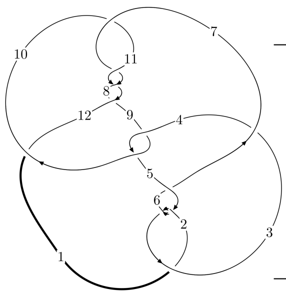
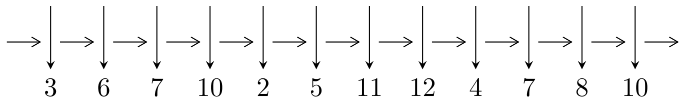
$12n_{0305}$ ($K12n_{0305}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -3u^{19} - 6u^{18} + \cdots + 2b - 3,\ -u^{19} - 12u^{18} + \cdots + 4a + 11,\ u^{20} + 4u^{19} + \cdots + 2u + 1 \rangle$$
$$I_2^u = \langle b,\ a^3 - a^2u + a^2 - 2au + 4a - 2u + 3,\ u^2 - u - 1 \rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 26 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. $I_1^u = \langle -3u^{19}-6u^{18}+\cdots+2b-3,\ -u^{19}-12u^{18}+\cdots+4a+11,\ u^{20}+4u^{19}+\cdots+2u+1\rangle$

(i) Arc colorings

$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u \\ -u^3+u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -u^2+1 \\ -u^4+2u^2 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^4-3u^2+1 \\ -u^4+2u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} \frac{1}{4}u^{19}+3u^{18}+\cdots-15u-\frac{11}{4} \\ \frac{3}{2}u^{19}+3u^{18}+\cdots+2u+\frac{3}{2} \end{pmatrix}$$
$$a_4 = \begin{pmatrix} \frac{7}{4}u^{19}+6u^{18}+\cdots-13u-\frac{5}{4} \\ \frac{3}{2}u^{19}+3u^{18}+\cdots+2u+\frac{3}{2} \end{pmatrix}$$
$$a_3 = \begin{pmatrix} \frac{7}{4}u^{19}+6u^{18}+\cdots-13u-\frac{5}{4} \\ -\frac{5}{4}u^{19}-\frac{11}{4}u^{18}+\cdots+\frac{7}{4}u+\frac{1}{2} \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -\frac{1}{4}u^{18}-\frac{3}{4}u^{17}+\cdots-\frac{21}{4}u-\frac{3}{4} \\ u^6-4u^4+3u^2+2u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} \frac{1}{4}u^{18}+\frac{3}{4}u^{17}+\cdots+\frac{17}{4}u+\frac{7}{4} \\ \frac{1}{4}u^{19}+\frac{1}{2}u^{18}+\cdots-\frac{1}{2}u+\frac{1}{4} \end{pmatrix}$$
$$a_9 = \begin{pmatrix} u^3-2u \\ u^5-3u^3+u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$= -2u^{19}-8u^{18}+16u^{17}+\frac{191}{2}u^{16}-22u^{15}-\frac{943}{2}u^{14}-192u^{13}+\frac{2425}{2}u^{12}+\frac{1981}{2}u^{11}-1627u^{10}-2079u^9+\frac{1641}{2}u^8+2156u^7+431u^6-908u^5-571u^4-\frac{53}{2}u^3+72u^2+29u-\frac{21}{2}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_6	$u^{20} + 9u^{19} + \cdots + 21u + 1$
c_2, c_5	$u^{20} + 3u^{19} + \cdots - 7u - 1$
c_3	$u^{20} - 3u^{19} + \cdots - 17u - 1$
c_4, c_9	$u^{20} - u^{19} + \cdots - 224u - 64$
c_7, c_8, c_{10} c_{11}	$u^{20} + 4u^{19} + \cdots + 2u + 1$
c_{12}	$u^{20} - 20u^{19} + \cdots - 3324u - 239$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_6	$y^{20} + 7y^{19} + \cdots - 221y + 1$
c_2, c_5	$y^{20} - 9y^{19} + \cdots - 21y + 1$
c_3	$y^{20} - 53y^{19} + \cdots - 69y + 1$
c_4, c_9	$y^{20} - 35y^{19} + \cdots - 5120y + 4096$
c_7, c_8, c_{10} c_{11}	$y^{20} - 32y^{19} + \cdots - 26y + 1$
c_{12}	$y^{20} - 116y^{19} + \cdots - 2215058y + 57121$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.995757+0.162502I$ $a=\ \ 0.409533+0.992912I$ $b=-0.250501-1.034700I$	$-1.72654-2.01165I$	$-16.2599+2.9665I$
$u=-0.995757-0.162502I$ $a=\ \ 0.409533-0.992912I$ $b=-0.250501+1.034700I$	$-1.72654+2.01165I$	$-16.2599-2.9665I$
$u=-0.618715+0.543682I$ $a=\ \ 1.42405-0.18504I$ $b=-1.183060-0.429676I$	$-1.91039+3.31491I$	$-16.4023-5.7778I$
$u=-0.618715-0.543682I$ $a=\ \ 1.42405+0.18504I$ $b=-1.183060+0.429676I$	$-1.91039-3.31491I$	$-16.4023+5.7778I$
$u=\ \ 1.332060+0.199912I$ $a=\ \ 0.389569+0.439368I$ $b=-1.42120+0.01301I$	$-6.30937-1.46809I$	$-15.3912+0.5997I$
$u=\ \ 1.332060-0.199912I$ $a=\ \ 0.389569-0.439368I$ $b=-1.42120-0.01301I$	$-6.30937+1.46809I$	$-15.3912-0.5997I$
$u=\ \ 1.37734+0.35940I$ $a=-0.841843-0.739118I$ $b=\ \ 1.77867+0.01269I$	$-8.39761-6.66344I$	$-17.7359+5.0430I$
$u=\ \ 1.37734-0.35940I$ $a=-0.841843+0.739118I$ $b=\ \ 1.77867-0.01269I$	$-8.39761+6.66344I$	$-17.7359-5.0430I$
$u=-0.221606+0.329450I$ $a=-0.272738+1.295930I$ $b=\ \ 0.671635-0.209494I$	$-0.674628-0.165298I$	$-12.57313-0.79676I$
$u=-0.221606-0.329450I$ $a=-0.272738-1.295930I$ $b=\ \ 0.671635+0.209494I$	$-0.674628+0.165298I$	$-12.57313+0.79676I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.370071$ $a=\ 0.180421$ $b=\ 0.474305$	-0.654279	-14.9070
$u=\ 1.63979+0.13284I$ $a=-0.602671+0.356588I$ $b=\ 0.982271-0.847239I$	$-10.89840+0.58168I$	$-20.0520-2.9617I$
$u=\ 1.63979-0.13284I$ $a=-0.602671-0.356588I$ $b=\ 0.982271+0.847239I$	$-10.89840-0.58168I$	$-20.0520+2.9617I$
$u=\ 0.328694+0.052343I$ $a=-0.15243+3.84880I$ $b=\ 0.004947-0.482870I$	$2.50647+2.74594I$	$-1.72205-1.87916I$
$u=\ 0.328694-0.052343I$ $a=-0.15243-3.84880I$ $b=\ 0.004947+0.482870I$	$2.50647-2.74594I$	$-1.72205+1.87916I$
$u=-1.84665+0.06383I$ $a=-0.420429+0.524003I$ $b=\ 2.10366-0.42974I$	$-18.2504+2.8693I$	$-15.5779-0.3444I$
$u=-1.84665-0.06383I$ $a=-0.420429-0.524003I$ $b=\ 2.10366+0.42974I$	$-18.2504-2.8693I$	$-15.5779+0.3444I$
$u=-1.85353+0.10925I$ $a=\ 0.515285-0.864581I$ $b=-2.14536+0.73132I$	$19.1451+9.0847I$	$-17.3799-4.2904I$
$u=-1.85353-0.10925I$ $a=\ 0.515285+0.864581I$ $b=-2.14536-0.73132I$	$19.1451-9.0847I$	$-17.3799+4.2904I$
$u=-1.91314$ $a=\ 0.922913$ $b=-2.55644$	14.2074	-19.9050

