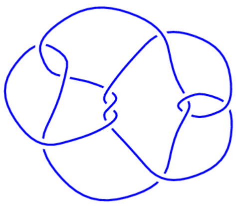
$11n_{104}$ $(K11n_{104})$



[1]

Arc Sequences

$$\rightarrow \underset{5}{\downarrow} \rightarrow \underset{1}{\downarrow} \rightarrow \underset{8}{\downarrow} \rightarrow \underset{9}{\uparrow} \rightarrow \underset{2}{\downarrow} \rightarrow \underset{11}{\downarrow} \rightarrow \underset{1}{\downarrow} \rightarrow \underset{10}{\downarrow} \rightarrow \underset{4}{\uparrow} \rightarrow \underset{5}{\downarrow} \rightarrow \underset{7}{\downarrow} \rightarrow$$

Solving Sequence

$$1{,}5 \xrightarrow[c_1]{} 2 \xrightarrow[c_2]{} 3{,}7 \xrightarrow[c_7]{} 8 \xrightarrow[c_{11}]{} 11 \xrightarrow[c_6]{} 6 \xrightarrow[c_{10}]{} 10 \xrightarrow[c_8]{} 9 \xrightarrow[c_4]{} 4 \gg c_3, c_5, c_9$$

Representation Ideals

$$I = \bigcap_{i=1}^{3} I_i^u$$

$I_1^u = \langle a^4 - 4a^3 + 4a^2 + 1,\ u + 1,\ b - 1\rangle$
$I_2^u = \langle u^8 - 2u^7 - 10u^6 + 30u^5 + 8u^4 - 14u^3 + 2u^2 + 2u - 1,\ b - u,\ u^6 - 2u^5 - 9u^4 + 28u^3 - u^2 + 8a + 14u + 1\rangle$
$I_3^u = \langle u - 1,\ a + 1,\ b + 1\rangle$

There are 3 irreducible components with 13 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. $\boldsymbol{I_1^u = \langle a^4 - 4a^3 + 4a^2 + 1,\ u + 1,\ b - 1\rangle}$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} a \\ 1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} a-1 \\ 1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -a+1 \\ -1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -a+1 \\ a-2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -a^3+3a^2-2a \\ a^3-4a^2+5a-1 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -a^2+2a-1 \\ -a+2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -a^2+2a-1 \\ -a+2 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes =unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = -0.098684 - 0.455090I$ $b = 1.00000$	$-5.75727 - 3.66386I$	$-16.0000 + 4.0000I$
$u = -1.00000$ $a = -0.098684 + 0.455090I$ $b = 1.00000$	$-5.75727 + 3.66386I$	$-16.0000 - 4.0000I$
$u = -1.00000$ $a = 2.09868 - 0.45509I$ $b = 1.00000$	$-5.75727 + 3.66386I$	$-16.0000 - 4.0000I$
$u = -1.00000$ $a = 2.09868 + 0.45509I$ $b = 1.00000$	$-5.75727 - 3.66386I$	$-16.0000 + 4.0000I$

II.

