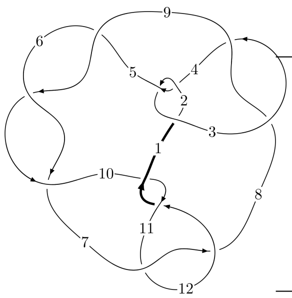
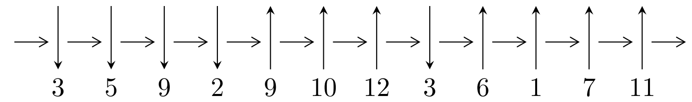
$12n_{0154}$ $(K12n_{0154})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$
\begin{aligned}
I_1^u = \langle & -1.84711 \times 10^{54} u^{30} + 3.00696 \times 10^{54} u^{29} + \cdots + 1.54890 \times 10^{57} b + 1.97638 \times 10^{57}, \\
& 5.87634 \times 10^{54} u^{30} + 8.97726 \times 10^{53} u^{29} + \cdots + 3.09781 \times 10^{57} a - 6.18337 \times 10^{57}, \\
& u^{31} + u^{30} + \cdots + 128u + 256 \rangle
\end{aligned}
$$

$$I_1^v = \langle a,\ b - 1,\ v^8 + v^7 - 3v^6 - 2v^5 + 3v^4 + 2v - 1 \rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 39 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. $\boldsymbol{I_1^u = \langle -1.85 \times 10^{54}u^{30} + 3.01 \times 10^{54}u^{29} + \cdots + 1.55 \times 10^{57}b + 1.98 \times 10^{57},\ 5.88 \times 10^{54}u^{30} + 8.98 \times 10^{53}u^{29} + \cdots + 3.10 \times 10^{57}a - 6.18 \times 10^{57},\ u^{31} + u^{30} + \cdots + 128u + 256\rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -0.00189693u^{30} - 0.000289794u^{29} + \cdots - 0.486873u + 1.99605 \\ 0.00119253u^{30} - 0.00194134u^{29} + \cdots + 0.0270826u - 1.27599 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -0.00189693u^{30} - 0.000289794u^{29} + \cdots - 0.486873u + 1.99605 \\ 0.000355948u^{30} - 0.00258740u^{29} + \cdots - 0.252818u - 0.864558 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0.00279729u^{30} + 0.00539863u^{29} + \cdots + 3.76148u + 1.30472 \\ -0.00152673u^{30} - 0.000485411u^{29} + \cdots + 0.810224u + 0.180328 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -0.00639923u^{30} - 0.00401893u^{29} + \cdots - 2.31167u + 3.22615 \\ -0.00140881u^{30} - 0.00446228u^{29} + \cdots - 0.919581u - 0.559880 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -0.00189693u^{30} - 0.000289794u^{29} + \cdots - 0.486873u + 1.99605 \\ -0.000355948u^{30} + 0.00258740u^{29} + \cdots + 0.252818u + 0.864558 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -0.00225288u^{30} + 0.00229761u^{29} + \cdots - 0.234054u + 2.86060 \\ -0.000355948u^{30} + 0.00258740u^{29} + \cdots + 0.252818u + 0.864558 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0.00450141u^{30} + 0.0104443u^{29} + \cdots + 7.25496u + 3.10927 \\ -0.00608885u^{30} - 0.00386215u^{29} + \cdots - 1.29049u + 0.110126 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 0.00392845u^{30} + 0.00115127u^{29} + \cdots + 3.59324u - 2.25231 \\ -0.00318570u^{30} - 0.00674377u^{29} + \cdots - 1.03520u - 2.46750 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u \\ -u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -0.0199438u^{30} - 0.0268193u^{29} + \cdots - 7.14938u - 3.17635$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{31} + u^{30} + \cdots + 4u + 1$
