>$b = 0.824800 + 0.143591I$ | $0.891108 - 0.463329I$ | $0$ |
| $u = 1.115350 - 0.452791I$<br>$a = -0.361726 - 0.339593I$<br>$b = 0.824800 - 0.143591I$ | $0.891108 + 0.463329I$ | $0$ |
| $u = -1.22285$<br>$a = 2.11329$<br>$b = -0.00993937$ | $6.34821$ | $0$ |

| Solutions to $I_1^u$ | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 0.069536 + 0.754894I$<br>$a = -0.723962 - 0.583814I$<br>$b = -0.659233 + 0.942112I$ | $-0.414783 + 0.267178I$ | $7.48415 + 0.42381I$ |
| $u = 0.069536 - 0.754894I$<br>$a = -0.723962 + 0.583814I$<br>$b = -0.659233 - 0.942112I$ | $-0.414783 - 0.267178I$ | $7.48415 - 0.42381I$ |
| $u = 1.246900 + 0.128101I$<br>$a = 0.84306 + 3.72917I$<br>$b = 0.08010 - 1.59038I$ | $11.78010 + 4.24713I$ | 0 |
| $u = 1.246900 - 0.128101I$<br>$a = 0.84306 - 3.72917I$<br>$b = 0.08010 + 1.59038I$ | $11.78010 - 4.24713I$ | 0 |
| $u = -1.201700 + 0.358369I$<br>$a = -0.431364 + 0.406062I$<br>$b = -0.609338 - 0.225740I$ | $-0.66555 - 4.45229I$ | 0 |
| $u = -1.201700 - 0.358369I$<br>$a = -0.431364 - 0.406062I$<br>$b = -0.609338 + 0.225740I$ | $-0.66555 + 4.45229I$ | 0 |
| $u = 1.25489$<br>$a = -0.0869145$<br>$b = -1.08085$ | $6.69122$ | 0 |
| $u = 1.244200 + 0.194794I$<br>$a = 2.26800 + 1.51808I$<br>$b = -0.014499 - 1.386050I$ | $11.09980 - 0.10055I$ | 0 |
| $u = 1.244200 - 0.194794I$<br>$a = 2.26800 - 1.51808I$<br>$b = -0.014499 + 1.386050I$ | $11.09980 + 0.10055I$ | 0 |
| $u = 1.238570 + 0.325666I$<br>$a = -0.680385 - 0.614714I$<br>$b = 0.919436 + 0.808126I$ | $3.20240 + 3.63807I$ | 0 |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 1.238570 - 0.325666I$<br>$a = -0.680385 + 0.614714I$<br>$b = 0.919436 - 0.808126I$ | $3.20240 - 3.63807I$ | 0 |
| $u = -1.197820 + 0.461395I$<br>$a = 0.413885 - 1.277320I$<br>$b = -0.062854 + 1.223650I$ | $3.87163 - 2.16113I$ | 0 |
| $u = -1.197820 - 0.461395I$<br>$a = 0.413885 + 1.277320I$<br>$b = -0.062854 - 1.223650I$ | $3.87163 + 2.16113I$ | 0 |
| $u = -1.278360 + 0.133753I$<br>$a = -0.40499 + 2.53862I$<br>$b = 0.15595 - 1.70029I$ | $12.17270 + 0.50014I$ | 0 |
| $u = -1.278360 - 0.133753I$<br>$a = -0.40499 - 2.53862I$<br>$b = 0.15595 + 1.70029I$ | $12.17270 - 0.50014I$ | 0 |
| $u = -1.280870 + 0.190846I$<br>$a = -0.94846 + 1.39858I$<br>$b = -0.41025 - 1.44460I$ | $11.52880 - 5.38344I$ | 0 |
| $u = -1.280870 - 0.190846I$<br>$a = -0.94846 - 1.39858I$<br>$b = -0.41025 + 1.44460I$ | $11.52880 + 5.38344I$ | 0 |
| $u = 1.310030 + 0.412002I$<br>$a = -1.39880 - 1.65413I$<br>$b = -0.20326 + 1.40973I$ | $4.59729 + 7.32898I$ | 0 |
| $u = 1.310030 - 0.412002I$<br>$a = -1.39880 + 1.65413I$<br>$b = -0.20326 - 1.40973I$ | $4.59729 - 7.32898I$ | 0 |
| $u = -1.351480 + 0.338312I$<br>$a = 0.63432 - 2.00827I$<br>$b = 0.466718 + 1.200170I$ | $4.10202 - 4.20256I$ | 0 |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = -1.351480 - 0.338312I$<br>$a = 0.63432 + 2.00827I$<br>$b = 0.466718 - 1.200170I$ | $4.10202 + 4.20256I$ | $0$ |
| $u = -1.350240 + 0.403220I$<br>$a = -0.077062 - 1.105780I$<br>$b = 0.962009 + 0.506118I$ | $2.41229 - 9.89482I$ | $0$ |
| $u = -1.350240 - 0.403220I$<br>$a = -0.077062 + 1.105780I$<br>$b = 0.962009 - 0.506118I$ | $2.41229 + 9.89482I$ | $0$ |
| $u = 1.364290 + 0.355675I$<br>$a = -0.206900 - 0.650879I$<br>$b = -0.400650 + 0.135843I$ | $0.60420 + 3.90700I$ | $0$ |
| $u = 1.364290 - 0.355675I$<br>$a = -0.206900 + 0.650879I$<br>$b = -0.400650 - 0.135843I$ | $0.60420 - 3.90700I$ | $0$ |
| $u = 0.039755 + 0.542419I$<br>$a = -0.31991 - 1.70017I$<br>$b = 0.203089 - 1.373340I$ | $7.42461 + 2.75741I$ | $6.63280 - 3.03516I$ |
| $u = 0.039755 - 0.542419I$<br>$a = -0.31991 + 1.70017I$<br>$b = 0.203089 + 1.373340I$ | $7.42461 - 2.75741I$ | $6.63280 + 3.03516I$ |
| $u = 1.43665 + 0.39904I$<br>$a = 1.11035 + 2.24747I$<br>$b = 0.35346 - 1.55119I$ | $9.0502 + 14.6852I$ | $0$ |
| $u = 1.43665 - 0.39904I$<br>$a = 1.11035 - 2.24747I$<br>$b = 0.35346 + 1.55119I$ | $9.0502 - 14.6852I$ | $0$ |
| $u = -1.48426 + 0.30904I$<br>$a = -1.02295 + 2.49547I$<br>$b = -0.143027 - 1.403930I$ | $5.68590 - 5.85795I$ | $0$ |

