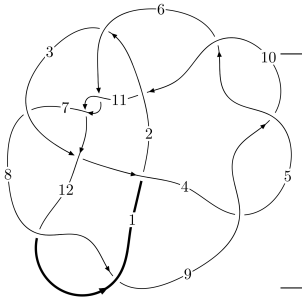
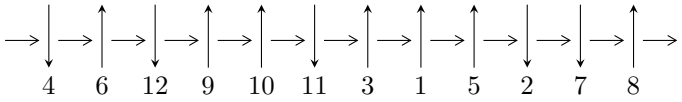
$12a_{1002}$ $(K12a_{1002})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u &= \langle 1.32196 \times 10^{269} u^{109} - 6.64912 \times 10^{268} u^{108} + \cdots + 2.22425 \times 10^{269} b - 9.95049 \times 10^{269}, \\
&\quad - 1.97255 \times 10^{271} u^{109} + 1.64430 \times 10^{271} u^{108} + \cdots + 2.58013 \times 10^{271} a + 1.37216 \times 10^{273}, \\
&\quad u^{110} - 2u^{109} + \cdots + 142u + 29 \rangle \\
I_2^u &= \langle -9u^{16} + 5u^{15} + \cdots + 19b + 25,\ 172u^{16} + 48u^{15} + \cdots + 133a - 178,\ u^{17} - u^{16} + \cdots - 2u + 1 \rangle \\
I_3^u &= \langle b,\ a - 1,\ u + 1 \rangle \\
I_4^u &= \langle b + 1,\ a^3 - 2a^2 - a + 1,\ u + 1 \rangle
\end{aligned}$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 131 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. $\boldsymbol{I_1^u = \langle 1.32 \times 10^{269} u^{109} - 6.65 \times 10^{268} u^{108} + \cdots + 2.22 \times 10^{269} b - 9.95 \times 10^{269},\ -1.97 \times 10^{271} u^{109} + 1.64 \times 10^{271} u^{108} + \cdots + 2.58 \times 10^{271} a + 1.37 \times 10^{273},\ u^{110} - 2u^{109} + \cdots + 142u + 29 \rangle}$

