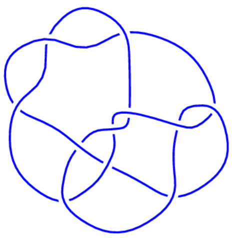
$11n_{111}$ $(K11n_{111})$



[1]

Arc Sequences

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

Solving Sequence

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

Representation Ideals

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

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

There are 2 irreducible components with 17 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. $\boldsymbol{I_1^u = \langle u^7 - 3u^6 + 4u^5 - u^4 - u^3 + 2u - 1,\ -u^6 + 3u^5 - 4u^4 + u^3 + b + u - 2,\ -u^6 + 2u^5 - 2u^4 - u^3 + u^2 + a - u - 1\rangle}$

(i) Arc colorings

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

(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
$u = -0.654004 - 0.474604I$ $a = -1.29788 - 1.25568I$ $b = -0.14511 + 1.82223I$	$-7.70554 - 1.74618I$	$-7.51126 + 3.54450I$
$u = -0.654004 + 0.474604I$ $a = -1.29788 + 1.25568I$ $b = -0.14511 - 1.82223I$	$-7.70554 + 1.74618I$	$-7.51126 - 3.54450I$
$u = 0.565757$ $a = 1.54854$ $b = 1.52187$	-9.60369	0.690319
$u = 0.708937 - 0.768660I$ $a = 0.228033 - 0.816615I$ $b = -0.148823 + 0.381778I$	$-1.83703 + 2.44043I$	$-3.31727 - 3.97577I$
$u = 0.708937 + 0.768660I$ $a = 0.228033 + 0.816615I$ $b = -0.148823 - 0.381778I$	$-1.83703 - 2.44043I$	$-3.31727 + 3.97577I$
$u = 1.16219 - 1.06064I$ $a = -0.204425 + 0.483393I$ $b = -0.467003 - 0.976251I$	$-5.39479 + 4.17967I$	$-12.5166 - 9.7446I$
$u = 1.16219 + 1.06064I$ $a = -0.204425 - 0.483393I$ $b = -0.467003 + 0.976251I$	$-5.39479 - 4.17967I$	$-12.5166 + 9.7446I$

II.

$$I_2^u = \langle u^{10} + 2u^9 + \cdots + 2u + 1,\ u^9 + 2u^8 + \cdots + a + 2,\ 2u^9 + 2u^8 + \cdots + b + 2\rangle$$

(i) Arc colorings

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

$$a_8 = \begin{pmatrix} -u^9 - 2u^8 + 3u^6 - 2u^5 - 8u^4 - 4u^3 + 4u^2 - 2 \\ -2u^9 - 2u^8 + 3u^6 - 5u^5 - 8u^4 - 5u^3 + 2u^2 - u - 2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -3u^9 - 4u^8 + 6u^6 - 7u^5 - 16u^4 - 9u^3 + 6u^2 - u - 4 \\ -2u^9 - 2u^8 + 3u^6 - 5u^5 - 8u^4 - 5u^3 + 2u^2 - u - 2 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -2u^9 - 2u^8 + u^7 + 3u^6 - 6u^5 - 8u^4 - 2u^3 + 3u^2 - 3u - 1 \\ -2u^9 - u^8 + u^7 + 2u^6 - 6u^5 - 5u^4 - u^3 + 2u^2 - u - 1 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} u^9 + u^8 - u^7 - u^6 + 3u^5 + 4u^4 - u^2 + u + 1 \\ -u^9 - 2u^8 + u^7 + 2u^6 - 3u^5 - 7u^4 - u^3 + 2u^2 - u - 1 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -u^8 + u^6 - 3u^4 - u^3 + u^2 \\ -u^9 - 2u^8 + u^7 + 2u^6 - 3u^5 - 7u^4 - u^3 + 2u^2 - u - 1 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -2u^9 - 3u^8 - u^7 + 5u^6 - 4u^5 - 12u^4 - 10u^3 + 6u^2 - 4 \\ -u^8 - u^7 + u^6 + u^5 - 3u^4 - 4u^3 + u^2 - 1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 2u^9 + 2u^8 - u^7 - 3u^6 + 6u^5 + 8u^4 + 3u^3 - 4u^2 + 3u + 2 \\ u^9 - u^7 + 3u^5 + u^4 - u^3 - u^2 + u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} u^8 + 2u^7 - 2u^6 - 2u^5 + 3u^4 + 10u^3 - 5u^2 - 2u + 3 \\ -u^9 + 2u^8 + 2u^7 - u^6 - 6u^5 + 6u^4 + 8u^3 - 4u^2 + 2 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} u^8 + 2u^7 - 2u^6 - 2u^5 + 3u^4 + 10u^3 - 5u^2 - 2u + 3 \\ -u^9 + 2u^8 + 2u^7 - u^6 - 6u^5 + 6u^4 + 8u^3 - 4u^2 + 2 \end{pmatrix}$$

