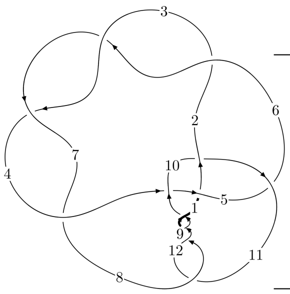
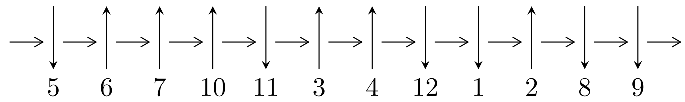
$12a_{1218}$ $(K12a_{1218})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & -2.88764 \times 10^{38} u^{57} + 1.08762 \times 10^{39} u^{56} + \cdots + 1.25794 \times 10^{38} b + 4.48859 \times 10^{38}, \\
& - 2.38160 \times 10^{37} u^{57} - 3.45850 \times 10^{38} u^{56} + \cdots + 1.25794 \times 10^{38} a - 1.21766 \times 10^{39}, \\
& u^{58} - 4u^{57} + \cdots + 10u + 1 \rangle \\
I_2^u = \langle & b - u,\ a - 1,\ u^2 + u - 1 \rangle \\
I_3^u = \langle & b + a,\ a^2 + a - 1,\ u - 1 \rangle
\end{aligned}$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 62 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. $I_1^u = \langle -2.89 \times 10^{38} u^{57} + 1.09 \times 10^{39} u^{56} + \cdots + 1.26 \times 10^{38} b + 4.49 \times 10^{38},\ -2.38 \times 10^{37} u^{57} - 3.46 \times 10^{38} u^{56} + \cdots + 1.26 \times 10^{38} a - 1.22 \times 10^{39},\ u^{58} - 4u^{57} + \cdots + 10u + 1 \rangle$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u^2 + 1 \\ u^4 - 2u^2 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0.189325u^{57} + 2.74933u^{56} + \cdots + 51.6861u + 9.67976 \\ 2.29553u^{57} - 8.64604u^{56} + \cdots - 52.0009u - 3.56820 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -3.31034u^{57} + 11.1720u^{56} + \cdots + 74.9248u + 11.0418 \\ 5.11921u^{57} - 15.5570u^{56} + \cdots - 75.3805u - 5.77324 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1.35642u^{57} - 2.73919u^{56} + \cdots - 31.4858u - 5.53784 \\ -3.83315u^{57} + 10.5013u^{56} + \cdots + 40.7130u + 3.05633 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -1.73986u^{57} + 2.87590u^{56} + \cdots - 2.41112u - 0.766687 \\ 1.73986u^{57} - 2.87590u^{56} + \cdots + 2.41112u - 0.233313 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -5.92742u^{57} + 17.2187u^{56} + \cdots + 94.5982u + 13.7225 \\ 8.41228u^{57} - 23.1154u^{56} + \cdots - 94.9130u - 7.61093 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0.212480u^{57} + 0.0136304u^{56} + \cdots + 18.3659u + 6.33053 \\ 1.59639u^{57} - 4.39858u^{56} + \cdots - 18.8215u - 1.06192 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 21.4511u^{57} - 79.0212u^{56} + \cdots - 524.981u - 52.4582$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{58} + 3u^{57} + \cdots + 4u + 4$
c_2, c_3, c_6 c_7	$u^{58} - 4u^{57} + \cdots + 10u + 1$
c_4	$u^{58} - u^{57} + \cdots + 519u + 83$
c_5	$u^{58} + u^{57} + \cdots - 519u + 83$
c_8, c_9, c_{11} c_{12}	$u^{58} + 4u^{57} + \cdots - 10u + 1$