(i) Arc colorings

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

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

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

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

$$a_2 = \begin{pmatrix} 0.764513u^{109} - 0.637292u^{108} + \cdots - 278.114u - 53.1817 \\ -0.594340u^{109} + 0.298937u^{108} + \cdots + 45.4409u + 4.47364 \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} 0.797741u^{109} - 0.903180u^{108} + \cdots - 224.858u - 15.9278 \\ -0.0931427u^{109} - 0.0484952u^{108} + \cdots - 31.3015u - 2.78574 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.170173u^{109} - 0.338354u^{108} + \cdots - 232.673u - 48.7081 \\ -0.594340u^{109} + 0.298937u^{108} + \cdots + 45.4409u + 4.47364 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.655043u^{109} - 1.14852u^{108} + \cdots - 381.879u - 32.5792 \\ 0.735729u^{109} - 0.404328u^{108} + \cdots - 126.324u - 20.0634 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 0.503853u^{109} - 0.796458u^{108} + \cdots - 126.933u + 0.220543 \\ -0.0221484u^{109} + 0.288965u^{108} + \cdots + 100.879u + 14.9464 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 0.144433u^{109} - 0.268865u^{108} + \cdots - 245.630u - 49.3323 \\ -0.286770u^{109} + 0.0910355u^{108} + \cdots + 14.5909u - 0.821688 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0.787523u^{109} - 1.66427u^{108} + \cdots - 416.345u - 34.1907 \\ -0.0988489u^{109} + 0.179027u^{108} + \cdots + 52.5901u + 8.61063 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -0.663649u^{109} + 1.82718u^{108} + \cdots + 495.499u + 53.9213$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{110} + 6u^{109} + \cdots + 6916672u - 1324600$
c_2	$u^{110} - 8u^{108} + \cdots - 1232u - 167$
c_3	$u^{110} - 3u^{109} + \cdots - 71u + 1$
c_4, c_5, c_9	$u^{110} + 2u^{109} + \cdots - 142u + 29$
c_6, c_{11}	$u^{110} - 2u^{109} + \cdots + 58u + 1$
c_7	$u^{110} + u^{109} + \cdots + 1532u - 40$
c_8, c_{12}	$u^{110} + 2u^{109} + \cdots - 455u + 73$
c_{10}	$u^{110} + 6u^{109} + \cdots + 62u + 5$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{110} + 54y^{109} + \cdots - 68056508021984y + 1754565160000$
c_2	$y^{110} - 16y^{109} + \cdots - 1812078y + 27889$
c_3	$y^{110} - 13y^{109} + \cdots - 3915y + 1$
c_4, c_5, c_9	$y^{110} - 122y^{109} + \cdots - 73814y + 841$
c_6, c_{11}	$y^{110} - 86y^{109} + \cdots - 814y + 1$
c_7	$y^{110} - 5y^{109} + \cdots - 2675984y + 1600$
c_8, c_{12}	$y^{110} - 90y^{109} + \cdots - 177533y + 5329$
c_{10}	$y^{110} + 114y^{108} + \cdots - 4464y + 25$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.561117+0.839392I$ $a=-0.303990+0.131847I$ $b=-0.421456-1.140830I$	$2.56229-4.55331I$	0
$u=-0.561117-0.839392I$ $a=-0.303990-0.131847I$ $b=-0.421456+1.140830I$	$2.56229+4.55331I$	0
