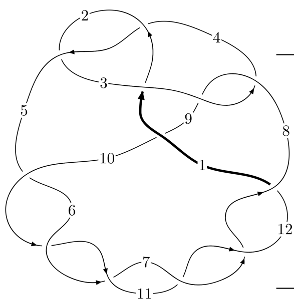
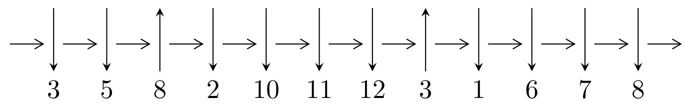
$12n_{0234}$ ($K12n_{0234}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -u^{23} + 16u^{21} + \cdots + b - 1,\ -u^{22} + 15u^{20} + \cdots + a + 1,\ u^{24} - 2u^{23} + \cdots + u - 1\rangle$$
$$I_2^u = \langle u^2 + b - 1,\ a + 1,\ u^3 + u^2 - 2u - 1\rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 27 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.

$\boldsymbol{I_1^u = \langle -u^{23}+16u^{21}+\cdots+b-1,\ -u^{22}+15u^{20}+\cdots+a+1,\ u^{24}-2u^{23}+\cdots+u-1\rangle}$

(i) Arc colorings

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

$$a_{11} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} u^{22} - 15u^{20} + \cdots - 6u - 1 \\ u^{23} - 16u^{21} + \cdots + u + 1 \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} -2u^{23} + 2u^{22} + \cdots - 6u - 2 \\ -3u^{23} + u^{22} + \cdots + 2u - 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$

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

$$a_{10} = \begin{pmatrix} -u^2 + 1 \\ -u^2 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -u^3 + 2u \\ -u^3 + u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -u^{23} + u^{22} + \cdots - 5u - 1 \\ -u^{23} + 15u^{21} + \cdots + 8u^2 + 2u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u^8 - 5u^6 + 7u^4 - 4u^2 + 1 \\ u^{10} - 6u^8 + 11u^6 - 6u^4 - u^2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= u^{23} - 4u^{22} - 16u^{21} + 62u^{20} + 110u^{19} - 405u^{18} - 420u^{17} + 1453u^{16} + 940u^{15} - 3134u^{14} - 1118u^{13} + 4197u^{12} + 260u^{11} - 3495u^{10} + 1034u^9 + 1741u^8 - 1269u^7 - 400u^6 + 550u^5 - 66u^4 - 92u^3 + 43u^2 + 22u - 5$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{24} + 8u^{23} + \cdots + 34u + 1$
c_2, c_4	$u^{24} - 4u^{23} + \cdots + 6u - 1$
c_3, c_8	$u^{24} + u^{23} + \cdots + 36u + 8$
c_5, c_6, c_7 c_{10}, c_{11}, c_{12}	$u^{24} - 2u^{23} + \cdots + u - 1$
c_9	$u^{24} + 2u^{23} + \cdots + 7u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{24} + 20y^{23} + \cdots - 534y + 1$
c_2, c_4	$y^{24} - 8y^{23} + \cdots - 34y + 1$
c_3, c_8	$y^{24} - 21y^{23} + \cdots - 1040y + 64$
c_5, c_6, c_7 c_{10}, c_{11}, c_{12}	$y^{24} - 34y^{23} + \cdots - 21y + 1$
c_9	$y^{24} + 26y^{23} + \cdots - 21y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.065440 + 0.105091I$ $a = -0.101056 - 1.017940I$ $b = 0.427572 + 0.787716I$	$-4.78298 - 2.15986I$	$-14.8245 + 3.7042I$
$u = 1.065440 - 0.105091I$ $a = -0.101056 + 1.017940I$ $b = 0.427572 - 0.787716I$	$-4.78298 + 2.15986I$	$-14.8245 - 3.7042I$
$u = -1.044560 + 0.293303I$ $a = 0.060787 - 0.485482I$ $b = 0.951447 + 0.437799I$	$0.73559 + 1.57187I$	$-10.92931 - 1.48898I$
$u = -1.044560 - 0.293303I$ $a = 0.060787 + 0.485482I$ $b = 0.951447 - 0.437799I$	$0.73559 - 1.57187I$	$-10.92931 + 1.48898I$
$u = -1.08841$ $a = -1.48671$ $b = -1.10653$	-6.35267	-13.5900
$u = -1.158950 + 0.291958I$ $a = 0.215884 + 1.148480I$ $b = -0.234965 - 0.552300I$	$-0.44591 + 7.86280I$	$-12.55352 - 5.99165I$
$u = -1.158950 - 0.291958I$ $a = 0.215884 - 1.148480I$ $b = -0.234965 + 0.552300I$	$-0.44591 - 7.86280I$	$-12.55352 + 5.99165I$
$u = 1.29716$ $a = -0.674636$ $b = 0.0175724$	-7.12889	-9.59420
$u = 0.413733 + 0.547171I$ $a = -0.390896 + 1.056560I$ $b = -0.969122 + 0.621169I$	$4.52862 - 4.98340I$	$-8.25902 + 6.13145I$
$u = 0.413733 - 0.547171I$ $a = -0.390896 - 1.056560I$ $b = -0.969122 - 0.621169I$	$4.52862 + 4.98340I$	$-8.25902 - 6.13145I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.292302 + 0.564711I$ $a = 0.90790 - 1.36582I$ $b = 0.567413 + 0.008562I$	$4.89005 + 1.34187I$	$-6.87930 + 0.47018I$
$u = 0.292302 - 0.564711I$ $a = 0.90790 + 1.36582I$ $b = 0.567413 - 0.008562I$	$4.89005 - 1.34187I$	$-6.87930 - 0.47018I$
$u = -0.544664$ $a = 0.533142$ $b = 0.444791$	-0.910827	-10.5330
$u = -0.260496 + 0.277785I$ $a = 1.25655 - 0.85026I$ $b = -0.092184 - 0.632306I$	$-0.635329 + 0.918549I$	$-9.38568 - 7.31949I$
$u = -0.260496 - 0.277785I$ $a = 1.25655 + 0.85026I$ $b = -0.092184 + 0.632306I$	$-0.635329 - 0.918549I$	$-9.38568 + 7.31949I$
$u = 0.266177$ $a = -2.54350$ $b = 0.862360$	-2.02344	2.35380
$u = 1.73483 + 0.06615I$ $a = -1.05402 + 1.43450I$ $b = -1.58632 + 2.38877I$	$-9.17857 - 2.99479I$	$-11.67464 + 0.80624I$
$u = 1.73483 - 0.06615I$ $a = -1.05402 - 1.43450I$ $b = -1.58632 - 2.38877I$	$-9.17857 + 2.99479I$	$-11.67464 - 0.80624I$
$u = -1.74821 + 0.02394I$ $a = -0.42595 + 2.65836I$ $b = -0.53152 + 4.79437I$	$-14.9721 + 2.6782I$	$-14.7087 - 2.4859I$
$u = -1.74821 - 0.02394I$ $a = -0.42595 - 2.65836I$ $b = -0.53152 - 4.79437I$	$-14.9721 - 2.6782I$	$-14.7087 + 2.4859I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.75360$ $a = -0.586507$ $b = -1.87176$	-16.6700	-14.3680
$u = 1.76989 + 0.07670I$ $a = 1.04117 - 2.39816I$ $b = 2.07334 - 4.41830I$	$-11.0119 - 9.4629I$	$-13.6249 + 4.9785I$
$u = 1.76989 - 0.07670I$ $a = 1.04117 + 2.39816I$ $b = 2.07334 + 4.41830I$	$-11.0119 + 9.4629I$	$-13.6249 - 4.9785I$
$u = -1.81183$ $a = -1.26255$ $b = -2.55776$	-18.6696	-7.58970

