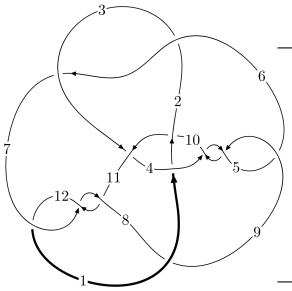
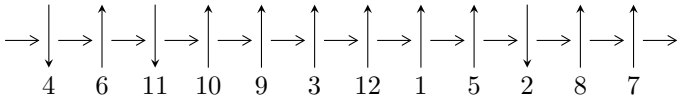
$12a_{0989}$ $(K12a_{0989})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u &= \langle 2.17644 \times 10^{158} u^{92} - 4.89354 \times 10^{158} u^{91} + \cdots + 2.36703 \times 10^{158} b + 2.64156 \times 10^{160}, \\
&\quad - 1.71815 \times 10^{160} u^{92} + 2.80396 \times 10^{160} u^{91} + \cdots + 7.33779 \times 10^{159} a - 2.19928 \times 10^{162}, \\
&\quad u^{93} - 2u^{92} + \cdots + 272u - 31 \rangle \\
I_2^u &= \langle u^{20} - u^{19} + \cdots + 2u^2 + b,\ u^{17} - u^{16} + \cdots + a + 4,\ u^{21} - u^{20} + \cdots + 9u^2 + 1 \rangle \\
I_3^u &= \langle u^2 + b,\ a - 1,\ u^{15} + 3u^{13} - u^{10} - 5u^9 - 2u^8 + u^6 + 3u^5 + 2u^4 - u^3 - u^2 + 1 \rangle
\end{aligned}$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 129 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. $\boldsymbol{I_1^u = \langle 2.18 \times 10^{158} u^{92} - 4.89 \times 10^{158} u^{91} + \cdots + 2.37 \times 10^{158} b + 2.64 \times 10^{160},\ -1.72 \times 10^{160} u^{92} + 2.80 \times 10^{160} u^{91} + \cdots + 7.34 \times 10^{159} a - 2.20 \times 10^{162},\ u^{93} - 2u^{92} + \cdots + 272u - 31 \rangle}$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 2.34150u^{92} - 3.82126u^{91} + \cdots - 1537.23u + 299.720 \\ -0.919480u^{92} + 2.06737u^{91} + \cdots + 662.190u - 111.598 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -1.05704u^{92} + 2.58553u^{91} + \cdots + 713.093u - 107.997 \\ -1.32311u^{92} + 2.32703u^{91} + \cdots + 778.565u - 142.988 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 1.42202u^{92} - 1.75388u^{91} + \cdots - 875.044u + 188.122 \\ -0.919480u^{92} + 2.06737u^{91} + \cdots + 662.190u - 111.598 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 1.34484u^{92} - 1.75442u^{91} + \cdots - 1040.40u + 221.242 \\ -0.842160u^{92} + 1.62410u^{91} + \cdots + 516.189u - 89.1519 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} u^2 + 1 \\ -u^4 - 2u^2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -3.75367u^{92} + 6.11615u^{91} + \cdots + 2424.00u - 448.315 \\ 2.03760u^{92} - 3.19078u^{91} + \cdots - 1029.66u + 188.557 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -3.68763u^{92} + 5.77130u^{91} + \cdots + 2009.93u - 364.805 \\ 0.312514u^{92} - 0.432786u^{91} + \cdots - 141.093u + 24.4478 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -2.67125u^{92} + 4.38356u^{91} + \cdots + 1306.55u - 207.373 \\ -2.16240u^{92} + 3.42633u^{91} + \cdots + 1506.82u - 289.648 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -2.26141u^{92} + 4.72648u^{91} + \cdots + 1127.48u - 174.399$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{93} - 9u^{92} + \cdots + 5549u - 149$
c_2, c_6	$u^{93} - 4u^{92} + \cdots - 16486u - 5639$
c_3	$u^{93} + 13u^{91} + \cdots - 23676u - 2809$
c_4, c_5, c_9	$u^{93} - 2u^{92} + \cdots + 272u - 31$
c_7, c_{11}, c_{12}	$u^{93} + 5u^{92} + \cdots - 230u - 28$
c_8	$u^{93} - 5u^{92} + \cdots - 978070u - 166348$
c_{10}	$u^{93} + 7u^{92} + \cdots + 3131u - 509$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{93} - 7y^{92} + \cdots + 30482673y - 22201$
c_2, c_6	$y^{93} - 56y^{92} + \cdots + 966106988y - 31798321$
c_3	$y^{93} + 26y^{92} + \cdots - 221556894y - 7890481$
c_4, c_5, c_9	$y^{93} + 98y^{92} + \cdots + 49928y - 961$
c_7, c_{11}, c_{12}	$y^{93} + 81y^{92} + \cdots + 1660y - 784$
c_8	$y^{93} - 27y^{92} + \cdots + 59397369308y - 27671657104$
