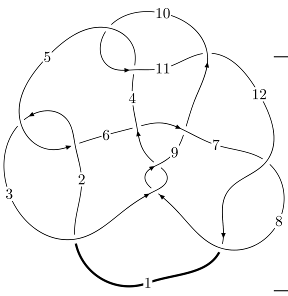
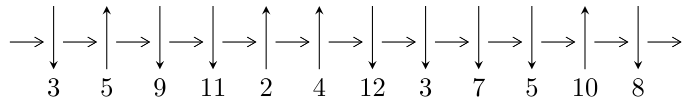
$12n_{0446}$ ($K12n_{0446}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u &= \langle -9u^{16} + 75u^{15} + \cdots + 4b + 48,\ -8u^{16} + 61u^{15} + \cdots + 4a + 16,\ u^{17} - 9u^{16} + \cdots - 16u + 8 \rangle \\
I_2^u &= \langle u^{12} + u^{11} + 3u^{10} + 2u^9 + 7u^8 + 4u^7 + 9u^6 + 3u^5 + 9u^4 + 2u^3 + 5u^2 + b + u + 2, \\
&\quad - 3u^{13} - 3u^{12} - 8u^{11} - 5u^{10} - 18u^9 - 10u^8 - 23u^7 - 8u^6 - 23u^5 - 6u^4 - 14u^3 - 4u^2 + a - 5u + 1, \\
&\quad u^{14} + u^{13} + 3u^{12} + 2u^{11} + 7u^{10} + 4u^9 + 10u^8 + 4u^7 + 11u^6 + 3u^5 + 8u^4 + 2u^3 + 4u^2 + 1 \rangle
\end{aligned}$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 31 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. $\boldsymbol{I^u_1 = \langle -9u^{16} + 75u^{15} + \cdots + 4b + 48,\ -8u^{16} + 61u^{15} + \cdots + 4a + 16,\ u^{17} - 9u^{16} + \cdots - 16u + 8\rangle}$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 2u^{16} - \frac{61}{4}u^{15} + \cdots + \frac{53}{4}u - 4 \\ \frac{9}{4}u^{16} - \frac{75}{4}u^{15} + \cdots + 23u - 12 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -\frac{3}{2}u^{16} + \frac{45}{4}u^{15} + \cdots - \frac{35}{4}u + 2 \\ -\frac{17}{4}u^{16} + \frac{151}{4}u^{15} + \cdots - 51u + 34 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} \frac{15}{8}u^{16} - \frac{117}{8}u^{15} + \cdots + 14u - \frac{5}{2} \\ \frac{9}{4}u^{16} - \frac{77}{4}u^{15} + \cdots + \frac{55}{2}u - 15 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} \frac{1}{4}u^{16} - \frac{9}{4}u^{15} + \cdots + \frac{7}{2}u - \frac{5}{2} \\ -\frac{1}{2}u^{15} + \frac{7}{2}u^{14} + \cdots + \frac{5}{2}u - 2 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} \frac{1}{4}u^{16} - \frac{9}{4}u^{15} + \cdots + \frac{7}{2}u - \frac{5}{2} \\ -\frac{1}{2}u^{16} + 3u^{15} + \cdots + \frac{1}{2}u - 2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -\frac{13}{8}u^{16} + \frac{119}{8}u^{15} + \cdots - 22u + \frac{31}{2} \\ \frac{5}{4}u^{16} - \frac{29}{4}u^{15} + \cdots - \frac{3}{2}u + 11 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} \frac{9}{4}u^{16} - 18u^{15} + \cdots + \frac{73}{4}u - 6 \\ \frac{9}{4}u^{16} - \frac{79}{4}u^{15} + \cdots + 29u - 16 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -6u^{16} + 48u^{15} - 204u^{14} + 579u^{13} - 1201u^{12} + 1920u^{11} - 2456u^{10} + 2621u^9 - 2430u^8 + 2003u^7 - 1452u^6 + 891u^5 - 445u^4 + 148u^3 + 6u^2 - 44u + 10$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{17} - 22u^{16} + \cdots + 54u - 1$
c_2, c_5	$u^{17} + 2u^{16} + \cdots - 2u + 1$
c_3, c_8	$u^{17} - u^{16} + \cdots - u + 1$
c_4, c_{10}	$u^{17} - 9u^{16} + \cdots - 16u + 8$
c_6	$u^{17} + 4u^{16} + \cdots + 24694u + 2511$
