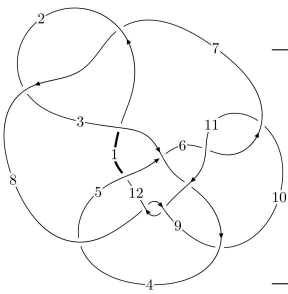
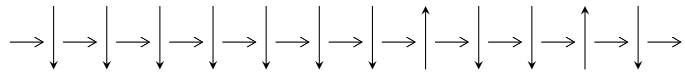
$12n_{0624}$ ($K12n_{0624}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle u^{16} - u^{15} + 6u^{14} - 5u^{13} + 13u^{12} - 10u^{11} + 8u^{10} - 9u^9 - 9u^8 - 4u^7 - 9u^6 + 8u^4 + 2u^3 + 9u^2 + b + u - 1,$$
$$u^{16} - 3u^{15} + \cdots + a + 5,\ u^{18} - 2u^{17} + \cdots - 8u + 1\rangle$$
$$I_2^u = \langle u^{11} + 2u^{10} + 6u^9 + 8u^8 + 12u^7 + 12u^6 + 9u^5 + 6u^4 - u^2 + b - 2u - 2,$$
$$-u^{11} - 3u^{10} - 10u^9 - 18u^8 - 30u^7 - 35u^6 - 33u^5 - 23u^4 - 6u^3 + 4u^2 + a + 9u + 6,$$
$$u^{12} + 3u^{11} + 9u^{10} + 16u^9 + 25u^8 + 30u^7 + 28u^6 + 21u^5 + 8u^4 - u^3 - 5u^2 - 5u - 1\rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 30 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.

$$\boldsymbol{I_1^u = \langle u^{16} - u^{15} + \cdots + b - 1,\ u^{16} - 3u^{15} + \cdots + a + 5,\ u^{18} - 2u^{17} + \cdots - 8u + 1\rangle}$$

