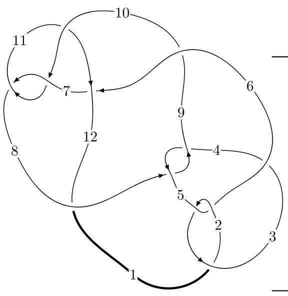
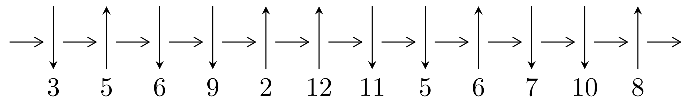
$12n_{0045}$ ($K12n_{0045}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -148u^{29} - 963u^{28} + \cdots + 32b - 233,\ -153u^{29} - 960u^{28} + \cdots + 32a - 98,\ u^{30} + 7u^{29} + \cdots + 7u + 1\rangle$$
$$I_2^u = \langle -au + b + a,\ a^6 + a^5u - a^4u + a^4 + 2a^3 - au + a + 1,\ u^2 - u + 1\rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 42 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. $\boldsymbol{I_1^u = \langle -148u^{29} - 963u^{28} + \cdots + 32b - 233,\ -153u^{29} - 960u^{28} + \cdots + 32a - 98,\ u^{30} + 7u^{29} + \cdots + 7u + 1\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 4.78125u^{29} + 30u^{28} + \cdots + 28.9688u + 3.06250 \\ 4.62500u^{29} + 30.0938u^{28} + \cdots + 43.3750u + 7.28125 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1.90625u^{29} + 11.6875u^{28} + \cdots + 5.09375u - 0.750000 \\ 3.56250u^{29} + 23.0313u^{28} + \cdots + 33.5625u + 5.46875 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 5.46875u^{29} + 34.7188u^{28} + \cdots + 38.6563u + 4.71875 \\ 3.56250u^{29} + 23.0313u^{28} + \cdots + 33.5625u + 5.46875 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^3 \\ u^5 + u^3 + u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -u^3 \\ u^3 + u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -0.0312500u^{28} - 0.187500u^{27} + \cdots - 2.18750u + 0.968750 \\ 0.0312500u^{29} + 0.218750u^{28} + \cdots + 0.218750u + 0.0312500 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -\frac{9}{32}u^{29} - 2u^{28} + \cdots - \frac{81}{32}u + \frac{5}{8} \\ 0.281250u^{29} + 1.71875u^{28} + \cdots + 0.531250u + 0.0312500 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} \frac{9}{32}u^{28} + \frac{27}{16}u^{27} + \cdots + 2u + \frac{11}{32} \\ -0.281250u^{29} - 1.65625u^{28} + \cdots + 0.843750u + 0.0312500 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{45}{4}u^{29} + \frac{1169}{16}u^{28} + \cdots + 103u + \frac{99}{8}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{30} + 3u^{29} + \cdots + 3u + 1$
c_2, c_5	$u^{30} + 7u^{29} + \cdots + 7u + 1$
c_3	$u^{30} - 7u^{29} + \cdots + 123187u + 9881$
c_4, c_8	$u^{30} + u^{29} + \cdots + 8192u + 4096$
c_6	$u^{30} + 9u^{29} + \cdots + 57u + 17$
c_7, c_{10}	$u^{30} + 3u^{29} + \cdots + u + 1$
c_9, c_{12}	$u^{30} - 3u^{29} + \cdots - 3u + 1$
c_{11}	$u^{30} + 13u^{29} + \cdots - 7u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{30} + 55y^{29} + \cdots + 63y + 1$
c_2, c_5	$y^{30} + 3y^{29} + \cdots + 3y + 1$
c_3	$y^{30} + 107y^{29} + \cdots + 1844116003y + 97634161$
c_4, c_8	$y^{30} + 65y^{29} + \cdots + 161480704y^2 + 16777216$
c_6	$y^{30} - 9y^{29} + \cdots + 2531y + 289$
c_7, c_{10}	$y^{30} - 13y^{29} + \cdots + 7y + 1$
c_9, c_{12}	$y^{30} - 53y^{29} + \cdots + 7y + 1$
c_{11}	$y^{30} + 11y^{29} + \cdots - 89y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.156149 + 0.923590I$ $a = 1.55521 - 0.59601I$ $b = -0.641878 + 0.220216I$	$-2.03388 + 4.90769I$	$-5.49958 - 7.49846I$
$u = 0.156149 - 0.923590I$ $a = 1.55521 + 0.59601I$ $b = -0.641878 - 0.220216I$	$-2.03388 - 4.90769I$	$-5.49958 + 7.49846I$
