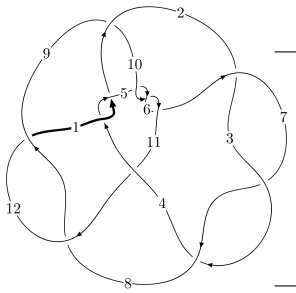
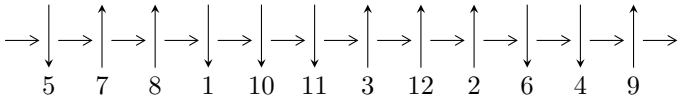
$12a_{1254}$ $(K12a_{1254})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned} I_1^u = \langle & -1.63090 \times 10^{126} u^{71} - 1.43198 \times 10^{127} u^{70} + \cdots + 1.61786 \times 10^{128} b + 1.62123 \times 10^{128}, \\ & - 1.10105 \times 10^{130} u^{71} - 3.48895 \times 10^{130} u^{70} + \cdots + 3.39751 \times 10^{129} a + 5.30987 \times 10^{130}, \\ & u^{72} + 3u^{71} + \cdots - 26u^2 + 1 \rangle \end{aligned}$$

* 1 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 72 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. $\boldsymbol{I_1^u = \langle -1.63 \times 10^{126} u^{71} - 1.43 \times 10^{127} u^{70} + \cdots + 1.62 \times 10^{128} b + 1.62 \times 10^{128},\ -1.10 \times 10^{130} u^{71} - 3.49 \times 10^{130} u^{70} + \cdots + 3.40 \times 10^{129} a + 5.31 \times 10^{130},\ u^{72} + 3u^{71} + \cdots - 26u^2 + 1 \rangle}$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

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

$$a_2 = \begin{pmatrix} 3.24076u^{71} + 10.2691u^{70} + \cdots - 136.064u - 15.6287 \\ 0.0100806u^{71} + 0.0885108u^{70} + \cdots + 0.154524u - 1.00208 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} 3.01036u^{71} + 9.56914u^{70} + \cdots - 129.487u - 15.8619 \\ 0.0443474u^{71} + 0.191702u^{70} + \cdots + 0.547558u - 0.927506 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 3.25084u^{71} + 10.3576u^{70} + \cdots - 135.909u - 16.6308 \\ 0.0100806u^{71} + 0.0885108u^{70} + \cdots + 0.154524u - 1.00208 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 3.93995u^{71} + 12.1793u^{70} + \cdots - 144.274u - 18.1963 \\ -0.205083u^{71} - 0.696225u^{70} + \cdots - 1.51684u - 0.931392 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 25.0206u^{71} + 79.2187u^{70} + \cdots - 1012.78u - 151.398 \\ 0.440428u^{71} + 1.31089u^{70} + \cdots - 17.2649u - 4.14504 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 28.8160u^{71} + 90.4805u^{70} + \cdots - 1156.38u - 175.392 \\ 0.437569u^{71} + 1.27882u^{70} + \cdots - 21.8953u - 4.40858 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -3.44954u^{71} - 11.3202u^{70} + \cdots + 159.467u + 31.2821 \\ -0.193079u^{71} - 0.610090u^{70} + \cdots + 6.79834u - 0.0918382 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 5.04864u^{71} + 17.1634u^{70} + \cdots - 197.061u - 30.2965$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{72} + u^{71} + \cdots - 16u + 1$
c_2, c_3, c_7	$u^{72} + 3u^{71} + \cdots - 26u^2 + 1$
c_5, c_6, c_{10}	$u^{72} - 3u^{71} + \cdots - 26u^2 + 1$
c_8, c_{12}	$u^{72} - u^{71} + \cdots + 16u + 1$
c_9	$63(63u^{72} + 1197u^{71} + \cdots - 137930u - 101308)$
c_{11}	$63(63u^{72} - 1197u^{71} + \cdots + 137930u - 101308)$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_8 c_{12}	$y^{72} - 51y^{71} + \cdots - 20y + 1$
