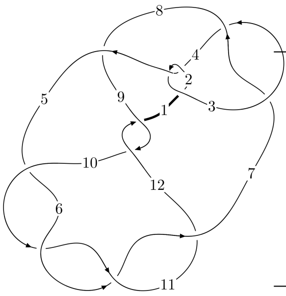
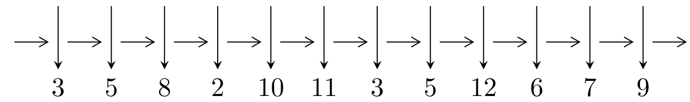
$12n_{0166}$ ($K12n_{0166}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle u^{25} - 14u^{23} + \cdots + b - 1,\ 2u^{25} - u^{24} + \cdots + a - 5u,\ u^{26} - 2u^{25} + \cdots + 3u + 1 \rangle$$
$$I_2^u = \langle u^4 - 2u^2 + b + u,\ -u^5 + 3u^3 + a - u + 1,\ u^6 + u^5 - 3u^4 - 2u^3 + 2u^2 - u - 1 \rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 32 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.

$$\boldsymbol{I_1^u = \langle u^{25} - 14u^{23} + \cdots + b - 1,\ 2u^{25} - u^{24} + \cdots + a - 5u,\ u^{26} - 2u^{25} + \cdots + 3u + 1\rangle}$$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -2u^{25} + u^{24} + \cdots + 9u^2 + 5u \\ -u^{25} + 14u^{23} + \cdots + 4u + 1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u^{10} + 5u^8 - 8u^6 + 5u^4 - 3u^2 + 1 \\ -u^{10} + 4u^8 - 3u^6 - 2u^4 - u^2 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -u^{25} + u^{24} + \cdots + u - 1 \\ u^{22} - 12u^{20} + \cdots - 4u^3 - 3u^2 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^{10} - 5u^8 + 8u^6 - 5u^4 + 3u^2 - 1 \\ u^{12} - 6u^{10} + 12u^8 - 8u^6 + u^4 - 2u^2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} u^{24} - 13u^{22} + \cdots - u - 1 \\ u^{25} - 14u^{23} + \cdots - 3u - 1 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -u^6 + 3u^4 - 2u^2 + 1 \\ -u^8 + 4u^6 - 4u^4 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^{25} + 5u^{24} + 51u^{23} - 62u^{22} - 269u^{21} + 312u^{20} + 760u^{19} - 813u^{18} - 1264u^{17} + 1176u^{16} + 1341u^{15} - 1013u^{14} - 1049u^{13} + 682u^{12} + 692u^{11} - 399u^{10} - 430u^9 + 65u^8 + 311u^7 - 6u^6 - 115u^5 - 18u^4 + 50u^3 + 9u^2 - 6u - 18$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{26}+37u^{25}+\cdots+76u+1$
c_2, c_4	$u^{26}-7u^{25}+\cdots-2u-1$
c_3, c_7	$u^{26}-u^{25}+\cdots-128u-64$
c_5, c_6, c_{10} c_{11}	$u^{26}-2u^{25}+\cdots+3u+1$
c_8	$u^{26}+2u^{25}+\cdots+3u+1$
c_9, c_{12}	$u^{26}-6u^{25}+\cdots-21u-9$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{26} - 89y^{25} + \cdots - 2892y + 1$
c_2, c_4	$y^{26} - 37y^{25} + \cdots - 76y + 1$
c_3, c_7	$y^{26} - 39y^{25} + \cdots - 12288y + 4096$
c_5, c_6, c_{10} c_{11}	$y^{26} - 30y^{25} + \cdots - 11y + 1$
c_8	$y^{26} - 54y^{25} + \cdots - 11y + 1$
c_9, c_{12}	$y^{26} + 6y^{25} + \cdots - 531y + 81$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.681707+0.582351I$ $a=-0.132311+0.107455I$ $b=-1.80048-0.98897I$	$-10.93830+7.21103I$	$-16.0759-5.4438I$
$u=-0.681707-0.582351I$ $a=-0.132311-0.107455I$ $b=-1.80048+0.98897I$	$-10.93830-7.21103I$	$-16.0759+5.4438I$
$u=\ \ 1.175060+0.078346I$ $a=\ \ 0.222046+0.015295I$ $b=\ \ 1.71753-0.10327I$	$-14.2898+0.0080I$	$-18.3523+0.3239I$
