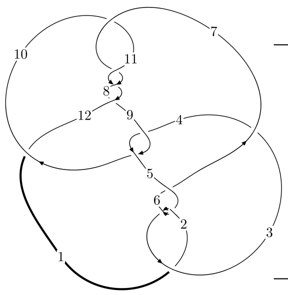
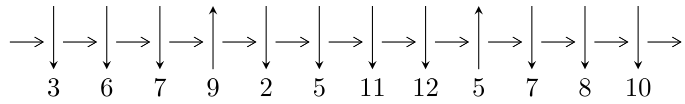
$12n_{0303}$ ($K12n_{0303}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle u^{23} + u^{22} + \cdots + b - 2u,\ -3u^{23} - 6u^{22} + \cdots + 2a + 7,\ u^{26} + 3u^{25} + \cdots - 9u^2 + 1\rangle$$
$$I_2^u = \langle b,\ a^2 + au - u^2 - a + 2u - 1,\ u^3 - u^2 + 1\rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 32 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.
$$\boldsymbol{I_1^u = \langle u^{23}+u^{22}+\cdots+b-2u,\ -3u^{23}-6u^{22}+\cdots+2a+7,\ u^{26}+3u^{25}+\cdots-9u^2+1\rangle}$$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u \\ -u^3+u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u^2+1 \\ u^2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} \frac{3}{2}u^{23}+3u^{22}+\cdots-4u-\frac{7}{2} \\ -u^{23}-u^{22}+\cdots+2u^2+2u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} u^{25}+\frac{7}{2}u^{24}+\cdots-\frac{11}{2}u-3 \\ -\frac{1}{2}u^{25}-\frac{3}{2}u^{24}+\cdots+\frac{3}{2}u-\frac{1}{2} \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^3 \\ u^5-u^3+u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} \frac{5}{2}u^{23}+4u^{22}+\cdots-6u-\frac{7}{2} \\ -u^{23}-u^{22}+\cdots+2u^2+2u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} u^7-2u^5+2u^3-2u \\ -u^7+u^5-2u^3+u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} \frac{1}{2}u^{23}+u^{22}+\cdots+2u+\frac{1}{2} \\ -u^2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} \frac{1}{2}u^{24}-2u^{22}+\cdots-\frac{7}{2}u+1 \\ -\frac{1}{2}u^{25}-\frac{3}{2}u^{24}+\cdots+\frac{3}{2}u-\frac{1}{2} \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{11}{2}u^{25}-12u^{24}+\frac{1}{2}u^{23}+30u^{22}-13u^{21}-105u^{20}-42u^{19}+\frac{337}{2}u^{18}+57u^{17}-325u^{16}-196u^{15}+356u^{14}+198u^{13}-\frac{979}{2}u^{12}-283u^{11}+\frac{789}{2}u^{10}+\frac{353}{2}u^9-\frac{809}{2}u^8-\frac{297}{2}u^7+250u^6+41u^5-154u^4-16u^3+\frac{149}{2}u^2+13u-\frac{33}{2}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_6	$u^{26} + 5u^{25} + \cdots + 18u + 1$
c_2, c_5	$u^{26} + 3u^{25} + \cdots - 9u^2 + 1$
c_3	$u^{26} - 3u^{25} + \cdots + 6516u + 1009$
c_4, c_9	$u^{26} - u^{25} + \cdots + 96u + 64$
c_7, c_8, c_{10} c_{11}	$u^{26} + 4u^{25} + \cdots - 3u + 1$
c_{12}	$u^{26} + 28u^{24} + \cdots - 31u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_6	$y^{26} + 35y^{25} + \cdots - 74y + 1$
c_2, c_5	$y^{26} - 5y^{25} + \cdots - 18y + 1$
c_3	$y^{26} + 95y^{25} + \cdots - 36103574y + 1018081$
