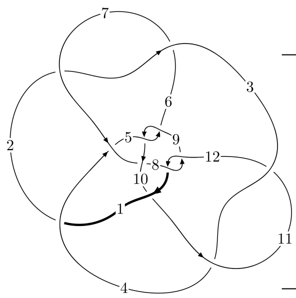
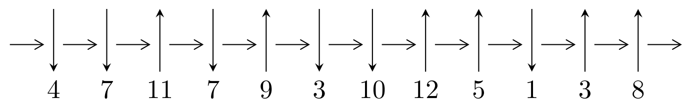
$12n_{0810}$ ($K12n_{0810}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & 46649848211422u^{20} - 271752392335713u^{19} + \cdots + 28925754984271 42b - 407290304844750, \\
& 616531903691785u^{20} - 4456755156074076u^{19} + \cdots + 5785150996854284a - 8643983373087020, \\
& u^{21} - 8u^{20} + \cdots + 4u - 4\rangle \\
I_2^u = \langle & 17u^{13}a + 3u^{13} + \cdots + 90a - 135,\ 15u^{13}a + 26u^{13} + \cdots + 180a + 160, \\
& u^{14} - 2u^{13} + 8u^{12} - 13u^{11} + 26u^{10} - 32u^9 + 44u^8 - 40u^7 + 42u^6 - 25u^5 + 25u^4 - 7u^3 + 10u^2 + 2\rangle \\
I_3^u = \langle & 934420413114u^{21}a - 2562507066002u^{21} + \cdots - 200809617100 80a + 99672371759230, \\
& - 58418953866728u^{21}a + 52781909440645u^{21} + \cdots + 613677712103440a - 532451057055698, \\
& u^{22} + 3u^{21} + \cdots - 106u - 16\rangle \\
I_4^u = \langle & -11u^9 - 27u^8 - 72u^7 - 123u^6 - 201u^5 - 298u^4 - 405u^3 - 392u^2 + 4b - 238u - 64, \\
& 127u^9 + 288u^8 + 805u^7 + 1315u^6 + 2210u^5 + 3201u^4 + 4367u^3 + 4163u^2 + 52a + 2522u + 694, \\
& u^{10} + 3u^9 + 8u^8 + 15u^7 + 25u^6 + 38u^5 + 53u^4 + 58u^3 + 44u^2 + 20u + 4\rangle
\end{aligned}$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 103 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.

$\boldsymbol{I^u_1 = \langle 4.66\times10^{13}u^{20} - 2.72\times10^{14}u^{19} + \cdots + 2.89\times10^{15}b - 4.07\times10^{14},\ 6.17\times10^{14}u^{20} - 4.46\times10^{15}u^{19} + \cdots + 5.79\times10^{15}a - 8.64\times10^{15},\ u^{21} - 8u^{20} + \cdots + 4u - 4\rangle}$