II. $I_2^u = \langle u^2 + b - 1,\ a + 1,\ u^3 + u^2 - 2u - 1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= u^2 + u - 23$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.24698$ $a = -1.00000$ $b = -0.554958$	-7.98968	-20.1980
$u = -0.445042$ $a = -1.00000$ $b = 0.801938$	-2.34991	-23.2470
$u = -1.80194$ $a = -1.00000$ $b = -2.24698$	-19.2692	-21.5550

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^3)(u^{24}+8u^{23}+\cdots+34u+1)$
c_2	$((u-1)^3)(u^{24}-4u^{23}+\cdots+6u-1)$
c_3, c_8	$u^3(u^{24}+u^{23}+\cdots+36u+8)$
c_4	$((u+1)^3)(u^{24}-4u^{23}+\cdots+6u-1)$
c_5, c_6, c_7	$(u^3-u^2-2u+1)(u^{24}-2u^{23}+\cdots+u-1)$
c_9	$(u^3-u^2-2u+1)(u^{24}+2u^{23}+\cdots+7u+1)$
c_{10}, c_{11}, c_{12}	$(u^3+u^2-2u-1)(u^{24}-2u^{23}+\cdots+u-1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^3)(y^{24}+20y^{23}+\cdots-534y+1)$
c_2, c_4	$((y-1)^3)(y^{24}-8y^{23}+\cdots-34y+1)$
c_3, c_8	$y^3(y^{24}-21y^{23}+\cdots-1040y+64)$
c_5, c_6, c_7 c_{10}, c_{11}, c_{12}	$(y^3-5y^2+6y-1)(y^{24}-34y^{23}+\cdots-21y+1)$
c_9	$(y^3-5y^2+6y-1)(y^{24}+26y^{23}+\cdots-21y+1)$