$u=-0.927916+0.225382I$ $a=\ \ 0.664044-0.078712I$ $b=\ \ 1.003900+0.171942I$	$0.313706+0.175524I$	0
$u=-0.927916-0.225382I$ $a=\ \ 0.664044+0.078712I$ $b=\ \ 1.003900-0.171942I$	$0.313706-0.175524I$	0
$u=\ \ 0.959964+0.457834I$ $a=\ \ 1.44411-0.00057I$ $b=-0.378698-0.662224I$	$1.63508-0.94549I$	0
$u=\ \ 0.959964-0.457834I$ $a=\ \ 1.44411+0.00057I$ $b=-0.378698+0.662224I$	$1.63508+0.94549I$	0
$u=-0.316258+1.015460I$ $a=-0.371801-0.517839I$ $b=\ \ 0.327371-0.681355I$	$-1.22848+8.07799I$	0
$u=-0.316258-1.015460I$ $a=-0.371801+0.517839I$ $b=\ \ 0.327371+0.681355I$	$-1.22848-8.07799I$	0
$u=\ \ 1.06797$ $a=\ \ 0.610464$ $b=-1.19855$	0.377278	0
$u=-0.729463+0.787079I$ $a=\ \ 0.260649-0.445540I$ $b=\ \ 0.91205+1.10958I$	$0.03302-13.85620I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.729463-0.787079I$ $a=\ \ 0.260649+0.445540I$ $b=\ \ 0.91205-1.10958I$	$0.03302+13.85620I$	0
$u=-0.567089+0.952408I$ $a=\ \ 0.498975+0.089888I$ $b=\ \ 0.239021+0.674220I$	$2.45698-1.04644I$	0
$u=-0.567089-0.952408I$ $a=\ \ 0.498975-0.089888I$ $b=\ \ 0.239021-0.674220I$	$2.45698+1.04644I$	0
$u=\ \ 0.530952+0.713864I$ $a=-0.171699+0.282459I$ $b=\ \ 0.927780+0.145012I$	$-4.74837-4.09767I$	0
$u=\ \ 0.530952-0.713864I$ $a=-0.171699-0.282459I$ $b=\ \ 0.927780-0.145012I$	$-4.74837+4.09767I$	0
$u=\ \ 0.773574+0.809008I$ $a=\ \ 0.356404+0.358372I$ $b=\ \ 0.741088-0.968332I$	$4.96862+8.04897I$	0
$u=\ \ 0.773574-0.809008I$ $a=\ \ 0.356404-0.358372I$ $b=\ \ 0.741088+0.968332I$	$4.96862-8.04897I$	0
$u=\ \ 0.513703+0.684899I$ $a=\ \ 0.142348+1.039150I$ $b=\ \ 0.900529-0.488273I$	$-4.77261+8.77139I$	0
$u=\ \ 0.513703-0.684899I$ $a=\ \ 0.142348-1.039150I$ $b=\ \ 0.900529+0.488273I$	$-4.77261-8.77139I$	0
$u=-0.663764+0.503751I$ $a=\ \ 1.221330+0.082009I$ $b=-0.057478+0.823623I$	$2.58165-0.03463I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.663764-0.503751I$ $a=\ \ 1.221330-0.082009I$ $b=-0.057478-0.823623I$	$2.58165+0.03463I$	0
$u=-1.18213$ $a=\ \ 1.50672$ $b=-1.65419$	-2.89730	0
$u=\ \ 0.586598+0.524605I$ $a=-0.292439-0.789688I$ $b=-0.91004+1.31036I$	$-2.19521+5.10239I$	0
$u=\ \ 0.586598-0.524605I$ $a=-0.292439+0.789688I$ $b=-0.91004-1.31036I$	$-2.19521-5.10239I$	0
$u=-0.467339+0.592282I$ $a=-0.569458+0.168185I$ $b=-0.665733-1.241350I$	$2.02732-3.98332I$	0
$u=-0.467339-0.592282I$ $a=-0.569458-0.168185I$ $b=-0.665733+1.241350I$	$2.02732+3.98332I$	0
$u=-0.388667+0.644207I$ $a=\ \ 0.609698-0.868649I$ $b=\ \ 0.610278+0.381243I$	$0.34111-3.17260I$	0
$u=-0.388667-0.644207I$ $a=\ \ 0.609698+0.868649I$ $b=\ \ 0.610278-0.381243I$	$0.34111+3.17260I$	0
$u=-1.259520+0.213847I$ $a=\ \ 0.457879-0.631771I$ $b=\ \ 0.247105+0.397332I$	$1.79921-0.26763I$	0