(i) Arc colorings

$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_9 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u \\ u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -0.106571u^{20} + 0.770378u^{19} + \cdots - 10.1014u + 1.49417 \\ -0.0161274u^{20} + 0.0939482u^{19} + \cdots - 1.66730u + 0.140805 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0.138515u^{20} - 1.16208u^{19} + \cdots - 0.849168u - 2.59979 \\ 0.0651459u^{20} - 0.521592u^{19} + \cdots + 2.89327u - 0.507601 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -0.305406u^{20} + 2.43760u^{19} + \cdots + 3.23821u - 0.643820 \\ -0.115389u^{20} + 0.953768u^{19} + \cdots + 0.0723902u + 0.582350 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.126900u^{20} - 1.08035u^{19} + \cdots - 1.35677u - 2.38567 \\ 0.0535308u^{20} - 0.439861u^{19} + \cdots + 2.38567u - 0.293478 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0.253284u^{20} - 2.06665u^{19} + \cdots + 5.80307u - 1.73605 \\ 0.0247544u^{20} - 0.213661u^{19} + \cdots + 2.73605u - 0.914119 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.359528u^{20} + 2.87082u^{19} + \cdots + 3.64447u - 1.95837 \\ -0.121837u^{20} + 1.03058u^{19} + \cdots + 1.74858u + 0.385598 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.0469918u^{20} + 0.352826u^{19} + \cdots + 9.44776u - 1.95278 \\ -0.0674397u^{20} + 0.517055u^{19} + \cdots + 2.01598u - 0.333850 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 0.0352014u^{20} - 0.297738u^{19} + \cdots + 7.52731u - 1.52650 \\ -0.0471219u^{20} + 0.366990u^{19} + \cdots + 1.71514u - 0.361776 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$= \frac{41241030794168}{131480704473961}u^{20} - \frac{392809002780967}{131480704473961}u^{19} + \cdots - \frac{542346152689020}{131480704473961}u + \frac{45491399639710}{131480704473961}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{21} - 2u^{20} + \cdots - 6u + 1$
c_2, c_6	$u^{21} + 13u^{20} + \cdots + 312u + 172$
c_3, c_5, c_9 c_{11}	$u^{21} - u^{20} + \cdots - 8u + 4$
c_7, c_{10}	$u^{21} - u^{20} + \cdots - 7u - 1$
c_8, c_{12}	$u^{21} - 8u^{20} + \cdots + 4u - 4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{21} - 34y^{20} + \cdots - 36y - 1$
c_2, c_6	$y^{21} - 29y^{20} + \cdots - 27872y - 29584$
c_3, c_5, c_9 c_{11}	$y^{21} + 29y^{20} + \cdots - 16y - 16$
c_7, c_{10}	$y^{21} - 13y^{20} + \cdots + 37y - 1$
c_8, c_{12}	$y^{21} + 16y^{20} + \cdots - 112y - 16$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.358666 + 0.930307I$ $a = 0.433917 - 0.430001I$ $b = 0.68140 - 1.26020I$	$-6.17334 + 2.74245I$	$-5.58156 - 4.02860I$
$u = 0.358666 - 0.930307I$ $a = 0.433917 + 0.430001I$ $b = 0.68140 + 1.26020I$	$-6.17334 - 2.74245I$	$-5.58156 + 4.02860I$
$u = 0.558265 + 0.983614I$ $a = 0.066116 + 0.477640I$ $b = -0.337788 + 0.285816I$	$-0.28143 + 3.09051I$	$6.95527 - 0.27871I$
$u = 0.558265 - 0.983614I$ $a = 0.066116 - 0.477640I$ $b = -0.337788 - 0.285816I$	$-0.28143 - 3.09051I$	$6.95527 + 0.27871I$
$u = 0.467681 + 0.621789I$ $a = 0.629405 - 0.116067I$ $b = 0.424881 + 0.293762I$	$0.781678 + 1.149180I$	$3.85794 - 2.68827I$
$u = 0.467681 - 0.621789I$ $a = 0.629405 + 0.116067I$ $b = 0.424881 - 0.293762I$	$0.781678 - 1.149180I$	$3.85794 + 2.68827I$
$u = -0.650483 + 0.373679I$ $a = -0.417963 + 0.786598I$ $b = -0.613311 - 0.464168I$	$-1.10763 - 1.39427I$	$-5.26731 + 0.64134I$
$u = -0.650483 - 0.373679I$ $a = -0.417963 - 0.786598I$ $b = -0.613311 + 0.464168I$	$-1.10763 + 1.39427I$	$-5.26731 - 0.64134I$
$u = 0.438404$ $a = -1.90341$ $b = 0.0963240$	-3.84208	0.707770
$u = -0.08373 + 1.60426I$ $a = 0.881615 + 0.250414I$ $b = 2.24248 - 0.27198I$	$-9.64118 - 4.00759I$	$-5.72656 + 3.33654I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.08373 - 1.60426I$ $a = 0.881615 - 0.250414I$ $b = 2.24248 + 0.27198I$	$-9.64118 + 4.00759I$	$-5.72656 - 3.33654I$
$u = -0.08952 + 1.60605I$ $a = -1.216710 - 0.134957I$ $b = -2.38466 + 0.31900I$	$-11.06540 + 2.33214I$	$-6.29844 - 1.85979I$
$u = -0.08952 - 1.60605I$ $a = -1.216710 + 0.134957I$ $b = -2.38466 - 0.31900I$	$-11.06540 - 2.33214I$	$-6.29844 + 1.85979I$
$u = 1.66299 + 0.39397I$ $a = -0.337684 - 0.955286I$ $b = -0.335651 + 0.310065I$	$-14.7810 + 7.3026I$	$-5.27461 - 4.46000I$
$u = 1.66299 - 0.39397I$ $a = -0.337684 + 0.955286I$ $b = -0.335651 - 0.310065I$	$-14.7810 - 7.3026I$	$-5.27461 + 4.46000I$
$u = -0.158569 + 0.231883I$ $a = 2.58481 - 3.49981I$ $b = -0.190649 - 1.004700I$	$-4.17541 + 3.55934I$	$-6.90301 - 4.21100I$
$u = -0.158569 - 0.231883I$ $a = 2.58481 + 3.49981I$ $b = -0.190649 + 1.004700I$	$-4.17541 - 3.55934I$	$-6.90301 + 4.21100I$
$u = 0.61630 + 1.71869I$ $a = 1.082550 - 0.037150I$ $b = 2.48651 + 0.06539I$	$18.1211 + 15.3149I$	$-5.71313 - 5.94319I$
$u = 0.61630 - 1.71869I$ $a = 1.082550 + 0.037150I$ $b = 2.48651 - 0.06539I$	$18.1211 - 15.3149I$	$-5.71313 + 5.94319I$
$u = 1.09920 + 1.70202I$ $a = -0.754346 - 0.282941I$ $b = -2.02137 - 0.12495I$	$-18.2820 + 2.4257I$	$-8.90248 + 0.I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \quad 1.09920 - 1.70202I$ $a = -0.754346 + 0.282941I$ $b = -2.02137 + 0.12495I$	$-18.2820 - 2.4257I$	$-8.90248 + 0.I$

II. $\boldsymbol{I_2^u = \langle 17u^{13}a + 3u^{13} + \cdots + 90a - 135,\ 15u^{13}a + 26u^{13} + \cdots + 180a + 160,\ u^{14} - 2u^{13} + \cdots + 10u^2 + 2\rangle}$

