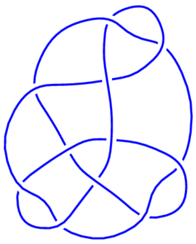
$11n_{92}$ ($K11n_{92}$)



[1]

Arc Sequences

$$\longrightarrow\Big\uparrow_{6}\longrightarrow\Big\downarrow_{1}\longrightarrow\Big\uparrow_{11}\longrightarrow\Big\uparrow_{9}\longrightarrow\Big\uparrow_{2}\longrightarrow\Big\downarrow_{3}\longrightarrow\Big\downarrow_{10}\longrightarrow\Big\uparrow_{4}\longrightarrow\Big\downarrow_{1}\longrightarrow\Big\uparrow_{3}\longrightarrow\Big\downarrow_{8}\longrightarrow$$

Solving Sequence

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

Representation Ideals

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

$$\begin{aligned}
I_1^u &= \langle b^4 + b^3 - 4b^2 - 4b + 7,\ u - 1,\ b^3 + 2b^2 - 2b + a - 5\rangle \\
I_2^u &= \langle u^7 - u^6 + 2u^5 - 2u^4 + 2u^3 - 3u^2 + u - 1,\ u^5 - u^4 + u^3 - 2u^2 + b + u - 2, \\
&\quad - 2u^6 + 2u^5 - 3u^4 + 3u^3 - 3u^2 + a + 4u - 1\rangle \\
I_3^u &= \langle u^{10} + 6u^9 + 19u^8 + 36u^7 + 46u^6 + 39u^5 + 26u^4 + 16u^3 + 15u^2 + 10u + 4, \\
&\quad u^9 + 4u^8 + 9u^7 + 12u^6 + 12u^5 + 9u^4 + 6u^3 + 6u^2 + 2b + 3u + 2, \\
&\quad u^9 + 4u^8 + 11u^7 + 18u^6 + 22u^5 + 15u^4 + 8u^3 + 4u^2 + 4a + 3u + 4\rangle
\end{aligned}$$

There are 3 irreducible components with 21 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. $\boldsymbol{I_1^u = \langle b^4 + b^3 - 4b^2 - 4b + 7,\ u - 1,\ b^3 + 2b^2 - 2b + a - 5\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 2 \\ 1 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 3 \\ 1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -5 \\ -1 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -b^3 - 2b^2 + 2b + 5 \\ b \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -3b^3 - 6b^2 + 2b + 15 \\ -b^3 - 2b^2 + b + 5 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -3b^3 - 6b^2 + 5b + 15 \\ -b^3 - 2b^2 + 2b + 5 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 3b^3 + 7b^2 - 3b - 18 \\ b^3 + 2b^2 - b - 6 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 7b^3 + 16b^2 - 7b - 36 \\ 3b^3 + 7b^2 - 3b - 16 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 7b^3 + 16b^2 - 7b - 36 \\ 3b^3 + 7b^2 - 3b - 16 \end{pmatrix}$$

(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
$u = 1.00000$ $a = -1.328777 + 0.090174I$ $b = -1.82878 - 0.77585I$	$6.57974 + 2.02988I$	$8.00000 - 3.46410I$
$u = 1.00000$ $a = -1.328777 - 0.090174I$ $b = -1.82878 + 0.77585I$	$6.57974 - 2.02988I$	$8.00000 + 3.46410I$
$u = 1.00000$ $a = 1.82878 + 0.77585I$ $b = 1.328777 - 0.090174I$	$6.57974 + 2.02988I$	$8.00000 - 3.46410I$
$u = 1.00000$ $a = 1.82878 - 0.77585I$ $b = 1.328777 + 0.090174I$	$6.57974 - 2.02988I$	$8.00000 + 3.46410I$

II. $\boldsymbol{I_2^u = \langle u^7 - u^6 + 2u^5 - 2u^4 + 2u^3 - 3u^2 + u - 1,\ u^5 - u^4 + u^3 - 2u^2 + b + u - 2,\ -2u^6 + 2u^5 - 3u^4 + 3u^3 - 3u^2 + a + 4u - 1\rangle}$