c_7, c_{12}	$u^{17} + 7u^{15} + \cdots - 226u + 111$
c_9	$u^{17} - 3u^{16} + \cdots - 4u + 1$
c_{11}	$u^{17} - 5u^{16} + \cdots + 160u + 64$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{17} + 62y^{16} + \cdots + 426y - 1$
c_2, c_5	$y^{17} - 22y^{16} + \cdots + 54y - 1$
c_3, c_8	$y^{17} + 21y^{16} + \cdots - 7y - 1$
c_4, c_{10}	$y^{17} + 5y^{16} + \cdots + 160y - 64$
c_6	$y^{17} - 22y^{16} + \cdots + 769543456y - 6305121$
c_7, c_{12}	$y^{17} + 14y^{16} + \cdots - 22850y - 12321$
c_9	$y^{17} - 3y^{16} + \cdots + 10y - 1$
c_{11}	$y^{17} + 13y^{16} + \cdots + 156160y - 4096$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.743107 + 0.737300I$ $a = -0.957729 + 0.743386I$ $b = -1.065040 + 0.659072I$	$-3.59959 + 0.58481I$	$-8.87613 + 1.72757I$
$u = 0.743107 - 0.737300I$ $a = -0.957729 - 0.743386I$ $b = -1.065040 - 0.659072I$	$-3.59959 - 0.58481I$	$-8.87613 - 1.72757I$
$u = -0.072889 + 0.887618I$ $a = 0.312452 - 0.912707I$ $b = -0.304982 + 0.710279I$	$1.67215 + 1.49188I$	$1.61333 - 4.98502I$
$u = -0.072889 - 0.887618I$ $a = 0.312452 + 0.912707I$ $b = -0.304982 - 0.710279I$	$1.67215 - 1.49188I$	$1.61333 + 4.98502I$
$u = -0.474839 + 0.714353I$ $a = 1.293010 + 0.446550I$ $b = 0.470362 - 0.202610I$	$-0.29498 + 1.80975I$	$-2.70110 - 3.65617I$
$u = -0.474839 - 0.714353I$ $a = 1.293010 - 0.446550I$ $b = 0.470362 + 0.202610I$	$-0.29498 - 1.80975I$	$-2.70110 + 3.65617I$
$u = 0.699430 + 0.964772I$ $a = -1.65451 + 0.74282I$ $b = -1.001640 - 0.878315I$	$-2.90799 - 6.08549I$	$-5.32420 + 3.68722I$
$u = 0.699430 - 0.964772I$ $a = -1.65451 - 0.74282I$ $b = -1.001640 + 0.878315I$	$-2.90799 + 6.08549I$	$-5.32420 - 3.68722I$
$u = 0.864249 + 0.915420I$ $a = 1.71758 - 0.46850I$ $b = 0.779025 + 0.016840I$	$-7.95991 - 3.20234I$	$-15.1724 + 0.4148I$
$u = 0.864249 - 0.915420I$ $a = 1.71758 + 0.46850I$ $b = 0.779025 - 0.016840I$	$-7.95991 + 3.20234I$	$-15.1724 - 0.4148I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.408880 + 0.063065I$ $a = 1.183850 - 0.166931I$ $b = 0.955388 - 0.931462I$	$6.30330 + 3.42896I$	$-6.06062 - 2.16109I$
$u = 1.408880 - 0.063065I$ $a = 1.183850 + 0.166931I$ $b = 0.955388 + 0.931462I$	$6.30330 - 3.42896I$	$-6.06062 + 2.16109I$
$u = -0.395985$ $a = -0.300112$ $b = -0.572653$	-0.874933	-11.5210
$u = 0.72984 + 1.44188I$ $a = 0.168023 - 0.244503I$ $b = 0.909775 - 1.029340I$	$10.83540 - 3.92897I$	$-4.57004 + 0.99423I$
$u = 0.72984 - 1.44188I$ $a = 0.168023 + 0.244503I$ $b = 0.909775 + 1.029340I$	$10.83540 + 3.92897I$	$-4.57004 - 0.99423I$
$u = 0.80021 + 1.43594I$ $a = 1.33738 - 0.75405I$ $b = 1.043440 + 0.934400I$	$10.3710 - 11.0996I$	$-5.14830 + 4.90846I$
$u = 0.80021 - 1.43594I$ $a = 1.33738 + 0.75405I$ $b = 1.043440 - 0.934400I$	$10.3710 + 11.0996I$	$-5.14830 - 4.90846I$

II.

