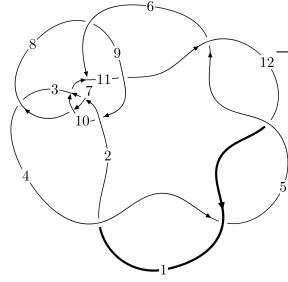
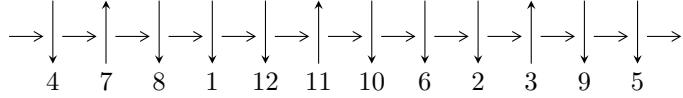


12a₁₀₄₄ (K12a₁₀₄₄)



A knot diagram¹

Linearized knot diagram



Solving Sequence

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

Ideals for irreducible components² of X_{par}

$$I_1^u = \langle -9.07361 \times 10^{36} u^{42} - 2.49991 \times 10^{38} u^{41} + \dots + 3.01538 \times 10^{35} b + 8.06957 \times 10^{37}, \\ -4.03479 \times 10^{37} u^{42} - 1.11159 \times 10^{39} u^{41} + \dots + 6.03076 \times 10^{35} a + 3.58061 \times 10^{38}, \\ u^{43} + 28u^{42} + \dots - 18u - 4 \rangle$$

$$I_2^u = \langle -6967u^{18} a^3 - 29606u^{18} a^2 + \dots - 20917a + 13395, u^{18} a^3 + 9u^{18} a^2 + \dots + 15a^2 + 25, \\ u^{19} - 9u^{18} + \dots - 5u^2 + 1 \rangle$$

$$I_3^u = \langle 300258u^{21} - 3737558u^{20} + \dots + 83731b - 586404, \\ 586404u^{21} - 7322994u^{20} + \dots + 83731a - 1066330, u^{22} - 13u^{21} + \dots - 5u + 1 \rangle$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 141 representations.

¹The 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>).

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

$$\text{I. } I_1^u = \langle -9.07 \times 10^{36} u^{42} - 2.50 \times 10^{38} u^{41} + \dots + 3.02 \times 10^{35} b + 8.07 \times 10^{37}, -4.03 \times 10^{37} u^{42} - 1.11 \times 10^{39} u^{41} + \dots + 6.03 \times 10^{35} a + 3.58 \times 10^{38}, u^{43} + 28u^{42} + \dots - 18u - 4 \rangle$$

(i) Arc colorings

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

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

$$a_3 = \begin{pmatrix} 66.9034u^{42} + 1843.21u^{41} + \dots - 1350.13u - 593.724 \\ 30.0911u^{42} + 829.054u^{41} + \dots - 610.538u - 267.614 \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} 50.3090u^{42} + 1386.73u^{41} + \dots - 1013.61u - 446.475 \\ 25.2456u^{42} + 696.395u^{41} + \dots - 529.788u - 234.919 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -98.4362u^{42} - 2711.47u^{41} + \dots + 2005.14u + 868.683 \\ -44.7454u^{42} - 1232.43u^{41} + \dots + 904.168u + 393.745 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 36.8123u^{42} + 1014.15u^{41} + \dots - 739.587u - 326.111 \\ 30.0911u^{42} + 829.054u^{41} + \dots - 610.538u - 267.614 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 73.3891u^{42} + 2021.12u^{41} + \dots - 1468.02u - 641.215 \\ 49.4695u^{42} + 1362.87u^{41} + \dots - 1004.50u - 437.492 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 68.7543u^{42} + 1894.58u^{41} + \dots - 1384.29u - 631.191 \\ 50.9823u^{42} + 1403.48u^{41} + \dots - 1017.06u - 453.999 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -29.3850u^{42} - 809.446u^{41} + \dots + 610.479u + 260.175 \\ -24.3059u^{42} - 669.592u^{41} + \dots + 492.496u + 214.763 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -96.7826u^{42} - 2666.41u^{41} + \dots + 1954.20u + 856.576 \\ -58.6162u^{42} - 1614.92u^{41} + \dots + 1190.66u + 525.323 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 65.9599u^{42} + 1818.07u^{41} + \dots - 1334.13u - 599.264 \\ 42.8407u^{42} + 1180.03u^{41} + \dots - 866.574u - 384.197 \end{pmatrix}$$