c_2, c_3, c_5 c_6, c_7, c_{10}	$y^{72} - 71y^{71} + \cdots - 52y + 1$
c_9, c_{11}	3969 $\cdot (3969y^{72} - 532791y^{71} + \cdots + 24968314100y + 10263310864)$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.649955 + 0.767013I$ $a = 0.371690 + 0.863674I$ $b = -1.157260 - 0.177201I$	$-3.51621 - 2.84598I$	0
$u = 0.649955 - 0.767013I$ $a = 0.371690 - 0.863674I$ $b = -1.157260 + 0.177201I$	$-3.51621 + 2.84598I$	0
$u = 0.755046 + 0.607683I$ $a = 0.958639 - 0.782753I$ $b = 0.211107 + 0.677137I$	$9.48984 + 1.78690I$	0
$u = 0.755046 - 0.607683I$ $a = 0.958639 + 0.782753I$ $b = 0.211107 - 0.677137I$	$9.48984 - 1.78690I$	0
$u = 0.561764 + 0.889787I$ $a = -0.343337 - 1.311210I$ $b = 1.285200 + 0.503327I$	$6.85180 - 11.78730I$	0
$u = 0.561764 - 0.889787I$ $a = -0.343337 + 1.311210I$ $b = 1.285200 - 0.503327I$	$6.85180 + 11.78730I$	0
$u = -0.566060 + 0.689487I$ $a = 0.38171 - 1.40245I$ $b = -1.258670 + 0.517373I$	$8.38473I$	0
$u = -0.566060 - 0.689487I$ $a = 0.38171 + 1.40245I$ $b = -1.258670 - 0.517373I$	$-8.38473I$	0
$u = -0.401846 + 0.784856I$ $a = 0.911206 - 0.151398I$ $b = -1.075360 - 0.313339I$	$0.50187 - 3.59150I$	$0. + 6.84899I$
$u = -0.401846 - 0.784856I$ $a = 0.911206 + 0.151398I$ $b = -1.075360 + 0.313339I$	$0.50187 + 3.59150I$	$0. - 6.84899I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.360230 + 0.755264I$ $a = -0.121619 + 1.340780I$ $b = 0.060046 - 1.002070I$	$10.66310 - 6.45840I$	$7.25218 + 5.11414I$
$u = 0.360230 - 0.755264I$ $a = -0.121619 - 1.340780I$ $b = 0.060046 + 1.002070I$	$10.66310 + 6.45840I$	$7.25218 - 5.11414I$
$u = 0.649376 + 0.994071I$ $a = -0.537633 + 0.012831I$ $b = 1.131150 - 0.361477I$	$6.71683 + 5.69927I$	0
$u = 0.649376 - 0.994071I$ $a = -0.537633 - 0.012831I$ $b = 1.131150 + 0.361477I$	$6.71683 - 5.69927I$	0
$u = -0.474762 + 1.140520I$ $a = -0.524061 + 0.650730I$ $b = 1.171890 - 0.205962I$	$1.64587 + 4.92294I$	0
$u = -0.474762 - 1.140520I$ $a = -0.524061 - 0.650730I$ $b = 1.171890 + 0.205962I$	$1.64587 - 4.92294I$	0
$u = -0.208137 + 0.704884I$ $a = 0.708628 - 1.104090I$ $b = -0.091169 + 0.449600I$	$5.21021 + 2.48118I$	$6.35115 - 4.16718I$
$u = -0.208137 - 0.704884I$ $a = 0.708628 + 1.104090I$ $b = -0.091169 - 0.449600I$	$5.21021 - 2.48118I$	$6.35115 + 4.16718I$
$u = -1.267630 + 0.242344I$ $a = 0.752454 - 0.638834I$ $b = -0.101250 + 0.346802I$	$2.11200 + 1.03313I$	0
$u = -1.267630 - 0.242344I$ $a = 0.752454 + 0.638834I$ $b = -0.101250 - 0.346802I$	$2.11200 - 1.03313I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.32452$ $a = -0.890875$ $b = -2.07992$	2.49962	0
$u = -1.346220 + 0.078526I$ $a = -0.291387 + 0.201598I$ $b = -1.38956 - 1.17852I$	$1.46224 + 2.61815I$	0
$u = -1.346220 - 0.078526I$ $a = -0.291387 - 0.201598I$ $b = -1.38956 + 1.17852I$	$1.46224 - 2.61815I$	0
$u = 1.363600 + 0.025152I$ $a = -0.513667 - 0.148824I$ $b = -0.113437 + 0.094897I$	$-3.19701 - 0.01303I$	0