c_{10}	$u^{58} - 3u^{57} + \cdots - 4u + 4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{10}	$y^{58} - 17y^{57} + \cdots - 120y + 16$
c_2, c_3, c_6 c_7, c_8, c_9 c_{11}, c_{12}	$y^{58} - 68y^{57} + \cdots - 90y + 1$
c_4, c_5	$y^{58} + 51y^{57} + \cdots - 36463y + 6889$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.803979 + 0.621852I$ $a = -0.271991 + 1.151380I$ $b = -1.08545 - 1.13142I$	$-8.28668 - 10.95660I$	0
$u = -0.803979 - 0.621852I$ $a = -0.271991 - 1.151380I$ $b = -1.08545 + 1.13142I$	$-8.28668 + 10.95660I$	0
$u = -0.793217 + 0.521649I$ $a = 0.498912 - 1.122630I$ $b = 0.946234 + 1.016640I$	$-8.39682I$	0
$u = -0.793217 - 0.521649I$ $a = 0.498912 + 1.122630I$ $b = 0.946234 - 1.016640I$	$8.39682I$	0
$u = 0.577533 + 0.730806I$ $a = -0.634988 - 0.459765I$ $b = -0.098643 + 1.074010I$	$-5.27688 + 2.48624I$	0
$u = 0.577533 - 0.730806I$ $a = -0.634988 + 0.459765I$ $b = -0.098643 - 1.074010I$	$-5.27688 - 2.48624I$	0
$u = 1.008620 + 0.380806I$ $a = -0.594450 - 0.045398I$ $b = 0.149754 + 0.464822I$	$1.242260 - 0.522127I$	0
$u = 1.008620 - 0.380806I$ $a = -0.594450 + 0.045398I$ $b = 0.149754 - 0.464822I$	$1.242260 + 0.522127I$	0
$u = -0.749389 + 0.385619I$ $a = -0.849917 + 1.075030I$ $b = -0.781148 - 0.827305I$	$2.11157 - 4.30929I$	$3.71388 + 6.70404I$
$u = -0.749389 - 0.385619I$ $a = -0.849917 - 1.075030I$ $b = -0.781148 + 0.827305I$	$2.11157 + 4.30929I$	$3.71388 - 6.70404I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.154793 + 0.824875I$ $a = -0.217281 - 0.442528I$ $b = 0.869009 - 0.759634I$	$-10.25510 + 6.17839I$	$-4.76560 - 4.41616I$
$u = -0.154793 - 0.824875I$ $a = -0.217281 + 0.442528I$ $b = 0.869009 + 0.759634I$	$-10.25510 - 6.17839I$	$-4.76560 + 4.41616I$
$u = 0.668037 + 0.496903I$ $a = 0.637455 + 0.425308I$ $b = 0.087808 - 0.841653I$	$1.48873 + 1.56696I$	$6.38155 - 7.61387I$
$u = 0.668037 - 0.496903I$ $a = 0.637455 - 0.425308I$ $b = 0.087808 + 0.841653I$	$1.48873 - 1.56696I$	$6.38155 + 7.61387I$
$u = 0.805056$ $a = 0.0586228$ $b = -0.469605$	1.37980	7.84380
$u = -0.614408 + 0.433410I$ $a = -0.65974 - 1.92027I$ $b = 0.667344 + 0.163534I$	$-9.33906 - 4.00146I$	$-4.44972 + 5.66506I$
$u = -0.614408 - 0.433410I$ $a = -0.65974 + 1.92027I$ $b = 0.667344 - 0.163534I$	$-9.33906 + 4.00146I$	$-4.44972 - 5.66506I$
$u = 1.176150 + 0.494013I$ $a = 0.885445 - 0.099461I$ $b = -0.449248 - 0.435686I$	$-6.21754 - 1.60405I$	0
$u = 1.176150 - 0.494013I$ $a = 0.885445 + 0.099461I$ $b = -0.449248 + 0.435686I$	$-6.21754 + 1.60405I$	0
$u = -0.091748 + 0.703159I$ $a = -0.125386 + 0.534649I$ $b = -0.680727 + 0.714968I$	$-2.11157 + 4.30929I$	$-3.71388 - 6.70404I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.091748-0.703159I$ $a=-0.125386-0.534649I$ $b=-0.680727-0.714968I$	$-2.11157-4.30929I$	$-3.71388+6.70404I$