(i) Arc colorings

$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_9 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u \\ u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} a \\ -0.894737au^{13} - 0.157895u^{13} + \cdots - 4.73684a + 7.10526 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 1.68421au^{13} + 0.552632u^{13} + \cdots - 0.789474a - 1.36842 \\ 2.15789au^{13} + 1.05263u^{13} + \cdots + 1.89474a - 3.36842 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -1.52632au^{13} - 1.60526u^{13} + \cdots + 2.68421a + 4.73684 \\ -1.36842au^{13} - 2.10526u^{13} + \cdots - 4.42105a + 4.73684 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.947368au^{13} + 0.552632u^{13} + \cdots - 3.63158a + 0.631579 \\ 1.42105au^{13} + 1.05263u^{13} + \cdots - 0.947368a - 1.36842 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -0.842105au^{13} + 0.131579u^{13} + \cdots + 1.89474a + 4.57895 \\ -0.842105au^{13} + 1.15789u^{13} + \cdots + 1.89474a + 10.8947 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 1.05263au^{13} - 2.94737au^{12} + \cdots - 2.36842a - 3 \\ 0.157895au^{13} + 1.36842u^{13} + \cdots - 8.10526a + 11.4211 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -2.36842au^{13} + 0.131579u^{13} + \cdots + 1.57895a + 4.57895 \\ -0.684211au^{13} - 0.368421u^{13} + \cdots + 1.78947a + 4.57895 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -2.36842au^{13} + 1.81579u^{13} + \cdots + 1.57895a + 3.78947 \\ -0.684211au^{13} + 0.473684u^{13} + \cdots + 1.78947a + 2.68421 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -\frac{259}{19}u^{13} + \frac{710}{19}u^{12} - \frac{2393}{19}u^{11} + \frac{4643}{19}u^{10} - \frac{8461}{19}u^9 + \frac{11424}{19}u^8 - 750u^7 + \frac{13647}{19}u^6 - \frac{12079}{19}u^5 + \frac{7345}{19}u^4 - \frac{4827}{19}u^3 + \frac{1525}{19}u^2 - \frac{998}{19}u - \frac{68}{19}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{28} - 16u^{27} + \cdots - 82u + 83$
c_2	$(u^{14} + 5u^{13} + \cdots + 4u^2 + 2)^2$
c_3, c_9	$u^{28} + u^{27} + \cdots - 20u + 4$
c_5, c_{11}	$u^{28} - u^{27} + \cdots + 20u + 4$
c_6	$(u^{14} - 5u^{13} + \cdots + 4u^2 + 2)^2$
c_7, c_{10}	$u^{28} - 6u^{27} + \cdots - 17u + 1$
c_8	$(u^{14} - 2u^{13} + \cdots + 10u^2 + 2)^2$
c_{12}	$(u^{14} + 2u^{13} + \cdots + 10u^2 + 2)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{28} - 34y^{27} + \cdots - 56026y + 6889$
c_2, c_6	$(y^{14} - 5y^{13} + \cdots + 16y + 4)^2$
c_3, c_5, c_9 c_{11}	$y^{28} + 13y^{27} + \cdots + 160y + 16$
c_7, c_{10}	$y^{28} - 6y^{27} + \cdots - 123y + 1$
c_8, c_{12}	$(y^{14} + 12y^{13} + \cdots + 40y + 4)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.234413 + 0.959941I$ $a = 0.798128 + 0.657503I$ $b = 2.55872 - 0.31570I$	$-7.07210 + 0.95011I$	$-10.11138 + 0.50859I$
$u = 0.234413 + 0.959941I$ $a = 0.576102 - 0.304813I$ $b = -0.069432 - 1.006050I$	$-7.07210 + 0.95011I$	$-10.11138 + 0.50859I$
$u = 0.234413 - 0.959941I$ $a = 0.798128 - 0.657503I$ $b = 2.55872 + 0.31570I$	$-7.07210 - 0.95011I$	$-10.11138 - 0.50859I$
