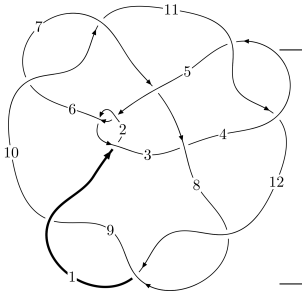
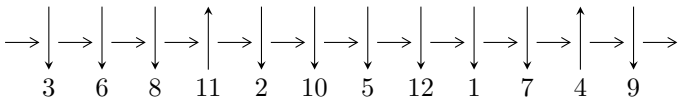
$12a_{0321}$ $(K12a_{0321})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u &= \langle -1.99007 \times 10^{472} u^{108} + 6.02795 \times 10^{472} u^{107} + \cdots + 7.29945 \times 10^{473} b + 1.94243 \times 10^{476}, \\
&\quad 1.10968 \times 10^{476} u^{108} - 2.92557 \times 10^{476} u^{107} + \cdots + 7.29288 \times 10^{477} a - 1.87345 \times 10^{480}, \\
&\quad u^{109} - 2u^{108} + \cdots - 109940u - 9991 \rangle \\
I_2^u &= \langle -25716144203 u^{24} - 112935246648 u^{23} + \cdots + 50148875831 b + 138327033199, \\
&\quad 80137258579 u^{24} + 357502315466 u^{23} + \cdots + 50148875831 a - 608633590610, \\
&\quad u^{25} + 4u^{24} + \cdots - 8u + 1 \rangle \\
I_3^u &= \langle b + 1,\ a + 2,\ u - 1 \rangle
\end{aligned}$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 135 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. $\boldsymbol{I_1^u = \langle -1.99 \times 10^{472} u^{108} + 6.03 \times 10^{472} u^{107} + \cdots + 7.30 \times 10^{473} b + 1.94 \times 10^{476},\ 1.11 \times 10^{476} u^{108} - 2.93 \times 10^{476} u^{107} + \cdots + 7.29 \times 10^{477} a - 1.87 \times 10^{480},\ u^{109} - 2u^{108} + \cdots - 109940u - 9991 \rangle}$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -0.0152159u^{108} + 0.0401154u^{107} + \cdots + 2397.87u + 256.887 \\ 0.0272632u^{108} - 0.0825809u^{107} + \cdots - 2662.37u - 266.107 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} 0.0120473u^{108} - 0.0424655u^{107} + \cdots - 264.498u - 9.21983 \\ 0.0272632u^{108} - 0.0825809u^{107} + \cdots - 2662.37u - 266.107 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -0.0309536u^{108} + 0.0971956u^{107} + \cdots + 2759.58u + 267.809 \\ 0.0291866u^{108} - 0.0948676u^{107} + \cdots - 1781.19u - 152.041 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -0.0360067u^{108} + 0.116129u^{107} + \cdots + 2679.86u + 247.676 \\ -0.0501905u^{108} + 0.151970u^{107} + \cdots + 5267.74u + 535.227 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.0121877u^{108} + 0.0321171u^{107} + \cdots + 1791.13u + 187.009 \\ -0.0198379u^{108} + 0.0648994u^{107} + \cdots + 1260.31u + 108.071 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 0.00315228u^{108} - 0.00784644u^{107} + \cdots - 853.506u - 104.441 \\ -0.0345567u^{108} + 0.100254u^{107} + \cdots + 4172.79u + 431.183 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.0243292u^{108} - 0.0776944u^{107} + \cdots - 1908.35u - 190.269 \\ -0.0436852u^{108} + 0.132054u^{107} + \cdots + 4815.21u + 501.459 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -0.0202956u^{108} + 0.0688861u^{107} + \cdots + 1125.32u + 103.804 \\ -0.0285451u^{108} + 0.0917335u^{107} + \cdots + 2214.88u + 212.091 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 0.0628061u^{108} - 0.159694u^{107} + \cdots - 11604.2u - 1313.19$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{109} + 53u^{108} + \cdots + 114u + 1$