| Solutions to $I_1^u$ | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = -1.48426 - 0.30904I$<br>$a = -1.02295 - 2.49547I$<br>$b = -0.143027 + 1.403930I$ | $5.68590 + 5.85795I$ | $0$ |
| $u = 0.037620 + 0.395735I$<br>$a = -1.287690 + 0.574122I$<br>$b = -0.12095 - 1.59031I$ | $8.09559 - 2.39337I$ | $3.23244 + 2.80367I$ |
| $u = 0.037620 - 0.395735I$<br>$a = -1.287690 - 0.574122I$<br>$b = -0.12095 + 1.59031I$ | $8.09559 + 2.39337I$ | $3.23244 - 2.80367I$ |
| $u = -1.63857$<br>$a = 0.548716$<br>$b = -0.409341$ | $10.4567$ | $0$ |
| $u = 0.152119 + 0.317487I$<br>$a = -0.986059 - 0.348852I$<br>$b = -0.207133 + 0.562199I$ | $0.300017 + 0.906434I$ | $6.10890 - 7.39998I$ |
| $u = 0.152119 - 0.317487I$<br>$a = -0.986059 + 0.348852I$<br>$b = -0.207133 - 0.562199I$ | $0.300017 - 0.906434I$ | $6.10890 + 7.39998I$ |
| $u = 1.67470 + 0.08059I$<br>$a = 0.33916 + 2.32988I$<br>$b = -0.161751 - 1.374090I$ | $15.0554 - 2.0908I$ | $0$ |
| $u = 1.67470 - 0.08059I$<br>$a = 0.33916 - 2.32988I$<br>$b = -0.161751 + 1.374090I$ | $15.0554 + 2.0908I$ | $0$ |
| $u = -0.0275139$<br>$a = 45.5029$<br>$b = 0.560752$ | $2.83333$ | $-3.70810$ |

**II.**

$\boldsymbol{I_2^u = \langle 2u^{14}-u^{13}+\cdots+b+2,\ -2u^{14}+2u^{13}+\cdots+a+1,\ u^{15}-9u^{13}+\cdots+2u+1\rangle}$