c_4, c_9	$y^{26} - 35y^{25} + \cdots - 58368y + 4096$
c_7, c_8, c_{10} c_{11}	$y^{26} - 28y^{25} + \cdots - 27y + 1$
c_{12}	$y^{26} + 56y^{25} + \cdots - 391y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.697878 + 0.750786I$ $a = 0.950274 + 0.282069I$ $b = -0.969430 + 0.478608I$	$3.30312 - 1.30372I$	$-2.90180 + 1.28901I$
$u = 0.697878 - 0.750786I$ $a = 0.950274 - 0.282069I$ $b = -0.969430 - 0.478608I$	$3.30312 + 1.30372I$	$-2.90180 - 1.28901I$
$u = -1.05556$ $a = -1.13582$ $b = -1.20261$	-6.55918	-13.9020
$u = -0.714104 + 0.530028I$ $a = -0.308272 + 1.024340I$ $b = -0.222426 + 0.888370I$	$-7.39553 + 1.99902I$	$-12.68261 - 2.64464I$
$u = -0.714104 - 0.530028I$ $a = -0.308272 - 1.024340I$ $b = -0.222426 - 0.888370I$	$-7.39553 - 1.99902I$	$-12.68261 + 2.64464I$
$u = 0.426539 + 0.776149I$ $a = -1.244140 - 0.230526I$ $b = 1.405990 + 0.009237I$	$-1.37386 + 1.46827I$	$-7.40504 - 0.61110I$
$u = 0.426539 - 0.776149I$ $a = -1.244140 + 0.230526I$ $b = 1.405990 - 0.009237I$	$-1.37386 - 1.46827I$	$-7.40504 + 0.61110I$
$u = 0.924653 + 0.644299I$ $a = -0.192140 - 0.877647I$ $b = 0.922849 + 0.070450I$	$2.53585 - 3.91698I$	$-4.21369 + 6.80514I$
$u = 0.924653 - 0.644299I$ $a = -0.192140 + 0.877647I$ $b = 0.922849 - 0.070450I$	$2.53585 + 3.91698I$	$-4.21369 - 6.80514I$
$u = 1.032140 + 0.523292I$ $a = 0.16264 + 1.48931I$ $b = -1.372650 + 0.239227I$	$-3.36202 - 6.28703I$	$-10.76890 + 5.79025I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.032140 - 0.523292I$ $a = 0.16264 - 1.48931I$ $b = -1.372650 - 0.239227I$	$-3.36202 + 6.28703I$	$-10.76890 - 5.79025I$
$u = -0.826543$ $a = 0.499620$ $b = 0.424946$	-1.35750	-5.74160
$u = 0.904709 + 0.855635I$ $a = -0.749040 + 0.396223I$ $b = 0.015583 - 1.255880I$	$0.45711 - 3.16518I$	$-10.09379 + 2.71963I$
$u = 0.904709 - 0.855635I$ $a = -0.749040 - 0.396223I$ $b = 0.015583 + 1.255880I$	$0.45711 + 3.16518I$	$-10.09379 - 2.71963I$
$u = -0.874451 + 0.958708I$ $a = -1.34597 + 0.77169I$ $b = 1.85003 - 0.54896I$	$6.92052 - 3.79217I$	$-7.74212 + 0.87029I$
$u = -0.874451 - 0.958708I$ $a = -1.34597 - 0.77169I$ $b = 1.85003 + 0.54896I$	$6.92052 + 3.79217I$	$-7.74212 - 0.87029I$
$u = -0.932825 + 0.952507I$ $a = 1.48560 - 0.97786I$ $b = -2.02844 + 0.13031I$	$13.70930 + 0.63054I$	$-5.09956 + 0.08472I$
$u = -0.932825 - 0.952507I$ $a = 1.48560 + 0.97786I$ $b = -2.02844 - 0.13031I$	$13.70930 - 0.63054I$	$-5.09956 - 0.08472I$
$u = -1.007520 + 0.885407I$ $a = 1.72924 - 1.22466I$ $b = -1.78041 - 0.65102I$	$6.48279 + 10.56660I$	$-8.37835 - 5.32202I$
