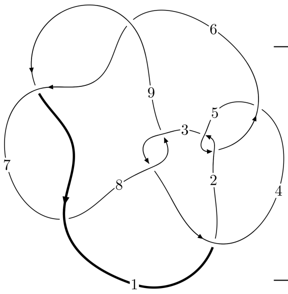
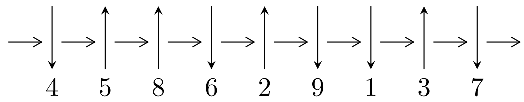
9_{22} $(K9a_2)$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$I_1^u = \langle -u^{22} - 2u^{21} + \cdots + 2b + 1,\ -u^6 + 3u^4 - 2u^3 - 2u^2 + a + 4u - 1,\ u^{23} + 3u^{22} + \cdots - u - 1\rangle$
$I_2^u = \langle b^2 - b + 1,\ a + 1,\ u - 1\rangle$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 25 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. $I_1^u = \langle -u^{22} - 2u^{21} + \cdots + 2b + 1,\ -u^6 + 3u^4 - 2u^3 - 2u^2 + a + 4u - 1,\ u^{23} + 3u^{22} + \cdots - u - 1\rangle$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} u^6 - 3u^4 + 2u^3 + 2u^2 - 4u + 1 \\ \frac{1}{2}u^{22} + u^{21} + \cdots + 2u^2 - \frac{1}{2} \end{pmatrix}$$
$$a_5 = \begin{pmatrix} \frac{3}{2}u^{22} + 3u^{21} + \cdots - 2u^2 - \frac{1}{2} \\ -\frac{5}{2}u^{22} - 4u^{21} + \cdots + u + \frac{3}{2} \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -2u^{22} - 3u^{21} + \cdots - u + 1 \\ \frac{3}{2}u^{22} + 2u^{21} + \cdots - u^2 - \frac{1}{2} \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -u^{22} - u^{21} + \cdots + u + 1 \\ -\frac{5}{2}u^{22} - 4u^{21} + \cdots + u + \frac{3}{2} \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$= 3u^{22} + 3u^{21} - 32u^{20} - 19u^{19} + 155u^{18} + 15u^{17} - 432u^{16} + 194u^{15} + 690u^{14} - 758u^{13} - 450u^{12} + 1221u^{11} - 359u^{10} - 839u^9 + 820u^8 - 2u^7 - 401u^6 + 227u^5 - 22u^4 - 21u^3 + u^2 + u$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{23} - 2u^{22} + \cdots + 18u - 9$
c_2, c_5	$u^{23} + 2u^{22} + \cdots - 2u - 1$
c_3, c_8	$u^{23} - u^{22} + \cdots + 8u + 4$
c_4	$u^{23} + 12u^{22} + \cdots - 2u - 1$
c_6, c_7, c_9	$u^{23} - 3u^{22} + \cdots - u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{23} - 12y^{22} + \cdots - 450y - 81$
c_2, c_5	$y^{23} + 12y^{22} + \cdots - 2y - 1$
c_3, c_8	$y^{23} + 15y^{22} + \cdots - 40y - 16$
c_4	$y^{23} + 24y^{21} + \cdots + 10y - 1$
c_6, c_7, c_9	$y^{23} - 23y^{22} + \cdots - 7y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.696926+0.678563I$ $a = -0.371551-0.457637I$ $b = 0.386982+1.120880I$	$-4.15124+1.33135I$	$-7.15950-0.67575I$
$u = 0.696926-0.678563I$ $a = -0.371551+0.457637I$ $b = 0.386982-1.120880I$	$-4.15124-1.33135I$	$-7.15950+0.67575I$
$u = 1.026370+0.230969I$ $a = -1.271710-0.069358I$ $b = 0.179248-0.701899I$	$-2.10210-0.88878I$	$-6.39291-0.92577I$
$u = 1.026370-0.230969I$ $a = -1.271710+0.069358I$ $b = 0.179248+0.701899I$	$-2.10210+0.88878I$	$-6.39291+0.92577I$
$u = 0.443194+0.830987I$ $a = -1.84438+0.30451I$ $b = 0.501837-1.137100I$	$-3.32060-6.47771I$	$-4.77780+6.52194I$
$u = 0.443194-0.830987I$ $a = -1.84438-0.30451I$ $b = 0.501837+1.137100I$	$-3.32060+6.47771I$	$-4.77780-6.52194I$
$u = 0.411789+0.657552I$ $a = -1.215710-0.639418I$ $b = 0.657802+0.201077I$	$-0.66432-2.00215I$	$-1.23588+3.62705I$
$u = 0.411789-0.657552I$ $a = -1.215710+0.639418I$ $b = 0.657802-0.201077I$	$-0.66432+2.00215I$	$-1.23588-3.62705I$
$u = 1.31043$ $a = -0.0893487$ $b = -0.616508$	-2.78711	-2.32390
$u = -1.349890+0.050765I$ $a = 1.185670+0.215112I$ $b = -0.730473-0.812317I$	$-3.41052+2.74438I$	$-6.00137-3.42075I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.349890 - 0.050765I$ $a = 1.185670 - 0.215112I$ $b = -0.730473 + 0.812317I$	$-3.41052 - 2.74438I$	$-6.00137 + 3.42075I$
$u = 1.42968 + 0.09520I$ $a = 0.89149 + 1.36719I$ $b = -0.449028 + 1.143790I$	$-5.84331 - 3.99588I$	$-6.60901 + 3.49800I$
$u = 1.42968 - 0.09520I$ $a = 0.89149 - 1.36719I$ $b = -0.449028 - 1.143790I$	$-5.84331 + 3.99588I$	$-6.60901 - 3.49800I$
$u = -1.48042 + 0.24817I$ $a = -0.537692 + 0.556573I$ $b = 0.868940 - 0.243856I$	$-6.80889 + 5.35900I$	$-4.49542 - 3.06793I$
$u = -1.48042 - 0.24817I$ $a = -0.537692 - 0.556573I$ $b = 0.868940 + 0.243856I$	$-6.80889 - 5.35900I$	$-4.49542 + 3.06793I$
$u = -1.51052 + 0.30516I$ $a = -1.54699 + 0.69863I$ $b = 0.565955 + 1.190510I$	$-9.6533 + 10.6207I$	$-7.02627 - 6.45650I$
$u = -1.51052 - 0.30516I$ $a = -1.54699 - 0.69863I$ $b = 0.565955 - 1.190510I$	$-9.6533 - 10.6207I$	$-7.02627 + 6.45650I$
$u = -1.55320 + 0.17815I$ $a = -0.002579 - 0.587301I$ $b = 0.282827 - 1.245840I$	$-11.61980 + 1.64388I$	$-9.30470 - 0.40272I$
$u = -1.55320 - 0.17815I$ $a = -0.002579 + 0.587301I$ $b = 0.282827 + 1.245840I$	$-11.61980 - 1.64388I$	$-9.30470 + 0.40272I$
$u = 0.008249 + 0.425434I$ $a = 0.49224 - 1.83322I$ $b = -0.476560 + 0.630579I$	$0.71923 - 1.37448I$	$2.70178 + 4.35124I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.008249 - 0.425434I$ $a = 0.49224 + 1.83322I$ $b = -0.476560 - 0.630579I$	$0.71923 + 1.37448I$	$2.70178 - 4.35124I$
$u = -0.277376 + 0.277332I$ $a = 2.26589 - 1.32800I$ $b = -0.479277 - 0.962679I$	$-0.27712 + 2.59653I$	$1.46303 - 3.78636I$
$u = -0.277376 - 0.277332I$ $a = 2.26589 + 1.32800I$ $b = -0.479277 + 0.962679I$	$-0.27712 - 2.59653I$	$1.46303 + 3.78636I$