$u=-1.259520-0.213847I$ $a=\ \ 0.457879+0.631771I$ $b=\ \ 0.247105-0.397332I$	$1.79921+0.26763I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.705578$ $a=\ \ 0.686211$ $b=-1.81071$	-4.29507	0
$u=\ \ 0.197875+0.654372I$ $a=-0.167494+0.382578I$ $b=-0.76633+1.33681I$	$-0.64558+4.99505I$	0
$u=\ \ 0.197875-0.654372I$ $a=-0.167494-0.382578I$ $b=-0.76633-1.33681I$	$-0.64558-4.99505I$	0
$u=-0.522290+0.434471I$ $a=\ \ 0.191918+0.244207I$ $b=\ \ 0.240332-0.360798I$	$1.176650-0.617251I$	0
$u=-0.522290-0.434471I$ $a=\ \ 0.191918-0.244207I$ $b=\ \ 0.240332+0.360798I$	$1.176650+0.617251I$	0
$u=-0.553619+0.372557I$ $a=\ \ 0.96752+1.55292I$ $b=-1.005840-0.395070I$	$-3.87784-1.19491I$	$0.+3.34499I$
$u=-0.553619-0.372557I$ $a=\ \ 0.96752-1.55292I$ $b=-1.005840+0.395070I$	$-3.87784+1.19491I$	$0.-3.34499I$
$u=-0.609765+0.259275I$ $a=-1.74801+1.21596I$ $b=-0.304239-1.351150I$	$2.09953-6.85443I$	$6.48042+7.99330I$
$u=-0.609765-0.259275I$ $a=-1.74801-1.21596I$ $b=-0.304239+1.351150I$	$2.09953+6.85443I$	$6.48042-7.99330I$
$u=\ \ 1.345720+0.087315I$ $a=\ \ 0.62240-1.65565I$ $b=-0.800525+1.105590I$	$-0.36834+3.75700I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.345720 - 0.087315I$ $a = 0.62240 + 1.65565I$ $b = -0.800525 - 1.105590I$	$-0.36834 - 3.75700I$	0
$u = 0.338412 + 0.532311I$ $a = 1.049160 - 0.832600I$ $b = -0.652477 - 0.520997I$	$-2.89784 - 1.43811I$	$-1.19470 + 1.30013I$
$u = 0.338412 - 0.532311I$ $a = 1.049160 + 0.832600I$ $b = -0.652477 + 0.520997I$	$-2.89784 + 1.43811I$	$-1.19470 - 1.30013I$
$u = 0.384390 + 0.472117I$ $a = -0.057955 - 0.709801I$ $b = -0.072193 + 1.060730I$	$-1.80335 + 4.26864I$	$0. - 8.46446I$
$u = 0.384390 - 0.472117I$ $a = -0.057955 + 0.709801I$ $b = -0.072193 - 1.060730I$	$-1.80335 - 4.26864I$	$0. + 8.46446I$
$u = -1.43088 + 0.15235I$ $a = 0.25860 + 2.38251I$ $b = -1.22902 - 2.26534I$	$4.56457 - 7.63869I$	0
$u = -1.43088 - 0.15235I$ $a = 0.25860 - 2.38251I$ $b = -1.22902 + 2.26534I$	$4.56457 + 7.63869I$	0
$u = -0.191657 + 0.512923I$ $a = -0.046361 + 0.638848I$ $b = -1.112870 - 0.427835I$	$-5.06856 - 1.65720I$	$-7.16569 + 4.46058I$
$u = -0.191657 - 0.512923I$ $a = -0.046361 - 0.638848I$ $b = -1.112870 + 0.427835I$	$-5.06856 + 1.65720I$	$-7.16569 - 4.46058I$
$u = 1.46115 + 0.08625I$ $a = -0.37508 + 1.49521I$ $b = -0.279736 - 0.529528I$	$3.59759 + 4.20792I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.46115 - 0.08625I$ $a = -0.37508 - 1.49521I$ $b = -0.279736 + 0.529528I$	$3.59759 - 4.20792I$	0
$u = 1.46767$ $a = 0.691382$ $b = -1.86135$	4.07909	0
$u = -1.46887 + 0.01504I$ $a = 0.25445 - 1.71637I$ $b = -0.311834 + 0.911854I$	$4.77660 + 1.78089I$	0
$u = -1.46887 - 0.01504I$ $a = 0.25445 + 1.71637I$ $b = -0.311834 - 0.911854I$	$4.77660 - 1.78089I$	0
$u = 1.48030 + 0.19076I$ $a = -0.00626 + 1.52329I$ $b = 0.500378 - 0.750683I$	$6.44612 + 6.13114I$	0