(ii) Obstruction class = -1

(iii) Cusp Shapes = $-119.862u^{42} - 3311.57u^{41} + \dots + 2522.42u + 1244.58$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4, c_5 c_{12}	$u^{43} - 9u^{42} + \dots - 172u + 16$
c_2, c_{10}	$u^{43} - 2u^{41} + \dots - 2u + 1$
c_3, c_9	$u^{43} - u^{42} + \dots - 16u + 2$
c_6	$u^{43} - 32u^{42} + \dots - 7864320u + 524288$
c_7	$u^{43} - 28u^{42} + \dots - 18u + 4$
c_8, c_{11}	$u^{43} + 3u^{42} + \dots + 20u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_5 c_{12}	$y^{43} + 51y^{42} + \dots - 3536y - 256$
c_2, c_{10}	$y^{43} - 4y^{42} + \dots + 8y - 1$
c_3, c_9	$y^{43} - 9y^{42} + \dots + 96y - 4$
c_6	$y^{43} + 18y^{42} + \dots - 137438953472y - 274877906944$
c_7	$y^{43} + 2y^{42} + \dots + 668y - 16$
c_8, c_{11}	$y^{43} + 23y^{42} + \dots + 94y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.619281 + 0.736910I$ $a = 0.20054 - 1.52504I$ $b = -0.99963 - 1.09221I$	$9.96243 + 4.04675I$	0
$u = -0.619281 - 0.736910I$ $a = 0.20054 + 1.52504I$ $b = -0.99963 + 1.09221I$	$9.96243 - 4.04675I$	0
$u = -0.593747 + 0.928986I$ $a = -0.031042 - 0.926856I$ $b = -0.879468 - 0.521481I$	$5.16180 - 0.19404I$	0
$u = -0.593747 - 0.928986I$ $a = -0.031042 + 0.926856I$ $b = -0.879468 + 0.521481I$	$5.16180 + 0.19404I$	0
$u = -1.228530 + 0.119928I$ $a = -0.547925 - 0.708005I$ $b = -0.758052 - 0.804094I$	$7.54354 + 0.37611I$	0
$u = -1.228530 - 0.119928I$ $a = -0.547925 + 0.708005I$ $b = -0.758052 + 0.804094I$	$7.54354 - 0.37611I$	0
$u = -0.975794 + 0.782038I$ $a = 0.076356 + 1.241860I$ $b = 1.04569 + 1.15208I$	$-0.28345 + 6.38071I$	0
$u = -0.975794 - 0.782038I$ $a = 0.076356 - 1.241860I$ $b = 1.04569 - 1.15208I$	$-0.28345 - 6.38071I$	0
$u = -0.507092 + 1.162540I$ $a = -0.081421 + 0.837209I$ $b = 0.932000 + 0.519197I$	$13.99450 - 1.63545I$	0
$u = -0.507092 - 1.162540I$ $a = -0.081421 - 0.837209I$ $b = 0.932000 - 0.519197I$	$13.99450 + 1.63545I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.069420 + 0.710868I$ $a = 0.324200 + 0.759138I$ $b = 0.886353 + 0.581374I$	$1.42612 + 2.66485I$	0
$u = -1.069420 - 0.710868I$ $a = 0.324200 - 0.759138I$ $b = 0.886353 - 0.581374I$	$1.42612 - 2.66485I$	0
$u = 0.687050$ $a = 0.599117$ $b = -0.411623$	-1.10828	-9.43920
$u = 0.336275 + 0.564768I$ $a = 0.699167 - 1.217530I$ $b = -0.922733 + 0.014557I$	$9.44828 - 2.46853I$	$1.53023 + 3.59562I$
$u = 0.336275 - 0.564768I$ $a = 0.699167 + 1.217530I$ $b = -0.922733 - 0.014557I$	$9.44828 + 2.46853I$	$1.53023 - 3.59562I$
$u = -0.528719 + 0.200325I$ $a = 0.00069 + 2.22752I$ $b = 0.446594 + 1.177590I$	$-0.62097 + 2.44438I$	$-15.0343 - 15.0278I$
$u = -0.528719 - 0.200325I$ $a = 0.00069 - 2.22752I$ $b = 0.446594 - 1.177590I$	$-0.62097 - 2.44438I$	$-15.0343 + 15.0278I$
$u = -1.09557 + 0.93019I$ $a = -0.029411 - 1.088810I$ $b = -1.04502 - 1.16551I$	$-3.62136 + 10.95930I$	0
$u = -1.09557 - 0.93019I$ $a = -0.029411 + 1.088810I$ $b = -1.04502 + 1.16551I$	$-3.62136 - 10.95930I$	0
$u = 0.223350 + 0.508490I$ $a = -0.358014 + 1.243700I$ $b = 0.712370 - 0.095733I$	$1.36482 - 1.89009I$	$0.58099 + 5.23171I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.223350 - 0.508490I$ $a = -0.358014 - 1.243700I$ $b = 0.712370 + 0.095733I$	$1.36482 + 1.89009I$	$0.58099 - 5.23171I$
$u = -1.11997 + 1.04983I$ $a = -0.025975 + 1.031520I$ $b = 1.05383 + 1.18254I$	$-1.2574 + 15.5298I$	0
$u = -1.11997 - 1.04983I$ $a = -0.025975 - 1.031520I$ $b = 1.05383 - 1.18254I$	$-1.2574 - 15.5298I$	0
$u = -0.443394 + 0.008368I$ $a = 1.66096 - 1.26229I$ $b = 0.725895 - 0.573592I$	$0.83810 - 1.87876I$	$0.39664 + 2.99774I$
$u = -0.443394 - 0.008368I$ $a = 1.66096 + 1.26229I$ $b = 0.725895 + 0.573592I$	$0.83810 + 1.87876I$	$0.39664 - 2.99774I$
$u = 0.351842 + 0.194871I$ $a = -2.94605 + 0.20344I$ $b = 1.076190 + 0.502519I$	$8.75469 + 1.88268I$	$-0.00595 - 3.28324I$
$u = 0.351842 - 0.194871I$ $a = -2.94605 - 0.20344I$ $b = 1.076190 - 0.502519I$	$8.75469 - 1.88268I$	$-0.00595 + 3.28324I$
$u = -1.12504 + 1.14203I$ $a = 0.064944 - 0.996760I$ $b = -1.06527 - 1.19556I$	$7.3041 + 18.4273I$	0
$u = -1.12504 - 1.14203I$ $a = 0.064944 + 0.996760I$ $b = -1.06527 + 1.19556I$	$7.3041 - 18.4273I$	0
$u = -1.28079 + 0.98206I$ $a = -0.218083 - 0.599042I$ $b = -0.867616 - 0.553074I$	$2.84744 + 7.10779I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.28079 - 0.98206I$ $a = -0.218083 + 0.599042I$ $b = -0.867616 + 0.553074I$	$2.84744 - 7.10779I$	0
$u = -0.87810 + 1.42078I$ $a = -0.356045 + 0.017937I$ $b = -0.287159 + 0.521613I$	$-2.50543 - 3.29694I$	0
$u = -0.87810 - 1.42078I$ $a = -0.356045 - 0.017937I$ $b = -0.287159 - 0.521613I$	$-2.50543 + 3.29694I$	0
$u = 0.183954 + 0.099778I$ $a = 5.23413 - 0.12638I$ $b = -0.975449 - 0.499001I$	$0.95612 + 1.98935I$	$0.00401 - 3.39354I$
$u = 0.183954 - 0.099778I$ $a = 5.23413 + 0.12638I$ $b = -0.975449 + 0.499001I$	$0.95612 - 1.98935I$	$0.00401 + 3.39354I$
$u = -1.34458 + 1.19695I$ $a = 0.135418 + 0.548413I$ $b = 0.838502 + 0.575295I$	$10.9150 + 10.1097I$	0
$u = -1.34458 - 1.19695I$ $a = 0.135418 - 0.548413I$ $b = 0.838502 - 0.575295I$	$10.9150 - 10.1097I$	0
$u = -1.31475 + 1.27295I$ $a = 0.349842 - 0.161305I$ $b = 0.254620 - 0.657408I$	$-1.00239 - 7.03044I$	0
$u = -1.31475 - 1.27295I$ $a = 0.349842 + 0.161305I$ $b = 0.254620 + 0.657408I$	$-1.00239 + 7.03044I$	0
$u = 0.25305 + 1.89084I$ $a = 0.123915 + 0.158134I$ $b = 0.267649 - 0.274318I$	$2.16526 - 1.06347I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.25305 - 1.89084I$	$2.16526 + 1.06347I$	0
$a = 0.123915 - 0.158134I$		
$b = 0.267649 + 0.274318I$		
$u = -1.56723 + 1.17558I$	$6.94224 - 9.40178I$	0
$a = -0.325755 + 0.235679I$		
$b = -0.233475 + 0.752315I$		
$u = -1.56723 - 1.17558I$	$6.94224 + 9.40178I$	0
$a = -0.325755 - 0.235679I$		
$b = -0.233475 - 0.752315I$		