c_2, c_5	$u^{109} + 5u^{108} + \cdots + 18u + 1$
c_3	$u^{109} + 3u^{108} + \cdots + 9062344u + 742717$
c_4, c_{11}	$u^{109} - 4u^{108} + \cdots + 10u - 1$
c_6, c_{10}	$u^{109} - 2u^{108} + \cdots - 109940u - 9991$
c_7	$u^{109} - 7u^{108} + \cdots - 1323756u + 105511$
c_8, c_9, c_{12}	$u^{109} + 3u^{108} + \cdots + 95u - 7$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{109} + 19y^{108} + \cdots + 7262y - 1$
c_2, c_5	$y^{109} - 53y^{108} + \cdots + 114y - 1$
c_3	$y^{109} - 47y^{108} + \cdots + 31084038325668y - 551628542089$
c_4, c_{11}	$y^{109} + 100y^{108} + \cdots + 112y - 1$
c_6, c_{10}	$y^{109} - 92y^{108} + \cdots + 1884094310y - 99820081$
c_7	$y^{109} - 35y^{108} + \cdots + 312381658400y - 11132571121$
c_8, c_9, c_{12}	$y^{109} - 117y^{108} + \cdots - 537y - 49$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.927360+0.368807I$ $a=-0.004486+0.281853I$ $b=\ \ 0.541893+0.407683I$	$-0.881908-0.499794I$	0
$u=-0.927360-0.368807I$ $a=-0.004486-0.281853I$ $b=\ \ 0.541893-0.407683I$	$-0.881908+0.499794I$	0
$u=-0.001942+0.975609I$ $a=\ \ 0.359346+1.195970I$ $b=-0.532276-0.624869I$	$-0.33225+2.57093I$	0
$u=-0.001942-0.975609I$ $a=\ \ 0.359346-1.195970I$ $b=-0.532276+0.624869I$	$-0.33225-2.57093I$	0
$u=\ \ 1.057370+0.207259I$ $a=\ \ 0.024452+0.732775I$ $b=-0.631857-0.932609I$	$-3.02837-3.95297I$	0
$u=\ \ 1.057370-0.207259I$ $a=\ \ 0.024452-0.732775I$ $b=-0.631857+0.932609I$	$-3.02837+3.95297I$	0
$u=-0.892897+0.611548I$ $a=-0.498464-0.905635I$ $b=\ \ 0.661982+0.108547I$	$-4.68433+2.02276I$	0
$u=-0.892897-0.611548I$ $a=-0.498464+0.905635I$ $b=\ \ 0.661982-0.108547I$	$-4.68433-2.02276I$	0
$u=\ \ 1.08678$ $a=-1.37532$ $b=-1.15010$	-4.90949	0
$u=-0.141033+1.081570I$ $a=-0.735304-0.856968I$ $b=\ \ 1.115130+0.539463I$	$-4.62116-6.15750I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.141033-1.081570I$ $a=-0.735304+0.856968I$ $b=1.115130-0.539463I$	$-4.62116+6.15750I$	0
$u=1.042030+0.340775I$ $a=-0.342757+0.367631I$ $b=0.307587-0.839493I$	$0.59322-2.98567I$	0
$u=1.042030-0.340775I$ $a=-0.342757-0.367631I$ $b=0.307587+0.839493I$	$0.59322+2.98567I$	0
$u=0.481404+0.728442I$ $a=1.58446-0.53180I$ $b=-1.077880+0.314975I$	$-6.22931+1.23975I$	0
$u=0.481404-0.728442I$ $a=1.58446+0.53180I$ $b=-1.077880-0.314975I$	$-6.22931-1.23975I$	0
$u=-0.164225+1.134570I$ $a=0.234584-1.329010I$ $b=-1.001660+0.578622I$	$-1.68142+7.31001I$	0
$u=-0.164225-1.134570I$ $a=0.234584+1.329010I$ $b=-1.001660-0.578622I$	$-1.68142-7.31001I$	0
$u=-1.146230+0.151412I$ $a=-0.421695-1.097710I$ $b=-1.39389+0.83781I$	$-10.94360+3.34958I$	0
$u=-1.146230-0.151412I$ $a=-0.421695+1.097710I$ $b=-1.39389-0.83781I$	$-10.94360-3.34958I$	0
$u=-1.117690+0.324951I$ $a=-0.82076-1.63481I$ $b=-1.040340+0.440134I$	$-2.81887+3.16219I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.117690-0.324951I$ $a=-0.82076+1.63481I$ $b=-1.040340-0.440134I$	$-2.81887-3.16219I$	0