(i) Arc colorings

$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -u^{16} + 3u^{15} + \cdots + 18u - 5 \\ -u^{16} + u^{15} + \cdots - u + 1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -2u^{16} + 4u^{15} + \cdots + 17u - 4 \\ -u^{16} + u^{15} + \cdots - u + 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u^{15} + u^{14} + \cdots - 10u + 1 \\ u^{16} - u^{15} + \cdots + 3u^3 + 10u^2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^{17} - 5u^{15} + \cdots + 5u + 1 \\ -u^{16} + u^{15} + \cdots - 11u^2 + u \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} u^{17} - 2u^{16} + \cdots + 19u - 5 \\ -u^{17} + u^{16} + \cdots - 9u + 2 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 2u^{17} - 3u^{16} + \cdots + 28u - 7 \\ -u^{17} + u^{16} + \cdots - 9u + 2 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} u^{16} - 2u^{15} + \cdots - 6u - 1 \\ u^{17} - u^{16} + \cdots + 7u - 1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -u^{17} + u^{16} + \cdots - 4u + 1 \\ -u^{16} + u^{15} + \cdots + 7u - 1 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 2u^{17} - 3u^{16} + 19u^{15} - 23u^{14} + 70u^{13} - 72u^{12} + 124u^{11} - 114u^{10} + 89u^9 - 89u^8 - 15u^7 - 26u^6 - 27u^5 - 2u^4 + 51u^3 - 15u^2 + 50u - 24$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{18} + 14u^{17} + \cdots + 21504u + 4096$
c_2, c_7	$u^{18} - 16u^{17} + \cdots + 224u - 64$
c_3, c_6, c_{10}	$u^{18} + 2u^{17} + \cdots - 2u - 1$
c_4, c_{12}	$u^{18} + 3u^{17} + \cdots - 2u - 1$
c_5	$u^{18} - 5u^{17} + \cdots - 4u + 1$
c_8, c_{11}	$u^{18} + 2u^{17} + \cdots + 8u + 1$
c_9	$u^{18} - u^{17} + \cdots - 120u - 61$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{18} + 82y^{17} + \cdots - 437256192y + 16777216$
c_2, c_7	$y^{18} - 14y^{17} + \cdots - 21504y + 4096$
c_3, c_6, c_{10}	$y^{18} + 28y^{17} + \cdots - 18y + 1$
c_4, c_{12}	$y^{18} + 35y^{17} + \cdots + 20y + 1$
c_5	$y^{18} - 45y^{17} + \cdots - 20y + 1$
c_8, c_{11}	$y^{18} + 14y^{17} + \cdots - 32y + 1$
c_9	$y^{18} + 33y^{17} + \cdots + 24762y + 3721$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.957035 + 0.038927I$ $a = 1.29444 - 2.14220I$ $b = -1.52646 + 1.38753I$	$12.15720 + 5.50571I$	$-6.58833 - 2.14870I$
$u = 0.957035 - 0.038927I$ $a = 1.29444 + 2.14220I$ $b = -1.52646 - 1.38753I$	$12.15720 - 5.50571I$	$-6.58833 + 2.14870I$
$u = -0.292699 + 1.060130I$ $a = 0.130715 - 0.442861I$ $b = -0.090901 + 0.653348I$	$-0.84836 - 1.94165I$	$-6.35139 + 2.74428I$
$u = -0.292699 - 1.060130I$ $a = 0.130715 + 0.442861I$ $b = -0.090901 - 0.653348I$	$-0.84836 + 1.94165I$	$-6.35139 - 2.74428I$
$u = 0.074993 + 1.132910I$ $a = 0.751791 + 0.803103I$ $b = 0.794717 - 0.290190I$	$-3.55462 + 1.02828I$	$-12.61847 - 1.28084I$
$u = 0.074993 - 1.132910I$ $a = 0.751791 - 0.803103I$ $b = 0.794717 + 0.290190I$	$-3.55462 - 1.02828I$	$-12.61847 + 1.28084I$
$u = -0.796441 + 0.291195I$ $a = 0.151574 + 0.889968I$ $b = -0.775836 - 0.472537I$	$1.24471 - 1.98200I$	$-5.60868 + 9.18970I$
$u = -0.796441 - 0.291195I$ $a = 0.151574 - 0.889968I$ $b = -0.775836 + 0.472537I$	$1.24471 + 1.98200I$	$-5.60868 - 9.18970I$
$u = 0.147448 + 1.249270I$ $a = -1.46732 - 1.39599I$ $b = -1.62783 + 0.04234I$	$-11.88260 + 2.10947I$	$-15.7034 - 5.8224I$
$u = 0.147448 - 1.249270I$ $a = -1.46732 + 1.39599I$ $b = -1.62783 - 0.04234I$	$-11.88260 - 2.10947I$	$-15.7034 + 5.8224I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.490413 + 1.272180I$ $a = 1.140910 + 0.046544I$ $b = -1.42593 - 1.40587I$	$8.34549 - 0.36039I$	$-9.48611 - 0.73252I$
$u = 0.490413 - 1.272180I$ $a = 1.140910 - 0.046544I$ $b = -1.42593 + 1.40587I$	$8.34549 + 0.36039I$	$-9.48611 + 0.73252I$
$u = 0.458123 + 1.327850I$ $a = -0.80670 - 2.00900I$ $b = -1.59701 + 1.33472I$	$7.89248 + 10.55150I$	$-10.01468 - 4.70572I$
$u = 0.458123 - 1.327850I$ $a = -0.80670 + 2.00900I$ $b = -1.59701 - 1.33472I$	$7.89248 - 10.55150I$	$-10.01468 + 4.70572I$
$u = -0.35310 + 1.38486I$ $a = -0.684948 + 0.964946I$ $b = -1.194280 - 0.456860I$	$-4.04162 - 6.18627I$	$-15.0481 + 5.4779I$
$u = -0.35310 - 1.38486I$ $a = -0.684948 - 0.964946I$ $b = -1.194280 + 0.456860I$	$-4.04162 + 6.18627I$	$-15.0481 - 5.4779I$
$u = 0.443581$ $a = 1.93499$ $b = -1.59894$	-8.07946	-1.20520
$u = 0.184865$ $a = -1.95591$ $b = 0.485984$	-0.676311	-14.9570

II.

$$\boldsymbol{I_2^u = \langle u^{11}+2u^{10}+\cdots+b-2,\ -u^{11}-3u^{10}+\cdots+a+6,\ u^{12}+3u^{11}+\cdots-5u-1\rangle}$$

(i) Arc colorings

$$a_8 = \begin{pmatrix}1\\0\end{pmatrix}$$

$$a_{12} = \begin{pmatrix}0\\u\end{pmatrix}$$

$$a_3 = \begin{pmatrix}u^{11}+3u^{10}+\cdots-9u-6\\-u^{11}-2u^{10}-6u^9-8u^8-12u^7-12u^6-9u^5-6u^4+u^2+2u+2\end{pmatrix}$$

$$a_9 = \begin{pmatrix}1\\-u^2\end{pmatrix}$$

$$a_2 = \begin{pmatrix}u^{10}+4u^9+10u^8+18u^7+23u^6+24u^5+17u^4+6u^3-3u^2-7u-4\\-u^{11}-2u^{10}-6u^9-8u^8-12u^7-12u^6-9u^5-6u^4+u^2+2u+2\end{pmatrix}$$

$$a_1 = \begin{pmatrix}-2u^{11}-6u^{10}+\cdots+14u+10\\-u^{10}-2u^9-5u^8-5u^7-5u^6-2u^5+2u^4+3u^3+4u^2+u-2\end{pmatrix}$$

$$a_7 = \begin{pmatrix}-u^{11}-5u^{10}+\cdots+15u+8\\-u^{10}-2u^9-5u^8-6u^7-6u^6-5u^5+u^3+3u^2+2u-2\end{pmatrix}$$