$u=\ \ 1.175060-0.078346I$ $a=\ \ 0.222046-0.015295I$ $b=\ \ 1.71753+0.10327I$	$-14.2898-0.0080I$	$-18.3523-0.3239I$
$u=-0.615423+0.435220I$ $a=\ \ 0.006046+0.650453I$ $b=\ \ 1.43706+0.60644I$	$-1.64268+3.44770I$	$-15.9366-6.5929I$
$u=-0.615423-0.435220I$ $a=\ \ 0.006046-0.650453I$ $b=\ \ 1.43706-0.60644I$	$-1.64268-3.44770I$	$-15.9366+6.5929I$
$u=\ \ 0.492369+0.545154I$ $a=\ \ 0.033687+0.462693I$ $b=\ \ 0.322628+0.025417I$	$2.35945-1.88336I$	$-5.73263+3.81073I$
$u=\ \ 0.492369-0.545154I$ $a=\ \ 0.033687-0.462693I$ $b=\ \ 0.322628-0.025417I$	$2.35945+1.88336I$	$-5.73263-3.81073I$
$u=-0.265310+0.672765I$ $a=\ \ 0.80138+1.96514I$ $b=\ \ 0.117100-0.374073I$	$-9.70379-2.98173I$	$-13.78370+0.17341I$
$u=-0.265310-0.672765I$ $a=\ \ 0.80138-1.96514I$ $b=\ \ 0.117100+0.374073I$	$-9.70379+2.98173I$	$-13.78370-0.17341I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.589835 + 0.287549I$ $a = 0.399854 - 1.018310I$ $b = -1.126490 + 0.098071I$	$-2.66891 - 0.88385I$	$-16.9206 + 6.0063I$
$u = 0.589835 - 0.287549I$ $a = 0.399854 + 1.018310I$ $b = -1.126490 - 0.098071I$	$-2.66891 + 0.88385I$	$-16.9206 - 6.0063I$
$u = -0.277498 + 0.391559I$ $a = -0.71760 - 1.38397I$ $b = -0.619638 + 0.253799I$	$-0.683753 - 0.414385I$	$-12.43905 - 0.47517I$
$u = -0.277498 - 0.391559I$ $a = -0.71760 + 1.38397I$ $b = -0.619638 - 0.253799I$	$-0.683753 + 0.414385I$	$-12.43905 + 0.47517I$
$u = 1.52883 + 0.05644I$ $a = 0.949715 - 0.290539I$ $b = 0.830011 + 0.081100I$	$-6.94574 - 0.62089I$	$-15.5634 - 0.9743I$
$u = 1.52883 - 0.05644I$ $a = 0.949715 + 0.290539I$ $b = 0.830011 - 0.081100I$	$-6.94574 + 0.62089I$	$-15.5634 + 0.9743I$
$u = -1.52725 + 0.15077I$ $a = -0.741655 - 0.245504I$ $b = -1.002680 - 0.376527I$	$-4.34854 + 4.33683I$	$-10.06939 - 2.72465I$
$u = -1.52725 - 0.15077I$ $a = -0.741655 + 0.245504I$ $b = -1.002680 + 0.376527I$	$-4.34854 - 4.33683I$	$-10.06939 + 2.72465I$
$u = -1.57781 + 0.08698I$ $a = 2.47671 + 0.53175I$ $b = 3.33781 + 0.79397I$	$-10.09930 + 2.28663I$	$-19.0760 - 2.3439I$
$u = -1.57781 - 0.08698I$ $a = 2.47671 - 0.53175I$ $b = 3.33781 - 0.79397I$	$-10.09930 - 2.28663I$	$-19.0760 + 2.3439I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.57863 + 0.12294I$ $a = -2.06274 + 1.32680I$ $b = -2.70573 + 0.88516I$	$-9.08260 - 5.47988I$	$-18.5451 + 4.2333I$
$u = 1.57863 - 0.12294I$ $a = -2.06274 - 1.32680I$ $b = -2.70573 - 0.88516I$	$-9.08260 + 5.47988I$	$-18.5451 - 4.2333I$
$u = 1.59730 + 0.17727I$ $a = 2.38789 - 2.06908I$ $b = 3.52206 - 2.02315I$	$-18.6017 - 10.0445I$	$-18.6964 + 4.4096I$
$u = 1.59730 - 0.17727I$ $a = 2.38789 + 2.06908I$ $b = 3.52206 + 2.02315I$	$-18.6017 + 10.0445I$	$-18.6964 - 4.4096I$
$u = -0.383361$ $a = -0.709996$ $b = -0.351806$	-0.582197	-16.9580
$u = -1.65067$ $a = -3.53607$ $b = -4.70658$	15.9598	-20.6600

II.

