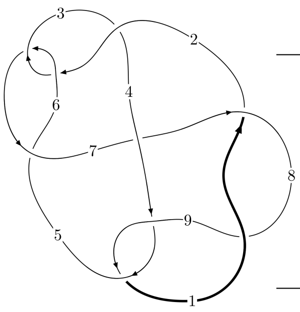
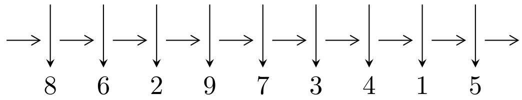
9_{23} $(K9a_{16})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$I_1^u = \langle u^5 - u^4 + 2u - 1 \rangle$
$I_2^u = \langle u^{16} - u^{15} - 2u^{14} + 3u^{13} + 4u^{12} - 7u^{11} - 3u^{10} + 10u^9 - 9u^7 + 3u^6 + 5u^5 - 4u^4 + 2u^2 - 2u + 1 \rangle$
$I_3^u = \langle u + 1 \rangle$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 22 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. $I_1^u = \langle u^5 - u^4 + 2u - 1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

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

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3, c_5 c_8	$y^5 + 7y^4 + 20y^3 + 26y^2 + 12y - 1$
c_2, c_4, c_6 c_9	$y^5 - y^4 + 4y^3 - 2y^2 + 4y - 1$
c_7	$y^5 + 2y^4 + 17y^3 + 23y^2 + 88y - 16$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.760506 + 0.815892I$	$6.30195 + 1.13825I$	$-3.90398 - 2.34058I$
$u = -0.760506 - 0.815892I$	$6.30195 - 1.13825I$	$-3.90398 + 2.34058I$
$u = \quad 1.001870 + 0.741764I$	$4.78344 - 10.61130I$	$-6.76481 + 7.85454I$
$u = \quad 1.001870 - 0.741764I$	$4.78344 + 10.61130I$	$-6.76481 - 7.85454I$
$u = \quad 0.517281$	-0.786636	-12.6620

II. $\boldsymbol{I_2^u = \langle u^{16} - u^{15} - 2u^{14} + 3u^{13} + 4u^{12} - 7u^{11} - 3u^{10} + 10u^9 - 9u^7 + 3u^6 + 5u^5 - 4u^4 + 2u^2 - 2u + 1\rangle}$

(i) Arc colorings

$$a_1 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_5 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_9 = \begin{pmatrix}1\\-u^2\end{pmatrix}$$
$$a_4 = \begin{pmatrix}u\\-u^3+u\end{pmatrix}$$
$$a_8 = \begin{pmatrix}-u^2+1\\-u^2\end{pmatrix}$$
$$a_2 = \begin{pmatrix}u^4-u^2+1\\u^4\end{pmatrix}$$
$$a_3 = \begin{pmatrix}-u^{11}+2u^9-4u^7+4u^5-3u^3+2u\\-u^{11}+u^9-2u^7+u^5-u^3+u\end{pmatrix}$$
$$a_7 = \begin{pmatrix}-u^6+u^4-2u^2+1\\u^8-2u^6+2u^4-2u^2\end{pmatrix}$$
$$a_6 = \begin{pmatrix}-u^{13}+2u^{11}-5u^9+6u^7-6u^5+4u^3-u\\u^{15}-3u^{13}+6u^{11}-9u^9+8u^7-6u^5+2u^3+u\end{pmatrix}$$
$$a_6 = \begin{pmatrix}-u^{13}+2u^{11}-5u^9+6u^7-6u^5+4u^3-u\\u^{15}-3u^{13}+6u^{11}-9u^9+8u^7-6u^5+2u^3+u\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= 4u^{12} - 8u^{10} + 16u^8 - 4u^7 - 16u^6 + 8u^5 + 12u^4 - 8u^3 - 4u^2 + 4u - 10$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_3, c_5 c_8	$u^{16} + 5u^{15} + \cdots - 4u^2 + 1$
c_2, c_4, c_6 c_9	$u^{16} + u^{15} + \cdots + 2u + 1$
c_7	$(u^8 + 2u^7 + 3u^6 + u^4 + 2u^2 + 2u + 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3, c_5 c_8	$y^{16} + 11y^{15} + \cdots - 8y + 1$
c_2, c_4, c_6 c_9	$y^{16} - 5y^{15} + \cdots - 4y^2 + 1$
c_7	$(y^8 + 2y^7 + 11y^6 + 10y^5 + 7y^4 + 10y^3 + 6y^2 + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.017320 + 0.191091I$	$-1.08130 + 5.29622I$	$-12.10789 - 6.28296I$
$u = -1.017320 - 0.191091I$	$-1.08130 - 5.29622I$	$-12.10789 + 6.28296I$
$u = \quad 0.908738 + 0.252477I$	$-0.328380 - 0.252703I$	$-10.38985 + 0.96511I$
$u = \quad 0.908738 - 0.252477I$	$-0.328380 + 0.252703I$	$-10.38985 - 0.96511I$
$u = \quad 0.708362 + 0.611401I$	$-0.328380 + 0.252703I$	$-10.38985 - 0.96511I$
$u = \quad 0.708362 - 0.611401I$	$-0.328380 - 0.252703I$	$-10.38985 + 0.96511I$
$u = \quad 0.724199 + 0.826388I$	$5.63436 + 4.73566I$	$-5.11364 - 2.91588I$
$u = \quad 0.724199 - 0.826388I$	$5.63436 - 4.73566I$	$-5.11364 + 2.91588I$
$u = -0.866890 + 0.696274I$	$2.35506 + 2.67607I$	$-4.38861 - 3.32415I$
$u = -0.866890 - 0.696274I$	$2.35506 - 2.67607I$	$-4.38861 + 3.32415I$
$u = \quad 0.960503 + 0.654282I$	$-1.08130 - 5.29622I$	$-12.10789 + 6.28296I$
$u = \quad 0.960503 - 0.654282I$	$-1.08130 + 5.29622I$	$-12.10789 - 6.28296I$
$u = -0.977539 + 0.749941I$	$5.63436 + 4.73566I$	$-5.11364 - 2.91588I$
$u = -0.977539 - 0.749941I$	$5.63436 - 4.73566I$	$-5.11364 + 2.91588I$
$u = \quad 0.059947 + 0.622852I$	$2.35506 - 2.67607I$	$-4.38861 + 3.32415I$
$u = \quad 0.059947 - 0.622852I$	$2.35506 + 2.67607I$	$-4.38861 - 3.32415I$

III. $I_3^u = \langle u+1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -18$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000$	-4.93480	-18.0000

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_3, c_5 c_8	$(u+1)(u^5+u^4+\cdots+4u+1)(u^{16}+5u^{15}+\cdots-4u^2+1)$
c_2, c_4, c_6 c_9	$(u-1)(u^5+u^4+2u+1)(u^{16}+u^{15}+\cdots+2u+1)$
c_7	$(u-1)(u^5-4u^4+9u^3-9u^2+4u+4)$ $\cdot\,(u^8+2u^7+3u^6+u^4+2u^2+2u+1)^2$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_3, c_5 c_8	$(y-1)(y^5+7y^4+\cdots+12y-1)(y^{16}+11y^{15}+\cdots-8y+1)$
c_2, c_4, c_6 c_9	$(y-1)(y^5-y^4+\cdots+4y-1)(y^{16}-5y^{15}+\cdots-4y^2+1)$
c_7	$(y-1)(y^5+2y^4+17y^3+23y^2+88y-16)$ $\cdot\,(y^8+2y^7+11y^6+10y^5+7y^4+10y^3+6y^2+1)^2$