$u = -1.007520 - 0.885407I$ $a = 1.72924 + 1.22466I$ $b = -1.78041 + 0.65102I$	$6.48279 - 10.56660I$	$-8.37835 + 5.32202I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.977518 + 0.926314I$ $a = -1.61355 + 1.11637I$ $b = 1.99598 + 0.29162I$	$13.5604 + 6.2675I$	$-5.43427 - 4.61670I$
$u = -0.977518 - 0.926314I$ $a = -1.61355 - 1.11637I$ $b = 1.99598 - 0.29162I$	$13.5604 - 6.2675I$	$-5.43427 + 4.61670I$
$u = 0.605940$ $a = 3.65946$ $b = -0.461168$	-9.68489	0.985630
$u = -0.507505 + 0.285828I$ $a = 0.417815 - 0.836271I$ $b = 0.046187 - 0.679181I$	$-0.698170 + 0.981366I$	$-8.43360 - 6.86703I$
$u = -0.507505 - 0.285828I$ $a = 0.417815 + 0.836271I$ $b = 0.046187 + 0.679181I$	$-0.698170 - 0.981366I$	$-8.43360 + 6.86703I$
$u = 0.332169$ $a = -2.60819$ $b = 0.512315$	-1.32945	-6.03470

II. $I_2^u = \langle b,\ a^2 + au - u^2 - a + 2u - 1,\ u^3 - u^2 + 1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -u^2 a - 3u^2 - a + 8u - 13$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.877439 + 0.744862I$ $a = 0.198308 - 1.205210I$ $b = 0$	$-5.85852 - 2.82812I$	$-8.44207 + 3.24268I$
$u = 0.877439 + 0.744862I$ $a = -0.075747 + 0.460350I$ $b = 0$	$2.03717 - 2.82812I$	$-5.93195 + 1.57712I$
$u = 0.877439 - 0.744862I$ $a = 0.198308 + 1.205210I$ $b = 0$	$-5.85852 + 2.82812I$	$-8.44207 - 3.24268I$
$u = 0.877439 - 0.744862I$ $a = -0.075747 - 0.460350I$ $b = 0$	$2.03717 + 2.82812I$	$-5.93195 - 1.57712I$
$u = -0.754878$ $a = -1.08457$ $b = 0$	-2.10041	-19.0460
$u = -0.754878$ $a = 2.83945$ $b = 0$	-9.99610	-25.2060

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^3-u^2+2u-1)^2)(u^{26}+5u^{25}+\cdots+18u+1)$
c_2	$((u^3+u^2-1)^2)(u^{26}+3u^{25}+\cdots-9u^2+1)$
c_3	$((u^3-u^2+2u-1)^2)(u^{26}-3u^{25}+\cdots+6516u+1009)$
c_4, c_9	$u^6(u^{26}-u^{25}+\cdots+96u+64)$
c_5	$((u^3-u^2+1)^2)(u^{26}+3u^{25}+\cdots-9u^2+1)$
c_6	$((u^3+u^2+2u+1)^2)(u^{26}+5u^{25}+\cdots+18u+1)$
c_7, c_8	$((u^2+u-1)^3)(u^{26}+4u^{25}+\cdots-3u+1)$
c_{10}, c_{11}	$((u^2-u-1)^3)(u^{26}+4u^{25}+\cdots-3u+1)$
c_{12}	$((u^2-u-1)^3)(u^{26}+28u^{24}+\cdots-31u-1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_6	$((y^3+3y^2+2y-1)^2)(y^{26}+35y^{25}+\cdots-74y+1)$
c_2, c_5	$((y^3-y^2+2y-1)^2)(y^{26}-5y^{25}+\cdots-18y+1)$
c_3	$((y^3+3y^2+2y-1)^2)(y^{26}+95y^{25}+\cdots-3.61036\times 10^7 y+1018081)$
c_4, c_9	$y^6(y^{26}-35y^{25}+\cdots-58368y+4096)$
c_7, c_8, c_{10} c_{11}	$((y^2-3y+1)^3)(y^{26}-28y^{25}+\cdots-27y+1)$
c_{12}	$((y^2-3y+1)^3)(y^{26}+56y^{25}+\cdots-391y+1)$