c_{10}	$y^{93} - 19y^{92} + \cdots + 11519509y - 259081$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.913602 + 0.442628I$ $a = -0.457622 + 1.243410I$ $b = 1.058510 - 0.914805I$	$-0.09995 + 12.96690I$	0
$u = 0.913602 - 0.442628I$ $a = -0.457622 - 1.243410I$ $b = 1.058510 + 0.914805I$	$-0.09995 - 12.96690I$	0
$u = 0.477137 + 0.859449I$ $a = -1.021430 - 0.010347I$ $b = 0.468897 + 0.485013I$	$1.63423 - 0.00473I$	0
$u = 0.477137 - 0.859449I$ $a = -1.021430 + 0.010347I$ $b = 0.468897 - 0.485013I$	$1.63423 + 0.00473I$	0
$u = -0.935734 + 0.449982I$ $a = -0.416168 + 0.107447I$ $b = 0.705075 - 0.315756I$	$-3.85014 - 0.96568I$	0
$u = -0.935734 - 0.449982I$ $a = -0.416168 - 0.107447I$ $b = 0.705075 + 0.315756I$	$-3.85014 + 0.96568I$	0
$u = -0.863338 + 0.408854I$ $a = -0.46911 - 1.34477I$ $b = 0.955959 + 0.919498I$	$5.07812 - 8.87462I$	0
$u = -0.863338 - 0.408854I$ $a = -0.46911 + 1.34477I$ $b = 0.955959 - 0.919498I$	$5.07812 + 8.87462I$	0
$u = -0.645207 + 0.651632I$ $a = 0.186968 - 1.274370I$ $b = 0.891416 + 0.487223I$	$-4.79645 - 4.22664I$	0
$u = -0.645207 - 0.651632I$ $a = 0.186968 + 1.274370I$ $b = 0.891416 - 0.487223I$	$-4.79645 + 4.22664I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.735166+0.839615I$ $a=-0.777511-0.042973I$ $b=\ \ 0.659808-0.589993I$	$3.87469+3.43543I$	0
$u=-0.735166-0.839615I$ $a=-0.777511+0.042973I$ $b=\ \ 0.659808+0.589993I$	$3.87469-3.43543I$	0
$u=\ \ 0.764831+0.380631I$ $a=-0.43381+1.55356I$ $b=\ \ 0.799947-0.860704I$	$2.91231+4.47308I$	0
$u=\ \ 0.764831-0.380631I$ $a=-0.43381-1.55356I$ $b=\ \ 0.799947+0.860704I$	$2.91231-4.47308I$	0
$u=\ \ 0.832710+0.861085I$ $a=-0.709125+0.097582I$ $b=\ \ 0.751222+0.616665I$	$-1.21449-7.09054I$	0
$u=\ \ 0.832710-0.861085I$ $a=-0.709125-0.097582I$ $b=\ \ 0.751222-0.616665I$	$-1.21449+7.09054I$	0
$u=-0.599446+0.529611I$ $a=\ \ 0.200504+1.259710I$ $b=-1.03242-1.03698I$	$-3.75102-7.23646I$	0
$u=-0.599446-0.529611I$ $a=\ \ 0.200504-1.259710I$ $b=-1.03242+1.03698I$	$-3.75102+7.23646I$	0
$u=\ \ 0.530203+0.536247I$ $a=-0.848529-0.391549I$ $b=\ \ 0.635048+0.428441I$	$1.89674-0.16432I$	0
$u=\ \ 0.530203-0.536247I$ $a=-0.848529+0.391549I$ $b=\ \ 0.635048-0.428441I$	$1.89674+0.16432I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.583719 + 0.435352I$ $a = 0.274470 - 1.263930I$ $b = -0.824406 + 0.986343I$	$0.96715 + 3.76112I$	$6.00000 - 7.79854I$
$u = 0.583719 - 0.435352I$ $a = 0.274470 + 1.263930I$ $b = -0.824406 - 0.986343I$	$0.96715 - 3.76112I$	$6.00000 + 7.79854I$
$u = 0.043409 + 1.292040I$ $a = -0.129329 + 1.260720I$ $b = -0.577513 - 1.162990I$	$-4.13101 - 4.56307I$	0
$u = 0.043409 - 1.292040I$ $a = -0.129329 - 1.260720I$ $b = -0.577513 + 1.162990I$	$-4.13101 + 4.56307I$	0
$u = -0.063260 + 1.309100I$ $a = -1.91793 - 0.51884I$ $b = -0.266745 - 0.059748I$	$0.82618 - 2.85276I$	0
$u = -0.063260 - 1.309100I$ $a = -1.91793 + 0.51884I$ $b = -0.266745 + 0.059748I$	$0.82618 + 2.85276I$	0
$u = -0.625101 + 0.280638I$ $a = 0.312212 + 1.130920I$ $b = -0.345387 - 1.035540I$	$-1.92190 - 0.78399I$	$6.00000 + 4.34634I$
$u = -0.625101 - 0.280638I$ $a = 0.312212 - 1.130920I$ $b = -0.345387 + 1.035540I$	$-1.92190 + 0.78399I$	$6.00000 - 4.34634I$
$u = 0.151548 + 1.312570I$ $a = -0.154828 - 0.278383I$ $b = 0.47612 + 2.10791I$	$-3.57737 + 7.92014I$	0
$u = 0.151548 - 1.312570I$ $a = -0.154828 + 0.278383I$ $b = 0.47612 - 2.10791I$	$-3.57737 - 7.92014I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.122631+1.319250I$ $a=-0.098610+0.261745I$ $b=\ \ 0.81321-1.84355I$	$0.68667-3.90580I$	0
