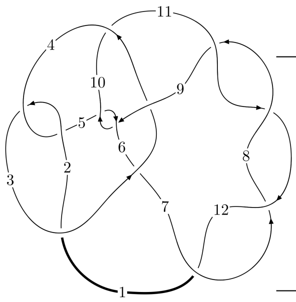
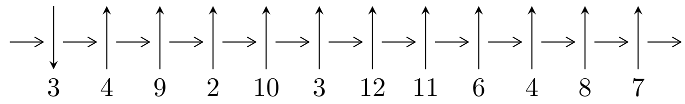
$12n_{0149}$ $(K12n_{0149})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u &= \langle -u^7 - 2u^6 + 6u^5 + 12u^4 - 8u^3 - 12u^2 + 2b + 13u + 8, \\
&\quad 7u^7 + 9u^6 - 38u^5 - 59u^4 + 48u^3 + 59u^2 + 20a - 59u - 48, \\
&\quad u^8 + 2u^7 - 4u^6 - 12u^5 - u^4 + 12u^3 - 2u^2 - 14u - 5\rangle \\
I_2^u &= \langle -u^3 b - 2u^2 b + b^2 + bu + 2u^2 - u - 2,\ u^2 + a,\ u^4 - u^2 + 1\rangle \\
I_3^u &= \langle b + u,\ a + u - 1,\ u^2 - u + 1\rangle
\end{aligned}$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 18 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.

$$I_1^u = \langle -u^7 - 2u^6 + \cdots + 2b + 8,\ 7u^7 + 9u^6 + \cdots + 20a - 48,\ u^8 + 2u^7 + \cdots - 14u - 5\rangle$$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.350000u^7 - 0.450000u^6 + \cdots + 2.95000u + 2.40000 \\ \frac{1}{2}u^7 + u^6 - 3u^5 - 6u^4 + 4u^3 + 6u^2 - \frac{13}{2}u - 4 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} \frac{3}{20}u^7 + \frac{11}{20}u^6 + \cdots - \frac{71}{20}u - \frac{8}{5} \\ \frac{1}{2}u^7 + u^6 - 3u^5 - 6u^4 + 4u^3 + 6u^2 - \frac{13}{2}u - 4 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -\frac{9}{20}u^7 - \frac{3}{20}u^6 + \cdots + \frac{53}{20}u + \frac{4}{5} \\ 2u^7 + \frac{5}{4}u^6 + \cdots - \frac{57}{4}u - \frac{27}{4} \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} \frac{11}{20}u^7 + \frac{7}{20}u^6 + \cdots - \frac{67}{20}u - \frac{11}{5} \\ -\frac{1}{4}u^6 + \frac{1}{4}u^5 + \cdots + \frac{7}{4}u + \frac{3}{4} \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -u^2 + 1 \\ u^4 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^4 - u^2 + 1 \\ u^4 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u^4 - u^2 + 1 \\ -u^6 - u^2 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.450000u^7 - 0.650000u^6 + \cdots + 4.65000u + 2.80000 \\ -\frac{1}{2}u^7 - \frac{1}{2}u^6 + \cdots + 5u + 2 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} \frac{13}{20}u^7 + \frac{1}{20}u^6 + \cdots - \frac{81}{20}u - \frac{3}{5} \\ \frac{1}{2}u^7 - \frac{1}{4}u^6 + \cdots - \frac{9}{4}u - \frac{1}{4} \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{3}{2}u^7 - 2u^6 + \frac{15}{2}u^5 + \frac{27}{2}u^4 - \frac{15}{2}u^3 - \frac{33}{2}u^2 + 11u + \frac{49}{2}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^8 - 20u^7 + \cdots - 13476u + 625$
c_2, c_4	$u^8 - 12u^7 + 62u^6 - 188u^5 + 351u^4 - 436u^3 + 350u^2 - 176u + 25$
c_3	$u^8 - 2u^7 - 4u^6 + 12u^5 - u^4 - 12u^3 - 2u^2 + 14u - 5$
c_5, c_9	$u^8 + 2u^7 - 3u^6 + 8u^5 + 19u^4 + 26u^3 + 11u^2 + 4u - 4$
c_6	$u^8 - 12u^7 + 21u^6 + 102u^5 - 554u^4 - 2292u^3 + 749u^2 - 502u + 179$
c_7, c_8, c_{11} c_{12}	$u^8 + 2u^7 + 6u^6 + 8u^5 + 5u^4 + 8u^3 - 12u^2 + 6u - 1$
c_{10}	$u^8 - 2u^7 - 3u^6 - 92u^5 - 70u^4 - 350u^3 - 705u^2 - 144u + 193$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^8 - 332y^7 + \cdots - 198380076y + 390625$
c_2, c_4	$y^8 - 20y^7 + \cdots - 13476y + 625$
c_3	$y^8 - 12y^7 + 62y^6 - 188y^5 + 351y^4 - 436y^3 + 350y^2 - 176y + 25$
c_5, c_9	$y^8 - 10y^7 + 15y^6 - 260y^5 - 145y^4 - 298y^3 - 239y^2 - 104y + 16$
c_6	$y^8 - 102y^7 + \cdots + 16138y + 32041$
c_7, c_8, c_{11} c_{12}	$y^8 + 8y^7 + 14y^6 - 60y^5 - 273y^4 - 292y^3 + 38y^2 - 12y + 1$
c_{10}	$y^8 - 10y^7 + \cdots - 292866y + 37249$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.872971 + 0.618128I$ $a = -0.215446 - 0.731489I$ $b = -0.005364 + 0.460904I$	$-1.46286 + 2.16790I$	$9.57172 - 4.32976I$
$u = 0.872971 - 0.618128I$ $a = -0.215446 + 0.731489I$ $b = -0.005364 - 0.460904I$	$-1.46286 - 2.16790I$	$9.57172 + 4.32976I$
$u = -1.162380 + 0.411109I$ $a = -0.420013 - 0.734093I$ $b = 2.69985 + 1.42341I$	$-8.79021 - 1.33537I$	$7.32369 + 0.78408I$
$u = -1.162380 - 0.411109I$ $a = -0.420013 + 0.734093I$ $b = 2.69985 - 1.42341I$	$-8.79021 + 1.33537I$	$7.32369 - 0.78408I$
$u = -0.458955$ $a = 0.746207$ $b = -0.337573$	0.592549	17.1350
$u = -1.56303 + 0.67202I$ $a = 1.198220 - 0.500803I$ $b = -3.72972 + 3.74449I$	$4.57005 - 8.46981I$	$6.36910 + 3.46503I$
$u = -1.56303 - 0.67202I$ $a = 1.198220 + 0.500803I$ $b = -3.72972 - 3.74449I$	$4.57005 + 8.46981I$	$6.36910 - 3.46503I$
$u = 2.16384$ $a = 1.52826$ $b = -9.59194$	10.7735	8.33600