c_2, c_4	$u^{31} - 9u^{30} + \cdots - 6u + 1$
c_3, c_8	$u^{31} + u^{30} + \cdots + 128u + 256$
c_5, c_6, c_9	$u^{31} - 2u^{30} + \cdots + 2u + 1$
c_7, c_{11}	$u^{31} + 2u^{30} + \cdots + 4u + 1$
c_{10}, c_{12}	$u^{31} - 12u^{30} + \cdots + 24u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{31} + 67y^{30} + \cdots + 68y - 1$
c_2, c_4	$y^{31} - y^{30} + \cdots + 4y - 1$
c_3, c_8	$y^{31} + 51y^{30} + \cdots - 344064y - 65536$
c_5, c_6, c_9	$y^{31} - 44y^{30} + \cdots + 24y - 1$
c_7, c_{11}	$y^{31} - 12y^{30} + \cdots + 24y - 1$
c_{10}, c_{12}	$y^{31} + 16y^{30} + \cdots + 264y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.161591 + 1.013030I$ $a = 0.773041 - 1.031550I$ $b = -0.534786 + 0.620785I$	$0.69845 + 2.45290I$	$3.48973 - 2.59889I$
$u = 0.161591 - 1.013030I$ $a = 0.773041 + 1.031550I$ $b = -0.534786 - 0.620785I$	$0.69845 - 2.45290I$	$3.48973 + 2.59889I$
$u = 0.955263 + 0.163453I$ $a = 0.518313 + 0.144297I$ $b = 0.790559 - 0.498487I$	$-1.29160 + 4.22402I$	$2.31530 - 6.13986I$
$u = 0.955263 - 0.163453I$ $a = 0.518313 - 0.144297I$ $b = 0.790559 + 0.498487I$	$-1.29160 - 4.22402I$	$2.31530 + 6.13986I$
$u = -0.086594 + 1.090170I$ $a = 0.662258 + 1.136950I$ $b = -0.617467 - 0.656725I$	$1.82403 - 7.93866I$	$5.05436 + 7.63782I$
$u = -0.086594 - 1.090170I$ $a = 0.662258 - 1.136950I$ $b = -0.617467 + 0.656725I$	$1.82403 + 7.93866I$	$5.05436 - 7.63782I$
$u = 0.595270 + 0.941294I$ $a = 0.653949 - 0.621182I$ $b = -0.196146 + 0.763577I$	$1.82341 + 0.25468I$	$4.36583 - 1.12602I$
$u = 0.595270 - 0.941294I$ $a = 0.653949 + 0.621182I$ $b = -0.196146 - 0.763577I$	$1.82341 - 0.25468I$	$4.36583 + 1.12602I$
$u = -0.766374 + 0.321934I$ $a = 0.504447 - 0.092329I$ $b = 0.918111 + 0.351073I$	$-1.93326 + 0.39687I$	$-0.195239 - 1.308176I$
$u = -0.766374 - 0.321934I$ $a = 0.504447 + 0.092329I$ $b = 0.918111 - 0.351073I$	$-1.93326 - 0.39687I$	$-0.195239 + 1.308176I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.124749 + 0.751932I$ $a = 0.452240 - 0.011332I$ $b = 1.209830 + 0.055374I$	$-2.89631 - 2.32872I$	$3.99393 + 2.38138I$
$u = -0.124749 - 0.751932I$ $a = 0.452240 + 0.011332I$ $b = 1.209830 - 0.055374I$	$-2.89631 + 2.32872I$	$3.99393 - 2.38138I$
$u = -0.387754 + 1.234260I$ $a = 0.525560 + 0.831111I$ $b = -0.456481 - 0.859510I$	$6.58495 - 1.93672I$	$10.00855 + 2.44149I$
$u = -0.387754 - 1.234260I$ $a = 0.525560 - 0.831111I$ $b = -0.456481 + 0.859510I$	$6.58495 + 1.93672I$	$10.00855 - 2.44149I$