$$\text{II. } I_2^u = \langle -6967a^3u^{18} - 2.96 \times 10^4 a^2u^{18} + \dots - 2.09 \times 10^4 a + 1.34 \times 10^4, u^{18}a^3 + 9u^{18}a^2 + \dots + 15a^2 + 25, u^{19} - 9u^{18} + \dots - 5u^2 + 1 \rangle$$

(i) Arc colorings

$$\begin{aligned} a_7 &= \begin{pmatrix} 1 \\ 0 \end{pmatrix} \\ a_{10} &= \begin{pmatrix} 0 \\ u \end{pmatrix} \\ a_3 &= \begin{pmatrix} a \\ 0.333078a^3u^{18} + 1.41540a^2u^{18} + \dots + a - 0.640388 \end{pmatrix} \\ a_8 &= \begin{pmatrix} 1 \\ u^2 \end{pmatrix} \\ a_4 &= \begin{pmatrix} -0.333078a^3u^{18} - 1.41540a^2u^{18} + \dots + 1.70770a^2 + 0.640388 \\ 1.00076a^3u^{18} + 1.75379a^2u^{18} + \dots + a - 0.0788354 \end{pmatrix} \\ a_{11} &= \begin{pmatrix} a^2u \\ -0.584596a^3u^{18} - 0.333078a^2u^{18} + \dots + a + 0.999952 \end{pmatrix} \\ a_2 &= \begin{pmatrix} -0.333078a^3u^{18} - 1.41540a^2u^{18} + \dots + 1.70770a^2 + 0.640388 \\ 0.333078a^3u^{18} + 1.41540a^2u^{18} + \dots + a - 0.640388 \end{pmatrix} \\ a_1 &= \begin{pmatrix} -0.668451a^3u^{18} - 1.09217a^2u^{18} + \dots - a - 0.482717 \\ 0.326959a^3u^{18} + 1.38509a^2u^{18} + \dots + 3a - 0.00970502 \end{pmatrix} \\ a_6 &= \begin{pmatrix} 0.292298a^3u^{18} - 0.333461a^2u^{18} + \dots - 2a + 0.500024 \\ -0.584596a^3u^{18} - 0.333078a^2u^{18} + \dots + a - 0.0000478080 \end{pmatrix} \\ a_9 &= \begin{pmatrix} 0.661615a^3u^{18} + 0.667687a^2u^{18} + \dots + 2a - 0.000191232 \\ -0.0770187a^3u^{18} - 0.334608a^2u^{18} + \dots - 3a - 0.999761 \end{pmatrix} \\ a_{12} &= \begin{pmatrix} 0.784721a^3u^{18} + 0.668069a^2u^{18} + \dots + a + 0.499737 \\ -0.246211a^3u^{18} - 1.00076a^2u^{18} + \dots - 4a + 0.000143424 \end{pmatrix} \\ a_5 &= \begin{pmatrix} 0.0145336a^3u^{18} - 0.678013a^2u^{18} + \dots - a + 0.502127 \\ 0.385093a^3u^{18} + 0.673041a^2u^{18} + \dots + a - 0.00119520 \end{pmatrix} \end{aligned}$$

