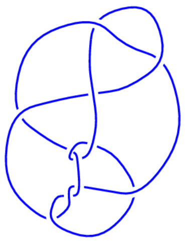
$11n_{90}$ ($K11n_{90}$)



[1]

Arc Sequences

$\longrightarrow \uparrow 6 \longrightarrow \downarrow 1 \longrightarrow \downarrow 9 \longrightarrow \downarrow 8 \longrightarrow \uparrow 2 \longrightarrow \downarrow 3 \longrightarrow \downarrow 11 \longrightarrow \downarrow 4 \longrightarrow \downarrow 5 \longrightarrow \downarrow 1 \longrightarrow \downarrow 8 \longrightarrow$

Solving Sequence

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

Representation Ideals

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

$$\begin{aligned}
I_1^u &= \langle u^2 + u + 1,\ a,\ b + u + 1\rangle \\
I_2^u &= \langle a^4 - 2a^2 + 4,\ -a^2 + 2u,\ -a^3 + a^2 + 2b - 2\rangle \\
I_3^u &= \langle u^{26} + 2u^{25} + \cdots + u + 3,\ 2612003u^{25} + 2633475u^{24} + \cdots + 4443878b - 5050430, \\
&\quad 3316412u^{25} + 7083841u^{24} + \cdots + 13331634a - 28261507\rangle
\end{aligned}$$

There are 3 irreducible components with 32 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. $I_1^u = \langle u^2+u+1,\ a,\ b+u+1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes =unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.500000 - 0.866025I$ $a = 0$ $b = -0.500000 + 0.866025I$	$-1.64493 + 2.02988I$	$-12.00000 - 3.46410I$
$u = -0.500000 + 0.866025I$ $a = 0$ $b = -0.500000 - 0.866025I$	$-1.64493 - 2.02988I$	$-12.00000 + 3.46410I$

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

(i) Arc colorings

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

(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
$u = 0.500000 + 0.866025I$ $a = -1.22474 - 0.70711I$ $b = 0.50000 - 2.28024I$	$3.28987 + 2.02988I$	$-6.00000 - 3.46410I$
$u = 0.500000 - 0.866025I$ $a = -1.22474 + 0.70711I$ $b = 0.50000 + 2.28024I$	$3.28987 - 2.02988I$	$-6.00000 + 3.46410I$
$u = 0.500000 - 0.866025I$ $a = 1.22474 - 0.70711I$ $b = 0.500000 - 0.548188I$	$3.28987 - 2.02988I$	$-6.00000 + 3.46410I$
$u = 0.500000 + 0.866025I$ $a = 1.22474 + 0.70711I$ $b = 0.500000 + 0.548188I$	$3.28987 + 2.02988I$	$-6.00000 - 3.46410I$

III.

$\boldsymbol{I_3^u = \langle u^{26} + 2u^{25} + \cdots + u + 3,\ 2.61 \times 10^6 u^{25} + 2.63 \times 10^6 u^{24} + \cdots + 4.44 \times 10^6 b - 5.05 \times 10^6,\ 3.32 \times 10^6 u^{25} + 7.08 \times 10^6 u^{24} + \cdots + 1.33 \times 10^7 a - 2.83 \times 10^7 \rangle}$