$u = 1.48030 - 0.19076I$ $a = -0.00626 - 1.52329I$ $b = 0.500378 + 0.750683I$	$6.44612 - 6.13114I$	0
$u = 0.498224 + 0.071301I$ $a = 1.59392 + 0.46947I$ $b = 0.764381 - 1.087900I$	$4.99636 - 2.04697I$	$13.62932 + 3.40547I$
$u = 0.498224 - 0.071301I$ $a = 1.59392 - 0.46947I$ $b = 0.764381 + 1.087900I$	$4.99636 + 2.04697I$	$13.62932 - 3.40547I$
$u = -1.49656 + 0.05118I$ $a = 0.44142 + 1.68291I$ $b = -0.376738 - 1.055420I$	$4.71699 - 2.04167I$	0
$u = -1.49656 - 0.05118I$ $a = 0.44142 - 1.68291I$ $b = -0.376738 + 1.055420I$	$4.71699 + 2.04167I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.49200+0.15868I$ $a=-0.31177+1.83486I$ $b=\ \ 0.11957-1.60278I$	$4.41842-6.58737I$	0
$u=-1.49200-0.15868I$ $a=-0.31177-1.83486I$ $b=\ \ 0.11957+1.60278I$	$4.41842+6.58737I$	0
$u=\ \ 1.51008+0.00548I$ $a=-0.76849+2.42077I$ $b=\ \ 1.57911-2.38327I$	$7.37201-5.32957I$	0
$u=\ \ 1.51008-0.00548I$ $a=-0.76849-2.42077I$ $b=\ \ 1.57911+2.38327I$	$7.37201+5.32957I$	0
$u=-1.52187+0.03609I$ $a=-0.105944+1.408030I$ $b=-0.98553-1.09051I$	$11.45720-3.34903I$	0
$u=-1.52187-0.03609I$ $a=-0.105944-1.408030I$ $b=-0.98553+1.09051I$	$11.45720+3.34903I$	0
$u=\ \ 1.51607+0.14680I$ $a=-0.307512-1.226570I$ $b=\ \ 0.284687+1.072820I$	$7.84229+2.83049I$	0
$u=\ \ 1.51607-0.14680I$ $a=-0.307512+1.226570I$ $b=\ \ 0.284687-1.072820I$	$7.84229-2.83049I$	0
$u=\ \ 1.52317+0.16202I$ $a=\ \ 0.19102-2.07830I$ $b=-1.06013+1.93180I$	$8.63374+6.61963I$	0
$u=\ \ 1.52317-0.16202I$ $a=\ \ 0.19102+2.07830I$ $b=-1.06013-1.93180I$	$8.63374-6.61963I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.52037+0.21522I$ $a=-0.32083-1.59097I$ $b=\ \ 0.669087+0.872290I$	$1.89051-12.02380I$	0
$u=-1.52037-0.21522I$ $a=-0.32083+1.59097I$ $b=\ \ 0.669087-0.872290I$	$1.89051+12.02380I$	0
$u=-1.53845+0.01503I$ $a=-0.77655-1.50959I$ $b=\ \ 1.62064+1.47082I$	$11.94240+1.77338I$	0
$u=-1.53845-0.01503I$ $a=-0.77655+1.50959I$ $b=\ \ 1.62064-1.47082I$	$11.94240-1.77338I$	0
$u=\ \ 0.439368+0.125267I$ $a=-2.91173-0.94485I$ $b=-0.296311+0.914392I$	$4.78298+2.77580I$	$10.74262-4.23324I$
$u=\ \ 0.439368-0.125267I$ $a=-2.91173+0.94485I$ $b=-0.296311-0.914392I$	$4.78298-2.77580I$	$10.74262+4.23324I$
$u=\ \ 1.54191+0.10236I$ $a=\ \ 0.82257-1.60996I$ $b=-0.538138+1.028000I$	$3.13802+2.89810I$	0
$u=\ \ 1.54191-0.10236I$ $a=\ \ 0.82257+1.60996I$ $b=-0.538138-1.028000I$	$3.13802-2.89810I$	0
$u=-1.55010$ $a=\ \ 0.515231$ $b=-0.188672$	2.86877	0
$u=\ \ 0.314782+0.316499I$ $a=\ \ 0.04286-1.45370I$ $b=-0.719949+0.376921I$	$-1.29001+0.97335I$	$-5.23681-1.57208I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.314782 - 0.316499I$ $a = 0.04286 + 1.45370I$ $b = -0.719949 - 0.376921I$	$-1.29001 - 0.97335I$	$-5.23681 + 1.57208I$
$u = 1.55565 + 0.07957I$ $a = -0.13471 - 1.87630I$ $b = -0.81156 + 1.54843I$	$9.40554 + 8.12188I$	0