(ii) Obstruction class = -1

$$\text{(iii) Cusp Shapes} = \frac{48912}{20917}u^{18}a^3 + \frac{27868}{20917}u^{18}a^2 + \dots - 4a - \frac{711174}{20917}$$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4, c_5 c_{12}	$(u^{19} + 3u^{18} + \dots + 2u + 1)^4$
c_2, c_{10}	$u^{76} + 3u^{75} + \dots + 2u + 1$
c_3, c_9	$u^{76} + u^{75} + \dots - 44450u + 29629$
c_6	$(u^2 + u + 1)^{38}$
c_7	$(u^{19} + 9u^{18} + \dots + 5u^2 - 1)^4$
c_8, c_{11}	$u^{76} + u^{75} + \dots - 12u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_5 c_{12}	$(y^{19} + 23y^{18} + \dots - 10y - 1)^4$
c_2, c_{10}	$y^{76} + 27y^{75} + \dots + 120y + 1$
c_3, c_9	$y^{76} - 17y^{75} + \dots - 10612715258y + 877877641$
c_6	$(y^2 + y + 1)^{38}$
c_7	$(y^{19} - y^{18} + \dots + 10y - 1)^4$
c_8, c_{11}	$y^{76} - 9y^{75} + \dots - 56y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.224406 + 0.979990I$ $a = -0.079941 - 1.063040I$ $b = 0.75493 - 1.56939I$	$10.77910 - 7.75317I$	$2.36068 + 8.39109I$
$u = 0.224406 + 0.979990I$ $a = -0.531501 - 1.301450I$ $b = 0.205893 + 0.046196I$	$10.77910 - 3.69340I$	$2.36068 + 1.46289I$
$u = 0.224406 + 0.979990I$ $a = 1.35403 + 1.08041I$ $b = -1.023830 + 0.316893I$	$10.77910 - 7.75317I$	$2.36068 + 8.39109I$
$u = 0.224406 + 0.979990I$ $a = -0.090504 + 0.189372I$ $b = -1.156140 + 0.812919I$	$10.77910 - 3.69340I$	$2.36068 + 1.46289I$
$u = 0.224406 - 0.979990I$ $a = -0.079941 + 1.063040I$ $b = 0.75493 + 1.56939I$	$10.77910 + 7.75317I$	$2.36068 - 8.39109I$
$u = 0.224406 - 0.979990I$ $a = -0.531501 + 1.301450I$ $b = 0.205893 - 0.046196I$	$10.77910 + 3.69340I$	$2.36068 - 1.46289I$
$u = 0.224406 - 0.979990I$ $a = 1.35403 - 1.08041I$ $b = -1.023830 - 0.316893I$	$10.77910 + 7.75317I$	$2.36068 - 8.39109I$
$u = 0.224406 - 0.979990I$ $a = -0.090504 - 0.189372I$ $b = -1.156140 - 0.812919I$	$10.77910 + 3.69340I$	$2.36068 - 1.46289I$
$u = 0.411578 + 0.796293I$ $a = -0.017212 + 1.037780I$ $b = -0.87911 + 1.55841I$	$1.87060 - 6.27257I$	$0.97656 + 11.51556I$
$u = 0.411578 + 0.796293I$ $a = -0.100441 + 1.281310I$ $b = -0.0472227 - 0.0855841I$	$1.87060 - 2.21281I$	$0.97656 + 4.58736I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.411578 + 0.796293I$		
$a = 0.1090080 - 0.0029603I$	$1.87060 - 2.21281I$	$0.97656 + 4.58736I$
$b = 1.061640 - 0.447379I$		
$u = 0.411578 + 0.796293I$		
$a = -1.09415 - 1.66953I$	$1.87060 - 6.27257I$	$0.97656 + 11.51556I$
$b = 0.833461 - 0.413422I$		
$u = 0.411578 - 0.796293I$		
$a = -0.017212 - 1.037780I$	$1.87060 + 6.27257I$	$0.97656 - 11.51556I$
$b = -0.87911 - 1.55841I$		
$u = 0.411578 - 0.796293I$		
$a = -0.100441 - 1.281310I$	$1.87060 + 2.21281I$	$0.97656 - 4.58736I$
$b = -0.0472227 + 0.0855841I$		
$u = 0.411578 - 0.796293I$		
$a = 0.1090080 + 0.0029603I$	$1.87060 + 2.21281I$	$0.97656 - 4.58736I$
$b = 1.061640 + 0.447379I$		
$u = 0.411578 - 0.796293I$		
$a = -1.09415 + 1.66953I$	$1.87060 + 6.27257I$	$0.97656 - 11.51556I$
$b = 0.833461 + 0.413422I$		
$u = 0.738136 + 0.285129I$		
$a = 0.220113 - 0.805434I$	$-1.93123 - 3.81353I$	$-12.8478 + 10.3305I$
$b = 1.18836 - 1.32414I$		
$u = 0.738136 + 0.285129I$		
$a = -0.298557 - 0.491122I$	$-1.93123 + 0.24623I$	$-12.84779 + 3.40225I$
$b = -1.164680 - 0.741015I$		
$u = 0.738136 + 0.285129I$		
$a = 1.71044 + 0.34319I$	$-1.93123 + 0.24623I$	$-12.84779 + 3.40225I$
$b = 0.080342 + 0.447642I$		
$u = 0.738136 + 0.285129I$		
$a = -0.79794 + 2.10213I$	$-1.93123 - 3.81353I$	$-12.8478 + 10.3305I$
$b = -0.392126 + 0.531760I$		