$u=-0.122631-1.319250I$ $a=-0.098610-0.261745I$ $b=\ \ 0.81321+1.84355I$	$0.68667+3.90580I$	0
$u=\ \ 0.086300+1.323190I$ $a=-0.033382-0.229889I$ $b=\ \ 1.17676+1.47463I$	$-2.79990-0.13216I$	0
$u=\ \ 0.086300-1.323190I$ $a=-0.033382+0.229889I$ $b=\ \ 1.17676-1.47463I$	$-2.79990+0.13216I$	0
$u=-0.102451+1.339250I$ $a=\ \ 0.10172-1.45870I$ $b=-0.122372+1.064720I$	$0.261156-0.373382I$	0
$u=-0.102451-1.339250I$ $a=\ \ 0.10172+1.45870I$ $b=-0.122372-1.064720I$	$0.261156+0.373382I$	0
$u=\ \ 0.380036+1.300450I$ $a=-0.056447-0.899311I$ $b=-1.277570+0.597971I$	$-6.84431+2.10476I$	0
$u=\ \ 0.380036-1.300450I$ $a=-0.056447+0.899311I$ $b=-1.277570-0.597971I$	$-6.84431-2.10476I$	0
$u=\ \ 0.108724+1.377210I$ $a=-1.45681+0.90106I$ $b=-0.484326+0.094880I$	$-5.29511+7.48084I$	0
$u=\ \ 0.108724-1.377210I$ $a=-1.45681-0.90106I$ $b=-0.484326-0.094880I$	$-5.29511-7.48084I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \quad 0.601998$ $a = \quad 0.475355$ $b = \quad 0.0274806$	0.846249	13.8440
$u = \quad 0.162275 + 1.400340I$ $a = \quad 0.50117 + 1.37602I$ $b = \quad 0.400795 - 0.971210I$	$-2.65152 + 5.81739I$	0
$u = \quad 0.162275 - 1.400340I$ $a = \quad 0.50117 - 1.37602I$ $b = \quad 0.400795 + 0.971210I$	$-2.65152 - 5.81739I$	0
$u = \quad 0.512131 + 0.278620I$ $a = -0.40132 + 2.59528I$ $b = \quad 0.429005 - 0.669047I$	$2.68816 + 3.40353I$	$11.5134 - 8.5198I$
$u = \quad 0.512131 - 0.278620I$ $a = -0.40132 - 2.59528I$ $b = \quad 0.429005 + 0.669047I$	$2.68816 - 3.40353I$	$11.5134 + 8.5198I$
$u = -0.23586 + 1.39895I$ $a = -0.331701 + 0.594399I$ $b = -1.00644 - 1.34411I$	$-7.24895 - 3.91169I$	0
$u = -0.23586 - 1.39895I$ $a = -0.331701 - 0.594399I$ $b = -1.00644 + 1.34411I$	$-7.24895 + 3.91169I$	0
$u = -0.15703 + 1.42035I$ $a = -0.450171 + 0.829493I$ $b = -1.23858 - 0.89464I$	$-6.63384 - 3.20290I$	0
$u = -0.15703 - 1.42035I$ $a = -0.450171 - 0.829493I$ $b = -1.23858 + 0.89464I$	$-6.63384 + 3.20290I$	0
$u = \quad 0.545802 + 0.030068I$ $a = \quad 0.12360 - 1.47805I$ $b = \quad 0.89653 + 1.26313I$	$0.58881 + 5.47605I$	$10.85334 - 6.45978I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.545802 - 0.030068I$ $a = 0.12360 + 1.47805I$ $b = 0.89653 - 1.26313I$	$0.58881 - 5.47605I$	$10.85334 + 6.45978I$
$u = -0.39220 + 1.40768I$ $a = -0.005970 + 0.835212I$ $b = -1.127310 - 0.377774I$	$-3.51071 - 4.89100I$	0
$u = -0.39220 - 1.40768I$ $a = -0.005970 - 0.835212I$ $b = -1.127310 + 0.377774I$	$-3.51071 + 4.89100I$	0
$u = 0.24694 + 1.45463I$ $a = -0.035778 - 0.663022I$ $b = -0.542421 + 0.600773I$	$-4.63718 + 3.26112I$	0
$u = 0.24694 - 1.45463I$ $a = -0.035778 + 0.663022I$ $b = -0.542421 - 0.600773I$	$-4.63718 - 3.26112I$	0
$u = 0.21190 + 1.46415I$ $a = -0.502395 - 0.696276I$ $b = -1.45367 + 1.07755I$	$-5.16038 + 6.68364I$	0
$u = 0.21190 - 1.46415I$ $a = -0.502395 + 0.696276I$ $b = -1.45367 - 1.07755I$	$-5.16038 - 6.68364I$	0
$u = 0.203352 + 0.478894I$ $a = -0.15094 - 1.89057I$ $b = -1.154220 + 0.296388I$	$-6.65054 + 0.51603I$	$-2.97629 - 0.81890I$
$u = 0.203352 - 0.478894I$ $a = -0.15094 + 1.89057I$ $b = -1.154220 - 0.296388I$	$-6.65054 - 0.51603I$	$-2.97629 + 0.81890I$
$u = 0.09622 + 1.47913I$ $a = -0.610858 - 0.868754I$ $b = -1.33232 + 0.62691I$	$-13.10280 + 1.77082I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.09622 - 1.47913I$ $a = -0.610858 + 0.868754I$ $b = -1.33232 - 0.62691I$	$-13.10280 - 1.77082I$	0