$u = 0.582153 + 0.326641I$ $a = 0.779541 - 0.242345I$ $b = 0.169752 + 0.363655I$	$1.172720 + 0.162363I$	$8.67848 - 0.29545I$
$u = 0.582153 - 0.326641I$ $a = 0.779541 + 0.242345I$ $b = 0.169752 - 0.363655I$	$1.172720 - 0.162363I$	$8.67848 + 0.29545I$
$u = -0.770420 + 1.108010I$ $a = 0.523737 + 0.599489I$ $b = -0.173508 - 0.946032I$	$3.43738 + 4.60020I$	$6.69378 - 4.27348I$
$u = -0.770420 - 1.108010I$ $a = 0.523737 - 0.599489I$ $b = -0.173508 + 0.946032I$	$3.43738 - 4.60020I$	$6.69378 + 4.27348I$
$u = 0.024622 + 0.570476I$ $a = 1.59020 - 0.12307I$ $b = -0.374894 + 0.048377I$	$-2.59053 + 2.65595I$	$2.84678 - 3.53648I$
$u = 0.024622 - 0.570476I$ $a = 1.59020 + 0.12307I$ $b = -0.374894 - 0.048377I$	$-2.59053 - 2.65595I$	$2.84678 + 3.53648I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.437432$ $a = 0.530400$ $b = 0.885369$	-1.27239	-10.1300
$u = 0.48856 + 2.04930I$ $a = -0.125667 + 0.875225I$ $b = -1.16074 - 1.11948I$	$11.66910 - 6.09696I$	0
$u = 0.48856 - 2.04930I$ $a = -0.125667 - 0.875225I$ $b = -1.16074 + 1.11948I$	$11.66910 + 6.09696I$	0
$u = -0.55039 + 2.06488I$ $a = -0.151530 - 0.868888I$ $b = -1.19479 + 1.11693I$	$13.3519 + 11.7446I$	0
$u = -0.55039 - 2.06488I$ $a = -0.151530 + 0.868888I$ $b = -1.19479 - 1.11693I$	$13.3519 - 11.7446I$	0
$u = 0.31189 + 2.12455I$ $a = -0.059513 + 0.836117I$ $b = -1.08470 - 1.18998I$	$11.95390 - 2.34313I$	0
$u = 0.31189 - 2.12455I$ $a = -0.059513 - 0.836117I$ $b = -1.08470 + 1.18998I$	$11.95390 + 2.34313I$	0
$u = -0.27394 + 2.19556I$ $a = -0.052072 - 0.807634I$ $b = -1.07950 + 1.23306I$	$13.7970 - 3.1675I$	0
$u = -0.27394 - 2.19556I$ $a = -0.052072 + 0.807634I$ $b = -1.07950 - 1.23306I$	$13.7970 + 3.1675I$	0
$u = -0.44042 + 2.17097I$ $a = -0.109711 - 0.826235I$ $b = -1.15792 + 1.18934I$	$17.8796 + 4.3535I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.44042 - 2.17097I$ $a = -0.109711 + 0.826235I$ $b = -1.15792 - 1.18934I$	$17.8796 - 4.3535I$	0

II. $I_1^v = \langle a,\ b-1,\ v^8+v^7-3v^6-2v^5+3v^4+2v-1\rangle$

(i) Arc colorings

$$a_3 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_9 = \begin{pmatrix}v\\0\end{pmatrix}$$
$$a_4 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_5 = \begin{pmatrix}0\\1\end{pmatrix}$$
$$a_6 = \begin{pmatrix}v^2\\1\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}-v^3+v\\-v\end{pmatrix}$$
$$a_7 = \begin{pmatrix}-v^4+2v^2\\-v^2+1\end{pmatrix}$$
$$a_2 = \begin{pmatrix}1\\-1\end{pmatrix}$$
$$a_1 = \begin{pmatrix}0\\-1\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-v^3+v\\v^3-2v\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}v^6-2v^4+v^2\\-v^6+3v^4-2v^2-1\end{pmatrix}$$