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.738136 - 0.285129I$ $a = 0.220113 + 0.805434I$ $b = 1.18836 + 1.32414I$	$-1.93123 + 3.81353I$	$-12.8478 - 10.3305I$
$u = 0.738136 - 0.285129I$ $a = -0.298557 + 0.491122I$ $b = -1.164680 + 0.741015I$	$-1.93123 - 0.24623I$	$-12.84779 - 3.40225I$
$u = 0.738136 - 0.285129I$ $a = 1.71044 - 0.34319I$ $b = 0.080342 - 0.447642I$	$-1.93123 - 0.24623I$	$-12.84779 - 3.40225I$
$u = 0.738136 - 0.285129I$ $a = -0.79794 - 2.10213I$ $b = -0.392126 - 0.531760I$	$-1.93123 + 3.81353I$	$-12.8478 - 10.3305I$
$u = -0.578057 + 0.369314I$ $a = -0.093463 + 0.827692I$ $b = -1.61147 + 1.31105I$	$8.03276 + 9.35799I$	$-5.9941 - 13.3695I$
$u = -0.578057 + 0.369314I$ $a = -0.59366 - 1.69489I$ $b = 0.069383 - 1.329150I$	$8.03276 + 5.29822I$	$-5.99414 - 6.44128I$
$u = -0.578057 + 0.369314I$ $a = 1.12844 - 1.57839I$ $b = -0.969117 - 0.760498I$	$8.03276 + 5.29822I$	$-5.99414 - 6.44128I$
$u = -0.578057 + 0.369314I$ $a = -3.00868 + 0.34582I$ $b = 0.251651 + 0.512970I$	$8.03276 + 9.35799I$	$-5.9941 - 13.3695I$
$u = -0.578057 - 0.369314I$ $a = -0.093463 - 0.827692I$ $b = -1.61147 - 1.31105I$	$8.03276 - 9.35799I$	$-5.9941 + 13.3695I$
$u = -0.578057 - 0.369314I$ $a = -0.59366 + 1.69489I$ $b = 0.069383 + 1.329150I$	$8.03276 - 5.29822I$	$-5.99414 + 6.44128I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.578057 - 0.369314I$ $a = 1.12844 + 1.57839I$ $b = -0.969117 + 0.760498I$	$8.03276 - 5.29822I$	$-5.99414 + 6.44128I$
$u = -0.578057 - 0.369314I$ $a = -3.00868 - 0.34582I$ $b = 0.251651 - 0.512970I$	$8.03276 - 9.35799I$	$-5.9941 + 13.3695I$
$u = 1.07839 + 0.92133I$ $a = 0.020594 + 1.098290I$ $b = -0.650210 + 1.015400I$	$-2.60244 - 4.96452I$	$-11.91453 + 1.46747I$
$u = 1.07839 + 0.92133I$ $a = -0.116481 - 0.842068I$ $b = 0.98968 - 1.20336I$	$-2.60244 - 4.96452I$	$-11.91453 + 1.46747I$
$u = 1.07839 + 0.92133I$ $a = 0.470035 + 0.385689I$ $b = -0.180979 + 0.648976I$	$-2.60244 - 0.90475I$	$-11.91453 - 5.46074I$
$u = 1.07839 + 0.92133I$ $a = -0.200198 - 0.430759I$ $b = -0.151536 - 0.848982I$	$-2.60244 - 0.90475I$	$-11.91453 - 5.46074I$
$u = 1.07839 - 0.92133I$ $a = 0.020594 - 1.098290I$ $b = -0.650210 - 1.015400I$	$-2.60244 + 4.96452I$	$-11.91453 - 1.46747I$
$u = 1.07839 - 0.92133I$ $a = -0.116481 + 0.842068I$ $b = 0.98968 + 1.20336I$	$-2.60244 + 4.96452I$	$-11.91453 - 1.46747I$
$u = 1.07839 - 0.92133I$ $a = 0.470035 - 0.385689I$ $b = -0.180979 - 0.648976I$	$-2.60244 + 0.90475I$	$-11.91453 + 5.46074I$
$u = 1.07839 - 0.92133I$ $a = -0.200198 + 0.430759I$ $b = -0.151536 + 0.848982I$	$-2.60244 + 0.90475I$	$-11.91453 + 5.46074I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.515417 + 0.216459I$ $a = 0.136886 - 1.007060I$ $b = 1.56792 - 1.42933I$	$-0.60400 + 6.51999I$	$-13.2217 - 15.7344I$
$u = -0.515417 + 0.216459I$ $a = -0.22464 + 1.91414I$ $b = 0.704217 + 1.183980I$	$-0.60400 + 2.46023I$	$-13.2217 - 8.8062I$
$u = -0.515417 + 0.216459I$ $a = 0.34137 + 2.44050I$ $b = 0.298549 + 1.035200I$	$-0.60400 + 2.46023I$	$-13.2217 - 8.8062I$
$u = -0.515417 + 0.216459I$ $a = 3.57597 - 1.27135I$ $b = -0.147434 - 0.548687I$	$-0.60400 + 6.51999I$	$-13.2217 - 15.7344I$
$u = -0.515417 - 0.216459I$ $a = 0.136886 + 1.007060I$ $b = 1.56792 + 1.42933I$	$-0.60400 - 6.51999I$	$-13.2217 + 15.7344I$
$u = -0.515417 - 0.216459I$ $a = -0.22464 - 1.91414I$ $b = 0.704217 - 1.183980I$	$-0.60400 - 2.46023I$	$-13.2217 + 8.8062I$
$u = -0.515417 - 0.216459I$ $a = 0.34137 - 2.44050I$ $b = 0.298549 - 1.035200I$	$-0.60400 - 2.46023I$	$-13.2217 + 8.8062I$
$u = -0.515417 - 0.216459I$ $a = 3.57597 + 1.27135I$ $b = -0.147434 + 0.548687I$	$-0.60400 - 6.51999I$	$-13.2217 + 15.7344I$