$u = 0.17173 + 1.47790I$ $a = 0.338655 + 0.331113I$ $b = 0.899141 - 0.179238I$	$-4.77166 + 2.31742I$	0
$u = 0.17173 - 1.47790I$ $a = 0.338655 - 0.331113I$ $b = 0.899141 + 0.179238I$	$-4.77166 - 2.31742I$	0
$u = -0.04028 + 1.49084I$ $a = 0.263156 - 0.385197I$ $b = 0.762580 + 0.278955I$	$-4.89782 + 1.60324I$	0
$u = -0.04028 - 1.49084I$ $a = 0.263156 + 0.385197I$ $b = 0.762580 - 0.278955I$	$-4.89782 - 1.60324I$	0
$u = 0.28423 + 1.47284I$ $a = 0.539000 + 1.044640I$ $b = 1.09985 - 1.02283I$	$-3.07822 + 8.28484I$	0
$u = 0.28423 - 1.47284I$ $a = 0.539000 - 1.044640I$ $b = 1.09985 + 1.02283I$	$-3.07822 - 8.28484I$	0
$u = -0.395291 + 0.288983I$ $a = 0.71541 + 1.49210I$ $b = -0.674999 - 0.451166I$	$-1.12259 - 1.10724I$	$-0.87157 + 3.08284I$
$u = -0.395291 - 0.288983I$ $a = 0.71541 - 1.49210I$ $b = -0.674999 + 0.451166I$	$-1.12259 + 1.10724I$	$-0.87157 - 3.08284I$
$u = -0.21627 + 1.49749I$ $a = -0.555071 + 0.685058I$ $b = -1.60874 - 1.03760I$	$-10.3086 - 10.2526I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.21627-1.49749I$ $a=-0.555071-0.685058I$ $b=-1.60874+1.03760I$	$-10.3086+10.2526I$	0
$u=0.42246+1.46495I$ $a=0.038625-0.826763I$ $b=-1.119850+0.181789I$	$-8.15205+8.05269I$	0
$u=0.42246-1.46495I$ $a=0.038625+0.826763I$ $b=-1.119850-0.181789I$	$-8.15205-8.05269I$	0
$u=-0.32088+1.49052I$ $a=0.518975-1.006450I$ $b=1.27865+1.03826I$	$-1.03771-13.15390I$	0
$u=-0.32088-1.49052I$ $a=0.518975+1.006450I$ $b=1.27865-1.03826I$	$-1.03771+13.15390I$	0
$u=-0.20586+1.53058I$ $a=0.701032-0.996276I$ $b=0.961366+0.620833I$	$-11.88910-7.29226I$	0
$u=-0.20586-1.53058I$ $a=0.701032+0.996276I$ $b=0.961366-0.620833I$	$-11.88910+7.29226I$	0
$u=-0.449276+0.042466I$ $a=-0.03422+1.73671I$ $b=1.07255-1.01805I$	$4.94301-1.86722I$	$17.1351+4.2480I$
$u=-0.449276-0.042466I$ $a=-0.03422-1.73671I$ $b=1.07255+1.01805I$	$4.94301+1.86722I$	$17.1351-4.2480I$
$u=0.33771+1.51180I$ $a=0.515098+0.984249I$ $b=1.38685-0.99515I$	$-6.3932+17.4899I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.33771 - 1.51180I$ $a = 0.515098 - 0.984249I$ $b = 1.38685 + 0.99515I$	$-6.3932 - 17.4899I$	0
$u = -0.27620 + 1.54799I$ $a = 0.075848 + 0.702148I$ $b = -0.489239 - 0.122470I$	$-9.41833 - 1.36160I$	0
$u = -0.27620 - 1.54799I$ $a = 0.075848 - 0.702148I$ $b = -0.489239 + 0.122470I$	$-9.41833 + 1.36160I$	0
$u = 0.00946 + 1.58941I$ $a = 0.299789 + 0.498833I$ $b = 0.636869 - 0.079459I$	$-10.78520 - 4.40021I$	0
$u = 0.00946 - 1.58941I$ $a = 0.299789 - 0.498833I$ $b = 0.636869 + 0.079459I$	$-10.78520 + 4.40021I$	0
$u = -0.24751 + 1.57309I$ $a = 0.359834 - 0.311803I$ $b = 0.910200 + 0.119775I$	$-10.91280 - 5.38166I$	0
$u = -0.24751 - 1.57309I$ $a = 0.359834 + 0.311803I$ $b = 0.910200 - 0.119775I$	$-10.91280 + 5.38166I$	0
$u = -0.390226 + 0.057007I$ $a = -2.61524 - 3.45928I$ $b = -0.001314 + 0.642526I$	$4.67448 + 1.36905I$	$20.6717 - 3.3521I$
$u = -0.390226 - 0.057007I$ $a = -2.61524 + 3.45928I$ $b = -0.001314 - 0.642526I$	$4.67448 - 1.36905I$	$20.6717 + 3.3521I$
$u = 0.346986 + 0.103915I$ $a = -4.06340 - 1.50940I$ $b = -0.345849 + 0.679582I$	$-0.47838 + 5.84762I$	$9.7633 - 10.6724I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.346986 - 0.103915I$ $a = -4.06340 + 1.50940I$ $b = -0.345849 - 0.679582I$	$-0.47838 - 5.84762I$	$9.7633 + 10.6724I$
$u = 0.294798 + 0.013504I$ $a = -0.08216 - 2.66607I$ $b = 1.38561 + 0.72652I$	$1.49403 - 1.59244I$	$14.2016 + 0.3191I$
$u = 0.294798 - 0.013504I$ $a = -0.08216 + 2.66607I$ $b = 1.38561 - 0.72652I$	$1.49403 + 1.59244I$	$14.2016 - 0.3191I$