**(i) Arc colorings**

$$a_8 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} u \\ -u^3+u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u^2+1 \\ u^4-2u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 2u^{14}-2u^{13}+\cdots+u-1 \\ -2u^{14}+u^{13}+\cdots+18u^2-2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -u^{13}+u^{12}+\cdots+u-3 \\ -2u^{14}+u^{13}+\cdots+18u^2-2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 2u^{13}-2u^{12}+\cdots-16u^2+3 \\ u^{14}-u^{13}+\cdots-10u^2+3u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u^{14}-u^{13}+\cdots+2u^2-3 \\ -2u^{14}+u^{13}+\cdots+16u^2-2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 2u^{13}-3u^{12}+\cdots-11u+2 \\ 2u^{14}-2u^{13}+\cdots+4u+3 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -3u^{14}+2u^{13}+\cdots+42u^2-4 \\ -u^{12}+7u^{10}-18u^8+u^7+19u^6-4u^5-3u^4+5u^3-6u^2-3u+2 \end{pmatrix}$$

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

**(iii) Cusp Shapes** $= -2u^{14}-2u^{13}+16u^{12}+15u^{11}-49u^{10}-41u^9+70u^8+45u^7-38u^6-5u^5-10u^4-22u^3+10u^2+5u+15$

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

| Crossings | u-Polynomials at each crossing |
|---|---|
| $c_1$ | $u^{15} - 2u^{14} + \cdots + 6u + 1$ |
| $c_2$ | $u^{15} - 3u^{14} + \cdots + 2u^2 + 1$ |
| $c_3$ | $u^{15} + u^{13} + \cdots + u + 1$ |
| $c_4, c_5$ | $u^{15} + 9u^{13} + \cdots - 2u + 1$ |
| $c_6$ | $u^{15} + 3u^{14} + \cdots - 2u^2 - 1$ |
| $c_7, c_8$ | $u^{15} - 9u^{13} + \cdots + 2u - 1$ |
| $c_9$ | $u^{15} + u^{14} + \cdots + u^2 + 1$ |
| $c_{10}$ | $u^{15} + 9u^{13} + \cdots - 2u - 1$ |
| $c_{11}, c_{12}$ | $u^{15} - 9u^{13} + \cdots + 2u + 1$ |

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

| Crossings | Riley Polynomials at each crossing |
|---|---|
| $c_1$ | $y^{15} - 2y^{14} + \cdots + 40y - 1$ |
| $c_2, c_6$ | $y^{15} - 13y^{14} + \cdots - 4y - 1$ |
| $c_3$ | $y^{15} + 2y^{14} + \cdots + 9y - 1$ |
| $c_4, c_5, c_{10}$ | $y^{15} + 18y^{14} + \cdots + 12y - 1$ |
| $c_7, c_8, c_{11}$ $c_{12}$ | $y^{15} - 18y^{14} + \cdots + 16y - 1$ |
| $c_9$ | $y^{15} - 9y^{14} + \cdots - 2y - 1$ |

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

| Solutions to $I_2^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 1.19201$<br>$a = -1.00785$<br>$b = -0.669803$ | $5.66959$ | $5.09880$ |
| $u = -1.238320 + 0.078062I$<br>$a = -1.29573 + 2.90295I$<br>$b = -0.15885 - 1.58766I$ | $11.83090 - 3.16023I$ | $13.91924 + 0.52022I$ |
| $u = -1.238320 - 0.078062I$<br>$a = -1.29573 - 2.90295I$<br>$b = -0.15885 + 1.58766I$ | $11.83090 + 3.16023I$ | $13.91924 - 0.52022I$ |
| $u = 0.151779 + 0.741588I$<br>$a = -1.040030 - 0.584316I$<br>$b = -0.260278 + 0.958370I$ | $-1.79394 + 1.02194I$ | $2.84820 - 1.54812I$ |
| $u = 0.151779 - 0.741588I$<br>$a = -1.040030 + 0.584316I$<br>$b = -0.260278 - 0.958370I$ | $-1.79394 - 1.02194I$ | $2.84820 + 1.54812I$ |
| $u = 1.237890 + 0.308571I$<br>$a = -0.061952 - 0.614896I$<br>$b = 0.371777 + 0.708479I$ | $1.57563 + 2.68429I$ | $8.08777 - 2.30509I$ |
| $u = 1.237890 - 0.308571I$<br>$a = -0.061952 + 0.614896I$<br>$b = 0.371777 - 0.708479I$ | $1.57563 - 2.68429I$ | $8.08777 + 2.30509I$ |
| $u = -1.40336 + 0.36290I$<br>$a = 0.87716 - 1.84733I$<br>$b = 0.265089 + 1.156520I$ | $3.20409 - 5.09393I$ | $7.73695 + 4.78673I$ |
| $u = -1.40336 - 0.36290I$<br>$a = 0.87716 + 1.84733I$<br>$b = 0.265089 - 1.156520I$ | $3.20409 + 5.09393I$ | $7.73695 - 4.78673I$ |
| $u = 0.458300$<br>$a = -2.74392$<br>$b = 0.467982$ | $3.24621$ | $16.6550$ |