(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
$u = -1.024892 - 0.901917I$ $a = -0.53528 + 1.77400I$ $b = 1.99271 - 1.85205I$	$6.52702 - 8.61249I$	$-5.20069 + 4.18606I$
$u = -1.024892 + 0.901917I$ $a = -0.53528 - 1.77400I$ $b = 1.99271 + 1.85205I$	$6.52702 + 8.61249I$	$-5.20069 - 4.18606I$
$u = -0.877879 - 0.988078I$ $a = 1.58833 - 0.74783I$ $b = -1.61793 - 0.67025I$	$7.01395 + 1.69275I$	$-4.50434 - 0.09697I$
$u = -0.877879 + 0.988078I$ $a = 1.58833 + 0.74783I$ $b = -1.61793 + 0.67025I$	$7.01395 - 1.69275I$	$-4.50434 + 0.09697I$
$u = -0.788734$ $a = 0.506370$ $b = 1.57545$	-10.0735	-16.9193
$u = -0.500771$ $a = -0.893325$ $b = -0.672063$	-1.57143	-5.48947
$u = 0.468034 - 0.459901I$ $a = 0.371283 - 0.765557I$ $b = 0.334564 + 0.528443I$	$-0.164338 + 1.117664I$	$-2.63384 - 5.74501I$
$u = 0.468034 + 0.459901I$ $a = 0.371283 + 0.765557I$ $b = 0.334564 - 0.528443I$	$-0.164338 - 1.117664I$	$-2.63384 + 5.74501I$
$u = 1.079489 - 0.800376I$ $a = -0.230860 + 0.485040I$ $b = -0.661040 - 0.972526I$	$-5.08678 + 3.48759I$	$-7.45675 - 0.73295I$
$u = 1.079489 + 0.800376I$ $a = -0.230860 - 0.485040I$ $b = -0.661040 + 0.972526I$	$-5.08678 - 3.48759I$	$-7.45675 + 0.73295I$

III. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1	$(u^7-u^6+3u^5-2u^4+2u^3-2u^2+u-1)$ $(u^{10}-6u^8+4u^7+31u^6+3u^5+19u^4+2u^3+u^2-u-1)$
c_2	$(u^7+5u^6+\cdots-3u-1)(u^{10}+12u^9+\cdots+3u+1)$
c_3, c_6	$(u^7+u^6+3u^5+2u^4+2u^3+2u^2+u+1)$ $(u^{10}-6u^8+4u^7+31u^6+3u^5+19u^4+2u^3+u^2-u-1)$
c_4, c_5	$(u^7+u^6-4u^5-3u^4+5u^3+2u^2-2u+1)$ $(u^{10}+9u^9+36u^8+79u^7+93u^6+36u^5-40u^4-45u^3-8u^2-4u-8)$
c_7	$(u^7+2u^6-u^5-3u^4-2u^3+u^2+2u+1)$ $(u^{10}+3u^9+11u^8+u^7-9u^6-84u^5-64u^4-11u^3-16u^2-1)$
c_8	$(u^7+3u^5+3u^4-2u^3+7u^2-2u+1)$ $(u^{10}+u^9-3u^8-11u^7+23u^6+10u^5-40u^4+43u^3+8u-13)$
c_9	$(u^7-u^6-4u^5+3u^4+5u^3-2u^2-2u-1)$ $(u^{10}+9u^9+36u^8+79u^7+93u^6+36u^5-40u^4-45u^3-8u^2-4u-8)$
c_{10}	$(u^7-2u^6-u^5+3u^4-2u^3-u^2+2u-1)$ $(u^{10}+3u^9+11u^8+u^7-9u^6-84u^5-64u^4-11u^3-16u^2-1)$
c_{11}	$(u^7-3u^6+4u^5-u^4-u^3+2u-1)$ $(u^{10}+2u^9+u^8-2u^7+u^6+7u^5+7u^4-u^2+2u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_3, c_6	$(y^7 + 5y^6 + \cdots - 3y - 1)(y^{10} - 12y^9 + \cdots - 3y + 1)$
c_2	$(y^7 - 7y^6 + \cdots + y - 1)(y^{10} + 52y^9 + \cdots - 75y + 1)$
c_4, c_5, c_9	$(y^7 - 9y^6 + 32y^5 - 57y^4 + 51y^3 - 18y^2 - 1)$ $(y^{10} - 9y^9 + \cdots + 112y + 64)$
c_7, c_{10}	$(y^7 - 6y^6 + \cdots + 2y - 1)(y^{10} + 13y^9 + \cdots + 32y + 1)$
c_8	$(y^7 + 6y^6 + 5y^5 - 25y^4 - 50y^3 - 47y^2 - 10y - 1)$ $(y^{10} - 7y^9 + \cdots - 64y + 169)$
c_{11}	$(y^7 - y^6 + \cdots + 4y - 1)(y^{10} - 2y^9 + \cdots - 6y + 1)$