II. $\boldsymbol{I_2^u = \langle -u^3b - 2u^2b + b^2 + bu + 2u^2 - u - 2,\ u^2 + a,\ u^4 - u^2 + 1\rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

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

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

$$a_{10} = \begin{pmatrix} u^3 - u \\ -u^3b + u \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} -u^2 + 1 \\ u^2 - 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0 \\ u^2 - 1 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 0 \\ -u^2 + 1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u^3 + u^2 - b + u \\ u^3b + u^2b - 2u^3 - b + 2u + 1 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} u^3b - u^3 - u^2 + u \\ u^3b - u^3 - u^2 + b + u - 1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4u^2 + 4$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$(u^2 - u + 1)^4$
c_2	$(u^2 + u + 1)^4$
c_3	$(u^4 - u^2 + 1)^2$
c_5, c_9	$(u^2 + 1)^4$
c_6	$u^8 + 4u^7 + 7u^6 + 16u^5 + 36u^4 + 50u^3 + 55u^2 + 50u + 25$
c_7, c_8, c_{11} c_{12}	$(u^4 + 3u^2 + 1)^2$
c_{10}	$u^8 + 2u^7 + 3u^6 + 2u^5 - 4u^4 - 20u^3 - 5u^2 + 25$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y^2+y+1)^4$
c_3	$(y^2-y+1)^4$
c_5, c_9	$(y+1)^8$
c_6	$y^8-2y^7-7y^6-42y^5+116y^4+210y^3-175y^2+250y+625$
c_7, c_8, c_{11} c_{12}	$(y^2+3y+1)^4$
c_{10}	$y^8+2y^7-7y^6+42y^5+116y^4-210y^3-175y^2-250y+625$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.866025 + 0.500000I$ $a = -0.500000 - 0.866025I$ $b = 1.035230 + 0.557008I$	$-2.63189 + 2.02988I$	$2.00000 - 3.46410I$
$u = 0.866025 + 0.500000I$ $a = -0.500000 - 0.866025I$ $b = -0.90126 + 1.67504I$	$-10.52760 + 2.02988I$	$2.00000 - 3.46410I$
$u = 0.866025 - 0.500000I$ $a = -0.500000 + 0.866025I$ $b = 1.035230 - 0.557008I$	$-2.63189 - 2.02988I$	$2.00000 + 3.46410I$
$u = 0.866025 - 0.500000I$ $a = -0.500000 + 0.866025I$ $b = -0.90126 - 1.67504I$	$-10.52760 - 2.02988I$	$2.00000 + 3.46410I$
$u = -0.866025 + 0.500000I$ $a = -0.500000 + 0.866025I$ $b = -0.035233 - 1.175040I$	$-2.63189 - 2.02988I$	$2.00000 + 3.46410I$
$u = -0.866025 + 0.500000I$ $a = -0.500000 + 0.866025I$ $b = 1.90126 - 0.05701I$	$-10.52760 - 2.02988I$	$2.00000 + 3.46410I$
$u = -0.866025 - 0.500000I$ $a = -0.500000 - 0.866025I$ $b = -0.035233 + 1.175040I$	$-2.63189 + 2.02988I$	$2.00000 - 3.46410I$
$u = -0.866025 - 0.500000I$ $a = -0.500000 - 0.866025I$ $b = 1.90126 + 0.05701I$	$-10.52760 + 2.02988I$	$2.00000 - 3.46410I$