$u=-1.171050+0.062575I$ $a=0.243573-0.861666I$ $b=-0.75611+1.19829I$	$-8.95265+4.63111I$	0
$u=-1.171050-0.062575I$ $a=0.243573+0.861666I$ $b=-0.75611-1.19829I$	$-8.95265-4.63111I$	0
$u=1.173030+0.041004I$ $a=-0.540423+0.900178I$ $b=-1.212730-0.663125I$	$-4.98444-2.41357I$	0
$u=1.173030-0.041004I$ $a=-0.540423-0.900178I$ $b=-1.212730+0.663125I$	$-4.98444+2.41357I$	0
$u=-1.176150+0.036021I$ $a=1.51938-1.46237I$ $b=1.066390+0.426048I$	$-6.86041-0.88784I$	0
$u=-1.176150-0.036021I$ $a=1.51938+1.46237I$ $b=1.066390-0.426048I$	$-6.86041+0.88784I$	0
$u=0.108220+1.194260I$ $a=-0.04457-1.44047I$ $b=-0.381359+0.662655I$	$-6.68074-5.67638I$	0
$u=0.108220-1.194260I$ $a=-0.04457+1.44047I$ $b=-0.381359-0.662655I$	$-6.68074+5.67638I$	0
$u=-1.136990+0.387269I$ $a=-0.468289-0.722813I$ $b=0.211741+1.127560I$	$-5.03193+5.61101I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.136990-0.387269I$ $a=-0.468289+0.722813I$ $b=\ 0.211741-1.127560I$	$-5.03193-5.61101I$	0
$u=\ 1.198400+0.113222I$ $a=\ 0.51876-1.94605I$ $b=\ 1.122610+0.582933I$	$-13.0830-7.0865I$	0
$u=\ 1.198400-0.113222I$ $a=\ 0.51876+1.94605I$ $b=\ 1.122610-0.582933I$	$-13.0830+7.0865I$	0
$u=\ 1.181720+0.307746I$ $a=\ 0.678893-0.995764I$ $b=-0.423479+0.760999I$	$-6.45027-1.36251I$	0
$u=\ 1.181720-0.307746I$ $a=\ 0.678893+0.995764I$ $b=-0.423479-0.760999I$	$-6.45027+1.36251I$	0
$u=-0.247531+0.733819I$ $a=\ 0.56761+1.55074I$ $b=\ 0.310446-0.709793I$	$-2.28524-1.40023I$	0
$u=-0.247531-0.733819I$ $a=\ 0.56761-1.55074I$ $b=\ 0.310446+0.709793I$	$-2.28524+1.40023I$	0
$u=\ 1.226970+0.097481I$ $a=-0.862780-0.648315I$ $b=\ 0.394183+0.774439I$	$-10.89780+1.94807I$	0
$u=\ 1.226970-0.097481I$ $a=-0.862780+0.648315I$ $b=\ 0.394183-0.774439I$	$-10.89780-1.94807I$	0
$u=\ 0.032475+0.748168I$ $a=-0.528278+1.089850I$ $b=\ 0.936740-0.608484I$	$1.92695+3.99796I$	$-3.21801-6.20905I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.032475 - 0.748168I$ $a = -0.528278 - 1.089850I$ $b = 0.936740 + 0.608484I$	$1.92695 - 3.99796I$	$-3.21801 + 6.20905I$
$u = 0.316631 + 0.673261I$ $a = -0.040172 - 1.317730I$ $b = 0.661258 + 0.648032I$	$2.74013 - 0.88698I$	0
$u = 0.316631 - 0.673261I$ $a = -0.040172 + 1.317730I$ $b = 0.661258 - 0.648032I$	$2.74013 + 0.88698I$	0
$u = -1.25835$ $a = -0.260141$ $b = -1.65764$	-11.9769	0
$u = -0.733035$ $a = 0.648851$ $b = -0.107199$	-0.968982	-9.84640
$u = 1.248920 + 0.255227I$ $a = 1.253130 + 0.044705I$ $b = 1.106620 - 0.157497I$	$-9.54974 - 5.10430I$	0
$u = 1.248920 - 0.255227I$ $a = 1.253130 - 0.044705I$ $b = 1.106620 + 0.157497I$	$-9.54974 + 5.10430I$	0
$u = -1.201150 + 0.436460I$ $a = -0.171617 - 0.684167I$ $b = -0.220383 + 0.206899I$	$-4.39780 + 2.11444I$	0
$u = -1.201150 - 0.436460I$ $a = -0.171617 + 0.684167I$ $b = -0.220383 - 0.206899I$	$-4.39780 - 2.11444I$	0