$$\boldsymbol{I_2^u = \langle u^{12}+u^{11}+\cdots+b+2,\ -3u^{13}-3u^{12}+\cdots+a+1,\ u^{14}+u^{13}+\cdots+4u^2+1\rangle}$$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} u^2+1 \\ u^2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} u \\ u^3+u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 3u^{13}+3u^{12}+\cdots+5u-1 \\ -u^{12}-u^{11}+\cdots-u-2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 2u^{13}+2u^{12}+\cdots+3u-2 \\ -u^{13}-2u^{12}+\cdots-2u-3 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 2u^{13}+2u^{12}+\cdots+2u-3 \\ -u^{12}-2u^{11}+\cdots-3u-2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u^{12}+u^{11}+\cdots+2u+3 \\ u^{13}+u^{12}+\cdots+u^2+4u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} u^{12}+u^{11}+\cdots+2u+3 \\ u^{13}+u^{12}+\cdots+4u-1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -2u^{13}-2u^{12}+\cdots-5u+1 \\ -u^{13}-u^{12}+\cdots-3u^2+u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 2u^{13}+3u^{12}+\cdots+4u-1 \\ -u^{12}-u^{11}+\cdots-8u^2-3 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes

$= -u^{13}+3u^{12}+2u^{11}+12u^{10}+9u^9+32u^8+21u^7+42u^6+25u^5+45u^4+22u^3+24u^2+10u$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{14} - 29y^{13} + \cdots + 12y^2 + 1$
c_2, c_5	$y^{14} + 11y^{13} + \cdots + 4y + 1$
c_3, c_8	$y^{14} - 10y^{13} + \cdots - 7y + 1$
c_4, c_{10}	$y^{14} + 5y^{13} + \cdots + 8y + 1$
c_6	$y^{14} + 11y^{13} + \cdots - 466y + 4489$
c_7, c_{12}	$y^{14} - 13y^{13} + \cdots - 4y + 1$
c_9	$y^{14} - 2y^{13} + \cdots - 8y + 1$
c_{11}	$y^{14} + 13y^{13} + \cdots + 32y^2 + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.105110 + 0.959669I$ $a = 0.448698 - 0.035015I$ $b = -0.594085 + 0.956154I$	$0.09953 + 1.96463I$	$-3.48083 - 3.91633I$
$u = 0.105110 - 0.959669I$ $a = 0.448698 + 0.035015I$ $b = -0.594085 - 0.956154I$	$0.09953 - 1.96463I$	$-3.48083 + 3.91633I$
$u = 0.694518 + 0.776039I$ $a = -0.573318 + 1.021770I$ $b = -1.16230 + 0.95610I$	$-3.84339 + 1.43715I$	$-12.12204 - 5.82210I$
$u = 0.694518 - 0.776039I$ $a = -0.573318 - 1.021770I$ $b = -1.16230 - 0.95610I$	$-3.84339 - 1.43715I$	$-12.12204 + 5.82210I$
$u = -0.584040 + 0.656749I$ $a = 0.75333 - 1.27705I$ $b = 0.796480 + 0.277469I$	$-6.62904 + 0.87099I$	$-9.32156 + 1.93932I$
$u = -0.584040 - 0.656749I$ $a = 0.75333 + 1.27705I$ $b = 0.796480 - 0.277469I$	$-6.62904 - 0.87099I$	$-9.32156 - 1.93932I$
$u = 0.672935 + 0.942423I$ $a = -1.78530 + 0.66319I$ $b = -1.09781 - 1.12323I$	$-3.32221 - 6.71387I$	$-11.7069 + 12.3294I$
$u = 0.672935 - 0.942423I$ $a = -1.78530 - 0.66319I$ $b = -1.09781 + 1.12323I$	$-3.32221 + 6.71387I$	$-11.7069 - 12.3294I$
$u = -0.645970 + 1.039580I$ $a = 0.263318 + 0.909593I$ $b = 0.491954 - 0.568665I$	$-5.34937 + 4.06327I$	$-5.63140 - 4.63388I$