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

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u+8$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.500000 + 0.866025I$ $a = 0.500000 - 0.866025I$ $b = -0.500000 - 0.866025I$	$-1.64493 + 2.02988I$	$6.00000 - 3.46410I$
$u = 0.500000 - 0.866025I$ $a = 0.500000 + 0.866025I$ $b = -0.500000 + 0.866025I$	$-1.64493 - 2.02988I$	$6.00000 + 3.46410I$

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^2-u+1)^4)(u^2+u+1)(u^8-20u^7+\cdots-13476u+625)$
c_2	$(u^2+u+1)^5$ $\cdot\,(u^8-12u^7+62u^6-188u^5+351u^4-436u^3+350u^2-176u+25)$
c_3	$(u^2+u+1)(u^4-u^2+1)^2$ $\cdot\,(u^8-2u^7-4u^6+12u^5-u^4-12u^3-2u^2+14u-5)$
c_4	$(u^2-u+1)^4(u^2+u+1)$ $\cdot\,(u^8-12u^7+62u^6-188u^5+351u^4-436u^3+350u^2-176u+25)$
c_5, c_9	$(u+1)^2(u^2+1)^4$ $\cdot\,(u^8+2u^7-3u^6+8u^5+19u^4+26u^3+11u^2+4u-4)$
c_6	(u^2-u+1) $\cdot\,(u^8-12u^7+21u^6+102u^5-554u^4-2292u^3+749u^2-502u+179)$ $\cdot\,(u^8+4u^7+7u^6+16u^5+36u^4+50u^3+55u^2+50u+25)$
c_7, c_8, c_{11} c_{12}	$(u^2-u+1)(u^4+3u^2+1)^2$ $\cdot\,(u^8+2u^7+6u^6+8u^5+5u^4+8u^3-12u^2+6u-1)$
c_{10}	(u^2+u+1) $\cdot\,(u^8-2u^7-3u^6-92u^5-70u^4-350u^3-705u^2-144u+193)$ $\cdot\,(u^8+2u^7+3u^6+2u^5-4u^4-20u^3-5u^2+25)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y^2+y+1)^5)(y^8-332y^7+\cdots-1.98380\times10^8y+390625)$
c_2, c_4	$((y^2+y+1)^5)(y^8-20y^7+\cdots-13476y+625)$
c_3	$(y^2-y+1)^4(y^2+y+1)$ $\cdot(y^8-12y^7+62y^6-188y^5+351y^4-436y^3+350y^2-176y+25)$
c_5, c_9	$(y-1)^2(y+1)^8$ $\cdot(y^8-10y^7+15y^6-260y^5-145y^4-298y^3-239y^2-104y+16)$
c_6	$(y^2+y+1)(y^8-102y^7+\cdots+16138y+32041)$ $\cdot(y^8-2y^7-7y^6-42y^5+116y^4+210y^3-175y^2+250y+625)$
c_7, c_8, c_{11} c_{12}	$(y^2+y+1)(y^2+3y+1)^4$ $\cdot(y^8+8y^7+14y^6-60y^5-273y^4-292y^3+38y^2-12y+1)$
c_{10}	$(y^2+y+1)(y^8-10y^7+\cdots-292866y+37249)$ $\cdot(y^8+2y^7-7y^6+42y^5+116y^4-210y^3-175y^2-250y+625)$