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

$$a_4 = \begin{pmatrix}u^{11}+4u^{10}+\cdots-10u-6\\u^{10}+2u^9+5u^8+6u^7+6u^6+5u^5-u^3-3u^2-2u+1\end{pmatrix}$$

$$a_5 = \begin{pmatrix}u^{11}+3u^{10}+\cdots-8u-7\\u^{10}+2u^9+5u^8+6u^7+6u^6+5u^5-u^3-3u^2-2u+1\end{pmatrix}$$

$$a_6 = \begin{pmatrix}-u^{11}-4u^{10}+\cdots+14u+8\\u^{11}+2u^{10}+6u^9+8u^8+12u^7+12u^6+9u^5+6u^4-u^2-2u-3\end{pmatrix}$$

$$a_{10} = \begin{pmatrix}3u^{11}+8u^{10}+\cdots-5u-4\\-u^{10}-4u^9+\cdots+7u+3\end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes

$= 7u^{11}+15u^{10}+48u^9+70u^8+112u^7+121u^6+105u^5+81u^4+18u^3-2u^2-21u-29$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{12} - 14u^{11} + \cdots - 67u + 9$
c_2	$u^{12} + 2u^{11} + \cdots - u + 3$
c_3, c_{10}	$u^{12} - u^{11} - 2u^{10} - u^9 + 2u^8 + 4u^7 - 2u^6 + 3u^5 - 3u^4 + 4u^3 - 2u^2 + u - 1$
c_4, c_{12}	$u^{12} + 2u^{11} - u^{10} - u^9 + 6u^8 - 3u^7 + u^6 + 5u^5 - 5u^4 + 7u^3 - 5u^2 + 3u - 1$
c_5	$u^{12} + 14u^{11} + \cdots + 3u + 1$
c_6	$u^{12} + u^{11} - 2u^{10} + u^9 + 2u^8 - 4u^7 - 2u^6 - 3u^5 - 3u^4 - 4u^3 - 2u^2 - u - 1$
c_7	$u^{12} - 2u^{11} + \cdots + u + 3$
c_8	$u^{12} + 3u^{11} + \cdots - 5u - 1$
c_9	$u^{12} - 2u^{10} - 6u^9 + 13u^8 + u^7 + 2u^6 - 9u^5 - 8u^4 + 9u^3 - 4u^2 + 5u - 3$
c_{11}	$u^{12} - 3u^{11} + \cdots + 5u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{12} - 22y^{11} + \cdots + 29y + 81$
c_2, c_7	$y^{12} - 14y^{11} + \cdots - 67y + 9$
c_3, c_6, c_{10}	$y^{12} - 5y^{11} + \cdots + 3y + 1$
c_4, c_{12}	$y^{12} - 6y^{11} + \cdots + y + 1$
c_5	$y^{12} - 30y^{11} + \cdots + 21y + 1$
c_8, c_{11}	$y^{12} + 9y^{11} + \cdots - 15y + 1$
c_9	$y^{12} - 4y^{11} + \cdots - y + 9$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.945559 + 0.176012I$ $a = 0.384985 + 0.661564I$ $b = -0.934205 - 0.378092I$	$1.63828 - 1.45323I$	$1.054104 + 0.917158I$
$u = -0.945559 - 0.176012I$ $a = 0.384985 - 0.661564I$ $b = -0.934205 + 0.378092I$	$1.63828 + 1.45323I$	$1.054104 - 0.917158I$
$u = -0.083486 + 1.161420I$ $a = 1.36019 - 1.88104I$ $b = 1.71485 + 0.22346I$	$-11.61070 - 1.25522I$	$-12.48094 - 2.13033I$
$u = -0.083486 - 1.161420I$ $a = 1.36019 + 1.88104I$ $b = 1.71485 - 0.22346I$	$-11.61070 + 1.25522I$	$-12.48094 + 2.13033I$
$u = 0.262959 + 1.174910I$ $a = -0.73282 + 1.30130I$ $b = 0.886932 - 0.447310I$	$-8.28259 + 3.18829I$	$-11.15779 - 3.99090I$
$u = 0.262959 - 1.174910I$ $a = -0.73282 - 1.30130I$ $b = 0.886932 + 0.447310I$	$-8.28259 - 3.18829I$	$-11.15779 + 3.99090I$
$u = -0.451022 + 1.172390I$ $a = -0.0134217 + 0.1288200I$ $b = -0.609088 + 0.508190I$	$-1.38760 - 3.47878I$	$-6.82613 + 4.40874I$
$u = -0.451022 - 1.172390I$ $a = -0.0134217 - 0.1288200I$ $b = -0.609088 - 0.508190I$	$-1.38760 + 3.47878I$	$-6.82613 - 4.40874I$
$u = 0.612728$ $a = -2.21290$ $b = 0.702300$	-4.82802	-5.83830
$u = -0.45888 + 1.40396I$ $a = -0.414406 + 0.891813I$ $b = -1.172970 - 0.328171I$	$-3.32828 - 6.54831I$	$-6.31944 + 10.84380I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.45888-1.40396I$ $a=-0.414406-0.891813I$ $b=-1.172970+0.328171I$	$-3.32828+6.54831I$	$-6.31944-10.84380I$
$u=-0.260752$ $a=-3.95615$ $b=\ \ 1.52667$	-8.44787	-23.7010