$$a_8 = \begin{pmatrix}v\\0\end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 2v^7+7v^6-5v^5-19v^4+8v^3+12v^2-8v+10$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2	$(u-1)^8$
c_3, c_8	u^8
c_4	$(u+1)^8$
c_5, c_6	$u^8 - u^7 - 3u^6 + 2u^5 + 3u^4 - 2u - 1$
c_7	$u^8 + u^7 - u^6 - 2u^5 + u^4 + 2u^3 - 2u - 1$
c_9	$u^8 + u^7 - 3u^6 - 2u^5 + 3u^4 + 2u - 1$
c_{10}	$u^8 + 3u^7 + 7u^6 + 10u^5 + 11u^4 + 10u^3 + 6u^2 + 4u + 1$
c_{11}	$u^8 - u^7 - u^6 + 2u^5 + u^4 - 2u^3 + 2u - 1$
c_{12}	$u^8 - 3u^7 + 7u^6 - 10u^5 + 11u^4 - 10u^3 + 6u^2 - 4u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y-1)^8$
c_3, c_8	y^8
c_5, c_6, c_9	$y^8 - 7y^7 + 19y^6 - 22y^5 + 3y^4 + 14y^3 - 6y^2 - 4y + 1$
c_7, c_{11}	$y^8 - 3y^7 + 7y^6 - 10y^5 + 11y^4 - 10y^3 + 6y^2 - 4y + 1$
c_{10}, c_{12}	$y^8 + 5y^7 + 11y^6 + 6y^5 - 17y^4 - 34y^3 - 22y^2 - 4y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$v = 1.180120 + 0.268597I$ $a = 0$ $b = 1.00000$	$-0.604279 + 1.131230I$	$1.351190 - 0.172290I$
$v = 1.180120 - 0.268597I$ $a = 0$ $b = 1.00000$	$-0.604279 - 1.131230I$	$1.351190 + 0.172290I$
$v = 0.108090 + 0.747508I$ $a = 0$ $b = 1.00000$	$-3.80435 + 2.57849I$	$-5.95120 - 3.90294I$
$v = 0.108090 - 0.747508I$ $a = 0$ $b = 1.00000$	$-3.80435 - 2.57849I$	$-5.95120 + 3.90294I$
$v = -1.37100$ $a = 0$ $b = 1.00000$	4.85780	8.27570
$v = -1.334530 + 0.318930I$ $a = 0$ $b = 1.00000$	$0.73474 - 6.44354I$	$3.58146 + 4.68309I$
$v = -1.334530 - 0.318930I$ $a = 0$ $b = 1.00000$	$0.73474 + 6.44354I$	$3.58146 - 4.68309I$
$v = 0.463640$ $a = 0$ $b = 1.00000$	-0.799899	8.76140

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^8)(u^{31}+u^{30}+\cdots+4u+1)$
c_2	$((u-1)^8)(u^{31}-9u^{30}+\cdots-6u+1)$
c_3, c_8	$u^8(u^{31}+u^{30}+\cdots+128u+256)$
c_4	$((u+1)^8)(u^{31}-9u^{30}+\cdots-6u+1)$
c_5, c_6	$(u^8-u^7-3u^6+2u^5+3u^4-2u-1)(u^{31}-2u^{30}+\cdots+2u+1)$
c_7	$(u^8+u^7+\cdots-2u-1)(u^{31}+2u^{30}+\cdots+4u+1)$
c_9	$(u^8+u^7-3u^6-2u^5+3u^4+2u-1)(u^{31}-2u^{30}+\cdots+2u+1)$
c_{10}	$(u^8+3u^7+7u^6+10u^5+11u^4+10u^3+6u^2+4u+1)$ $\cdot(u^{31}-12u^{30}+\cdots+24u-1)$
c_{11}	$(u^8-u^7+\cdots+2u-1)(u^{31}+2u^{30}+\cdots+4u+1)$
c_{12}	$(u^8-3u^7+7u^6-10u^5+11u^4-10u^3+6u^2-4u+1)$ $\cdot(u^{31}-12u^{30}+\cdots+24u-1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^8)(y^{31}+67y^{30}+\cdots+68y-1)$
c_2, c_4	$((y-1)^8)(y^{31}-y^{30}+\cdots+4y-1)$
c_3, c_8	$y^8(y^{31}+51y^{30}+\cdots-344064y-65536)$
c_5, c_6, c_9	$(y^8-7y^7+19y^6-22y^5+3y^4+14y^3-6y^2-4y+1)$ $\cdot(y^{31}-44y^{30}+\cdots+24y-1)$
c_7, c_{11}	$(y^8-3y^7+7y^6-10y^5+11y^4-10y^3+6y^2-4y+1)$ $\cdot(y^{31}-12y^{30}+\cdots+24y-1)$
c_{10}, c_{12}	$(y^8+5y^7+11y^6+6y^5-17y^4-34y^3-22y^2-4y+1)$ $\cdot(y^{31}+16y^{30}+\cdots+264y-1)$