II.

$\boldsymbol{I_2^u = \langle u^{20}-u^{19}+\cdots+2u^2+b,\ u^{17}-u^{16}+\cdots+a+4,\ u^{21}-u^{20}+\cdots+9u^2+1\rangle}$

(i) Arc colorings

$$a_4 = \begin{pmatrix}1\\0\end{pmatrix}$$

$$a_{10} = \begin{pmatrix}0\\u\end{pmatrix}$$

$$a_2 = \begin{pmatrix}-u^{17}+u^{16}+\cdots-16u^2-4\\-u^{20}+u^{19}+\cdots-u^3-2u^2\end{pmatrix}$$

$$a_5 = \begin{pmatrix}1\\-u^2\end{pmatrix}$$

$$a_{11} = \begin{pmatrix}-4u^{20}+4u^{19}+\cdots-2u^2-10u\\-u^{19}+u^{18}+\cdots+2u-1\end{pmatrix}$$

$$a_1 = \begin{pmatrix}-u^{20}+u^{19}+\cdots-18u^2-4\\-u^{20}+u^{19}+\cdots-u^3-2u^2\end{pmatrix}$$

$$a_3 = \begin{pmatrix}-u^{17}+u^{16}+\cdots-16u^2-3\\u^{18}-u^{17}+\cdots-4u^2+u\end{pmatrix}$$

$$a_9 = \begin{pmatrix}-u\\u^3+u\end{pmatrix}$$

$$a_6 = \begin{pmatrix}u^2+1\\-u^4-2u^2\end{pmatrix}$$

$$a_7 = \begin{pmatrix}-u^{20}+2u^{19}+\cdots-u+5\\-4u^{20}+4u^{19}+\cdots+2u^2-5u\end{pmatrix}$$

$$a_8 = \begin{pmatrix}u^{20}-5u^{19}+\cdots-3u-1\\u^{20}-4u^{19}+\cdots-4u^2+3u\end{pmatrix}$$

$$a_{12} = \begin{pmatrix}-7u^{20}+3u^{19}+\cdots-7u-6\\-u^{20}-4u^{19}+\cdots+4u-7\end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes

$= -4u^{20}-u^{19}-34u^{18}-17u^{17}-105u^{16}-93u^{15}-108u^{14}-232u^{13}+112u^{12}-261u^{11}+327u^{10}-64u^9+134u^8+75u^7-201u^6-10u^5-205u^4-47u^3-60u^2-3u-2$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{21} - 4u^{19} + \cdots + 3u - 1$
c_2	$u^{21} - 3u^{20} + \cdots - 9u^2 + 1$
c_3	$u^{21} - u^{20} + \cdots + 4u^3 + 1$
c_4, c_5	$u^{21} - u^{20} + \cdots + 9u^2 + 1$
c_6	$u^{21} + 3u^{20} + \cdots + 9u^2 - 1$
c_7	$u^{21} - u^{20} + \cdots - 5u^2 + 1$
c_8	$u^{21} + u^{20} + \cdots + 2u + 1$
c_9	$u^{21} + u^{20} + \cdots - 9u^2 - 1$
c_{10}	$u^{21} - 4u^{18} + \cdots - u - 1$
c_{11}, c_{12}	$u^{21} + u^{20} + \cdots + 5u^2 - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{21} - 8y^{20} + \cdots + 3y - 1$
c_2, c_6	$y^{21} - 21y^{20} + \cdots + 18y - 1$
c_3	$y^{21} - 3y^{20} + \cdots - 8y^2 - 1$
c_4, c_5, c_9	$y^{21} + 21y^{20} + \cdots - 18y - 1$
c_7, c_{11}, c_{12}	$y^{21} + 21y^{20} + \cdots + 10y - 1$
c_8	$y^{21} - 7y^{20} + \cdots + 10y - 1$
c_{10}	$y^{21} + 8y^{19} + \cdots + 3y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \ 0.942504 + 0.246260I$ $a = \ 0.631734 - 0.286008I$ $b = -0.752858 - 0.134198I$	$-4.31301 + 1.48475I$	$-2.43515 - 3.09049I$
$u = \ 0.942504 - 0.246260I$ $a = \ 0.631734 + 0.286008I$ $b = -0.752858 + 0.134198I$	$-4.31301 - 1.48475I$	$-2.43515 + 3.09049I$
$u = -0.867402$ $a = \ 0.846213$ $b = -0.674358$	0.209182	-3.13540
$u = -0.024819 + 1.260640I$ $a = \ 0.873577 + 0.193046I$ $b = \ 1.79051 - 0.60013I$	$-1.87183 + 1.42542I$	$6.45818 - 0.53250I$
$u = -0.024819 - 1.260640I$ $a = \ 0.873577 - 0.193046I$ $b = \ 1.79051 + 0.60013I$	$-1.87183 - 1.42542I$	$6.45818 + 0.53250I$
$u = \ 0.051916 + 1.310110I$ $a = \ 1.134780 - 0.699911I$ $b = \ 0.761655 + 0.696872I$	$0.60500 + 2.12401I$	$7.45502 - 0.61311I$
$u = \ 0.051916 - 1.310110I$ $a = \ 1.134780 + 0.699911I$ $b = \ 0.761655 - 0.696872I$	$0.60500 - 2.12401I$	$7.45502 + 0.61311I$
$u = -0.116459 + 1.317440I$ $a = \ 0.529330 + 0.945267I$ $b = \ 0.127554 - 1.169550I$	$-4.23054 - 6.68298I$	$3.09112 + 5.24011I$
$u = -0.116459 - 1.317440I$ $a = \ 0.529330 - 0.945267I$ $b = \ 0.127554 + 1.169550I$	$-4.23054 + 6.68298I$	$3.09112 - 5.24011I$
$u = \ 0.315230 + 1.339510I$ $a = -0.047136 - 0.641467I$ $b = -1.16096 + 0.82040I$	$-8.03930 + 2.94569I$	$-3.03387 - 2.74900I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \ 0.315230 - 1.339510I$ $a = -0.047136 + 0.641467I$ $b = -1.16096 - 0.82040I$	$-8.03930 - 2.94569I$	$-3.03387 + 2.74900I$
$u = -0.313919 + 0.482198I$ $a = -0.35009 + 1.42347I$ $b = -0.070636 + 0.740220I$	$-1.00960 + 5.13706I$	$3.81791 - 2.57618I$
$u = -0.313919 - 0.482198I$ $a = -0.35009 - 1.42347I$ $b = -0.070636 - 0.740220I$	$-1.00960 - 5.13706I$	$3.81791 + 2.57618I$
$u = -0.077295 + 0.557233I$ $a = -1.226070 + 0.444963I$ $b = \ 0.974734 + 0.496814I$	$0.81376 - 1.77615I$	$1.80485 + 4.14303I$
$u = -0.077295 - 0.557233I$ $a = -1.226070 - 0.444963I$ $b = \ 0.974734 - 0.496814I$	$0.81376 + 1.77615I$	$1.80485 - 4.14303I$
$u = -0.27572 + 1.43267I$ $a = -0.199332 + 0.719503I$ $b = -0.867664 - 0.619835I$	$-4.77951 - 4.11317I$	$3.13796 + 6.16435I$
$u = -0.27572 - 1.43267I$ $a = -0.199332 - 0.719503I$ $b = -0.867664 + 0.619835I$	$-4.77951 + 4.11317I$	$3.13796 - 6.16435I$
$u = \ 0.162734 + 0.459737I$ $a = -1.36050 - 1.34511I$ $b = \ 0.361068 - 0.517119I$	$3.85234 - 1.38121I$	$8.78785 + 1.62457I$
$u = \ 0.162734 - 0.459737I$ $a = -1.36050 + 1.34511I$ $b = \ 0.361068 + 0.517119I$	$3.85234 + 1.38121I$	$8.78785 - 1.62457I$
$u = \ 0.26953 + 1.56759I$ $a = -0.409400 - 0.556126I$ $b = -0.826230 + 0.337958I$	$-10.74070 + 6.05778I$	$1.98382 - 7.58727I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \quad 0.26953 - 1.56759I$		
$a = -0.409400 + 0.556126I$	$-10.74070 - 6.05778I$	$1.98382 + 7.58727I$
$b = -0.826230 - 0.337958I$		