$u = -1.224520 + 0.378182I$ $a = 0.077221 - 0.365173I$ $b = -0.298317 - 0.328543I$	$-4.36955 + 2.20355I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.224520-0.378182I$ $a=\ 0.077221+0.365173I$ $b=-0.298317+0.328543I$	$-4.36955-2.20355I$	0
$u=\ 1.186760+0.526901I$ $a=\ 1.16922-1.11264I$ $b=\ 0.943150+0.121171I$	$-9.22014-5.07106I$	0
$u=\ 1.186760-0.526901I$ $a=\ 1.16922+1.11264I$ $b=\ 0.943150-0.121171I$	$-9.22014+5.07106I$	0
$u=-0.463740+0.510377I$ $a=\ 0.067072-1.240980I$ $b=\ 0.893561-0.026652I$	$-4.67096+1.93516I$	$-15.9176-3.5896I$
$u=-0.463740-0.510377I$ $a=\ 0.067072+1.240980I$ $b=\ 0.893561+0.026652I$	$-4.67096-1.93516I$	$-15.9176+3.5896I$
$u=-1.299780+0.179706I$ $a=\ 0.972081+0.717778I$ $b=\ 1.046880-0.479841I$	$-2.54445+3.37243I$	0
$u=-1.299780-0.179706I$ $a=\ 0.972081-0.717778I$ $b=\ 1.046880+0.479841I$	$-2.54445-3.37243I$	0
$u=\ 1.264240+0.390206I$ $a=\ 0.73496-1.23757I$ $b=\ 1.147500+0.584416I$	$-1.89007-8.23554I$	0
$u=\ 1.264240-0.390206I$ $a=\ 0.73496+1.23757I$ $b=\ 1.147500-0.584416I$	$-1.89007+8.23554I$	0
$u=\ 1.252170+0.558161I$ $a=-0.08507+1.67329I$ $b=-1.108000-0.585173I$	$-8.50772-6.47710I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.252170 - 0.558161I$ $a = -0.08507 - 1.67329I$ $b = -1.108000 + 0.585173I$	$-8.50772 + 6.47710I$	0
$u = -1.288050 + 0.518655I$ $a = 0.41587 + 1.40242I$ $b = 1.26484 - 0.63490I$	$-8.2774 + 11.7660I$	0
$u = -1.288050 - 0.518655I$ $a = 0.41587 - 1.40242I$ $b = 1.26484 + 0.63490I$	$-8.2774 - 11.7660I$	0
$u = 1.313920 + 0.456848I$ $a = 0.448450 - 0.453491I$ $b = -0.368355 + 0.821745I$	$-4.47485 - 7.63949I$	0
$u = 1.313920 - 0.456848I$ $a = 0.448450 + 0.453491I$ $b = -0.368355 - 0.821745I$	$-4.47485 + 7.63949I$	0
$u = -1.40284 + 0.26612I$ $a = -1.27343 - 0.81645I$ $b = -1.075530 + 0.475402I$	$-6.50588 + 6.06163I$	0
$u = -1.40284 - 0.26612I$ $a = -1.27343 + 0.81645I$ $b = -1.075530 - 0.475402I$	$-6.50588 - 6.06163I$	0
$u = -0.514954 + 0.241943I$ $a = 1.287940 + 0.250825I$ $b = -0.694966 - 0.159105I$	$-1.130220 - 0.058098I$	$-6.31168 - 0.93824I$
$u = -0.514954 - 0.241943I$ $a = 1.287940 - 0.250825I$ $b = -0.694966 + 0.159105I$	$-1.130220 + 0.058098I$	$-6.31168 + 0.93824I$
$u = -0.539163 + 0.088043I$ $a = -0.63521 + 1.61057I$ $b = 0.871250 - 0.779499I$	$1.25521 + 2.92708I$	$-20.6191 - 7.0979I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.539163-0.088043I$ $a=-0.63521-1.61057I$ $b=\ \ 0.871250+0.779499I$	$1.25521-2.92708I$	$-20.6191+7.0979I$
$u=-0.136443+0.527344I$ $a=\ \ 1.68053-0.92025I$ $b=-0.723335+0.458886I$	$-0.79469+1.36894I$	$-9.17150-4.18616I$
$u=-0.136443-0.527344I$ $a=\ \ 1.68053+0.92025I$ $b=-0.723335-0.458886I$	$-0.79469-1.36894I$	$-9.17150+4.18616I$
$u=\ \ 0.85209+1.22980I$ $a=-0.664286+0.651414I$ $b=\ \ 1.051060-0.329189I$	$-10.33410-3.36596I$	0
$u=\ \ 0.85209-1.22980I$ $a=-0.664286-0.651414I$ $b=\ \ 1.051060+0.329189I$	$-10.33410+3.36596I$	0
$u=-0.374092+0.331035I$ $a=\ \ 1.032560-0.927902I$ $b=-1.142870-0.573781I$	$-8.60926-1.47993I$	$-14.4229+2.1286I$