(i) Arc colorings

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

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

$$a_6 = \begin{pmatrix} u \\ u \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^2 + 1 \\ u^2 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.248763u^{25} - 0.531356u^{24} + \cdots - 1.84971u + 2.11988 \\ -0.587776u^{25} - 0.592607u^{24} + \cdots - 1.81642u + 1.13649 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 0.399078u^{25} + 1.03920u^{24} + \cdots - 0.102018u + 3.27267 \\ 0.653747u^{25} + 1.49959u^{24} + \cdots + 3.62523u + 0.617162 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.350580u^{25} + 0.793132u^{24} + \cdots + 1.83334u + 0.523587 \\ 0.588524u^{25} + 0.711798u^{24} + \cdots - 0.487769u - 0.654627 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} u^4 + u^2 + 1 \\ u^4 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^7 - 2u^5 - 2u^3 \\ -u^7 - u^5 + u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0.254668u^{25} + 0.460389u^{24} + \cdots + 3.72725u - 0.655503 \\ 0.576545u^{25} + 0.400932u^{24} + \cdots + 0.277158u - 1.33948 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.350580u^{25} + 0.793132u^{24} + \cdots + 1.83334u + 0.523587 \\ -0.00919400u^{25} - 0.493313u^{24} + \cdots - 1.63148u - 0.930543 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.350580u^{25} + 0.793132u^{24} + \cdots + 1.83334u + 0.523587 \\ -0.00919400u^{25} - 0.493313u^{24} + \cdots - 1.63148u - 0.930543 \end{pmatrix}$$

(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
$u = -0.987320 - 0.168214I$ $a = 0.72012 + 1.22782I$ $b = -0.577336 + 0.714767I$	$-5.22414 - 5.39338I$	$-6.45106 + 2.82273I$
$u = -0.987320 + 0.168214I$ $a = 0.72012 - 1.22782I$ $b = -0.577336 - 0.714767I$	$-5.22414 + 5.39338I$	$-6.45106 - 2.82273I$
$u = -0.683039 - 0.071498I$ $a = -0.45632 - 1.63078I$ $b = 0.358747 - 0.126452I$	$2.38839 - 2.21658I$	$-3.00360 + 3.59199I$
$u = -0.683039 + 0.071498I$ $a = -0.45632 + 1.63078I$ $b = 0.358747 + 0.126452I$	$2.38839 + 2.21658I$	$-3.00360 - 3.59199I$
$u = -0.576371 - 1.269309I$ $a = 0.786703 + 0.753829I$ $b = 0.80884 + 2.42539I$	$-8.60064 + 11.02739I$	$-8.81919 - 5.78425I$
$u = -0.576371 + 1.269309I$ $a = 0.786703 - 0.753829I$ $b = 0.80884 - 2.42539I$	$-8.60064 - 11.02739I$	$-8.81919 + 5.78425I$
$u = -0.432711 - 1.187741I$ $a = -0.759442 - 0.618449I$ $b = -1.27695 - 1.88674I$	$-0.86443 + 6.41567I$	$-7.45843 - 6.37638I$
$u = -0.432711 + 1.187741I$ $a = -0.759442 + 0.618449I$ $b = -1.27695 + 1.88674I$	$-0.86443 - 6.41567I$	$-7.45843 + 6.37638I$
$u = -0.409972 - 1.042736I$ $a = 0.653204 + 0.189915I$ $b = 0.987125 + 0.181713I$	$-0.71901 + 1.35928I$	$-6.71358 - 0.21049I$
$u = -0.409972 + 1.042736I$ $a = 0.653204 - 0.189915I$ $b = 0.987125 - 0.181713I$	$-0.71901 - 1.35928I$	$-6.71358 + 0.21049I$

Solution to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.376370 - 1.343313I$ $a = -0.992733 + 0.198233I$ $b = -0.835460 + 0.841765I$	$-10.10765 - 0.68348I$	$-10.33009 + 0.33748I$
$u = -0.376370 + 1.343313I$ $a = -0.992733 - 0.198233I$ $b = -0.835460 - 0.841765I$	$-10.10765 + 0.68348I$	$-10.33009 - 0.33748I$
$u = -0.280901 - 0.919746I$ $a = 0.423297 + 0.414948I$ $b = 0.356935 + 0.681008I$	$-0.60039 + 1.42912I$	$-6.05587 - 3.68708I$
$u = -0.280901 + 0.919746I$ $a = 0.423297 - 0.414948I$ $b = 0.356935 - 0.681008I$	$-0.60039 - 1.42912I$	$-6.05587 + 3.68708I$
$u = 0.086149 - 0.939073I$ $a = 1.54009 - 0.26805I$ $b = 0.41562 - 1.68165I$	$1.87196 - 0.46648I$	$-9.69334 - 0.39377I$
$u = 0.086149 + 0.939073I$ $a = 1.54009 + 0.26805I$ $b = 0.41562 + 1.68165I$	$1.87196 + 0.46648I$	$-9.69334 + 0.39377I$
$u = 0.232752 - 1.110797I$ $a = -0.314705 - 0.567127I$ $b = 0.09167 - 1.71081I$	$-3.76323 - 2.26383I$	$-13.05428 + 2.02208I$
$u = 0.232752 + 1.110797I$ $a = -0.314705 + 0.567127I$ $b = 0.09167 + 1.71081I$	$-3.76323 + 2.26383I$	$-13.05428 - 2.02208I$
$u = 0.339124$ $a = 1.23653$ $b = -0.422539$	-0.865956	-11.4730
$u = 0.49655 - 1.32834I$ $a = 0.178904 + 0.751212I$ $b = 0.16316 + 1.94567I$	$-13.5263 - 5.3591I$	$-12.04516 + 3.16064I$