III. $I_3^u = \langle u^2 + b,\ a - 1,\ u^{15} + 3u^{13} + \cdots - u^2 + 1 \rangle$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

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

$$a_1 = \begin{pmatrix} -u^2 + 1 \\ -u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} u^4 + u^2 + 1 \\ -u^6 - 2u^4 - u^2 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} u^2 + 1 \\ -u^4 - 2u^2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^6 - u^4 + 1 \\ u^8 + 2u^6 - 2u^2 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u^7 + 2u^3 - 2u \\ -u^7 - u^5 + 2u^3 + u \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} u^{12} + u^{11} + u^{10} + 2u^9 - 3u^8 - u^7 - u^6 - 2u^5 + 3u^4 + u^3 - 2u^2 - u + 1 \\ -u^{13} + u^{12} - 3u^{11} + 2u^{10} - u^9 - u^8 + 3u^7 - 2u^6 + u^5 + u^4 - u^2 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^5 - 4u^3 + 4u + 6$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{15} - 6u^{14} + \cdots + 2u + 1$
c_2, c_6	$u^{15} + 6u^{14} + \cdots + 2u - 1$
c_3	$u^{15} - 3u^{13} + \cdots + 4u + 5$
c_4, c_5, c_9 c_{10}	$u^{15} + 3u^{13} - u^{10} - 5u^9 - 2u^8 + u^6 + 3u^5 + 2u^4 - u^3 - u^2 + 1$
c_7, c_{11}, c_{12}	$(u^3 - u^2 + 2u - 1)^5$
c_8	$(u^3 + u^2 - 1)^5$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_6	$y^{15} - 18y^{14} + \cdots - 6y - 1$
c_3	$y^{15} - 6y^{14} + \cdots - 134y - 25$
c_4, c_5, c_9 c_{10}	$y^{15} + 6y^{14} + \cdots + 2y - 1$
c_7, c_{11}, c_{12}	$(y^3 + 3y^2 + 2y - 1)^5$
c_8	$(y^3 - y^2 + 2y - 1)^5$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.003770 + 0.106833I$ $a = 1.00000$ $b = -0.996143 - 0.214471I$	$-3.02413 + 2.82812I$	$2.49024 - 2.97945I$
$u = 1.003770 - 0.106833I$ $a = 1.00000$ $b = -0.996143 + 0.214471I$	$-3.02413 - 2.82812I$	$2.49024 + 2.97945I$
$u = -0.962445$ $a = 1.00000$ $b = -0.926301$	1.11345	9.01950
$u = -0.803235 + 0.362184I$ $a = 1.00000$ $b = -0.514010 + 0.581838I$	$-3.02413 + 2.82812I$	$2.49024 - 2.97945I$
$u = -0.803235 - 0.362184I$ $a = 1.00000$ $b = -0.514010 - 0.581838I$	$-3.02413 - 2.82812I$	$2.49024 + 2.97945I$
$u = 0.168874 + 1.219270I$ $a = 1.00000$ $b = 1.45811 - 0.41181I$	$-3.02413 - 2.82812I$	$2.49024 + 2.97945I$
$u = 0.168874 - 1.219270I$ $a = 1.00000$ $b = 1.45811 + 0.41181I$	$-3.02413 + 2.82812I$	$2.49024 - 2.97945I$
$u = -0.450135 + 0.619793I$ $a = 1.00000$ $b = 0.181522 + 0.557981I$	$-3.02413 - 2.82812I$	$2.49024 + 2.97945I$
$u = -0.450135 - 0.619793I$ $a = 1.00000$ $b = 0.181522 - 0.557981I$	$-3.02413 + 2.82812I$	$2.49024 - 2.97945I$
$u = -0.096333 + 1.293630I$ $a = 1.00000$ $b = 1.66419 + 0.24924I$	1.11345	$9.01951 + 0.I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.096333-1.293630I$ $a=\ 1.00000$ $b=\ 1.66419-0.24924I$	1.11345	$9.01951+0.I$
$u=\ 0.577555+0.364050I$ $a=\ 1.00000$ $b=-0.201038-0.420518I$	1.11345	$9.01951+0.I$
$u=\ 0.577555-0.364050I$ $a=\ 1.00000$ $b=-0.201038+0.420518I$	1.11345	$9.01951+0.I$
$u=\ 0.080725+1.370050I$ $a=\ 1.00000$ $b=\ 1.87052-0.22119I$	$-3.02413+2.82812I$	$2.49024-2.97945I$
$u=\ 0.080725-1.370050I$ $a=\ 1.00000$ $b=\ 1.87052+0.22119I$	$-3.02413-2.82812I$	$2.49024+2.97945I$