$u = 1.28782 + 0.69169I$ $a = 0.217129 - 1.114740I$ $b = 0.426150 - 0.961228I$	$3.89129 - 4.57393I$	$-8.47148 + 5.29372I$
$u = 1.28782 + 0.69169I$ $a = -0.621576 - 0.491356I$ $b = 0.132391 - 0.683945I$	$3.89129 - 0.51417I$	$-8.47148 - 1.63449I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.28782 + 0.69169I$ $a = 0.054314 + 0.717229I$ $b = -1.05067 + 1.28540I$	$3.89129 - 4.57393I$	$-8.47148 + 5.29372I$
$u = 1.28782 + 0.69169I$ $a = 0.141597 + 0.455037I$ $b = 0.460612 + 1.062710I$	$3.89129 - 0.51417I$	$-8.47148 - 1.63449I$
$u = 1.28782 - 0.69169I$ $a = 0.217129 + 1.114740I$ $b = 0.426150 + 0.961228I$	$3.89129 + 4.57393I$	$-8.47148 - 5.29372I$
$u = 1.28782 - 0.69169I$ $a = -0.621576 + 0.491356I$ $b = 0.132391 + 0.683945I$	$3.89129 + 0.51417I$	$-8.47148 + 1.63449I$
$u = 1.28782 - 0.69169I$ $a = 0.054314 - 0.717229I$ $b = -1.05067 - 1.28540I$	$3.89129 + 4.57393I$	$-8.47148 - 5.29372I$
$u = 1.28782 - 0.69169I$ $a = 0.141597 - 0.455037I$ $b = 0.460612 - 1.062710I$	$3.89129 + 0.51417I$	$-8.47148 + 1.63449I$
$u = -0.493766$ $a = -0.051780 + 1.334910I$ $b = -1.25352 + 1.55631I$	$-3.21610 + 2.02988I$	$-23.6348 - 3.4641I$
$u = -0.493766$ $a = -0.051780 - 1.334910I$ $b = -1.25352 - 1.55631I$	$-3.21610 - 2.02988I$	$-23.6348 + 3.4641I$
$u = -0.493766$ $a = -2.53869 + 3.15193I$ $b = -0.025567 + 0.659131I$	$-3.21610 + 2.02988I$	$-23.6348 - 3.4641I$
$u = -0.493766$ $a = -2.53869 - 3.15193I$ $b = -0.025567 - 0.659131I$	$-3.21610 - 2.02988I$	$-23.6348 + 3.4641I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.05045 + 1.11478I$ $a = -0.022759 - 0.967513I$ $b = 0.674813 - 1.211630I$	$-2.00492 - 6.85219I$	$-7.9642 + 14.7411I$
$u = 1.05045 + 1.11478I$ $a = 0.273568 + 0.863111I$ $b = -1.05466 + 1.04170I$	$-2.00492 - 6.85219I$	$-7.9642 + 14.7411I$
$u = 1.05045 + 1.11478I$ $a = -0.412467 - 0.506564I$ $b = 0.174195 - 0.578011I$	$-2.00492 - 2.79242I$	$-7.96421 + 7.81289I$
$u = 1.05045 + 1.11478I$ $a = 0.196648 + 0.341558I$ $b = -0.131433 + 0.991934I$	$-2.00492 - 2.79242I$	$-7.96421 + 7.81289I$
$u = 1.05045 - 1.11478I$ $a = -0.022759 + 0.967513I$ $b = 0.674813 + 1.211630I$	$-2.00492 + 6.85219I$	$-7.9642 - 14.7411I$
$u = 1.05045 - 1.11478I$ $a = 0.273568 - 0.863111I$ $b = -1.05466 - 1.04170I$	$-2.00492 + 6.85219I$	$-7.9642 - 14.7411I$
$u = 1.05045 - 1.11478I$ $a = -0.412467 + 0.506564I$ $b = 0.174195 + 0.578011I$	$-2.00492 + 2.79242I$	$-7.96421 - 7.81289I$
$u = 1.05045 - 1.11478I$ $a = 0.196648 - 0.341558I$ $b = -0.131433 - 0.991934I$	$-2.00492 + 2.79242I$	$-7.96421 - 7.81289I$
$u = 1.04957 + 1.25847I$ $a = 0.013720 + 0.933343I$ $b = -0.63265 + 1.28758I$	$5.56101 - 7.78064I$	$-5.10596 + 10.77370I$
$u = 1.04957 + 1.25847I$ $a = -0.356143 - 0.799738I$ $b = 1.16018 - 0.99688I$	$5.56101 - 7.78064I$	$-5.10596 + 10.77370I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.04957 + 1.25847I$	$5.56101 - 3.72087I$	$-5.10596 + 3.84550I$
$a = 0.442870 + 0.549940I$		
$b = -0.239273 + 0.532330I$		
$u = 1.04957 + 1.25847I$	$5.56101 - 3.72087I$	$-5.10596 + 3.84550I$
$a = -0.155952 - 0.320196I$		
$b = 0.227258 - 1.134540I$		
$u = 1.04957 - 1.25847I$	$5.56101 + 7.78064I$	$-5.10596 - 10.77370I$
$a = 0.013720 - 0.933343I$		
$b = -0.63265 - 1.28758I$		
$u = 1.04957 - 1.25847I$	$5.56101 + 7.78064I$	$-5.10596 - 10.77370I$
$a = -0.356143 + 0.799738I$		
$b = 1.16018 + 0.99688I$		
$u = 1.04957 - 1.25847I$	$5.56101 + 3.72087I$	$-5.10596 - 3.84550I$
$a = 0.442870 - 0.549940I$		
$b = -0.239273 - 0.532330I$		
$u = 1.04957 - 1.25847I$	$5.56101 + 3.72087I$	$-5.10596 - 3.84550I$
$a = -0.155952 + 0.320196I$		
$b = 0.227258 + 1.134540I$		