$u = 0.234413 - 0.959941I$ $a = 0.576102 + 0.304813I$ $b = -0.069432 + 1.006050I$	$-7.07210 - 0.95011I$	$-10.11138 - 0.50859I$
$u = 1.022560 + 0.623679I$ $a = -0.178045 - 1.091150I$ $b = 0.060144 + 0.373874I$	$-2.39227 - 1.39378I$	$-5.43366 + 1.94339I$
$u = 1.022560 + 0.623679I$ $a = 0.502605 + 0.670944I$ $b = 0.944156 + 0.116934I$	$-2.39227 - 1.39378I$	$-5.43366 + 1.94339I$
$u = 1.022560 - 0.623679I$ $a = -0.178045 + 1.091150I$ $b = 0.060144 - 0.373874I$	$-2.39227 + 1.39378I$	$-5.43366 - 1.94339I$
$u = 1.022560 - 0.623679I$ $a = 0.502605 - 0.670944I$ $b = 0.944156 - 0.116934I$	$-2.39227 + 1.39378I$	$-5.43366 - 1.94339I$
$u = 0.575362 + 1.105550I$ $a = -1.079860 - 0.029997I$ $b = -2.72538 - 0.46723I$	$-4.15197 + 6.97492I$	$-7.34754 - 10.51051I$
$u = 0.575362 + 1.105550I$ $a = 0.522348 + 0.114656I$ $b = 0.536465 + 0.133213I$	$-4.15197 + 6.97492I$	$-7.34754 - 10.51051I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.575362 - 1.105550I$ $a = -1.079860 + 0.029997I$ $b = -2.72538 + 0.46723I$	$-4.15197 - 6.97492I$	$-7.34754 + 10.51051I$
$u = 0.575362 - 1.105550I$ $a = 0.522348 - 0.114656I$ $b = 0.536465 - 0.133213I$	$-4.15197 - 6.97492I$	$-7.34754 + 10.51051I$
$u = -0.308303 + 1.211280I$ $a = -0.807183 + 0.151993I$ $b = -1.40408 + 1.23092I$	$-0.266128 - 0.267018I$	$-8.31716 - 0.56328I$
$u = -0.308303 + 1.211280I$ $a = 0.108704 + 1.319500I$ $b = 0.330999 + 0.920896I$	$-0.266128 - 0.267018I$	$-8.31716 - 0.56328I$
$u = -0.308303 - 1.211280I$ $a = -0.807183 - 0.151993I$ $b = -1.40408 - 1.23092I$	$-0.266128 + 0.267018I$	$-8.31716 + 0.56328I$
$u = -0.308303 - 1.211280I$ $a = 0.108704 - 1.319500I$ $b = 0.330999 - 0.920896I$	$-0.266128 + 0.267018I$	$-8.31716 + 0.56328I$
$u = -0.215278 + 0.705882I$ $a = -1.367820 - 0.277475I$ $b = -0.326723 + 1.131580I$	$1.68909 - 1.91963I$	$5.71225 - 4.11158I$
$u = -0.215278 + 0.705882I$ $a = -0.30229 - 1.41470I$ $b = -0.465422 - 0.889685I$	$1.68909 - 1.91963I$	$5.71225 - 4.11158I$
$u = -0.215278 - 0.705882I$ $a = -1.367820 + 0.277475I$ $b = -0.326723 - 1.131580I$	$1.68909 + 1.91963I$	$5.71225 + 4.11158I$
$u = -0.215278 - 0.705882I$ $a = -0.30229 + 1.41470I$ $b = -0.465422 + 0.889685I$	$1.68909 + 1.91963I$	$5.71225 + 4.11158I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.272478+0.552545I$ $a=-0.788139-0.338457I$ $b=-0.56920-3.14491I$	$-7.86777-4.67761I$	$-14.7715+8.0785I$
$u=-0.272478+0.552545I$ $a=\ \ 1.91009-0.15679I$ $b=\ \ 0.061739+0.382886I$	$-7.86777-4.67761I$	$-14.7715+8.0785I$
$u=-0.272478-0.552545I$ $a=-0.788139+0.338457I$ $b=-0.56920+3.14491I$	$-7.86777+4.67761I$	$-14.7715-8.0785I$
$u=-0.272478-0.552545I$ $a=\ \ 1.91009+0.15679I$ $b=\ \ 0.061739-0.382886I$	$-7.86777+4.67761I$	$-14.7715-8.0785I$
$u=-0.03627+1.68674I$ $a=\ \ 1.075870-0.171245I$ $b=\ \ 2.42178-0.08826I$	$-12.83750+2.76839I$	$-7.73098-3.24512I$
$u=-0.03627+1.68674I$ $a=-0.470505+0.524657I$ $b=-1.35376-0.78155I$	$-12.83750+2.76839I$	$-7.73098-3.24512I$
$u=-0.03627-1.68674I$ $a=\ \ 1.075870+0.171245I$ $b=\ \ 2.42178+0.08826I$	$-12.83750-2.76839I$	$-7.73098+3.24512I$
$u=-0.03627-1.68674I$ $a=-0.470505-0.524657I$ $b=-1.35376+0.78155I$	$-12.83750-2.76839I$	$-7.73098+3.24512I$

