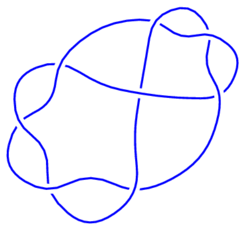
8_4 $(K8a_{17})$



[1]

Arc Sequences

$$\to \overset{\uparrow}{6} \to \overset{\uparrow}{5} \to \underset{\downarrow}{8} \to \underset{\downarrow}{7} \to \overset{\uparrow}{1} \to \overset{\uparrow}{2} \to \underset{\downarrow}{4} \to \underset{\downarrow}{3} \to$$

Solving Sequence

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

Representation Ideals

$$I = I_1^u$$

$$I_1^u = \langle u^9 - u^8 + 6u^7 - 5u^6 + 11u^5 - 7u^4 + 6u^3 - 2u^2 + u - 1 \rangle$$

There are 1 irreducible components with 9 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. $\boldsymbol{I_1^u = \langle u^9 - u^8 + 6u^7 - 5u^6 + 11u^5 - 7u^4 + 6u^3 - 2u^2 + u - 1\rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} u^2 + 1 \\ u^4 + 2u^2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u^6 + 3u^4 + 2u^2 + 1 \\ -u^6 - 2u^4 + u^2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} u^6 + 3u^4 + 2u^2 + 1 \\ u^8 + 4u^6 + 4u^4 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^7 + 4u^6 - 20u^5 + 16u^4 - 28u^3 + 16u^2 - 8u + 6$

(iv) Complex Volumes and Cusp Shapes

Solution to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.290170 - 0.487341I$	$0.035384 - 1.109693I$	$0.55374 + 6.23947I$
$u = -0.290170 + 0.487341I$	$0.035384 + 1.109693I$	$0.55374 - 6.23947I$
$u = -0.05587 - 1.55975I$	$7.06362 - 2.21388I$	$4.24115 + 3.04598I$
$u = -0.05587 + 1.55975I$	$7.06362 + 2.21388I$	$4.24115 - 3.04598I$
$u = \quad 0.12170 - 1.63384I$	$13.4612 + 5.5005I$	$7.48937 - 2.97298I$
$u = \quad 0.12170 + 1.63384I$	$13.4612 - 5.5005I$	$7.48937 + 2.97298I$
$u = \quad 0.429032 - 0.787939I$	$5.16280 + 3.41073I$	$5.88238 - 4.39642I$
$u = \quad 0.429032 + 0.787939I$	$5.16280 - 3.41073I$	$5.88238 + 4.39642I$
$u = \quad 0.590618$	2.83680	1.66670

II. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1, c_5, c_6	$(u^9 + u^8 - 4u^7 - 3u^6 + 5u^5 + u^4 - 2u^3 + 2u^2 + u + 1)$
c_2	$(u^9 + 3u^8 + 2u^7 - 5u^6 - u^5 + 13u^4 + 10u^3 - 2u^2 + u + 3)$
c_3, c_4, c_7 c_8	$(u^9 + u^8 + 6u^7 + 5u^6 + 11u^5 + 7u^4 + 6u^3 + 2u^2 + u + 1)$

III. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_5, c_6	$(y^9 - 9y^8 + 32y^7 - 55y^6 + 45y^5 - 19y^4 + 16y^3 - 10y^2 - 3y - 1)$
c_2	$(y^9 - 5y^8 + 32y^7 - 87y^6 + 185y^5 - 223y^4 + 180y^3 - 62y^2 + 13y - 9)$
c_3, c_4, c_7 c_8	$(y^9 + 11y^8 + 48y^7 + 105y^6 + 121y^5 + 73y^4 + 20y^3 - 6y^2 - 3y - 1)$