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

(i) Arc colorings

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -1 \\ b \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -b+1 \\ b-1 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 0 \\ b-1 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0 \\ b-1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4b - 1$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4, c_5	$u^2 - u + 1$
c_2	$u^2 + u + 1$
c_3, c_8	u^2
c_6, c_7	$(u-1)^2$
c_9	$(u+1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4 c_5	$y^2 + y + 1$
c_3, c_8	y^2
c_6, c_7, c_9	$(y-1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.00000$ $a = -1.00000$ $b = 0.500000 + 0.866025I$	$-1.64493 + 2.02988I$	$-3.00000 - 3.46410I$
$u = 1.00000$ $a = -1.00000$ $b = 0.500000 - 0.866025I$	$-1.64493 - 2.02988I$	$-3.00000 + 3.46410I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^2-u+1)(u^{23}-2u^{22}+\cdots+18u-9)$
c_2	$(u^2+u+1)(u^{23}+2u^{22}+\cdots-2u-1)$
c_3, c_8	$u^2(u^{23}-u^{22}+\cdots+8u+4)$
c_4	$(u^2-u+1)(u^{23}+12u^{22}+\cdots-2u-1)$
c_5	$(u^2-u+1)(u^{23}+2u^{22}+\cdots-2u-1)$
c_6, c_7	$((u-1)^2)(u^{23}-3u^{22}+\cdots-u+1)$
c_9	$((u+1)^2)(u^{23}-3u^{22}+\cdots-u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y^2+y+1)(y^{23}-12y^{22}+\cdots-450y-81)$
c_2, c_5	$(y^2+y+1)(y^{23}+12y^{22}+\cdots-2y-1)$
c_3, c_8	$y^2(y^{23}+15y^{22}+\cdots-40y-16)$
c_4	$(y^2+y+1)(y^{23}+24y^{21}+\cdots+10y-1)$
c_6, c_7, c_9	$((y-1)^2)(y^{23}-23y^{22}+\cdots-7y-1)$