III.

$$I_3^u = \langle 3.00 \times 10^5 u^{21} - 3.74 \times 10^6 u^{20} + \dots + 8.37 \times 10^4 b - 5.86 \times 10^5, 5.86 \times 10^5 u^{21} - 7.32 \times 10^6 u^{20} + \dots + 8.37 \times 10^4 a - 1.07 \times 10^6, u^{22} - 13u^{21} + \dots - 5u + 1 \rangle$$

(i) Arc colorings

$$\begin{aligned} a_7 &= \begin{pmatrix} 1 \\ 0 \end{pmatrix} \\ a_{10} &= \begin{pmatrix} 0 \\ u \end{pmatrix} \\ a_3 &= \begin{pmatrix} -7.00343u^{21} + 87.4586u^{20} + \dots - 44.3530u + 12.7352 \\ -3.58598u^{21} + 44.6377u^{20} + \dots - 22.2820u + 7.00343 \end{pmatrix} \\ a_8 &= \begin{pmatrix} 1 \\ u^2 \end{pmatrix} \\ a_4 &= \begin{pmatrix} -5.39755u^{21} + 67.0370u^{20} + \dots - 32.9975u + 9.31774 \\ -3.51768u^{21} + 44.3290u^{20} + \dots - 21.6136u + 6.54859 \end{pmatrix} \\ a_{11} &= \begin{pmatrix} -2.61019u^{21} + 33.0158u^{20} + \dots - 16.3744u + 1.22024 \\ -0.916650u^{21} + 11.9220u^{20} + \dots - 10.8307u + 2.61019 \end{pmatrix} \\ a_2 &= \begin{pmatrix} -3.41744u^{21} + 42.8209u^{20} + \dots - 22.0710u + 5.73176 \\ -3.58598u^{21} + 44.6377u^{20} + \dots - 22.2820u + 7.00343 \end{pmatrix} \\ a_1 &= \begin{pmatrix} 1.55273u^{21} - 19.9663u^{20} + \dots + 12.4988u - 5.43283 \\ -1.89051u^{21} + 22.0306u^{20} + \dots - 5.14530u + 0.758883 \end{pmatrix} \\ a_6 &= \begin{pmatrix} 9.89821u^{21} - 122.389u^{20} + \dots + 57.7470u - 15.1185 \\ 6.29352u^{21} - 77.1234u^{20} + \dots + 31.3995u - 8.98156 \end{pmatrix} \\ a_9 &= \begin{pmatrix} -0.771387u^{21} + 8.42141u^{20} + \dots + 5.31399u - 3.08349 \\ -0.922155u^{21} + 12.6725u^{20} + \dots - 8.85766u + 1.69354 \end{pmatrix} \\ a_{12} &= \begin{pmatrix} -4.10925u^{21} + 51.3382u^{20} + \dots - 23.0531u + 3.38501 \\ -2.70867u^{21} + 33.4842u^{20} + \dots - 17.1752u + 4.29466 \end{pmatrix} \\ a_5 &= \begin{pmatrix} 0.817009u^{21} - 8.99200u^{20} + \dots - 1.20787u + 2.56636 \\ 2.56637u^{21} - 31.4113u^{20} + \dots + 10.3704u - 2.01674 \end{pmatrix} \end{aligned}$$

(ii) Obstruction class = 1

$$(iii) \text{ Cusp Shapes} = -\frac{3961003}{83731}u^{21} + \frac{49875561}{83731}u^{20} + \dots - \frac{26977727}{83731}u + \frac{8950063}{83731}$$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{12}	$u^{22} - 4u^{21} + \dots - 8u + 1$
c_2, c_{10}	$u^{22} + 6u^{20} + \dots - u + 1$
c_3, c_9	$u^{22} - u^{21} + \dots - 2u + 2$
c_4, c_5	$u^{22} + 4u^{21} + \dots + 8u + 1$
c_6	$u^{22} - u^{21} + \dots - 8u + 2$
c_7	$u^{22} - 13u^{21} + \dots - 5u + 1$
c_8, c_{11}	$u^{22} + 5u^{21} + \dots + 3u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_5 c_{12}	$y^{22} + 28y^{21} + \dots + 16y + 1$
c_2, c_{10}	$y^{22} + 12y^{21} + \dots + 21y + 1$
c_3, c_9	$y^{22} - 5y^{21} + \dots - 24y + 4$
c_6	$y^{22} + 17y^{21} + \dots + 20y + 4$
c_7	$y^{22} + 3y^{21} + \dots - 9y + 1$
c_8, c_{11}	$y^{22} - 5y^{21} + \dots + 3y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.438202 + 0.672246I$ $a = 0.61789 + 1.58697I$ $b = -0.796076 + 1.110790I$	$9.41063 - 5.22030I$	$0.06768 + 7.65102I$
$u = 0.438202 - 0.672246I$ $a = 0.61789 - 1.58697I$ $b = -0.796076 - 1.110790I$	$9.41063 + 5.22030I$	$0.06768 - 7.65102I$
$u = 0.928863 + 0.813564I$ $a = -0.047964 - 1.144700I$ $b = 0.88673 - 1.10229I$	$-0.78236 - 5.04646I$	$-5.15506 + 3.89150I$
$u = 0.928863 - 0.813564I$ $a = -0.047964 + 1.144700I$ $b = 0.88673 + 1.10229I$	$-0.78236 + 5.04646I$	$-5.15506 - 3.89150I$
$u = 1.024400 + 0.790762I$ $a = -0.325907 - 0.530025I$ $b = 0.085266 - 0.800669I$	$-2.42816 - 1.79273I$	$-10.82224 + 3.56301I$
$u = 1.024400 - 0.790762I$ $a = -0.325907 + 0.530025I$ $b = 0.085266 + 0.800669I$	$-2.42816 + 1.79273I$	$-10.82224 - 3.56301I$
$u = -0.608120 + 0.044532I$ $a = 0.92099 + 1.09142I$ $b = -0.608676 - 0.622702I$	$8.44045 - 8.43585I$	$-1.95973 + 4.08065I$
$u = -0.608120 - 0.044532I$ $a = 0.92099 - 1.09142I$ $b = -0.608676 + 0.622702I$	$8.44045 + 8.43585I$	$-1.95973 - 4.08065I$
$u = 0.192459 + 0.537307I$ $a = -1.411040 - 0.031910I$ $b = -0.254422 - 0.764305I$	$-2.42611 - 2.12413I$	$-9.83324 + 4.10839I$
$u = 0.192459 - 0.537307I$ $a = -1.411040 + 0.031910I$ $b = -0.254422 + 0.764305I$	$-2.42611 + 2.12413I$	$-9.83324 - 4.10839I$