III. $\boldsymbol{I_3^u = \langle 9.34 \times 10^{11} a u^{21} - 2.56 \times 10^{12} u^{21} + \cdots - 2.01 \times 10^{13} a + 9.97 \times 10^{13},\ -5.84 \times 10^{13} a u^{21} + 5.28 \times 10^{13} u^{21} + \cdots + 6.14 \times 10^{14} a - 5.32 \times 10^{14},\ u^{22} + 3u^{21} + \cdots - 106u - 16\rangle}$

(i) Arc colorings

$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} a \\ -0.109662au^{21} + 0.300732u^{21} + \cdots + 2.35667a - 11.6974 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0.206848au^{21} - 0.179565u^{21} + \cdots - 5.14198a + 4.64581 \\ -0.00824585au^{21} + 0.183407u^{21} + \cdots + 1.51405a - 8.88568 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0.214923au^{21} - 0.225154u^{21} + \cdots - 8.20474a + 11.3428 \\ -0.0858092au^{21} + 0.424867u^{21} + \cdots + 3.49268a - 16.8777 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0.0946281au^{21} - 0.171902u^{21} + \cdots - 3.21453a + 3.19075 \\ -0.120466au^{21} + 0.191070u^{21} + \cdots + 3.44150a - 10.3407 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -0.0513765au^{21} - 0.00593995u^{21} + \cdots + 1.63862a + 5.20752 \\ -0.0513765au^{21} + 0.273963u^{21} + \cdots + 1.63862a - 11.2984 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -0.0731608au^{21} + 0.0271244u^{21} + \cdots + 1.84536a + 8.76641 \\ -0.182823au^{21} + 0.730749u^{21} + \cdots + 3.20203a - 26.5582 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -0.147292au^{21} - 0.00593995u^{21} + \cdots + 0.898090a + 5.20752 \\ 0.0812089au^{21} - 0.233617u^{21} + \cdots - 1.75460a + 5.54098 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -0.147292au^{21} + 0.200908u^{21} + \cdots + 0.898090a + 0.0655438 \\ 0.0812089au^{21} - 0.215094u^{21} + \cdots - 1.75460a + 6.65603 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= \frac{1978972851711}{1420147857381}u^{21} + \frac{190080141899}{1420147857381}u^{20} + \cdots + \frac{3122761442852}{129104350671}u + \frac{10177990956464}{1420147857381}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{44} - 3u^{43} + \cdots - 10746u + 4757$
c_2, c_6	$(u^{22} - 5u^{21} + \cdots + 322u - 68)^2$
c_3, c_5, c_9 c_{11}	$u^{44} - 2u^{43} + \cdots - 774u + 61$
c_7, c_{10}	$u^{44} - 3u^{43} + \cdots - 133u + 449$
c_8, c_{12}	$(u^{22} + 3u^{21} + \cdots - 106u - 16)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{44} - 63y^{43} + \cdots - 533588274y + 22629049$
c_2, c_6	$(y^{22} - 37y^{21} + \cdots - 116468y + 4624)^2$
c_3, c_5, c_9 c_{11}	$y^{44} + 40y^{43} + \cdots - 287122y + 3721$
c_7, c_{10}	$y^{44} - 9y^{43} + \cdots - 2706301y + 201601$
c_8, c_{12}	$(y^{22} + 25y^{21} + \cdots - 228y + 256)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.04270$ $a=\ \ 0.30245+1.75266I$ $b=-0.073263+0.573968I$	-14.1642	-4.58700
$u=-1.04270$ $a=\ \ 0.30245-1.75266I$ $b=-0.073263-0.573968I$	-14.1642	-4.58700
$u=\ \ 0.457379+1.018200I$ $a=\ \ 0.115964-1.048530I$ $b=\ \ 0.090260-0.405075I$	$0.743577+0.428047I$	$0.238159+0.175042I$
$u=\ \ 0.457379+1.018200I$ $a=\ \ 0.845744+0.235877I$ $b=\ \ 1.21774+1.09691I$	$0.743577+0.428047I$	$0.238159+0.175042I$
$u=\ \ 0.457379-1.018200I$ $a=\ \ 0.115964+1.048530I$ $b=\ \ 0.090260+0.405075I$	$0.743577-0.428047I$	$0.238159-0.175042I$
$u=\ \ 0.457379-1.018200I$ $a=\ \ 0.845744-0.235877I$ $b=\ \ 1.21774-1.09691I$	$0.743577-0.428047I$	$0.238159-0.175042I$
$u=\ \ 0.226624+0.805825I$ $a=\ \ 1.134210-0.388448I$ $b=\ \ 0.319328+0.933679I$	$1.44999+2.22738I$	$-6.70486-11.03214I$
$u=\ \ 0.226624+0.805825I$ $a=-0.158356+1.235610I$ $b=-0.263799+1.084790I$	$1.44999+2.22738I$	$-6.70486-11.03214I$
$u=\ \ 0.226624-0.805825I$ $a=\ \ 1.134210+0.388448I$ $b=\ \ 0.319328-0.933679I$	$1.44999-2.22738I$	$-6.70486+11.03214I$
$u=\ \ 0.226624-0.805825I$ $a=-0.158356-1.235610I$ $b=-0.263799-1.084790I$	$1.44999-2.22738I$	$-6.70486+11.03214I$

