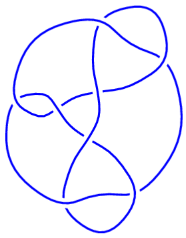
8_{20} $(K8n_1)$



[1]

Arc Sequences

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

Solving Sequence

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

Representation Ideals

$$I = \bigcap_{i=1}^{2} I_i^u$$

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

There are 2 irreducible components with 6 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. $I_1^u = \langle u-1,\ b,\ a-1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 0$

(iv) Complex Volumes and Cusp Shapes

	Solution to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u =$	1.00000		
$a =$	1.00000	0	0
$b =$	0		

II.

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

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 4u^4 + 6u^3 - 8u^2 - 6u + 8$

(iv) Complex Volumes and Cusp Shapes

Solution to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.81245 - 0.17314I$ $a = 0.165924 + 1.354819I$ $b = 0.37638 - 2.02979I$	$-11.90992 - 4.12490I$	$-1.10604 + 2.15443I$
$u = -1.81245 + 0.17314I$ $a = 0.165924 - 1.354819I$ $b = 0.37638 + 2.02979I$	$-11.90992 + 4.12490I$	$-1.10604 - 2.15443I$
$u = -0.274898$ $a = -2.52902$ $b = -0.504107$	1.20365	8.94304
$u = 0.949895 - 0.441667I$ $a = -0.401414 + 0.226060I$ $b = 0.375669 - 0.888717I$	$-1.85138 + 1.10891I$	$-2.36548 - 2.04112I$
$u = 0.949895 + 0.441667I$ $a = -0.401414 - 0.226060I$ $b = 0.375669 + 0.888717I$	$-1.85138 - 1.10891I$	$-2.36548 + 2.04112I$

III. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1, c_4	$(u-1)(u^5+2u^4-2u^3-3u^2+3u+1)$
c_2, c_7	$u(u^5+u^4+5u^3+u^2+2u-2)$
c_3	$(u+1)(u^5+8u^4+22u^3+25u^2+15u+1)$
c_5, c_8	$(u-1)(u^5+2u^4+2u^3-u^2-u-1)$
c_6	$(u+1)(u^5+6u^3+u^2-u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_4	$(y-1)(y^5 - 8y^4 + 22y^3 - 25y^2 + 15y - 1)$
c_2, c_7	$y(y^5 + 9y^4 + 27y^3 + 23y^2 + 8y - 4)$
c_3	$(y-1)(y^5 - 20y^4 + 114y^3 + 19y^2 + 175y - 1)$
c_5, c_8	$(y-1)(y^5 + 6y^3 - y^2 - y - 1)$
c_6	$(y-1)(y^5 + 12y^4 + 34y^3 - 13y^2 - y - 1)$