$u = 0.399490 + 0.989549I$ $a = -0.655955 + 0.923964I$ $b = -0.207702 - 0.507122I$	$-0.76957 + 1.31164I$	$0.008085 - 1.158902I$
$u = 0.399490 - 0.989549I$ $a = -0.655955 - 0.923964I$ $b = -0.207702 + 0.507122I$	$-0.76957 - 1.31164I$	$0.008085 + 1.158902I$
$u = 0.918172 + 0.122403I$ $a = -0.292882 + 0.357499I$ $b = -0.60497 + 1.73623I$	$2.37348 + 2.46946I$	$2.98715 - 3.45316I$
$u = 0.918172 - 0.122403I$ $a = -0.292882 - 0.357499I$ $b = -0.60497 - 1.73623I$	$2.37348 - 2.46946I$	$2.98715 + 3.45316I$
$u = 0.780975 + 0.876399I$ $a = -1.049250 - 0.803341I$ $b = -0.003320 - 1.369010I$	$1.59076 + 0.61155I$	$0.819771 + 0.666887I$
$u = 0.780975 - 0.876399I$ $a = -1.049250 + 0.803341I$ $b = -0.003320 + 1.369010I$	$1.59076 - 0.61155I$	$0.819771 - 0.666887I$
$u = 0.362356 + 0.695450I$ $a = -0.993697 - 0.057570I$ $b = -0.0321747 + 0.0227484I$	$-0.194740 + 1.399730I$	$-2.02435 - 4.86797I$
$u = 0.362356 - 0.695450I$ $a = -0.993697 + 0.057570I$ $b = -0.0321747 - 0.0227484I$	$-0.194740 - 1.399730I$	$-2.02435 + 4.86797I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.724731 + 1.015800I$ $a = 0.79644 + 1.28595I$ $b = -1.11851 + 1.13827I$	$1.10886 + 5.31866I$	$-0.13308 - 5.18400I$
$u = 0.724731 - 1.015800I$ $a = 0.79644 - 1.28595I$ $b = -1.11851 - 1.13827I$	$1.10886 - 5.31866I$	$-0.13308 + 5.18400I$
$u = -0.624839 + 0.318859I$ $a = -1.57129 - 0.30420I$ $b = -1.44565 + 0.98598I$	$0.78177 - 6.39042I$	$-0.72567 + 4.22016I$
$u = -0.624839 - 0.318859I$ $a = -1.57129 + 0.30420I$ $b = -1.44565 - 0.98598I$	$0.78177 + 6.39042I$	$-0.72567 - 4.22016I$
$u = 0.021362 + 0.665268I$ $a = 1.74798 + 0.18763I$ $b = -0.284692 - 0.540613I$	$-2.74789 - 1.44408I$	$-8.12661 + 0.68826I$
$u = 0.021362 - 0.665268I$ $a = 1.74798 - 0.18763I$ $b = -0.284692 + 0.540613I$	$-2.74789 + 1.44408I$	$-8.12661 - 0.68826I$
$u = -0.626826 + 0.181498I$ $a = 1.68869 + 0.16006I$ $b = 1.59366 - 0.59325I$	$2.71723 - 1.30741I$	$2.25892 + 0.04222I$
$u = -0.626826 - 0.181498I$ $a = 1.68869 - 0.16006I$ $b = 1.59366 + 0.59325I$	$2.71723 + 1.30741I$	$2.25892 - 0.04222I$
$u = -1.03232 + 1.03051I$ $a = -1.33615 - 1.25080I$ $b = -2.95729 + 0.40290I$	$11.18100 - 3.78919I$	$-2.00000 + 1.99020I$
$u = -1.03232 - 1.03051I$ $a = -1.33615 + 1.25080I$ $b = -2.95729 - 0.40290I$	$11.18100 + 3.78919I$	$-2.00000 - 1.99020I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.13894+0.98249I$ $a=-0.85062-1.72090I$ $b=-4.00129-1.44921I$	$16.0192+4.0819I$	0
$u=-1.13894-0.98249I$ $a=-0.85062+1.72090I$ $b=-4.00129+1.44921I$	$16.0192-4.0819I$	0
$u=-1.00742+1.12472I$ $a=-1.90712-1.30827I$ $b=-3.23563+2.16136I$	$15.4793-11.9246I$	$0.+6.30873I$
$u=-1.00742-1.12472I$ $a=-1.90712+1.30827I$ $b=-3.23563-2.16136I$	$15.4793+11.9246I$	$0.-6.30873I$
$u=-1.12156+1.02634I$ $a=1.12316+1.72616I$ $b=4.29671+0.57523I$	$17.7688-1.7617I$	0
$u=-1.12156-1.02634I$ $a=1.12316-1.72616I$ $b=4.29671-0.57523I$	$17.7688+1.7617I$	0
$u=-1.04184+1.10803I$ $a=1.74324+1.46487I$ $b=3.74797-1.61674I$	$17.4515-6.1631I$	0
$u=-1.04184-1.10803I$ $a=1.74324-1.46487I$ $b=3.74797+1.61674I$	$17.4515+6.1631I$	0