$u = 1.55565 - 0.07957I$ $a = -0.13471 + 1.87630I$ $b = -0.81156 - 1.54843I$	$9.40554 - 8.12188I$	0
$u = 1.55716 + 0.08388I$ $a = 0.079050 + 1.135280I$ $b = 0.812119 - 1.044250I$	$10.06430 + 1.82526I$	0
$u = 1.55716 - 0.08388I$ $a = 0.079050 - 1.135280I$ $b = 0.812119 + 1.044250I$	$10.06430 - 1.82526I$	0
$u = 0.417614 + 0.127707I$ $a = 1.22900 + 2.26831I$ $b = -0.244550 - 0.614686I$	$-1.42070 - 2.02385I$	$5.86521 + 0.25795I$
$u = 0.417614 - 0.127707I$ $a = 1.22900 - 2.26831I$ $b = -0.244550 + 0.614686I$	$-1.42070 + 2.02385I$	$5.86521 - 0.25795I$
$u = -0.188293 + 0.392923I$ $a = 0.53118 - 3.05353I$ $b = 0.240285 - 0.019161I$	$-1.97408 - 2.72746I$	$-13.6098 + 7.1286I$
$u = -0.188293 - 0.392923I$ $a = 0.53118 + 3.05353I$ $b = 0.240285 + 0.019161I$	$-1.97408 + 2.72746I$	$-13.6098 - 7.1286I$
$u = -1.56070 + 0.15405I$ $a = 0.36566 + 2.37618I$ $b = -1.08051 - 2.20286I$	$4.99912 - 7.57034I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.56070-0.15405I$ $a=\ \ 0.36566-2.37618I$ $b=-1.08051+2.20286I$	$4.99912+7.57034I$	0
$u=\ \ 1.57068+0.29738I$ $a=-0.14027-1.56575I$ $b=-0.71535+1.61442I$	$9.53813+8.77828I$	0
$u=\ \ 1.57068-0.29738I$ $a=-0.14027+1.56575I$ $b=-0.71535-1.61442I$	$9.53813-8.77828I$	0
$u=\ \ 1.60561$ $a=-1.37001$ $b=\ \ 2.25122$	8.86339	0
$u=\ \ 0.99962+1.25672I$ $a=-0.151543+0.000614I$ $b=-0.235450+0.608818I$	$3.59740-1.02869I$	0
$u=\ \ 0.99962-1.25672I$ $a=-0.151543-0.000614I$ $b=-0.235450-0.608818I$	$3.59740+1.02869I$	0
$u=\ \ 1.59888+0.26921I$ $a=-0.033918+1.188430I$ $b=\ \ 1.01703-1.06081I$	$9.89750+5.36352I$	0
$u=\ \ 1.59888-0.26921I$ $a=-0.033918-1.188430I$ $b=\ \ 1.01703+1.06081I$	$9.89750-5.36352I$	0
$u=-1.63257$ $a=\ \ 0.100653$ $b=\ \ 0.830742$	10.9931	0
$u=\ \ 1.61310+0.25881I$ $a=-0.30620+1.75307I$ $b=\ \ 1.26003-1.61640I$	$7.7665+17.7910I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.61310 - 0.25881I$ $a = -0.30620 - 1.75307I$ $b = 1.26003 + 1.61640I$	$7.7665 - 17.7910I$	0
$u = -1.61784 + 0.25740I$ $a = -0.18698 - 1.54451I$ $b = 1.15091 + 1.41429I$	$12.8283 - 12.0395I$	0
$u = -1.61784 - 0.25740I$ $a = -0.18698 + 1.54451I$ $b = 1.15091 - 1.41429I$	$12.8283 + 12.0395I$	0
$u = -0.341173 + 0.081513I$ $a = 2.56530 - 0.70164I$ $b = 0.63053 + 1.90328I$	$0.98612 + 5.53424I$	$9.21361 - 3.89205I$
$u = -0.341173 - 0.081513I$ $a = 2.56530 + 0.70164I$ $b = 0.63053 - 1.90328I$	$0.98612 - 5.53424I$	$9.21361 + 3.89205I$
$u = -1.66219 + 0.28544I$ $a = 0.105978 + 1.138680I$ $b = -0.87100 - 1.21409I$	$11.98830 - 4.05097I$	0
$u = -1.66219 - 0.28544I$ $a = 0.105978 - 1.138680I$ $b = -0.87100 + 1.21409I$	$11.98830 + 4.05097I$	0
$u = 1.83473$ $a = 0.791840$ $b = -1.43197$	5.03924	0
$u = -0.159152$ $a = -8.05301$ $b = -1.10930$	-1.59084	-6.53800
$u = -2.00901$ $a = -0.107919$ $b = 0.383709$	2.58600	0

