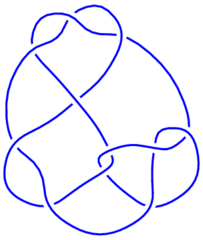
$11n_{70}$ $(K11n_{70})$



1

Arc Sequences

$$\to \underset{4}{\downarrow} \to \underset{1}{\downarrow} \to \underset{8}{\uparrow} \to \underset{2}{\downarrow} \to \underset{10}{\downarrow} \to \underset{11}{\downarrow} \to \underset{4}{\uparrow} \to \underset{1}{\uparrow} \to \underset{7}{\downarrow} \to \underset{6}{\downarrow} \to \underset{9}{\uparrow} \to$$

Solving Sequence

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

Representation Ideals

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

$$\begin{aligned}
I_1^u &= \langle a^5 - a^4 - 2a^3 + a^2 + a + 1,\ u - 1,\ a^4 - 2a^2 + b - a\rangle \\
I_2^u &= \langle u^{11} - 6u^{10} + 6u^9 + 23u^8 - 41u^7 - 9u^6 + 22u^5 - 4u^4 + 42u^3 - 3u^2 + 2u - 1, \\
&\quad 5u^{10} - 25u^9 + 9u^8 + 108u^7 - 109u^6 - 70u^5 + 40u^4 - 52u^3 + 118u^2 + 16b - u + 9, \\
&\quad 13u^{10} - 77u^9 + 69u^8 + 316u^7 - 505u^6 - 202u^5 + 292u^4 - 24u^3 + 546u^2 + 16a + 75u + 25\rangle
\end{aligned}$$

There are 2 irreducible components with 16 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. $I_1^u = \langle a^5 - a^4 - 2a^3 + a^2 + a + 1,\ u - 1,\ a^4 - 2a^2 + b - a \rangle$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} a \\ -a^4 + 2a^2 + a \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -a^2 \\ a^4 - 2a^2 - a \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -a^3 + a \\ -1 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} a^4 - 2a^2 \\ a^4 - 2a^2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} a^4 - 2a^2 \\ a^4 - 2a^2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} a^4 - 2a^2 \\ 0 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} a^4 - 2a^2 \\ 0 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes =unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.00000$ $a = -1.21774$ $b = -0.450910$	-4.04602	-9.76978
$u = 1.00000$ $a = -0.309916 - 0.549911I$ $b = -0.649026 + 0.272465I$	$-1.97403 - 1.53058I$	$-5.05737 + 4.09764I$
$u = 1.00000$ $a = -0.309916 + 0.549911I$ $b = -0.649026 - 0.272465I$	$-1.97403 + 1.53058I$	$-5.05737 - 4.09764I$
$u = 1.00000$ $a = 1.41878 - 0.21917I$ $b = 1.87448 + 0.98099I$	$-7.51750 + 4.40083I$	$-9.05774 - 4.18967I$
$u = 1.00000$ $a = 1.41878 + 0.21917I$ $b = 1.87448 - 0.98099I$	$-7.51750 - 4.40083I$	$-9.05774 + 4.18967I$

II. $I_2^u =$
$\langle u^{11}-6u^{10}+\cdots+2u-1,\ 5u^{10}-25u^9+\cdots+16b+9,\ 13u^{10}-77u^9+\cdots+16a+25\rangle$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -0.812500u^{10} + 4.81250u^9 + \cdots - 4.68750u - 1.56250 \\ -0.312500u^{10} + 1.56250u^9 + \cdots + 0.0625000u - 0.562500 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -\frac{3}{4}u^{10} + \frac{33}{8}u^9 + \cdots - \frac{15}{2}u - \frac{19}{8} \\ -0.312500u^{10} + 1.56250u^9 + \cdots + 0.0625000u - 0.562500 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0.0625000u^{10} - 0.312500u^9 + \cdots + 2.93750u + 2.06250 \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -\frac{1}{2}u^{10} + \frac{5}{2}u^9 + \cdots - \frac{23}{4}u - \frac{1}{4} \\ -\frac{1}{2}u^{10} + \frac{9}{4}u^9 + \cdots + \frac{3}{4}u - \frac{1}{2} \end{pmatrix}$$
$$a_4 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -\frac{3}{2}u^{10} + \frac{25}{4}u^9 + \cdots - \frac{21}{4}u - \frac{1}{2} \\ -\frac{3}{2}u^{10} + 6u^9 + \cdots + \frac{5}{4}u - \frac{3}{4} \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u^2 + 1 \\ -u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u^4 - u^2 + 1 \\ u^4 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -\frac{1}{4}u^{10} + 2u^9 + \cdots - \frac{11}{2}u - \frac{1}{4} \\ \frac{1}{4}u^{10} - \frac{1}{2}u^9 + \cdots - \frac{13}{2}u^2 + \frac{1}{4}u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -\frac{1}{4}u^{10} + 2u^9 + \cdots - \frac{11}{2}u - \frac{1}{4} \\ \frac{1}{4}u^{10} - \frac{1}{2}u^9 + \cdots - \frac{13}{2}u^2 + \frac{1}{4}u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes =**unknown**