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.507414 + 0.170111I$ $a = 0.10803 - 2.51060I$ $b = 0.481898 - 1.255540I$	$-0.47711 - 2.32001I$	$17.0909 - 12.5042I$
$u = 0.507414 - 0.170111I$ $a = 0.10803 + 2.51060I$ $b = 0.481898 + 1.255540I$	$-0.47711 + 2.32001I$	$17.0909 + 12.5042I$
$u = 1.05623 + 1.06802I$ $a = 0.138131 + 0.911593I$ $b = -0.827700 + 1.110380I$	$-1.89257 - 6.00486I$	$-6.00000 + 3.86001I$
$u = 1.05623 - 1.06802I$ $a = 0.138131 - 0.911593I$ $b = -0.827700 - 1.110380I$	$-1.89257 + 6.00486I$	$-6.00000 - 3.86001I$
$u = -0.401084 + 0.262695I$ $a = -0.11004 - 1.70706I$ $b = 0.492569 + 0.655767I$	$-0.03830 - 5.91440I$	$-3.99077 + 5.88417I$
$u = -0.401084 - 0.262695I$ $a = -0.11004 + 1.70706I$ $b = 0.492569 - 0.655767I$	$-0.03830 + 5.91440I$	$-3.99077 - 5.88417I$
$u = 1.44802 + 0.65854I$ $a = 0.119183 + 0.619386I$ $b = -0.235311 + 0.975369I$	$4.14174 - 2.33203I$	0
$u = 1.44802 - 0.65854I$ $a = 0.119183 - 0.619386I$ $b = -0.235311 - 0.975369I$	$4.14174 + 2.33203I$	0
$u = 1.10164 + 1.20126I$ $a = -0.179933 - 0.841039I$ $b = 0.812088 - 1.142670I$	$5.53268 - 6.52999I$	0
$u = 1.10164 - 1.20126I$ $a = -0.179933 + 0.841039I$ $b = 0.812088 + 1.142670I$	$5.53268 + 6.52999I$	0

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.81198 + 2.09035I$	$1.90327 - 0.91976I$	0
$a = 0.170657 + 0.083688I$		
$b = -0.036369 + 0.424686I$		
$u = 0.81198 - 2.09035I$	$1.90327 + 0.91976I$	0
$a = 0.170657 - 0.083688I$		
$b = -0.036369 - 0.424686I$		

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_{12}	$((u^{19} + 3u^{18} + \dots + 2u + 1)^4)(u^{22} - 4u^{21} + \dots - 8u + 1)$ $\cdot (u^{43} - 9u^{42} + \dots - 172u + 16)$
c_2, c_{10}	$(u^{22} + 6u^{20} + \dots - u + 1)(u^{43} - 2u^{41} + \dots - 2u + 1)$ $\cdot (u^{76} + 3u^{75} + \dots + 2u + 1)$
c_3, c_9	$(u^{22} - u^{21} + \dots - 2u + 2)(u^{43} - u^{42} + \dots - 16u + 2)$ $\cdot (u^{76} + u^{75} + \dots - 44450u + 29629)$
c_4, c_5	$((u^{19} + 3u^{18} + \dots + 2u + 1)^4)(u^{22} + 4u^{21} + \dots + 8u + 1)$ $\cdot (u^{43} - 9u^{42} + \dots - 172u + 16)$
c_6	$((u^2 + u + 1)^{38})(u^{22} - u^{21} + \dots - 8u + 2)$ $\cdot (u^{43} - 32u^{42} + \dots - 7864320u + 524288)$
c_7	$((u^{19} + 9u^{18} + \dots + 5u^2 - 1)^4)(u^{22} - 13u^{21} + \dots - 5u + 1)$ $\cdot (u^{43} - 28u^{42} + \dots - 18u + 4)$
c_8, c_{11}	$(u^{22} + 5u^{21} + \dots + 3u + 1)(u^{43} + 3u^{42} + \dots + 20u + 1)$ $\cdot (u^{76} + u^{75} + \dots - 12u + 1)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_5 c_{12}	$((y^{19} + 23y^{18} + \dots - 10y - 1)^4)(y^{22} + 28y^{21} + \dots + 16y + 1)$ $\cdot (y^{43} + 51y^{42} + \dots - 3536y - 256)$
c_2, c_{10}	$(y^{22} + 12y^{21} + \dots + 21y + 1)(y^{43} - 4y^{42} + \dots + 8y - 1)$ $\cdot (y^{76} + 27y^{75} + \dots + 120y + 1)$
c_3, c_9	$(y^{22} - 5y^{21} + \dots - 24y + 4)(y^{43} - 9y^{42} + \dots + 96y - 4)$ $\cdot (y^{76} - 17y^{75} + \dots - 10612715258y + 877877641)$
c_6	$((y^2 + y + 1)^{38})(y^{22} + 17y^{21} + \dots + 20y + 4)$ $\cdot (y^{43} + 18y^{42} + \dots - 137438953472y - 274877906944)$
c_7	$((y^{19} - y^{18} + \dots + 10y - 1)^4)(y^{22} + 3y^{21} + \dots - 9y + 1)$ $\cdot (y^{43} + 2y^{42} + \dots + 668y - 16)$
c_8, c_{11}	$(y^{22} - 5y^{21} + \dots + 3y + 1)(y^{43} + 23y^{42} + \dots + 94y - 1)$ $\cdot (y^{76} - 9y^{75} + \dots - 56y + 1)$