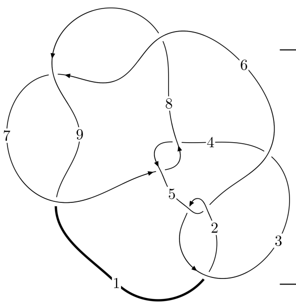
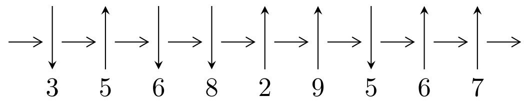
9_{42} $(K9n_4)$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle u^4 + u^3 + u^2 + b + 1,\ u^4 + u^3 + u^2 + a - u + 1,\ u^5 + 2u^4 + 2u^3 + u + 1\rangle$$
$$I_2^u = \langle b + 1,\ a - u + 1,\ u^2 - u + 1\rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 7 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. $\boldsymbol{I_1^u = \langle u^4+u^3+u^2+b+1,\ u^4+u^3+u^2+a-u+1,\ u^5+2u^4+2u^3+u+1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

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

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^5 + 6u^3 + u - 1$
c_2, c_5	$u^5 + 2u^4 + 2u^3 + u + 1$
c_3	$u^5 - 2u^4 + 14u^3 + 16u^2 + 9u + 9$
c_4, c_7	$u^5 - u^4 + 8u^3 - u^2 - 4u - 4$
c_6, c_8, c_9	$u^5 + 3u^4 - u^3 - 6u^2 - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^5 + 12y^4 + 38y^3 + 12y^2 + y - 1$
c_2, c_5	$y^5 + 6y^3 + y - 1$
c_3	$y^5 + 24y^4 + 278y^3 + 32y^2 - 207y - 81$
c_4, c_7	$y^5 + 15y^4 + 54y^3 - 73y^2 + 8y - 16$
c_6, c_8, c_9	$y^5 - 11y^4 + 37y^3 - 30y^2 - 12y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.436447 + 0.655029I$ $a = 0.423679 + 0.262806I$ $b = -0.012768 - 0.392223I$	$-0.057511 + 1.373620I$	$-0.45374 - 4.59823I$
$u = 0.436447 - 0.655029I$ $a = 0.423679 - 0.262806I$ $b = -0.012768 + 0.392223I$	$-0.057511 - 1.373620I$	$-0.45374 + 4.59823I$
$u = -0.668466$ $a = -2.01628$ $b = -1.34782$	2.55277	4.34960
$u = -1.10221 + 1.09532I$ $a = 1.084460 + 0.905094I$ $b = 2.18668 - 0.19022I$	$17.6979 - 4.0569I$	$4.27894 + 1.95729I$
$u = -1.10221 - 1.09532I$ $a = 1.084460 - 0.905094I$ $b = 2.18668 + 0.19022I$	$17.6979 + 4.0569I$	$4.27894 - 1.95729I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4u+5$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_3 c_5	$y^2 + y + 1$
c_4, c_7	y^2
c_6, c_8, 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
$u = \quad 0.500000 + 0.866025I$ $a = -0.500000 + 0.866025I$ $b = -1.00000$	$1.64493 + 2.02988I$	$3.00000 - 3.46410I$
$u = \quad 0.500000 - 0.866025I$ $a = -0.500000 - 0.866025I$ $b = -1.00000$	$1.64493 - 2.02988I$	$3.00000 + 3.46410I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^2-u+1)(u^5+6u^3+u-1)$
c_2	$(u^2+u+1)(u^5+2u^4+2u^3+u+1)$
c_3	$(u^2-u+1)(u^5-2u^4+14u^3+16u^2+9u+9)$
c_4, c_7	$u^2(u^5-u^4+8u^3-u^2-4u-4)$
c_5	$(u^2-u+1)(u^5+2u^4+2u^3+u+1)$
c_6	$(u+1)^2(u^5+3u^4-u^3-6u^2-1)$
c_8, c_9	$(u-1)^2(u^5+3u^4-u^3-6u^2-1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y^2+y+1)(y^5+12y^4+38y^3+12y^2+y-1)$
c_2, c_5	$(y^2+y+1)(y^5+6y^3+y-1)$
c_3	$(y^2+y+1)(y^5+24y^4+278y^3+32y^2-207y-81)$
c_4, c_7	$y^2(y^5+15y^4+54y^3-73y^2+8y-16)$
c_6, c_8, c_9	$(y-1)^2(y^5-11y^4+37y^3-30y^2-12y-1)$