$u=-0.374092-0.331035I$ $a=\ \ 1.032560+0.927902I$ $b=-1.142870+0.573781I$	$-8.60926+1.47993I$	$-14.4229-2.1286I$
$u=-1.48071+0.25387I$ $a=\ \ 0.319112-0.074073I$ $b=\ \ 1.404500+0.116946I$	$-18.0245+7.5939I$	0
$u=-1.48071-0.25387I$ $a=\ \ 0.319112+0.074073I$ $b=\ \ 1.404500-0.116946I$	$-18.0245-7.5939I$	0
$u=\ \ 0.480994+0.126570I$ $a=-1.96808-2.47848I$ $b=\ \ 1.076970-0.299233I$	$-10.61350+5.99402I$	$-18.1018-3.7342I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.480994 - 0.126570I$ $a = -1.96808 + 2.47848I$ $b = 1.076970 + 0.299233I$	$-10.61350 - 5.99402I$	$-18.1018 + 3.7342I$
$u = 0.098496 + 0.483051I$ $a = 1.228410 + 0.028238I$ $b = -0.443278 + 0.446712I$	$-0.67889 + 1.28300I$	$-6.58010 - 4.63125I$
$u = 0.098496 - 0.483051I$ $a = 1.228410 - 0.028238I$ $b = -0.443278 - 0.446712I$	$-0.67889 - 1.28300I$	$-6.58010 + 4.63125I$
$u = 0.109455 + 0.479164I$ $a = -0.82993 + 1.99601I$ $b = -0.929731 - 0.602032I$	$-1.52384 - 3.08285I$	$-9.69293 + 2.06484I$
$u = 0.109455 - 0.479164I$ $a = -0.82993 - 1.99601I$ $b = -0.929731 + 0.602032I$	$-1.52384 + 3.08285I$	$-9.69293 - 2.06484I$
$u = -1.42468 + 0.49590I$ $a = 0.427632 + 0.788644I$ $b = -0.357295 - 1.022260I$	$-11.6087 + 11.5120I$	0
$u = -1.42468 - 0.49590I$ $a = 0.427632 - 0.788644I$ $b = -0.357295 + 1.022260I$	$-11.6087 - 11.5120I$	0
$u = -1.49024 + 0.24040I$ $a = -0.370784 + 0.651679I$ $b = -1.026120 - 0.440412I$	$-6.45908 - 1.19336I$	0
$u = -1.49024 - 0.24040I$ $a = -0.370784 - 0.651679I$ $b = -1.026120 + 0.440412I$	$-6.45908 + 1.19336I$	0
$u = 1.43521 + 0.47001I$ $a = -0.71708 + 1.34700I$ $b = -1.134240 - 0.591143I$	$-6.7727 - 12.9003I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \quad 1.43521 - 0.47001I$ $a = -0.71708 - 1.34700I$ $b = -1.134240 + 0.591143I$	$-6.7727 + 12.9003I$	0
$u = \quad 1.57342 + 0.01663I$ $a = -0.628685 + 0.255232I$ $b = -1.076440 + 0.245301I$	$-15.4353 + 0.3798I$	0
$u = \quad 1.57342 - 0.01663I$ $a = -0.628685 - 0.255232I$ $b = -1.076440 - 0.245301I$	$-15.4353 - 0.3798I$	0
$u = \quad 0.21277 + 1.56571I$ $a = \quad 0.441834 + 1.098900I$ $b = -1.093730 - 0.544984I$	$-8.76583 - 10.38610I$	0
$u = \quad 0.21277 - 1.56571I$ $a = \quad 0.441834 - 1.098900I$ $b = -1.093730 + 0.544984I$	$-8.76583 + 10.38610I$	0
$u = -0.323820 + 0.250962I$ $a = -0.72155 - 1.63819I$ $b = -0.449755 - 0.739128I$	$-6.46389 - 3.71609I$	$-11.41713 + 1.73666I$
$u = -0.323820 - 0.250962I$ $a = -0.72155 + 1.63819I$ $b = -0.449755 + 0.739128I$	$-6.46389 + 3.71609I$	$-11.41713 - 1.73666I$
$u = \quad 1.46267 + 0.69119I$ $a = -0.404631 + 1.074490I$ $b = \quad 0.459672 - 0.742288I$	$-10.52840 - 0.73929I$	0
$u = \quad 1.46267 - 0.69119I$ $a = -0.404631 - 1.074490I$ $b = \quad 0.459672 + 0.742288I$	$-10.52840 + 0.73929I$	0
$u = -1.52696 + 0.58294I$ $a = -0.34024 - 1.38124I$ $b = -1.212060 + 0.653074I$	$-14.2664 + 17.5419I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.52696-0.58294I$ $a=-0.34024+1.38124I$ $b=-1.212060-0.653074I$	$-14.2664-17.5419I$	0