(iv) Complex Volumes and Cusp Shapes

Solution to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.81262$ $a = 0.839018$ $b = 3.48033$	-8.89454	-10.0846
$u = -1.19982$ $a = -0.355119$ $b = -0.841341$	-2.26362	-4.99857
$u = -0.098712 - 0.296530I$ $a = 1.52538 - 0.38173I$ $b = 0.070421 - 0.363106I$	$-0.105049 - 1.037842I$	$-1.85452 + 6.48223I$
$u = -0.098712 + 0.296530I$ $a = 1.52538 + 0.38173I$ $b = 0.070421 + 0.363106I$	$-0.105049 + 1.037842I$	$-1.85452 - 6.48223I$
$u = -0.091212 - 0.812545I$ $a = -0.36666 + 1.73373I$ $b = -0.056209 - 0.329495I$	$-5.67466 - 3.04693I$	$-7.70492 + 3.06297I$
$u = -0.091212 + 0.812545I$ $a = -0.36666 - 1.73373I$ $b = -0.056209 + 0.329495I$	$-5.67466 + 3.04693I$	$-7.70492 - 3.06297I$
$u = 0.253478$ $a = -4.97395$ $b = -0.971971$	-2.74892	-1.30155
$u = 2.25206 - 0.10125I$ $a = 0.262785 - 0.346980I$ $b = 1.166246 + 0.540322I$	$-18.1442 + 2.6778I$	$-6.71737 - 2.37407I$
$u = 2.25206 + 0.10125I$ $a = 0.262785 + 0.346980I$ $b = 1.166246 - 0.540322I$	$-18.1442 - 2.6778I$	$-6.71737 + 2.37407I$
$u = 2.31734 - 0.31015I$ $a = -0.676476 + 0.033210I$ $b = -3.51397 - 1.25159I$	$14.4281 + 6.7220I$	$-9.53086 - 2.63003I$
$u = 2.31734 + 0.31015I$ $a = -0.676476 - 0.033210I$ $b = -3.51397 + 1.25159I$	$14.4281 - 6.7220I$	$-9.53086 + 2.63003I$

III. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1	$(u-1)^5(u^{11}+6u^{10}+\cdots+2u+1)$
c_2	$(u+1)^5(u^{11}+24u^{10}+\cdots-2u+1)$
c_3, c_7	$u^5(u^{11}+u^{10}+\cdots-64u+32)$
c_4	$(u+1)^5(u^{11}+6u^{10}+\cdots+2u+1)$
c_5, c_6	$(u^5+u^4-2u^3-u^2+u-1)$ $(u^{11}+2u^{10}-4u^9-8u^8+6u^7+8u^6-8u^5+9u^3+2u^2-1)$
c_8	$(u^5-u^4+\cdots+u-1)(u^{11}+12u^9+\cdots-2u+1)$
c_9	$(u^5+3u^4+\cdots-u-1)(u^{11}+6u^{10}+\cdots+20u+7)$
c_{10}	$(u^5-u^4-2u^3+u^2+u+1)$ $(u^{11}+2u^{10}-4u^9-8u^8+6u^7+8u^6-8u^5+9u^3+2u^2-1)$
c_{11}	$(u^5+u^4+\cdots+u+1)(u^{11}+12u^9+\cdots-2u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_4	$(y-1)^5(y^{11} - 24y^{10} + \cdots - 2y - 1)$
c_2	$(y-1)^5(y^{11} - 116y^{10} + \cdots + 306y - 1)$
c_3, c_7	$y^5(y^{11} + 33y^{10} + \cdots + 3584y - 1024)$
c_5, c_6, c_{10}	$(y^5 - 5y^4 + \cdots - y - 1)(y^{11} - 12y^{10} + \cdots + 4y - 1)$
c_8, c_{11}	$(y^5 + 3y^4 + \cdots - y - 1)(y^{11} + 24y^{10} + \cdots + 4y - 1)$
c_9	$(y^5 - y^4 + \cdots + 3y - 1)(y^{11} - 12y^{10} + \cdots + 540y - 49)$