$u=\ \ 0.635581+0.189573I$ $a=-0.89658+3.23104I$ $b=\ \ 0.93416-2.56648I$	$-7.67427+0.41875I$	$-15.8309+7.9264I$
$u=\ \ 0.635581-0.189573I$ $a=-0.89658-3.23104I$ $b=\ \ 0.93416+2.56648I$	$-7.67427-0.41875I$	$-15.8309-7.9264I$
$u=-0.550445+0.243751I$ $a=\ \ 1.52059-0.52439I$ $b=\ \ 0.749569+0.393249I$	$-1.242260-0.522127I$	$-4.85746+7.66329I$
$u=-0.550445-0.243751I$ $a=\ \ 1.52059+0.52439I$ $b=\ \ 0.749569-0.393249I$	$-1.242260+0.522127I$	$-4.85746-7.66329I$
$u=\ \ 0.584934+0.061813I$ $a=\ \ 0.15128-2.97701I$ $b=\ \ 0.05666+2.44383I$	$0.213446I$	$0.+27.5576I$
$u=\ \ 0.584934-0.061813I$ $a=\ \ 0.15128+2.97701I$ $b=\ \ 0.05666-2.44383I$	$-\ 0.213446I$	$0.-27.5576I$
$u=-0.430814+0.285650I$ $a=\ \ 0.09371+2.24652I$ $b=-0.371702+0.056513I$	$-1.48873-1.56696I$	$-6.38155+7.61387I$
$u=-0.430814-0.285650I$ $a=\ \ 0.09371-2.24652I$ $b=-0.371702-0.056513I$	$-1.48873+1.56696I$	$-6.38155-7.61387I$
$u=-0.250271+0.449093I$ $a=-0.567142-0.727486I$ $b=-1.268190-0.096887I$	$-10.37260+0.86444I$	$-7.08102+2.87846I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.250271-0.449093I$ $a=-0.567142+0.727486I$ $b=-1.268190+0.096887I$	$-10.37260-0.86444I$	$-7.08102-2.87846I$
$u=\ \ 1.50011$ $a=-0.813827$ $b=\ \ 1.76423$	-4.86772	0
$u=\ \ 1.54778+0.03907I$ $a=-0.22281+1.48990I$ $b=\ \ 0.058169-0.419643I$	$5.27688+2.48624I$	0
$u=\ \ 1.54778-0.03907I$ $a=-0.22281-1.48990I$ $b=\ \ 0.058169+0.419643I$	$5.27688-2.48624I$	0
$u=\ \ 0.001775+0.445857I$ $a=\ \ 1.000040-0.710446I$ $b=\ \ 0.364686-0.633641I$	$1.41091I$	$0.-3.50261I$
$u=\ \ 0.001775-0.445857I$ $a=\ \ 1.000040+0.710446I$ $b=\ \ 0.364686+0.633641I$	$-1.41091I$	$0.+3.50261I$
$u=\ \ 1.57398+0.11293I$ $a=\ \ 0.56491-1.41977I$ $b=-0.204122+0.485422I$	$-1.93678+5.95845I$	0
$u=\ \ 1.57398-0.11293I$ $a=\ \ 0.56491+1.41977I$ $b=-0.204122-0.485422I$	$-1.93678-5.95845I$	0
$u=\ \ 1.58805+0.06429I$ $a=\ \ 0.055690-1.002130I$ $b=-1.144500+0.638936I$	$6.21754+1.60405I$	0
$u=\ \ 1.58805-0.06429I$ $a=\ \ 0.055690+1.002130I$ $b=-1.144500-0.638936I$	$6.21754-1.60405I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.59261 + 0.05649I$ $a = -0.10696 + 3.02763I$ $b = 0.34217 - 2.56487I$	$-1.36403I$	0
$u = -1.59261 - 0.05649I$ $a = -0.10696 - 3.02763I$ $b = 0.34217 + 2.56487I$	$1.36403I$	0
$u = -1.58253 + 0.21992I$ $a = 0.43189 - 1.53582I$ $b = 0.242359 + 1.309890I$	$1.93678 - 5.95845I$	0
$u = -1.58253 - 0.21992I$ $a = 0.43189 + 1.53582I$ $b = 0.242359 - 1.309890I$	$1.93678 + 5.95845I$	0