$u=-1.47302+0.79032I$ $a=\ \ 0.289378+1.321630I$ $b=\ \ 1.038930-0.449583I$	$-6.42133+5.28910I$	0
$u=-1.47302-0.79032I$ $a=\ \ 0.289378-1.321630I$ $b=\ \ 1.038930+0.449583I$	$-6.42133-5.28910I$	0
$u=\ \ 1.66666+0.21470I$ $a=\ \ 0.342970+0.113767I$ $b=\ \ 1.037410-0.252350I$	$-10.88430+0.64765I$	0
$u=\ \ 1.66666-0.21470I$ $a=\ \ 0.342970-0.113767I$ $b=\ \ 1.037410+0.252350I$	$-10.88430-0.64765I$	0
$u=\ \ 1.63703+0.96366I$ $a=-0.009749-1.382130I$ $b=\ \ 1.088920+0.588620I$	$-12.41950-5.82148I$	0
$u=\ \ 1.63703-0.96366I$ $a=-0.009749+1.382130I$ $b=\ \ 1.088920-0.588620I$	$-12.41950+5.82148I$	0
$u=\ \ 2.12651+0.36116I$ $a=-0.203081-0.490165I$ $b=-0.997778+0.268752I$	$-14.7882+0.8898I$	0
$u=\ \ 2.12651-0.36116I$ $a=-0.203081+0.490165I$ $b=-0.997778-0.268752I$	$-14.7882-0.8898I$	0

II.

$\boldsymbol{I_2^u = \langle -2.57\times 10^{10}u^{24}-1.13\times 10^{11}u^{23}+\cdots+5.01\times 10^{10}b+1.38\times 10^{11},\ 8.01\times 10^{10}u^{24}+3.58\times 10^{11}u^{23}+\cdots+5.01\times 10^{10}a-6.09\times 10^{11},\ u^{25}+4u^{24}+\cdots-8u+1\rangle}$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -1.59799u^{24} - 7.12882u^{23} + \cdots - 57.6221u + 12.1365 \\ 0.512796u^{24} + 2.25200u^{23} + \cdots + 14.4684u - 2.75833 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} -1.08519u^{24} - 4.87682u^{23} + \cdots - 43.1537u + 9.37821 \\ 0.512796u^{24} + 2.25200u^{23} + \cdots + 14.4684u - 2.75833 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 1.20923u^{24} + 4.70829u^{23} + \cdots - 2.24711u - 7.01597 \\ -0.0111263u^{24} + 0.0388091u^{23} + \cdots - 3.53764u + 3.44465 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 2.57497u^{24} + 10.7378u^{23} + \cdots + 34.2229u - 10.7623 \\ -1.60455u^{24} - 6.66333u^{23} + \cdots - 17.7203u + 5.25580 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u^{24} - 4u^{23} + \cdots - 3u + 8 \\ 0.774803u^{24} + 3.01861u^{23} + \cdots + 2.47448u - 3.60917 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 3.05016u^{24} + 12.6743u^{23} + \cdots + 33.5807u - 10.5700 \\ -1.44373u^{24} - 5.96771u^{23} + \cdots - 17.2669u + 5.02770 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u^{24} - 4u^{23} + \cdots - 2u + 7 \\ -0.0159683u^{24} + 0.726898u^{23} + \cdots + 7.22737u - 3.62514 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -0.128625u^{24} - 0.544109u^{23} + \cdots + 2.65787u - 1.20923 \\ 0.112923u^{24} + 0.798958u^{23} + \cdots + 5.59387u - 0.117499 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes

$= \frac{65044392892}{50148875831}u^{24} + \frac{159543202607}{50148875831}u^{23} + \cdots - \frac{1103313011400}{50148875831}u + \frac{372935725441}{50148875831}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{25} - 13u^{24} + \cdots + 16u - 1$
c_2	$u^{25} - u^{24} + \cdots + 8u^2 - 1$
c_3	$u^{25} + u^{24} + \cdots + 4u - 1$