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

(i) Arc colorings

$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

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

$$a_3 = \begin{pmatrix} u^5-3u^3+u-1 \\ -u^4+2u^2-u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u \\ -u^3+u \end{pmatrix}$$

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

$$a_{12} = \begin{pmatrix} -u^2+1 \\ -u^4+2u^2 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} u^5-3u^3-1 \\ -u^4+2u^2-2u \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} u^5-3u^3+u-1 \\ -u^4+2u^2-u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u^5-2u^3-u \\ u^5-3u^3+u \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -3u^5-u^4+6u^3+u^2+2u-14$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y-1)^6$
c_3, c_7	y^6
c_5, c_6, c_{10} c_{11}	$y^6 - 7y^5 + 17y^4 - 16y^3 + 6y^2 - 5y + 1$
c_8, c_9, c_{12}	$y^6 + 5y^5 + 9y^4 + 4y^3 - 6y^2 - 5y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.493180 + 0.575288I$ $a = 0.504580 - 0.342767I$ $b = -0.354346 + 0.659157I$	$1.31531 - 1.97241I$	$-14.7121 + 3.8836I$
$u = 0.493180 - 0.575288I$ $a = 0.504580 + 0.342767I$ $b = -0.354346 - 0.659157I$	$1.31531 + 1.97241I$	$-14.7121 - 3.8836I$
$u = -0.483672$ $a = -1.17069$ $b = 0.896823$	-2.38379	-15.3880
$u = -1.52087 + 0.16310I$ $a = 0.462019 + 1.043570I$ $b = 1.11206 + 1.11328I$	$-5.34051 + 4.59213I$	$-18.4963 - 3.9250I$
$u = -1.52087 - 0.16310I$ $a = 0.462019 - 1.043570I$ $b = 1.11206 - 1.11328I$	$-5.34051 - 4.59213I$	$-18.4963 + 3.9250I$
$u = 1.53904$ $a = -1.76250$ $b = -2.41226$	-9.30502	-18.1960

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^6)(u^{26}+37u^{25}+\cdots+76u+1)$
c_2	$((u-1)^6)(u^{26}-7u^{25}+\cdots-2u-1)$
c_3, c_7	$u^6(u^{26}-u^{25}+\cdots-128u-64)$
c_4	$((u+1)^6)(u^{26}-7u^{25}+\cdots-2u-1)$
c_5, c_6	$(u^6-u^5-3u^4+2u^3+2u^2+u-1)(u^{26}-2u^{25}+\cdots+3u+1)$
c_8	$(u^6-u^5+3u^4-2u^3+2u^2-u-1)(u^{26}+2u^{25}+\cdots+3u+1)$
c_9	$(u^6+u^5+3u^4+2u^3+2u^2+u-1)(u^{26}-6u^{25}+\cdots-21u-9)$
c_{10}, c_{11}	$(u^6+u^5-3u^4-2u^3+2u^2-u-1)(u^{26}-2u^{25}+\cdots+3u+1)$
c_{12}	$(u^6-u^5+3u^4-2u^3+2u^2-u-1)(u^{26}-6u^{25}+\cdots-21u-9)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^6)(y^{26} - 89y^{25} + \cdots - 2892y + 1)$
c_2, c_4	$((y-1)^6)(y^{26} - 37y^{25} + \cdots - 76y + 1)$
c_3, c_7	$y^6(y^{26} - 39y^{25} + \cdots - 12288y + 4096)$
c_5, c_6, c_{10} c_{11}	$(y^6 - 7y^5 + \cdots - 5y + 1)(y^{26} - 30y^{25} + \cdots - 11y + 1)$
c_8	$(y^6 + 5y^5 + \cdots - 5y + 1)(y^{26} - 54y^{25} + \cdots - 11y + 1)$
c_9, c_{12}	$(y^6 + 5y^5 + \cdots - 5y + 1)(y^{26} + 6y^{25} + \cdots - 531y + 81)$