$u = -0.645970 - 1.039580I$ $a = 0.263318 - 0.909593I$ $b = 0.491954 + 0.568665I$	$-5.34937 - 4.06327I$	$-5.63140 + 4.63388I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.925465 + 0.908624I$ $a = -1.45765 - 0.16567I$ $b = -0.528256 + 0.113442I$	$-7.43274 + 3.38328I$	$-1.12875 - 4.65800I$
$u = -0.925465 - 0.908624I$ $a = -1.45765 + 0.16567I$ $b = -0.528256 - 0.113442I$	$-7.43274 - 3.38328I$	$-1.12875 + 4.65800I$
$u = 0.182913 + 0.587851I$ $a = -2.14907 + 1.62071I$ $b = -0.905989 - 0.618123I$	$-1.48665 - 3.24685I$	$-5.60851 + 4.03314I$
$u = 0.182913 - 0.587851I$ $a = -2.14907 - 1.62071I$ $b = -0.905989 + 0.618123I$	$-1.48665 + 3.24685I$	$-5.60851 - 4.03314I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^{14} - 11u^{13} + \cdots - 4u + 1)(u^{17} - 22u^{16} + \cdots + 54u - 1)$
c_2	$(u^{14} + u^{13} + 6u^{12} + 4u^{11} + 9u^{10} + 3u^8 - 5u^7 - 4u^5 + 2u^4 - u^3 + 2u^2 + 1)$ $\cdot (u^{17} + 2u^{16} + \cdots - 2u + 1)$
c_3	$(u^{14} - 5u^{12} + 9u^{10} - 2u^9 - 6u^8 + 6u^7 - 7u^5 + 4u^4 + 4u^3 - 3u^2 - u + 1)$ $\cdot (u^{17} - u^{16} + \cdots - u + 1)$
c_4	$(u^{14} - u^{13} + \cdots + 4u^2 + 1)(u^{17} - 9u^{16} + \cdots - 16u + 8)$
c_5	$(u^{14} - u^{13} + 6u^{12} - 4u^{11} + 9u^{10} + 3u^8 + 5u^7 + 4u^5 + 2u^4 + u^3 + 2u^2 + 1)$ $\cdot (u^{17} + 2u^{16} + \cdots - 2u + 1)$
c_6	$(u^{14} - u^{13} + \cdots + 8u + 67)(u^{17} + 4u^{16} + \cdots + 24694u + 2511)$
c_7	$(u^{14} - u^{13} + \cdots + 4u + 1)(u^{17} + 7u^{15} + \cdots - 226u + 111)$
c_8	$(u^{14} - 5u^{12} + 9u^{10} + 2u^9 - 6u^8 - 6u^7 + 7u^5 + 4u^4 - 4u^3 - 3u^2 + u + 1)$ $\cdot (u^{17} - u^{16} + \cdots - u + 1)$
c_9	$(u^{14} + 6u^{13} + \cdots + 4u + 1)(u^{17} - 3u^{16} + \cdots - 4u + 1)$
c_{10}	$(u^{14} + u^{13} + \cdots + 4u^2 + 1)(u^{17} - 9u^{16} + \cdots - 16u + 8)$
c_{11}	$(u^{14} - 5u^{13} + \cdots - 8u + 1)(u^{17} - 5u^{16} + \cdots + 160u + 64)$
c_{12}	$(u^{14} + u^{13} + \cdots - 4u + 1)(u^{17} + 7u^{15} + \cdots - 226u + 111)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y^{14} - 29y^{13} + \cdots + 12y^2 + 1)(y^{17} + 62y^{16} + \cdots + 426y - 1)$
c_2, c_5	$(y^{14} + 11y^{13} + \cdots + 4y + 1)(y^{17} - 22y^{16} + \cdots + 54y - 1)$
c_3, c_8	$(y^{14} - 10y^{13} + \cdots - 7y + 1)(y^{17} + 21y^{16} + \cdots - 7y - 1)$
c_4, c_{10}	$(y^{14} + 5y^{13} + \cdots + 8y + 1)(y^{17} + 5y^{16} + \cdots + 160y - 64)$
c_6	$(y^{14} + 11y^{13} + \cdots - 466y + 4489)$ $\cdot\,(y^{17} - 22y^{16} + \cdots + 769543456y - 6305121)$
c_7, c_{12}	$(y^{14} - 13y^{13} + \cdots - 4y + 1)(y^{17} + 14y^{16} + \cdots - 22850y - 12321)$
c_9	$(y^{14} - 2y^{13} + \cdots - 8y + 1)(y^{17} - 3y^{16} + \cdots + 10y - 1)$
c_{11}	$(y^{14} + 13y^{13} + \cdots + 32y^2 + 1)(y^{17} + 13y^{16} + \cdots + 156160y - 4096)$