Solutions to I_3^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.20980$ $a = 0.294291 + 0.944243I$ $b = 0.642252 - 0.686297I$	-3.72523	-8.18500
$u = 1.20980$ $a = 0.294291 - 0.944243I$ $b = 0.642252 + 0.686297I$	-3.72523	-8.18500
$u = -0.689362 + 0.229386I$ $a = 0.01853 - 1.42171I$ $b = -0.191657 + 0.548748I$	$-0.67054 + 1.98597I$	$1.83458 - 3.47221I$
$u = -0.689362 + 0.229386I$ $a = -0.102400 - 0.123929I$ $b = -0.056853 + 0.708751I$	$-0.67054 + 1.98597I$	$1.83458 - 3.47221I$
$u = -0.689362 - 0.229386I$ $a = 0.01853 + 1.42171I$ $b = -0.191657 - 0.548748I$	$-0.67054 - 1.98597I$	$1.83458 + 3.47221I$
$u = -0.689362 - 0.229386I$ $a = -0.102400 + 0.123929I$ $b = -0.056853 - 0.708751I$	$-0.67054 - 1.98597I$	$1.83458 + 3.47221I$
$u = -0.218673 + 1.262490I$ $a = -0.938783 + 0.384242I$ $b = -2.44127 - 0.13576I$	$-5.45881 - 0.93633I$	$-3.90557 + 0.08669I$
$u = -0.218673 + 1.262490I$ $a = 0.198203 + 0.659477I$ $b = 0.083542 + 0.357045I$	$-5.45881 - 0.93633I$	$-3.90557 + 0.08669I$
$u = -0.218673 - 1.262490I$ $a = -0.938783 - 0.384242I$ $b = -2.44127 + 0.13576I$	$-5.45881 + 0.93633I$	$-3.90557 - 0.08669I$
$u = -0.218673 - 1.262490I$ $a = 0.198203 - 0.659477I$ $b = 0.083542 - 0.357045I$	$-5.45881 + 0.93633I$	$-3.90557 - 0.08669I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.511878+1.220260I$ $a=\ 1.059960-0.055249I$ $b=\ 2.73012-0.26498I$	$-3.63436-6.49284I$	$0.55712+2.91982I$
$u=-0.511878+1.220260I$ $a=\ 0.004918-0.279283I$ $b=\ 0.359462+0.234811I$	$-3.63436-6.49284I$	$0.55712+2.91982I$
$u=-0.511878-1.220260I$ $a=\ 1.059960+0.055249I$ $b=\ 2.73012+0.26498I$	$-3.63436+6.49284I$	$0.55712-2.91982I$
$u=-0.511878-1.220260I$ $a=\ 0.004918+0.279283I$ $b=\ 0.359462-0.234811I$	$-3.63436+6.49284I$	$0.55712-2.91982I$
$u=-0.50930+1.47048I$ $a=\ 1.079350-0.120269I$ $b=\ 1.95737-0.81045I$	$-18.8917-5.6090I$	$-7.11087+3.25228I$
$u=-0.50930+1.47048I$ $a=-1.41500-0.26394I$ $b=-2.37405+0.02009I$	$-18.8917-5.6090I$	$-7.11087+3.25228I$
$u=-0.50930-1.47048I$ $a=\ 1.079350+0.120269I$ $b=\ 1.95737+0.81045I$	$-18.8917+5.6090I$	$-7.11087-3.25228I$
$u=-0.50930-1.47048I$ $a=-1.41500+0.26394I$ $b=-2.37405-0.02009I$	$-18.8917+5.6090I$	$-7.11087-3.25228I$
$u=-0.347793+0.231922I$ $a=\ 1.35477+0.55673I$ $b=-0.58926-2.54064I$	$-7.48607-4.50242I$	$3.32541-0.00984I$
$u=-0.347793+0.231922I$ $a=\ 2.48521-1.81552I$ $b=\ 0.327911+0.393218I$	$-7.48607-4.50242I$	$3.32541-0.00984I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.347793 - 0.231922I$ $a = \ \ 1.35477 - 0.55673I$ $b = -0.58926 + 2.54064I$	$-7.48607 + 4.50242I$	$3.32541 + 0.00984I$
$u = -0.347793 - 0.231922I$ $a = \ \ 2.48521 + 1.81552I$ $b = \ \ 0.327911 - 0.393218I$	$-7.48607 + 4.50242I$	$3.32541 + 0.00984I$
$u = -0.05840 + 1.62782I$ $a = -1.107470 - 0.080175I$ $b = -2.62516 - 0.39573I$	$-14.5481 - 5.7193I$	$-6.68719 + 3.44042I$
$u = -0.05840 + 1.62782I$ $a = -0.294917 - 1.267580I$ $b = -0.297043 - 0.832997I$	$-14.5481 - 5.7193I$	$-6.68719 + 3.44042I$
$u = -0.05840 - 1.62782I$ $a = -1.107470 + 0.080175I$ $b = -2.62516 + 0.39573I$	$-14.5481 + 5.7193I$	$-6.68719 - 3.44042I$
$u = -0.05840 - 1.62782I$ $a = -0.294917 + 1.267580I$ $b = -0.297043 + 0.832997I$	$-14.5481 + 5.7193I$	$-6.68719 - 3.44042I$
$u = -0.24944 + 1.66440I$ $a = \ \ 1.056420 - 0.309321I$ $b = \ \ 2.24354 - 0.17069I$	$-12.76390 + 1.46972I$	$-7.15635 + 2.06549I$
$u = -0.24944 + 1.66440I$ $a = \ \ 0.022168 + 0.398861I$ $b = -0.254904 - 1.280220I$	$-12.76390 + 1.46972I$	$-7.15635 + 2.06549I$
$u = -0.24944 - 1.66440I$ $a = \ \ 1.056420 + 0.309321I$ $b = \ \ 2.24354 + 0.17069I$	$-12.76390 - 1.46972I$	$-7.15635 - 2.06549I$
$u = -0.24944 - 1.66440I$ $a = \ \ 0.022168 - 0.398861I$ $b = -0.254904 + 1.280220I$	$-12.76390 - 1.46972I$	$-7.15635 - 2.06549I$

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.31729 + 1.70586I$ $a = 1.080730 + 0.233949I$ $b = 2.28353 + 0.03027I$	$-10.39710 + 5.75297I$	$-8.00445 - 3.25214I$
$u = 0.31729 + 1.70586I$ $a = -0.848505 + 0.111896I$ $b = -2.58780 + 0.06595I$	$-10.39710 + 5.75297I$	$-8.00445 - 3.25214I$
$u = 0.31729 - 1.70586I$ $a = 1.080730 - 0.233949I$ $b = 2.28353 - 0.03027I$	$-10.39710 - 5.75297I$	$-8.00445 + 3.25214I$
$u = 0.31729 - 1.70586I$ $a = -0.848505 - 0.111896I$ $b = -2.58780 - 0.06595I$	$-10.39710 - 5.75297I$	$-8.00445 + 3.25214I$