$u = 1.363600 - 0.025152I$ $a = -0.513667 + 0.148824I$ $b = -0.113437 - 0.094897I$	$-3.19701 + 0.01303I$	0
$u = -1.37923$ $a = -1.92010$ $b = -1.32845$	-1.08828	0
$u = 0.434671 + 0.429294I$ $a = -0.56763 - 1.50065I$ $b = 1.215410 + 0.596589I$	$-0.50187 - 3.59150I$	$-0.30026 + 6.84899I$
$u = 0.434671 - 0.429294I$ $a = -0.56763 + 1.50065I$ $b = 1.215410 - 0.596589I$	$-0.50187 + 3.59150I$	$-0.30026 - 6.84899I$
$u = 1.388510 + 0.125096I$ $a = 0.295480 - 0.465640I$ $b = 0.27946 + 1.49621I$	$-1.64587 - 4.92294I$	0
$u = 1.388510 - 0.125096I$ $a = 0.295480 + 0.465640I$ $b = 0.27946 - 1.49621I$	$-1.64587 + 4.92294I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.398290 + 0.071099I$ $a = 0.058738 - 0.776258I$ $b = -0.912296 + 0.581047I$	$-2.11200 - 1.03313I$	0
$u = 1.398290 - 0.071099I$ $a = 0.058738 + 0.776258I$ $b = -0.912296 - 0.581047I$	$-2.11200 + 1.03313I$	0
$u = -0.551714 + 0.218194I$ $a = 0.121797 + 0.972740I$ $b = 1.181600 - 0.138253I$	$-2.64681 + 0.31493I$	$-3.09974 + 2.98415I$
$u = -0.551714 - 0.218194I$ $a = 0.121797 - 0.972740I$ $b = 1.181600 + 0.138253I$	$-2.64681 - 0.31493I$	$-3.09974 - 2.98415I$
$u = -1.404890 + 0.097683I$ $a = 0.063758 + 0.734444I$ $b = 0.395294 - 0.764529I$	$-5.21021 + 2.48118I$	0
$u = -1.404890 - 0.097683I$ $a = 0.063758 - 0.734444I$ $b = 0.395294 + 0.764529I$	$-5.21021 - 2.48118I$	0
$u = 1.40558 + 0.24747I$ $a = -0.083482 + 0.851271I$ $b = -0.216127 - 0.825464I$	$-5.89665I$	0
$u = 1.40558 - 0.24747I$ $a = -0.083482 - 0.851271I$ $b = -0.216127 + 0.825464I$	$5.89665I$	0
$u = -0.501776 + 0.266487I$ $a = -1.68326 - 0.64048I$ $b = -0.349712 + 0.435136I$	$2.64681 - 0.31493I$	$3.09974 - 2.98415I$
$u = -0.501776 - 0.266487I$ $a = -1.68326 + 0.64048I$ $b = -0.349712 - 0.435136I$	$2.64681 + 0.31493I$	$3.09974 + 2.98415I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.44069$ $a=\ \ 6.02414$ $b=\ \ 1.02295$	-4.98750	0
$u=-1.44554+0.26940I$ $a=-0.382483-0.613995I$ $b=-0.139489+1.196830I$	$4.86838+10.14510I$	0
$u=-1.44554-0.26940I$ $a=-0.382483+0.613995I$ $b=-0.139489-1.196830I$	$4.86838-10.14510I$	0
$u=-0.246051+0.465180I$ $a=\ \ 0.19086+1.49758I$ $b=-0.139532-1.090770I$	$3.51621+2.84598I$	$7.08728-8.53827I$
$u=-0.246051-0.465180I$ $a=\ \ 0.19086-1.49758I$ $b=-0.139532+1.090770I$	$3.51621-2.84598I$	$7.08728+8.53827I$
$u=-1.47163+0.14528I$ $a=\ \ 0.565549+0.814669I$ $b=\ \ 1.57798-0.67208I$	$-6.71683+5.69927I$	0
$u=-1.47163-0.14528I$ $a=\ \ 0.565549-0.814669I$ $b=\ \ 1.57798+0.67208I$	$-6.71683-5.69927I$	0
$u=\ \ 1.51164+0.11669I$ $a=\ \ 0.684539-0.713923I$ $b=\ \ 1.44150+0.28466I$	$-9.48984-1.78690I$	0
$u=\ \ 1.51164-0.11669I$ $a=\ \ 0.684539+0.713923I$ $b=\ \ 1.44150-0.28466I$	$-9.48984+1.78690I$	0
$u=\ \ 0.227486+0.392172I$ $a=-2.91334-1.86372I$ $b=\ \ 0.976660-0.216723I$	$0.906236I$	$0.+9.31169I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.227486 - 0.392172I$ $a = -2.91334 + 1.86372I$ $b = 0.976660 + 0.216723I$	$-0.906236I$	$0. - 9.31169I$