$\boldsymbol{I_2^u = \langle u^8 - 2u^7 + \cdots + 2u - 1,\ b - u,\ u^6 - 2u^5 - 9u^4 + 28u^3 - u^2 + 8a + 14u + 1\rangle}$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u^2 + 1 \\ u^2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -\frac{1}{8}u^6 + \frac{1}{4}u^5 + \cdots - \frac{7}{4}u - \frac{1}{8} \\ u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -\frac{1}{8}u^6 + \frac{1}{4}u^5 + \cdots - \frac{11}{4}u - \frac{1}{8} \\ u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} \frac{1}{8}u^7 - \frac{1}{4}u^6 + \cdots + \frac{1}{8}u + 1 \\ -u^2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} \frac{1}{8}u^7 - \frac{1}{4}u^6 + \cdots + \frac{1}{8}u + 1 \\ -\frac{1}{8}u^7 + \frac{1}{4}u^6 + \cdots - \frac{7}{4}u^2 - \frac{1}{8}u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -\frac{5}{8}u^7 + \frac{15}{8}u^6 + \cdots - \frac{65}{8}u + \frac{13}{8} \\ \frac{1}{2}u^7 - \frac{11}{8}u^6 + \cdots + 4u - \frac{9}{8} \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -\frac{5}{8}u^7 + \frac{11}{8}u^6 + \cdots - \frac{9}{8}u + \frac{9}{8} \\ \frac{1}{8}u^7 - \frac{1}{4}u^6 + \cdots + \frac{7}{4}u^2 + \frac{1}{8}u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -\frac{5}{8}u^7 + \frac{11}{8}u^6 + \cdots - \frac{9}{8}u + \frac{9}{8} \\ \frac{1}{8}u^7 - \frac{1}{4}u^6 + \cdots + \frac{7}{4}u^2 + \frac{1}{8}u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes =unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -3.34406$ $a = -0.656809$ $b = -3.34406$	15.7287	-9.67086
$u = -0.594812 - 0.065631I$ $a = 1.77892 + 0.41529I$ $b = -0.594812 - 0.065631I$	$-4.20158 - 3.92770I$	$-10.18918 + 5.00146I$
$u = -0.594812 + 0.065631I$ $a = 1.77892 - 0.41529I$ $b = -0.594812 + 0.065631I$	$-4.20158 + 3.92770I$	$-10.18918 - 5.00146I$
$u = 0.279091 - 0.329009I$ $a = -0.414734 + 0.712553I$ $b = 0.279091 - 0.329009I$	$-0.535301 + 1.039085I$	$-7.61110 - 6.36007I$
$u = 0.279091 + 0.329009I$ $a = -0.414734 - 0.712553I$ $b = 0.279091 + 0.329009I$	$-0.535301 - 1.039085I$	$-7.61110 + 6.36007I$
$u = 0.495898$ $a = -1.31523$ $b = 0.495898$	-1.19322	-8.17952
$u = 2.73980 - 1.24096I$ $a = 0.621831 + 0.351657I$ $b = 2.73980 - 1.24096I$	$11.45110 + 7.34942I$	$-11.27453 - 2.75920I$
$u = 2.73980 + 1.24096I$ $a = 0.621831 - 0.351657I$ $b = 2.73980 + 1.24096I$	$11.45110 - 7.34942I$	$-11.27453 + 2.75920I$

III. $I^u_3 = \langle u - 1,\ a + 1,\ b + 1 \rangle$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -1 \\ -1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes =unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.00000$ $a = -1.00000$ $b = -1.00000$	-3.28987	-12.0000

IV. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1	$(u+1)^5(u^8+2u^7-10u^6-30u^5+8u^4+14u^3+2u^2-2u-1)$
c_2	$(u+1)^5$ $(u^8+24u^7+236u^6+1112u^5+870u^4+264u^3+44u^2+8u+1)$
c_3, c_{10}	$u(u^4-2u^2+2)$ $(u^8+4u^7-12u^6-70u^5-54u^4+46u^3+38u^2-10u+10)$
c_4, c_9	$(u)(u^4+2u^2+2)(u^8+4u^7+\cdots+6u+2)$
c_5	$(u-1)^4(u+1)(u^8+2u^7+\cdots-2u-1)$
c_6, c_7	$(u-1)(u+1)^4(u^8+2u^7+\cdots-2u-1)$
c_8	$(u)(u^2-2u+2)^2(u^8+4u^7+\cdots+4u+4)$
c_{11}	$(u-1)^5(u^8+2u^7-10u^6-30u^5+8u^4+14u^3+2u^2-2u-1)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_5, c_6 c_7, c_{11}	$(y-1)^5$ $(y^8 - 24y^7 + 236y^6 - 1112y^5 + 870y^4 - 264y^3 + 44y^2 - 8y + 1)$
c_2	$(y-1)^5(y^8 - 104y^7 + \cdots + 24y + 1)$
c_3, c_{10}	$(y)(y^2 - 2y + 2)^2(y^8 - 40y^7 + \cdots + 660y + 100)$
c_4, c_9	$(y)(y^2 + 2y + 2)^2(y^8 + 4y^7 + \cdots + 4y + 4)$
c_8	$(y)(y^2 + 4)^2(y^8 + 32y^6 + \cdots - 176y + 16)$