IV. $I_4^u = \langle -11u^9 - 27u^8 + \cdots + 4b - 64,\ 127u^9 + 288u^8 + \cdots + 52a + 694,\ u^{10} + 3u^9 + \cdots + 20u + 4\rangle$

(i) Arc colorings

$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_9 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u \\ u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -2.44231u^9 - 5.53846u^8 + \cdots - 48.5000u - 13.3462 \\ \frac{11}{4}u^9 + \frac{27}{4}u^8 + \cdots + \frac{119}{2}u + 16 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} \frac{3}{13}u^9 + \frac{5}{52}u^8 + \cdots - \frac{5}{2}u - \frac{49}{26} \\ \frac{7}{52}u^9 + \frac{17}{52}u^8 + \cdots + \frac{9}{2}u + \frac{22}{13} \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -0.884615u^9 - 1.82692u^8 + \cdots - 13.5000u - 3.19231 \\ 2.09615u^9 + 5.01923u^8 + \cdots + 44.5000u + 11.9231 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -0.423077u^9 - 1.13462u^8 + \cdots - 12.5000u - 3.96154 \\ -0.519231u^9 - 0.903846u^8 + \cdots - 5.50000u - 0.384615 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -\frac{3}{26}u^9 - \frac{9}{52}u^8 + \cdots + 2u + \frac{57}{26} \\ 0.403846u^9 + 0.980769u^8 + \cdots + 9.50000u + 2.07692 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.653846u^9 - 1.48077u^8 + \cdots - 11u - 3.57692 \\ 0.788462u^9 + 2.05769u^8 + \cdots + 20.5000u + 5.76923 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -2.21154u^9 - 5.19231u^8 + \cdots - 42.5000u - 10.7308 \\ 2.32692u^9 + 5.86538u^8 + \cdots + 55.5000u + 15.5385 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -4u^9 - \frac{37}{4}u^8 + \cdots - 78u - \frac{41}{2} \\ 3.28846u^9 + 8.05769u^8 + \cdots + 74.5000u + 20.7692 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes

$= -\frac{200}{13}u^9 - \frac{495}{13}u^8 - \frac{1306}{13}u^7 - \frac{2250}{13}u^6 - 280u^5 - \frac{5416}{13}u^4 - \frac{7325}{13}u^3 - \frac{7132}{13}u^2 - 326u - \frac{1192}{13}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{10} - 3u^8 + 7u^7 - 3u^6 - 9u^5 + 19u^4 - 21u^3 + 15u^2 - 6u + 1$
c_2	$u^{10} - 8u^9 + \cdots - 24u + 4$
c_3, c_9	$u^{10} + u^9 + 7u^8 + 3u^7 + 15u^6 + u^5 + 13u^4 + 5u^2 + 1$
c_5, c_{11}	$u^{10} - u^9 + 7u^8 - 3u^7 + 15u^6 - u^5 + 13u^4 + 5u^2 + 1$
c_6	$u^{10} + 8u^9 + \cdots + 24u + 4$
c_7, c_{10}	$u^{10} - u^9 + u^8 - u^7 + 2u^6 - 2u^5 + 2u^4 - 3u^3 + 2u^2 - u + 1$
c_8	$u^{10} + 3u^9 + \cdots + 20u + 4$
c_{12}	$u^{10} - 3u^9 + \cdots - 20u + 4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{10} - 6y^9 + 3y^8 + 7y^7 + 51y^6 + 11y^5 - 29y^4 + 15y^3 + 11y^2 - 6y + 1$
c_2, c_6	$y^{10} - 8y^9 + \cdots - 32y + 16$
c_3, c_5, c_9 c_{11}	$y^{10} + 13y^9 + \cdots + 10y + 1$
c_7, c_{10}	$y^{10} + y^9 + 3y^8 + 3y^7 + 2y^6 + 2y^5 - y^3 + 2y^2 + 3y + 1$
c_8, c_{12}	$y^{10} + 7y^9 + \cdots - 48y + 16$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.760697+0.640528I$ $a=-0.611876+0.249644I$ $b=-0.814636+0.047301I$	$0.04719-1.98946I$	$-0.34774+5.27723I$
$u=-0.760697-0.640528I$ $a=-0.611876-0.249644I$ $b=-0.814636-0.047301I$	$0.04719+1.98946I$	$-0.34774-5.27723I$
$u=-0.673976+0.906830I$ $a=-0.267161+0.478992I$ $b=\quad 0.225289-0.082571I$	$-0.78223-3.32806I$	$-6.56898+6.19086I$
$u=-0.673976-0.906830I$ $a=-0.267161-0.478992I$ $b=\quad 0.225289+0.082571I$	$-0.78223+3.32806I$	$-6.56898-6.19086I$
$u=-0.658761+0.130449I$ $a=\quad 0.048977-1.266850I$ $b=-0.075967+1.183730I$	$-1.82403+2.46122I$	$-7.28347-4.94712I$
$u=-0.658761-0.130449I$ $a=\quad 0.048977+1.266850I$ $b=-0.075967-1.183730I$	$-1.82403-2.46122I$	$-7.28347+4.94712I$
$u=\quad 0.85535+1.31066I$ $a=-1.103500-0.375117I$ $b=-1.74453-0.36767I$	$-16.9543+3.5243I$	$-4.81696-1.77054I$
$u=\quad 0.85535-1.31066I$ $a=-1.103500+0.375117I$ $b=-1.74453+0.36767I$	$-16.9543-3.5243I$	$-4.81696+1.77054I$
$u=-0.26192+1.67321I$ $a=\quad 0.933564-0.007475I$ $b=\quad 2.40984+0.15933I$	$-8.45052-6.48343I$	$-3.48284+5.23163I$
$u=-0.26192-1.67321I$ $a=\quad 0.933564+0.007475I$ $b=\quad 2.40984-0.15933I$	$-8.45052+6.48343I$	$-3.48284-5.23163I$