II. $I_2^u = \langle -9u^{16} + 5u^{15} + \cdots + 19b + 25,\ 172u^{16} + 48u^{15} + \cdots + 133a - 178,\ u^{17} - u^{16} + \cdots - 2u + 1 \rangle$

(i) Arc colorings

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

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

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

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

$$a_2 = \begin{pmatrix} -1.29323u^{16} - 0.360902u^{15} + \cdots + 5.40602u + 1.33835 \\ 0.473684u^{16} - 0.263158u^{15} + \cdots - 0.578947u - 1.31579 \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} -0.924812u^{16} - 0.676692u^{15} + \cdots + 5.51128u - 3.24060 \\ 0.263158u^{16} + 0.631579u^{15} + \cdots + 0.789474u + 1.15789 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -0.819549u^{16} - 0.624060u^{15} + \cdots + 4.82707u + 0.0225564 \\ 0.473684u^{16} - 0.263158u^{15} + \cdots - 0.578947u - 1.31579 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.120301u^{16} + 0.0827068u^{15} + \cdots + 4.78195u - 2.01504 \\ -0.390977u^{16} - 0.481203u^{15} + \cdots + 0.541353u + 0.451128 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -0.353383u^{16} - 0.819549u^{15} + \cdots + 3.79699u + 1.33083 \\ 0.112782u^{16} - 0.0150376u^{15} + \cdots - 1.23308u - 0.360902 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -0.819549u^{16} - 0.624060u^{15} + \cdots + 4.82707u + 1.02256 \\ -0.0751880u^{16} - 0.323308u^{15} + \cdots - 0.511278u - 0.759398 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} \frac{8}{7}u^{16} + \frac{5}{7}u^{15} + \cdots + \frac{46}{7}u - \frac{34}{7} \\ -1.65414u^{16} - 0.112782u^{15} + \cdots - 0.248120u + 3.29323 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= \frac{47}{19}u^{16} - \frac{81}{19}u^{15} + \cdots - \frac{49}{19}u - \frac{63}{19}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{17} - 6u^{16} + \cdots - 44u + 8$
c_2	$u^{17} - 2u^{16} + \cdots - 8u + 1$
c_3	$u^{17} - 2u^{15} + \cdots - 4u - 1$
c_4, c_5	$u^{17} - u^{16} + \cdots - 2u + 1$
c_6	$u^{17} + u^{16} + \cdots - 13u + 1$
c_7	$u^{17} + 2u^{15} + \cdots + 56u - 49$
c_8	$u^{17} - u^{16} + \cdots + 4u + 1$
c_9	$u^{17} + u^{16} + \cdots - 2u - 1$
c_{10}	$u^{17} + 2u^{16} + \cdots + 10u + 1$
c_{11}	$u^{17} - u^{16} + \cdots - 13u - 1$
c_{12}	$u^{17} + u^{16} + \cdots + 4u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{17} + 18y^{16} + \cdots - 368y - 64$
c_2	$y^{17} + 2y^{16} + \cdots + 36y - 1$
c_3	$y^{17} - 4y^{16} + \cdots - 22y^2 - 1$
c_4, c_5, c_9	$y^{17} - 23y^{16} + \cdots + 2y - 1$
c_6, c_{11}	$y^{17} - 17y^{16} + \cdots + 139y - 1$
c_7	$y^{17} + 4y^{16} + \cdots - 490y - 2401$
c_8, c_{12}	$y^{17} - 13y^{16} + \cdots + 18y - 1$
c_{10}	$y^{17} + 18y^{15} + \cdots + 10y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.775884 + 0.786019I$ $a = 0.565091 - 0.244403I$ $b = 0.099687 - 0.637521I$	$3.52883 - 1.34033I$	$6.22025 + 4.59101I$
$u = 0.775884 - 0.786019I$ $a = 0.565091 + 0.244403I$ $b = 0.099687 + 0.637521I$	$3.52883 + 1.34033I$	$6.22025 - 4.59101I$
$u = 1.19074$ $a = 1.13854$ $b = -1.68727$	-2.29823	7.51380
$u = 0.188468 + 0.483306I$ $a = -1.106310 + 0.252673I$ $b = -0.13780 + 1.74335I$	$0.30417 + 5.98476I$	$0.88458 - 9.18662I$
$u = 0.188468 - 0.483306I$ $a = -1.106310 - 0.252673I$ $b = -0.13780 - 1.74335I$	$0.30417 - 5.98476I$	$0.88458 + 9.18662I$
$u = 1.49754 + 0.07202I$ $a = 0.36875 - 1.82402I$ $b = 0.082526 + 1.150800I$	$4.39708 + 3.90435I$	$6.82804 - 3.81833I$
$u = 1.49754 - 0.07202I$ $a = 0.36875 + 1.82402I$ $b = 0.082526 - 1.150800I$	$4.39708 - 3.90435I$	$6.82804 + 3.81833I$
$u = -1.50371 + 0.14008I$ $a = -0.13517 + 2.72302I$ $b = -0.68266 - 2.58485I$	$6.23453 - 8.10814I$	$7.34439 + 7.84548I$
$u = -1.50371 - 0.14008I$ $a = -0.13517 - 2.72302I$ $b = -0.68266 + 2.58485I$	$6.23453 + 8.10814I$	$7.34439 - 7.84548I$
$u = 1.50540 + 0.20269I$ $a = -0.16005 - 1.61021I$ $b = -0.72949 + 1.40654I$	$8.53803 + 5.44346I$	$7.21039 - 3.12363I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \quad 1.50540 - 0.20269I$ $a = -0.16005 + 1.61021I$ $b = -0.72949 - 1.40654I$	$8.53803 - 5.44346I$	$7.21039 + 3.12363I$
$u = -1.59626$ $a = -0.363429$ $b = \quad 1.27870$	12.1374	13.4350
$u = \quad 0.381978$ $a = \quad 2.53018$ $b = -1.53551$	-4.99201	-9.55970
$u = -0.213418 + 0.264891I$ $a = -0.41873 + 3.65151I$ $b = -0.168737 - 0.514234I$	$-1.60221 - 2.77869I$	$7.58534 + 9.18091I$
$u = -0.213418 - 0.264891I$ $a = -0.41873 - 3.65151I$ $b = -0.168737 + 0.514234I$	$-1.60221 + 2.77869I$	$7.58534 - 9.18091I$
$u = -1.73839 + 0.20848I$ $a = \quad 0.233778 + 0.276480I$ $b = -0.491484 - 0.171737I$	$2.49494 - 0.04707I$	$-1.7675 + 22.1407I$
$u = -1.73839 - 0.20848I$ $a = \quad 0.233778 - 0.276480I$ $b = -0.491484 + 0.171737I$	$2.49494 + 0.04707I$	$-1.7675 - 22.1407I$

III. $I_3^u = \langle b,\ a-1,\ u+1 \rangle$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ -1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ -1 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1 \\ -1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 1 \\ -1 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 6$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_7, c_{10}	u
c_2, c_3, c_4 c_5, c_6, c_8 c_9, c_{11}, c_{12}	$u-1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_7, c_{10}	y
c_2, c_3, c_4 c_5, c_6, c_8 c_9, c_{11}, c_{12}	$y-1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.00000$		
$a = \quad 1.00000$	1.64493	6.00000
$b = \qquad 0$		