Solution to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.49655 + 1.32834I$ $a = 0.178904 - 0.751212I$ $b = 0.16316 - 1.94567I$	$-13.5263 + 5.3591I$	$-12.04516 - 3.16064I$
$u = 0.541900 - 0.798242I$ $a = -1.16213 + 0.83131I$ $b = 0.06745 + 1.46140I$	$4.95516 - 2.19764I$	$0.54342 + 3.86213I$
$u = 0.541900 + 0.798242I$ $a = -1.16213 - 0.83131I$ $b = 0.06745 - 1.46140I$	$4.95516 + 2.19764I$	$0.54342 - 3.86213I$
$u = 0.714585 - 0.848170I$ $a = 0.598743 - 0.649572I$ $b = -0.51239 - 1.52112I$	$-0.16795 - 2.70526I$	$-6.45261 + 3.54399I$
$u = 0.714585 + 0.848170I$ $a = 0.598743 + 0.649572I$ $b = -0.51239 + 1.52112I$	$-0.16795 + 2.70526I$	$-6.45261 - 3.54399I$
$u = 1.01037$ $a = -1.00132$ $b = 0.327695$	-9.37437	-9.45944

IV. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1	$(u^2-u+1)^2(u^2+u+1)(u^{26}+2u^{25}+\cdots+u+3)$
c_2	$(u^2+u+1)^3(u^{26}+16u^{25}+\cdots-43u+9)$
c_3, c_4, c_8	$u^2(u^2+2)^2(u^{26}+u^{25}+\cdots-8u-4)$
c_5	$(u^2+u+1)^3(u^{26}+2u^{25}+\cdots+u+3)$
c_6	$(u^2-u+1)^2(u^2+u+1)(u^{26}+2u^{25}+\cdots-13u+3)$
c_7	$(u-1)^2(u+1)^4(u^{26}+3u^{25}+\cdots+22u-3)$
c_9	$u^2(u^2+2)^2(u^{26}+u^{25}+\cdots+32u-4)$
c_{10}	$(u-1)^4(u+1)^2(u^{26}+33u^{25}+\cdots+64u+9)$
c_{11}	$(u-1)^4(u+1)^2(u^{26}+3u^{25}+\cdots+22u-3)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_5	$(y^2+y+1)^3(y^{26}+16y^{25}+\cdots-43y+9)$
c_2	$(y^2+y+1)^3(y^{26}-8y^{25}+\cdots-7123y+81)$
c_3, c_4, c_8	$y^2(y+2)^4(y^{26}+21y^{25}+\cdots+64y+16)$
c_6	$(y^2+y+1)^3(y^{26}-32y^{25}+\cdots-187y+9)$
c_7, c_{11}	$(y-1)^6(y^{26}-33y^{25}+\cdots-64y+9)$
c_9	$y^2(y+2)^4(y^{26}-39y^{25}+\cdots-128y+16)$
c_{10}	$(y-1)^6(y^{26}-73y^{25}+\cdots+35108y+81)$