c_4	$u^{25} + 14u^{23} + \cdots - 2u + 1$
c_5	$u^{25} + u^{24} + \cdots - 8u^2 + 1$
c_6	$u^{25} + 4u^{24} + \cdots - 8u + 1$
c_7	$u^{25} + 3u^{24} + \cdots - 2u + 1$
c_8, c_9	$u^{25} + 3u^{24} + \cdots - 3u - 1$
c_{10}	$u^{25} - 4u^{24} + \cdots - 8u - 1$
c_{11}	$u^{25} + 14u^{23} + \cdots - 2u - 1$
c_{12}	$u^{25} - 3u^{24} + \cdots - 3u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{25} + 11y^{24} + \cdots + 12y - 1$
c_2, c_5	$y^{25} - 13y^{24} + \cdots + 16y - 1$
c_3	$y^{25} - 7y^{24} + \cdots + 10y - 1$
c_4, c_{11}	$y^{25} + 28y^{24} + \cdots - 42y - 1$
c_6, c_{10}	$y^{25} - 28y^{24} + \cdots + 60y - 1$
c_7	$y^{25} - 7y^{24} + \cdots + 14y - 1$
c_8, c_9, c_{12}	$y^{25} - 29y^{24} + \cdots + y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.969986 + 0.204903I$ $a = 0.270688 + 0.668341I$ $b = -0.735305 - 0.749517I$	$-3.03260 - 3.38850I$	$-13.63024 + 0.59156I$
$u = 0.969986 - 0.204903I$ $a = 0.270688 - 0.668341I$ $b = -0.735305 + 0.749517I$	$-3.03260 + 3.38850I$	$-13.63024 - 0.59156I$
$u = -0.734968 + 0.662546I$ $a = -1.07522 - 1.93753I$ $b = 0.574709 + 0.388619I$	$-7.97737 + 4.24269I$	$-13.01556 - 1.55556I$
$u = -0.734968 - 0.662546I$ $a = -1.07522 + 1.93753I$ $b = 0.574709 - 0.388619I$	$-7.97737 - 4.24269I$	$-13.01556 + 1.55556I$
$u = -0.865758 + 0.332100I$ $a = -0.838267 - 0.386272I$ $b = -0.473807 + 0.858543I$	$-6.92118 + 4.94360I$	$-13.8491 - 7.0409I$
$u = -0.865758 - 0.332100I$ $a = -0.838267 + 0.386272I$ $b = -0.473807 - 0.858543I$	$-6.92118 - 4.94360I$	$-13.8491 + 7.0409I$
$u = 1.210180 + 0.021952I$ $a = -0.742841 + 0.943238I$ $b = -1.121790 - 0.533032I$	$-4.62324 - 1.98868I$	$-12.48966 - 0.44574I$
$u = 1.210180 - 0.021952I$ $a = -0.742841 - 0.943238I$ $b = -1.121790 + 0.533032I$	$-4.62324 + 1.98868I$	$-12.48966 + 0.44574I$
$u = -1.222280 + 0.207922I$ $a = -0.129640 - 1.220490I$ $b = -1.16333 + 0.84752I$	$-10.35600 + 3.71032I$	$-14.8988 - 5.3062I$
$u = -1.222280 - 0.207922I$ $a = -0.129640 + 1.220490I$ $b = -1.16333 - 0.84752I$	$-10.35600 - 3.71032I$	$-14.8988 + 5.3062I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.138820 + 0.597465I$ $a = -0.790252 + 0.323436I$ $b = 0.743618 - 0.360851I$	$-4.71938 - 1.10605I$	$-14.5407 - 4.1700I$
$u = 1.138820 - 0.597465I$ $a = -0.790252 - 0.323436I$ $b = 0.743618 + 0.360851I$	$-4.71938 + 1.10605I$	$-14.5407 + 4.1700I$
$u = -1.011320 + 0.821968I$ $a = -0.13347 + 1.90974I$ $b = 1.090770 - 0.499634I$	$-9.85612 + 8.13985I$	$-16.2664 - 7.3867I$
$u = -1.011320 - 0.821968I$ $a = -0.13347 - 1.90974I$ $b = 1.090770 + 0.499634I$	$-9.85612 - 8.13985I$	$-16.2664 + 7.3867I$
$u = 0.627265 + 0.293480I$ $a = 0.643075 + 0.863662I$ $b = -0.772902 + 0.161877I$	$-1.92884 + 0.39340I$	$-17.3153 - 1.2800I$
$u = 0.627265 - 0.293480I$ $a = 0.643075 - 0.863662I$ $b = -0.772902 - 0.161877I$	$-1.92884 - 0.39340I$	$-17.3153 + 1.2800I$
$u = -0.527015$ $a = 3.67423$ $b = -0.480646$	-3.95879	-8.21000
