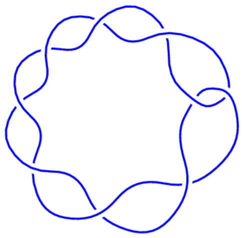
9_2 $(K9a_{27})$



[1]

Arc Sequences

$$\rightarrow \downarrow_{4} \rightarrow \downarrow_{7} \rightarrow \downarrow_{2} \rightarrow \downarrow_{1} \rightarrow \downarrow_{9} \rightarrow \downarrow_{8} \rightarrow \downarrow_{3} \rightarrow \downarrow_{6} \rightarrow \downarrow_{5} \rightarrow$$

Solving Sequence

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

Representation Ideals

$$I = I_1^u$$

$$I_1^u = \langle u^7 + u^6 - u^4 + 2u^3 + 2u^2 - 1 \rangle$$

There are 1 irreducible components with 7 representations.

[1] The knot diagram image is adapter from "C. Livingston and A. H. Moore, KnotInfo: Table of Knot Invariants, http://www.indiana.edu/ knotinfo"

I. $I_1^u = \langle u^7 + u^6 - u^4 + 2u^3 + 2u^2 - 1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^5 - 4u^4 + 4u^2 - 8u - 10$

(iv) Complex Volumes and Cusp Shapes

Solution to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.962510 - 0.950397I$	$-19.5871 - 3.4867I$	$-2.02769 + 2.18600I$
$u = -0.962510 + 0.950397I$	$-19.5871 + 3.4867I$	$-2.02769 - 2.18600I$
$u = -0.676751 - 0.491075I$	$1.26782 - 1.83261I$	$-3.77442 + 5.43914I$
$u = -0.676751 + 0.491075I$	$1.26782 + 1.83261I$	$-3.77442 - 5.43914I$
$u = \quad 0.577619$	-0.745234	-13.9888
$u = \quad 0.850452 - 0.793787I$	$7.99979 + 2.92126I$	$-2.20347 - 2.94858I$
$u = \quad 0.850452 + 0.793787I$	$7.99979 - 2.92126I$	$-2.20347 + 2.94858I$

II. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1, c_3, c_4 c_5, c_6, c_8 c_9	$(u^7 + u^6 + 6u^5 + 5u^4 + 10u^3 + 6u^2 + 4u + 1)$
c_2, c_7	$(u^7 + u^6 - u^4 + 2u^3 + 2u^2 - 1)$

III. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_3, c_4 c_5, c_6, c_8 c_9	$(y^7 + 11y^6 + 46y^5 + 91y^4 + 86y^3 + 34y^2 + 4y - 1)$
c_2, c_7	$(y^7 - y^6 + 6y^5 - 5y^4 + 10y^3 - 6y^2 + 4y - 1)$