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

(i) Arc colorings

$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

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

$$a_8 = \begin{pmatrix} -u \\ -u-1 \end{pmatrix}$$

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

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

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

$$a_4 = \begin{pmatrix} a \\ 0 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} a \\ -au-a \end{pmatrix}$$

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

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

$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 2a^2u + a^2 + 2au - a + 3u - 19$

(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
$u = -0.618034$ $a = -0.922021$ $b = 0$	-2.10041	-18.9930
$u = -0.618034$ $a = -0.34801 + 2.11500I$ $b = 0$	$2.03717 + 2.82812I$	$-19.0485 - 4.3818I$
$u = -0.618034$ $a = -0.34801 - 2.11500I$ $b = 0$	$2.03717 - 2.82812I$	$-19.0485 + 4.3818I$
$u = 1.61803$ $a = 0.132927 + 0.807858I$ $b = 0$	$-5.85852 - 2.82812I$	$-16.5384 + 2.7162I$
$u = 1.61803$ $a = 0.132927 - 0.807858I$ $b = 0$	$-5.85852 + 2.82812I$	$-16.5384 - 2.7162I$
$u = 1.61803$ $a = 0.352181$ $b = 0$	-9.99610	-12.8330

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^3 - u^2 + 2u - 1)^2)(u^{20} + 9u^{19} + \cdots + 21u + 1)$
c_2	$((u^3 + u^2 - 1)^2)(u^{20} + 3u^{19} + \cdots - 7u - 1)$
c_3	$((u^3 - u^2 + 2u - 1)^2)(u^{20} - 3u^{19} + \cdots - 17u - 1)$
c_4, c_9	$u^6(u^{20} - u^{19} + \cdots - 224u - 64)$
c_5	$((u^3 - u^2 + 1)^2)(u^{20} + 3u^{19} + \cdots - 7u - 1)$
c_6	$((u^3 + u^2 + 2u + 1)^2)(u^{20} + 9u^{19} + \cdots + 21u + 1)$
c_7, c_8	$((u^2 + u - 1)^3)(u^{20} + 4u^{19} + \cdots + 2u + 1)$
c_{10}, c_{11}	$((u^2 - u - 1)^3)(u^{20} + 4u^{19} + \cdots + 2u + 1)$
c_{12}	$((u^2 - u - 1)^3)(u^{20} - 20u^{19} + \cdots - 3324u - 239)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_6	$((y^3+3y^2+2y-1)^2)(y^{20}+7y^{19}+\cdots-221y+1)$
c_2, c_5	$((y^3-y^2+2y-1)^2)(y^{20}-9y^{19}+\cdots-21y+1)$
c_3	$((y^3+3y^2+2y-1)^2)(y^{20}-53y^{19}+\cdots-69y+1)$
c_4, c_9	$y^6(y^{20}-35y^{19}+\cdots-5120y+4096)$
c_7, c_8, c_{10} c_{11}	$((y^2-3y+1)^3)(y^{20}-32y^{19}+\cdots-26y+1)$
c_{12}	$((y^2-3y+1)^3)(y^{20}-116y^{19}+\cdots-2215058y+57121)$