$u = -1.46428 + 0.16139I$ $a = -0.275679 + 0.051058I$ $b = -1.193930 - 0.181729I$	$-10.94710 - 0.10199I$	$-15.6139 - 2.1795I$
$u = -1.46428 - 0.16139I$ $a = -0.275679 - 0.051058I$ $b = -1.193930 + 0.181729I$	$-10.94710 + 0.10199I$	$-15.6139 + 2.1795I$
$u = 1.39084 + 0.49425I$ $a = 0.85869 - 1.29735I$ $b = 0.999575 + 0.422001I$	$-5.69268 - 4.43024I$	$-13.30448 + 2.77709I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.39084 - 0.49425I$ $a = 0.85869 + 1.29735I$ $b = 0.999575 - 0.422001I$	$-5.69268 + 4.43024I$	$-13.30448 - 2.77709I$
$u = 0.197277 + 0.044089I$ $a = -1.98047 - 2.86320I$ $b = 0.877863 + 0.729895I$	$1.57649 - 2.78288I$	$0.22422 - 1.94629I$
$u = 0.197277 - 0.044089I$ $a = -1.98047 + 2.86320I$ $b = 0.877863 - 0.729895I$	$1.57649 + 2.78288I$	$0.22422 + 1.94629I$
$u = -1.97226 + 0.14980I$ $a = 0.356263 - 0.242063I$ $b = 0.914851 + 0.304706I$	$-14.1444 - 1.2798I$	$-12.69501 + 6.20324I$
$u = -1.97226 - 0.14980I$ $a = 0.356263 + 0.242063I$ $b = 0.914851 - 0.304706I$	$-14.1444 + 1.2798I$	$-12.69501 - 6.20324I$

III. $I_3^u = \langle b+1,\ a+2,\ u-1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -18$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_3 c_4, c_5, c_6 c_7, c_8, c_9 c_{10}, 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
$u = \quad 1.00000$ $a = -2.00000$ $b = -1.00000$	-4.93480	-18.0000

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u+1)(u^{25}-13u^{24}+\cdots+16u-1)(u^{109}+53u^{108}+\cdots+114u+1)$
c_2	$(u+1)(u^{25}-u^{24}+\cdots+8u^2-1)(u^{109}+5u^{108}+\cdots+18u+1)$
c_3	$(u-1)(u^{25}+u^{24}+\cdots+4u-1)$ $\cdot(u^{109}+3u^{108}+\cdots+9062344u+742717)$
c_4	$(u+1)(u^{25}+14u^{23}+\cdots-2u+1)(u^{109}-4u^{108}+\cdots+10u-1)$
c_5	$(u+1)(u^{25}+u^{24}+\cdots-8u^2+1)(u^{109}+5u^{108}+\cdots+18u+1)$
c_6	$(u-1)(u^{25}+4u^{24}+\cdots-8u+1)(u^{109}-2u^{108}+\cdots-109940u-9991)$
c_7	$(u-1)(u^{25}+3u^{24}+\cdots-2u+1)$ $\cdot(u^{109}-7u^{108}+\cdots-1323756u+105511)$
c_8, c_9	$(u+1)(u^{25}+3u^{24}+\cdots-3u-1)(u^{109}+3u^{108}+\cdots+95u-7)$
c_{10}	$(u-1)(u^{25}-4u^{24}+\cdots-8u-1)(u^{109}-2u^{108}+\cdots-109940u-9991)$
c_{11}	$(u+1)(u^{25}+14u^{23}+\cdots-2u-1)(u^{109}-4u^{108}+\cdots+10u-1)$
c_{12}	$(u+1)(u^{25}-3u^{24}+\cdots-3u+1)(u^{109}+3u^{108}+\cdots+95u-7)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y-1)(y^{25}+11y^{24}+\cdots+12y-1)(y^{109}+19y^{108}+\cdots+7262y-1)$
c_2, c_5	$(y-1)(y^{25}-13y^{24}+\cdots+16y-1)(y^{109}-53y^{108}+\cdots+114y-1)$
c_3	$(y-1)(y^{25}-7y^{24}+\cdots+10y-1)$ $\cdot(y^{109}-47y^{108}+\cdots+31084038325668y-551628542089)$
c_4, c_{11}	$(y-1)(y^{25}+28y^{24}+\cdots-42y-1)(y^{109}+100y^{108}+\cdots+112y-1)$
c_6, c_{10}	$(y-1)(y^{25}-28y^{24}+\cdots+60y-1)$ $\cdot(y^{109}-92y^{108}+\cdots+1884094310y-99820081)$
c_7	$(y-1)(y^{25}-7y^{24}+\cdots+14y-1)$ $\cdot(y^{109}-35y^{108}+\cdots+312381658400y-11132571121)$
c_8, c_9, c_{12}	$(y-1)(y^{25}-29y^{24}+\cdots+y-1)(y^{109}-117y^{108}+\cdots-537y-49)$