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^{15}-6u^{14}+\cdots+2u+1)(u^{21}-4u^{19}+\cdots+3u-1)$ $\cdot(u^{93}-9u^{92}+\cdots+5549u-149)$
c_2	$(u^{15}+6u^{14}+\cdots+2u-1)(u^{21}-3u^{20}+\cdots-9u^2+1)$ $\cdot(u^{93}-4u^{92}+\cdots-16486u-5639)$
c_3	$(u^{15}-3u^{13}+\cdots+4u+5)(u^{21}-u^{20}+\cdots+4u^3+1)$ $\cdot(u^{93}+13u^{91}+\cdots-23676u-2809)$
c_4, c_5	$(u^{15}+3u^{13}-u^{10}-5u^9-2u^8+u^6+3u^5+2u^4-u^3-u^2+1)$ $\cdot(u^{21}-u^{20}+\cdots+9u^2+1)(u^{93}-2u^{92}+\cdots+272u-31)$
c_6	$(u^{15}+6u^{14}+\cdots+2u-1)(u^{21}+3u^{20}+\cdots+9u^2-1)$ $\cdot(u^{93}-4u^{92}+\cdots-16486u-5639)$
c_7	$((u^3-u^2+2u-1)^5)(u^{21}-u^{20}+\cdots-5u^2+1)$ $\cdot(u^{93}+5u^{92}+\cdots-230u-28)$
c_8	$((u^3+u^2-1)^5)(u^{21}+u^{20}+\cdots+2u+1)$ $\cdot(u^{93}-5u^{92}+\cdots-978070u-166348)$
c_9	$(u^{15}+3u^{13}-u^{10}-5u^9-2u^8+u^6+3u^5+2u^4-u^3-u^2+1)$ $\cdot(u^{21}+u^{20}+\cdots-9u^2-1)(u^{93}-2u^{92}+\cdots+272u-31)$
c_{10}	$(u^{15}+3u^{13}-u^{10}-5u^9-2u^8+u^6+3u^5+2u^4-u^3-u^2+1)$ $\cdot(u^{21}-4u^{18}+\cdots-u-1)(u^{93}+7u^{92}+\cdots+3131u-509)$
c_{11}, c_{12}	$((u^3-u^2+2u-1)^5)(u^{21}+u^{20}+\cdots+5u^2-1)$ $\cdot(u^{93}+5u^{92}+\cdots-230u-28)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y^{15}-18y^{14}+\cdots-6y-1)(y^{21}-8y^{20}+\cdots+3y-1)$ $\cdot(y^{93}-7y^{92}+\cdots+30482673y-22201)$
c_2, c_6	$(y^{15}-18y^{14}+\cdots-6y-1)(y^{21}-21y^{20}+\cdots+18y-1)$ $\cdot(y^{93}-56y^{92}+\cdots+966106988y-31798321)$
c_3	$(y^{15}-6y^{14}+\cdots-134y-25)(y^{21}-3y^{20}+\cdots-8y^2-1)$ $\cdot(y^{93}+26y^{92}+\cdots-221556894y-7890481)$
c_4, c_5, c_9	$(y^{15}+6y^{14}+\cdots+2y-1)(y^{21}+21y^{20}+\cdots-18y-1)$ $\cdot(y^{93}+98y^{92}+\cdots+49928y-961)$
c_7, c_{11}, c_{12}	$((y^3+3y^2+2y-1)^5)(y^{21}+21y^{20}+\cdots+10y-1)$ $\cdot(y^{93}+81y^{92}+\cdots+1660y-784)$
c_8	$((y^3-y^2+2y-1)^5)(y^{21}-7y^{20}+\cdots+10y-1)$ $\cdot(y^{93}-27y^{92}+\cdots+59397369308y-27671657104)$
c_{10}	$(y^{15}+6y^{14}+\cdots+2y-1)(y^{21}+8y^{19}+\cdots+3y-1)$ $\cdot(y^{93}-19y^{92}+\cdots+11519509y-259081)$