$u = -1.60277 + 0.00806I$ $a = 0.94531 - 2.97432I$ $b = -1.17552 + 2.67763I$	$7.67427 - 0.41875I$	0
$u = -1.60277 - 0.00806I$ $a = 0.94531 + 2.97432I$ $b = -1.17552 - 2.67763I$	$7.67427 + 0.41875I$	0
$u = -1.61745 + 0.14658I$ $a = -0.199604 + 1.369900I$ $b = -0.401208 - 1.169100I$	$9.33906 - 4.00146I$	0
$u = -1.61745 - 0.14658I$ $a = -0.199604 - 1.369900I$ $b = -0.401208 + 1.169100I$	$9.33906 + 4.00146I$	0
$u = 1.62381 + 0.10972I$ $a = -0.13698 + 1.52608I$ $b = 1.07956 - 1.05237I$	$10.25510 + 6.17839I$	0
$u = 1.62381 - 0.10972I$ $a = -0.13698 - 1.52608I$ $b = 1.07956 + 1.05237I$	$10.25510 - 6.17839I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.63751 + 0.15124I$ $a = 0.28012 - 1.77911I$ $b = -1.14258 + 1.30370I$	$8.28668 + 10.95660I$	0
$u = 1.63751 - 0.15124I$ $a = 0.28012 + 1.77911I$ $b = -1.14258 - 1.30370I$	$8.28668 - 10.95660I$	0
$u = 1.64399 + 0.18789I$ $a = -0.39793 + 1.95590I$ $b = 1.21392 - 1.48592I$	$14.0571I$	0
$u = 1.64399 - 0.18789I$ $a = -0.39793 - 1.95590I$ $b = 1.21392 + 1.48592I$	$-14.0571I$	0
$u = -1.65526 + 0.07461I$ $a = -0.184098 - 0.969973I$ $b = 0.710486 + 0.840147I$	$10.37260 - 0.86444I$	0
$u = -1.65526 - 0.07461I$ $a = -0.184098 + 0.969973I$ $b = 0.710486 - 0.840147I$	$10.37260 + 0.86444I$	0
$u = -1.74741$ $a = -0.264052$ $b = -0.316899$	4.86772	0
$u = -0.113883$ $a = 5.02027$ $b = 0.684561$	-1.37980	-7.84380

II. $I_2^u = \langle b - u,\ a - 1,\ u^2 + u - 1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 5$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.618034$ $a = 1.00000$ $b = 0.618034$	-0.657974	5.00000
$u = -1.61803$ $a = 1.00000$ $b = -1.61803$	7.23771	5.00000

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -5$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.00000$ $a = 0.618034$ $b = -0.618034$	0.657974	−5.00000
$u = 1.00000$ $a = -1.61803$ $b = 1.61803$	−7.23771	−5.00000

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$u^2(u+1)^2(u^{58}+3u^{57}+\cdots+4u+4)$
c_2, c_3	$((u+1)^2)(u^2-u-1)(u^{58}-4u^{57}+\cdots+10u+1)$
c_4	$(u^2-u-1)(u^2+u-1)(u^{58}-u^{57}+\cdots+519u+83)$
c_5	$(u^2-u-1)(u^2+u-1)(u^{58}+u^{57}+\cdots-519u+83)$
c_6, c_7	$((u-1)^2)(u^2+u-1)(u^{58}-4u^{57}+\cdots+10u+1)$
c_8, c_9	$((u-1)^2)(u^2+u-1)(u^{58}+4u^{57}+\cdots-10u+1)$
c_{10}	$u^2(u-1)^2(u^{58}-3u^{57}+\cdots-4u+4)$
c_{11}, c_{12}	$((u+1)^2)(u^2-u-1)(u^{58}+4u^{57}+\cdots-10u+1)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_{10}	$y^2(y-1)^2(y^{58}-17y^{57}+\cdots-120y+16)$
c_2, c_3, c_6 c_7, c_8, c_9 c_{11}, c_{12}	$((y-1)^2)(y^2-3y+1)(y^{58}-68y^{57}+\cdots-90y+1)$
c_4, c_5	$((y^2-3y+1)^2)(y^{58}+51y^{57}+\cdots-36463y+6889)$