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_4	$(u^{10} - 3u^8 + 7u^7 - 3u^6 - 9u^5 + 19u^4 - 21u^3 + 15u^2 - 6u + 1)$ $\cdot (u^{21} - 2u^{20} + \cdots - 6u + 1)(u^{28} - 16u^{27} + \cdots - 82u + 83)$ $\cdot (u^{44} - 3u^{43} + \cdots - 10746u + 4757)$
c_2	$(u^{10} - 8u^9 + \cdots - 24u + 4)(u^{14} + 5u^{13} + \cdots + 4u^2 + 2)^2$ $\cdot (u^{21} + 13u^{20} + \cdots + 312u + 172)(u^{22} - 5u^{21} + \cdots + 322u - 68)^2$
c_3, c_9	$(u^{10} + u^9 + 7u^8 + 3u^7 + 15u^6 + u^5 + 13u^4 + 5u^2 + 1)$ $\cdot (u^{21} - u^{20} + \cdots - 8u + 4)(u^{28} + u^{27} + \cdots - 20u + 4)$ $\cdot (u^{44} - 2u^{43} + \cdots - 774u + 61)$
c_5, c_{11}	$(u^{10} - u^9 + 7u^8 - 3u^7 + 15u^6 - u^5 + 13u^4 + 5u^2 + 1)$ $\cdot (u^{21} - u^{20} + \cdots - 8u + 4)(u^{28} - u^{27} + \cdots + 20u + 4)$ $\cdot (u^{44} - 2u^{43} + \cdots - 774u + 61)$
c_6	$(u^{10} + 8u^9 + \cdots + 24u + 4)(u^{14} - 5u^{13} + \cdots + 4u^2 + 2)^2$ $\cdot (u^{21} + 13u^{20} + \cdots + 312u + 172)(u^{22} - 5u^{21} + \cdots + 322u - 68)^2$
c_7, c_{10}	$(u^{10} - u^9 + u^8 - u^7 + 2u^6 - 2u^5 + 2u^4 - 3u^3 + 2u^2 - u + 1)$ $\cdot (u^{21} - u^{20} + \cdots - 7u - 1)(u^{28} - 6u^{27} + \cdots - 17u + 1)$ $\cdot (u^{44} - 3u^{43} + \cdots - 133u + 449)$
c_8	$(u^{10} + 3u^9 + \cdots + 20u + 4)(u^{14} - 2u^{13} + \cdots + 10u^2 + 2)^2$ $\cdot (u^{21} - 8u^{20} + \cdots + 4u - 4)(u^{22} + 3u^{21} + \cdots - 106u - 16)^2$
c_{12}	$(u^{10} - 3u^9 + \cdots - 20u + 4)(u^{14} + 2u^{13} + \cdots + 10u^2 + 2)^2$ $\cdot (u^{21} - 8u^{20} + \cdots + 4u - 4)(u^{22} + 3u^{21} + \cdots - 106u - 16)^2$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4	$(y^{10} - 6y^9 + 3y^8 + 7y^7 + 51y^6 + 11y^5 - 29y^4 + 15y^3 + 11y^2 - 6y + 1)$ $\cdot (y^{21} - 34y^{20} + \cdots - 36y - 1)(y^{28} - 34y^{27} + \cdots - 56026y + 6889)$ $\cdot (y^{44} - 63y^{43} + \cdots - 533588274y + 22629049)$
c_2, c_6	$(y^{10} - 8y^9 + \cdots - 32y + 16)(y^{14} - 5y^{13} + \cdots + 16y + 4)^2$ $\cdot (y^{21} - 29y^{20} + \cdots - 27872y - 29584)$ $\cdot (y^{22} - 37y^{21} + \cdots - 116468y + 4624)^2$
c_3, c_5, c_9 c_{11}	$(y^{10} + 13y^9 + \cdots + 10y + 1)(y^{21} + 29y^{20} + \cdots - 16y - 16)$ $\cdot (y^{28} + 13y^{27} + \cdots + 160y + 16)(y^{44} + 40y^{43} + \cdots - 287122y + 3721)$
c_7, c_{10}	$(y^{10} + y^9 + 3y^8 + 3y^7 + 2y^6 + 2y^5 - y^3 + 2y^2 + 3y + 1)$ $\cdot (y^{21} - 13y^{20} + \cdots + 37y - 1)(y^{28} - 6y^{27} + \cdots - 123y + 1)$ $\cdot (y^{44} - 9y^{43} + \cdots - 2706301y + 201601)$
c_8, c_{12}	$(y^{10} + 7y^9 + \cdots - 48y + 16)(y^{14} + 12y^{13} + \cdots + 40y + 4)^2$ $\cdot (y^{21} + 16y^{20} + \cdots - 112y - 16)(y^{22} + 25y^{21} + \cdots - 228y + 256)^2$