$u = 1.53124 + 0.23600I$ $a = -0.569957 + 1.044770I$ $b = -1.46206 - 0.58160I$	$-6.85180 - 11.78730I$	0
$u = 1.53124 - 0.23600I$ $a = -0.569957 - 1.044770I$ $b = -1.46206 + 0.58160I$	$-6.85180 + 11.78730I$	0
$u = -1.55559$ $a = 1.08766$ $b = -0.193111$	1.08828	0
$u = -1.54857 + 0.24062I$ $a = -0.476741 - 0.923449I$ $b = -1.38209 + 0.33972I$	$-10.66310 + 6.45840I$	0
$u = -1.54857 - 0.24062I$ $a = -0.476741 + 0.923449I$ $b = -1.38209 - 0.33972I$	$-10.66310 - 6.45840I$	0
$u = 0.216451 + 0.368593I$ $a = -0.516118 - 0.919730I$ $b = 0.122854 + 0.327294I$	$-0.846056I$	$0. + 8.06993I$
$u = 0.216451 - 0.368593I$ $a = -0.516118 + 0.919730I$ $b = 0.122854 - 0.327294I$	$0.846056I$	$0. - 8.06993I$
$u = -1.55377 + 0.31543I$ $a = 0.587127 + 1.178050I$ $b = 1.42437 - 0.53718I$	$16.1961I$	0
$u = -1.55377 - 0.31543I$ $a = 0.587127 - 1.178050I$ $b = 1.42437 + 0.53718I$	$-16.1961I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.54410 + 0.36847I$ $a = 0.336253 - 1.043030I$ $b = 1.350500 + 0.365176I$	$-4.86838 - 10.14510I$	0
$u = 1.54410 - 0.36847I$ $a = 0.336253 + 1.043030I$ $b = 1.350500 - 0.365176I$	$-4.86838 + 10.14510I$	0
$u = 0.104562 + 0.393865I$ $a = 0.765029 - 1.020030I$ $b = -1.49104 + 0.54161I$	$5.95339 - 0.98579I$	$13.4814 + 6.1699I$
$u = 0.104562 - 0.393865I$ $a = 0.765029 + 1.020030I$ $b = -1.49104 - 0.54161I$	$5.95339 + 0.98579I$	$13.4814 - 6.1699I$
$u = 1.62235 + 0.28986I$ $a = -0.362610 + 0.552302I$ $b = -1.131580 - 0.066438I$	$-5.95339 - 0.98579I$	0
$u = 1.62235 - 0.28986I$ $a = -0.362610 - 0.552302I$ $b = -1.131580 + 0.066438I$	$-5.95339 + 0.98579I$	0
$u = -1.55311 + 0.67597I$ $a = -0.002070 + 0.554887I$ $b = 1.171780 - 0.109704I$	$-1.46224 + 2.61815I$	0
$u = -1.55311 - 0.67597I$ $a = -0.002070 - 0.554887I$ $b = 1.171780 + 0.109704I$	$-1.46224 - 2.61815I$	0
$u = -0.258714 + 0.094467I$ $a = 3.50898 + 1.82058I$ $b = -0.846426 - 0.103474I$	$3.19701 + 0.01303I$	$0.976771 + 0.960819I$
$u = -0.258714 - 0.094467I$ $a = 3.50898 - 1.82058I$ $b = -0.846426 + 0.103474I$	$3.19701 - 0.01303I$	$0.976771 - 0.960819I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \quad 0.155044$ $a = -52.3313$ $b = -1.07077$	4.98750	-83.9270
$u = -1.95291$ $a = \quad 0.284351$ $b = \quad 1.16979$	-2.49962	0

II. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{72} + u^{71} + \cdots - 16u + 1$
c_2, c_3, c_7	$u^{72} + 3u^{71} + \cdots - 26u^2 + 1$
c_5, c_6, c_{10}	$u^{72} - 3u^{71} + \cdots - 26u^2 + 1$
c_8, c_{12}	$u^{72} - u^{71} + \cdots + 16u + 1$
c_9	$63(63u^{72} + 1197u^{71} + \cdots - 137930u - 101308)$
c_{11}	$63(63u^{72} - 1197u^{71} + \cdots + 137930u - 101308)$

III. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_8 c_{12}	$y^{72} - 51y^{71} + \cdots - 20y + 1$
c_2, c_3, c_5 c_6, c_7, c_{10}	$y^{72} - 71y^{71} + \cdots - 52y + 1$
c_9, c_{11}	3969 $\cdot (3969y^{72} - 532791y^{71} + \cdots + 24968314100y + 10263310864)$