IV. $I_4^u = \langle b+1,\ a^3-2a^2-a+1,\ u+1\rangle$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ -1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} a \\ -1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} a-1 \\ -1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} a-1 \\ -1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} a^2-2a+1 \\ -a \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} a^2-3a+1 \\ a^2-a-1 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} a \\ -a-1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} a^2-2a+1 \\ -a \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -a^2+6a-9$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_9, c_{10}	$(u-1)^3$
c_2	u^3+2u^2-u-1
c_3, c_{11}, c_{12}	u^3-u^2-2u+1
c_4, c_5	$(u+1)^3$
c_6, c_8	u^3+u^2-2u-1
c_7	u^3

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.00000$ $a=-0.801938$ $b=-1.00000$	0	-14.4550
$u=-1.00000$ $a=\ \ 0.554958$ $b=-1.00000$	0	-5.97820
$u=-1.00000$ $a=\ \ 2.24698$ $b=-1.00000$	0	-0.567040

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$u(u-1)^3(u^{17}-6u^{16}+\cdots-44u+8)$ $\cdot(u^{110}+6u^{109}+\cdots+6916672u-1324600)$
c_2	$(u-1)(u^3+2u^2-u-1)(u^{17}-2u^{16}+\cdots-8u+1)$ $\cdot(u^{110}-8u^{108}+\cdots-1232u-167)$
c_3	$(u-1)(u^3-u^2-2u+1)(u^{17}-2u^{15}+\cdots-4u-1)$ $\cdot(u^{110}-3u^{109}+\cdots-71u+1)$
c_4, c_5	$(u-1)(u+1)^3(u^{17}-u^{16}+\cdots-2u+1)(u^{110}+2u^{109}+\cdots-142u+29)$
c_6	$(u-1)(u^3+u^2-2u-1)(u^{17}+u^{16}+\cdots-13u+1)$ $\cdot(u^{110}-2u^{109}+\cdots+58u+1)$
c_7	$u^4(u^{17}+2u^{15}+\cdots+56u-49)(u^{110}+u^{109}+\cdots+1532u-40)$
c_8	$(u-1)(u^3+u^2-2u-1)(u^{17}-u^{16}+\cdots+4u+1)$ $\cdot(u^{110}+2u^{109}+\cdots-455u+73)$
c_9	$((u-1)^4)(u^{17}+u^{16}+\cdots-2u-1)(u^{110}+2u^{109}+\cdots-142u+29)$
c_{10}	$u(u-1)^3(u^{17}+2u^{16}+\cdots+10u+1)(u^{110}+6u^{109}+\cdots+62u+5)$
c_{11}	$(u-1)(u^3-u^2-2u+1)(u^{17}-u^{16}+\cdots-13u-1)$ $\cdot(u^{110}-2u^{109}+\cdots+58u+1)$
c_{12}	$(u-1)(u^3-u^2-2u+1)(u^{17}+u^{16}+\cdots+4u-1)$ $\cdot(u^{110}+2u^{109}+\cdots-455u+73)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$y(y-1)^3(y^{17}+18y^{16}+\cdots-368y-64)$ $\cdot(y^{110}+54y^{109}+\cdots-68056508021984y+1754565160000)$
c_2	$(y-1)(y^3-6y^2+5y-1)(y^{17}+2y^{16}+\cdots+36y-1)$ $\cdot(y^{110}-16y^{109}+\cdots-1812078y+27889)$
c_3	$(y-1)(y^3-5y^2+6y-1)(y^{17}-4y^{16}+\cdots-22y^2-1)$ $\cdot(y^{110}-13y^{109}+\cdots-3915y+1)$
c_4, c_5, c_9	$((y-1)^4)(y^{17}-23y^{16}+\cdots+2y-1)$ $\cdot(y^{110}-122y^{109}+\cdots-73814y+841)$
c_6, c_{11}	$(y-1)(y^3-5y^2+6y-1)(y^{17}-17y^{16}+\cdots+139y-1)$ $\cdot(y^{110}-86y^{109}+\cdots-814y+1)$
c_7	$y^4(y^{17}+4y^{16}+\cdots-490y-2401)$ $\cdot(y^{110}-5y^{109}+\cdots-2675984y+1600)$
c_8, c_{12}	$(y-1)(y^3-5y^2+6y-1)(y^{17}-13y^{16}+\cdots+18y-1)$ $\cdot(y^{110}-90y^{109}+\cdots-177533y+5329)$
c_{10}	$y(y-1)^3(y^{17}+18y^{15}+\cdots+10y-1)$ $\cdot(y^{110}+114y^{108}+\cdots-4464y+25)$