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^{12} - 14u^{11} + \cdots - 67u + 9)(u^{18} + 14u^{17} + \cdots + 21504u + 4096)$
c_2	$(u^{12} + 2u^{11} + \cdots - u + 3)(u^{18} - 16u^{17} + \cdots + 224u - 64)$
c_3, c_{10}	$(u^{12} - u^{11} - 2u^{10} - u^9 + 2u^8 + 4u^7 - 2u^6 + 3u^5 - 3u^4 + 4u^3 - 2u^2 + u - 1)$ $\cdot (u^{18} + 2u^{17} + \cdots - 2u - 1)$
c_4, c_{12}	$(u^{12} + 2u^{11} - u^{10} - u^9 + 6u^8 - 3u^7 + u^6 + 5u^5 - 5u^4 + 7u^3 - 5u^2 + 3u - 1)$ $\cdot (u^{18} + 3u^{17} + \cdots - 2u - 1)$
c_5	$(u^{12} + 14u^{11} + \cdots + 3u + 1)(u^{18} - 5u^{17} + \cdots - 4u + 1)$
c_6	$(u^{12} + u^{11} - 2u^{10} + u^9 + 2u^8 - 4u^7 - 2u^6 - 3u^5 - 3u^4 - 4u^3 - 2u^2 - u - 1)$ $\cdot (u^{18} + 2u^{17} + \cdots - 2u - 1)$
c_7	$(u^{12} - 2u^{11} + \cdots + u + 3)(u^{18} - 16u^{17} + \cdots + 224u - 64)$
c_8	$(u^{12} + 3u^{11} + \cdots - 5u - 1)(u^{18} + 2u^{17} + \cdots + 8u + 1)$
c_9	$(u^{12} - 2u^{10} - 6u^9 + 13u^8 + u^7 + 2u^6 - 9u^5 - 8u^4 + 9u^3 - 4u^2 + 5u - 3)$ $\cdot (u^{18} - u^{17} + \cdots - 120u - 61)$
c_{11}	$(u^{12} - 3u^{11} + \cdots + 5u - 1)(u^{18} + 2u^{17} + \cdots + 8u + 1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y^{12} - 22y^{11} + \cdots + 29y + 81)$ $\cdot (y^{18} + 82y^{17} + \cdots - 437256192y + 16777216)$
c_2, c_7	$(y^{12} - 14y^{11} + \cdots - 67y + 9)(y^{18} - 14y^{17} + \cdots - 21504y + 4096)$
c_3, c_6, c_{10}	$(y^{12} - 5y^{11} + \cdots + 3y + 1)(y^{18} + 28y^{17} + \cdots - 18y + 1)$
c_4, c_{12}	$(y^{12} - 6y^{11} + \cdots + y + 1)(y^{18} + 35y^{17} + \cdots + 20y + 1)$
c_5	$(y^{12} - 30y^{11} + \cdots + 21y + 1)(y^{18} - 45y^{17} + \cdots - 20y + 1)$
c_8, c_{11}	$(y^{12} + 9y^{11} + \cdots - 15y + 1)(y^{18} + 14y^{17} + \cdots - 32y + 1)$
c_9	$(y^{12} - 4y^{11} + \cdots - y + 9)(y^{18} + 33y^{17} + \cdots + 24762y + 3721)$