$u=-0.269490+0.299415I$ $a=-1.99775-0.56157I$ $b=-0.605235+0.631449I$	$-1.76892+0.41411I$	$-5.79951-1.41452I$
$u=-0.269490-0.299415I$ $a=-1.99775+0.56157I$ $b=-0.605235-0.631449I$	$-1.76892-0.41411I$	$-5.79951+1.41452I$

II. $\boldsymbol{I_2^u = \langle -au+b+a,\ a^6+a^5u-a^4u+a^4+2a^3-au+a+1,\ u^2-u+1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -a^5u+a^5-4a^4u+4a^4-2a^3u-5a^2u+2a^2-4au+2a-5u-2$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.500000+0.866025I$ $a = 0.245150+1.015700I$ $b = -1.002190-0.295542I$	$1.89061+1.10558I$	$1.81693-2.49433I$
$u = 0.500000+0.866025I$ $a = 0.757043+0.720154I$ $b = -1.002190+0.295542I$	$1.89061+2.95419I$	$-0.06995-4.17815I$
$u = 0.500000+0.866025I$ $a = -0.789622-0.038604I$ $b = 0.428243-0.664531I$	$-1.89061+1.10558I$	$-7.01188-1.87706I$
$u = 0.500000+0.866025I$ $a = 0.361379-0.703135I$ $b = 0.428243+0.664531I$	$-1.89061+2.95419I$	$-3.50232-4.35344I$
$u = 0.500000+0.866025I$ $a = -1.020870-0.650692I$ $b = 1.073950-0.558752I$	$-\ 3.66314I$	$-1.09315+2.75648I$
$u = 0.500000+0.866025I$ $a = -0.053081-1.209440I$ $b = 1.073950+0.558752I$	$7.72290I$	$-4.13964-8.90605I$
$u = 0.500000-0.866025I$ $a = 0.245150-1.015700I$ $b = -1.002190+0.295542I$	$1.89061-1.10558I$	$1.81693+2.49433I$
$u = 0.500000-0.866025I$ $a = 0.757043-0.720154I$ $b = -1.002190-0.295542I$	$1.89061-2.95419I$	$-0.06995+4.17815I$
$u = 0.500000-0.866025I$ $a = -0.789622+0.038604I$ $b = 0.428243+0.664531I$	$-1.89061-1.10558I$	$-7.01188+1.87706I$
$u = 0.500000-0.866025I$ $a = 0.361379+0.703135I$ $b = 0.428243-0.664531I$	$-1.89061-2.95419I$	$-3.50232+4.35344I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \quad 0.500000 - 0.866025I$ $a = -1.020870 + 0.650692I$ $b = \quad 1.073950 + 0.558752I$	$3.66314I$	$-1.09315 - 2.75648I$
$u = \quad 0.500000 - 0.866025I$ $a = -0.053081 + 1.209440I$ $b = \quad 1.073950 - 0.558752I$	$-\,7.72290I$	$-4.13964 + 8.90605I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^2-u+1)^6)(u^{30}+3u^{29}+\cdots+3u+1)$
c_2	$((u^2+u+1)^6)(u^{30}+7u^{29}+\cdots+7u+1)$
c_3	$((u^2-u+1)^6)(u^{30}-7u^{29}+\cdots+123187u+9881)$
c_4, c_8	$u^{12}(u^{30}+u^{29}+\cdots+8192u+4096)$
c_5	$((u^2-u+1)^6)(u^{30}+7u^{29}+\cdots+7u+1)$
c_6	$((u^6+3u^5+5u^4+4u^3+2u^2+u+1)^2)(u^{30}+9u^{29}+\cdots+57u+17)$
c_7	$((u^6+u^5-u^4-2u^3+u+1)^2)(u^{30}+3u^{29}+\cdots+u+1)$
c_9, c_{12}	$((u^6+u^5-u^4-2u^3+u+1)^2)(u^{30}-3u^{29}+\cdots-3u+1)$
c_{10}	$((u^6-u^5-u^4+2u^3-u+1)^2)(u^{30}+3u^{29}+\cdots+u+1)$
c_{11}	$((u^6+3u^5+5u^4+4u^3+2u^2+u+1)^2)(u^{30}+13u^{29}+\cdots-7u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y^2+y+1)^6)(y^{30}+55y^{29}+\cdots+63y+1)$
c_2, c_5	$((y^2+y+1)^6)(y^{30}+3y^{29}+\cdots+3y+1)$
c_3	$((y^2+y+1)^6)(y^{30}+107y^{29}+\cdots+1.84412\times10^9y+9.76342\times10^7)$
c_4, c_8	$y^{12}(y^{30}+65y^{29}+\cdots+1.61481\times10^8y^2+1.67772\times10^7)$
c_6	$((y^6+y^5+5y^4+6y^2+3y+1)^2)(y^{30}-9y^{29}+\cdots+2531y+289)$
c_7, c_{10}	$((y^6-3y^5+5y^4-4y^3+2y^2-y+1)^2)(y^{30}-13y^{29}+\cdots+7y+1)$
c_9, c_{12}	$((y^6-3y^5+5y^4-4y^3+2y^2-y+1)^2)(y^{30}-53y^{29}+\cdots+7y+1)$
c_{11}	$((y^6+y^5+5y^4+6y^2+3y+1)^2)(y^{30}+11y^{29}+\cdots-89y+1)$