| Solutions to $I_2^u$ | $\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 1.58675 + 0.04787I$<br>$a = 0.53316 + 2.42451I$<br>$b = -0.12509 - 1.45929I$ | $15.8645 - 1.5465I$ | $16.0962 - 0.3491I$ |
| $u = 1.58675 - 0.04787I$<br>$a = 0.53316 - 2.42451I$<br>$b = -0.12509 + 1.45929I$ | $15.8645 + 1.5465I$ | $16.0962 + 0.3491I$ |
| $u = -1.60528$<br>$a = 0.693477$<br>$b = -0.282393$ | 10.6979 | 25.1980 |
| $u = -0.357259 + 0.149534I$<br>$a = -2.48346 + 0.24716I$<br>$b = 0.14946 - 1.51822I$ | $8.86003 + 2.31551I$ | $14.8358 - 1.2107I$ |
| $u = -0.357259 - 0.149534I$<br>$a = -2.48346 - 0.24716I$<br>$b = 0.14946 + 1.51822I$ | $8.86003 - 2.31551I$ | $14.8358 + 1.2107I$ |

**III. u-Polynomials**

| Crossings | u-Polynomials at each crossing |
|---|---|
| $c_1$ | $(u^{15}-2u^{14}+\cdots+6u+1)(u^{59}-9u^{58}+\cdots-108u+61)$ |
| $c_2$ | $(u^{15}-3u^{14}+\cdots+2u^2+1)(u^{59}-2u^{58}+\cdots+5154u-773)$ |
| $c_3$ | $(u^{15}+u^{13}+\cdots+u+1)(u^{59}-u^{58}+\cdots+23u-43)$ |
| $c_4, c_5$ | $(u^{15}+9u^{13}+\cdots-2u+1)(u^{59}-u^{58}+\cdots+102u+1)$ |
| $c_6$ | $(u^{15}+3u^{14}+\cdots-2u^2-1)(u^{59}-2u^{58}+\cdots+5154u-773)$ |
| $c_7, c_8$ | $(u^{15}-9u^{13}+\cdots+2u-1)(u^{59}-u^{58}+\cdots+32u+1)$ |
| $c_9$ | $(u^{15}+u^{14}+\cdots+u^2+1)(u^{59}+2u^{58}+\cdots+1624u-1291)$ |
| $c_{10}$ | $(u^{15}+9u^{13}+\cdots-2u-1)(u^{59}-u^{58}+\cdots+102u+1)$ |
| $c_{11}, c_{12}$ | $(u^{15}-9u^{13}+\cdots+2u+1)(u^{59}-u^{58}+\cdots+32u+1)$ |

## IV. Riley Polynomials

| Crossings | Riley Polynomials at each crossing |
|---|---|
| $c_1$ | $(y^{15} - 2y^{14} + \cdots + 40y - 1)(y^{59} - 33y^{58} + \cdots + 229434y - 3721)$ |
| $c_2, c_6$ | $(y^{15} - 13y^{14} + \cdots - 4y - 1)$<br>$\cdot (y^{59} - 40y^{58} + \cdots + 18677570y - 597529)$ |
| $c_3$ | $(y^{15} + 2y^{14} + \cdots + 9y - 1)(y^{59} + 31y^{58} + \cdots - 87965y - 1849)$ |
| $c_4, c_5, c_{10}$ | $(y^{15} + 18y^{14} + \cdots + 12y - 1)(y^{59} + 59y^{58} + \cdots + 10138y - 1)$ |
| $c_7, c_8, c_{11}$<br>$c_{12}$ | $(y^{15} - 18y^{14} + \cdots + 16y - 1)(y^{59} - 53y^{58} + \cdots + 1298y - 1)$ |
| $c_9$ | $(y^{15} - 9y^{14} + \cdots - 2y - 1)$<br>$\cdot (y^{59} - 32y^{58} + \cdots + 37592492y - 1666681)$ |