(i) Arc colorings

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

(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
$u = -0.592907 - 0.959525I$ $a = -0.148823 - 0.381778I$ $b = -0.278087 + 0.369158I$	$-1.45284 + 2.44043I$	$-0.66357 - 2.79895I$
$u = -0.592907 + 0.959525I$ $a = -0.148823 + 0.381778I$ $b = -0.278087 - 0.369158I$	$-1.45284 - 2.44043I$	$-0.66357 + 2.79895I$
$u = 0.118747 - 0.674908I$ $a = -0.14511 + 1.82223I$ $b = 1.212605 + 0.314318I$	$4.41567 + 1.74618I$	$3.81474 - 1.89982I$
$u = 0.118747 + 0.674908I$ $a = -0.14511 - 1.82223I$ $b = 1.212605 - 0.314318I$	$4.41567 - 1.74618I$	$3.81474 + 1.89982I$
$u = 0.403446 - 1.141774I$ $a = -0.467003 - 0.976251I$ $b = -1.303068 + 0.139348I$	$2.10492 - 4.17967I$	$2.47305 + 4.17814I$
$u = 0.403446 + 1.141774I$ $a = -0.467003 + 0.976251I$ $b = -1.303068 - 0.139348I$	$2.10492 + 4.17967I$	$2.47305 - 4.17814I$
$u = 1.14143$ $a = 1.52187$ $b = 1.73710$	6.31383	6.75155

III.

$\boldsymbol{I_3^u = \langle u^{10} + 6u^9 + \cdots + 10u + 4,\ u^9 + 4u^8 + \cdots + 2b + 2,\ u^9 + 4u^8 + \cdots + 4a + 4\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^2 + 1 \\ u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u^4 + u^2 + 1 \\ u^4 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u^7 - 2u^5 - 2u^3 \\ -u^7 - u^5 + u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -\frac{1}{4}u^9 - u^8 + \cdots - \frac{3}{4}u - 1 \\ -\frac{1}{2}u^9 - 2u^8 + \cdots - \frac{3}{2}u - 1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -\frac{15}{4}u^9 - 14u^8 + \cdots - \frac{29}{4}u - 2 \\ -\frac{9}{2}u^9 - 19u^8 + \cdots - \frac{27}{2}u - 5 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} \frac{3}{4}u^9 + u^8 + \cdots - \frac{11}{4}u - 3 \\ \frac{3}{2}u^9 + 5u^8 + \cdots + \frac{1}{2}u - 1 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -\frac{1}{2}u^9 - \frac{5}{2}u^8 + \cdots - \frac{5}{2}u - \frac{1}{2} \\ -\frac{1}{2}u^9 - 3u^8 + \cdots - \frac{7}{2}u - 2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} \frac{1}{2}u^9 + \frac{1}{2}u^8 + \cdots - \frac{5}{2}u - \frac{5}{2} \\ \frac{3}{2}u^9 + 6u^8 + \cdots + 4u^2 + \frac{7}{2}u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} \frac{1}{2}u^9 + \frac{1}{2}u^8 + \cdots - \frac{5}{2}u - \frac{5}{2} \\ \frac{3}{2}u^9 + 6u^8 + \cdots + 4u^2 + \frac{7}{2}u \end{pmatrix}$$

(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
$u = -1.25120 - 1.19248I$ $a = 0.992038 - 0.709022I$ $b = 2.08674 + 0.29586I$	$-19.4087 + 8.7708I$	$4.35608 - 3.79545I$
$u = -1.25120 + 1.19248I$ $a = 0.992038 + 0.709022I$ $b = 2.08674 - 0.29586I$	$-19.4087 - 8.7708I$	$4.35608 + 3.79545I$
$u = -1.18386 - 1.28213I$ $a = -0.847532 + 0.789285I$ $b = -2.01532 - 0.15224I$	$-19.7069 + 0.3487I$	$4.25811 + 0.03534I$
$u = -1.18386 + 1.28213I$ $a = -0.847532 - 0.789285I$ $b = -2.01532 + 0.15224I$	$-19.7069 - 0.3487I$	$4.25811 - 0.03534I$
$u = -0.561291 - 0.522406I$ $a = -0.782334 + 0.060641I$ $b = -0.470796 - 0.374659I$	$1.01700 + 1.01665I$	$4.69191 - 3.41900I$
$u = -0.561291 + 0.522406I$ $a = -0.782334 - 0.060641I$ $b = -0.470796 + 0.374659I$	$1.01700 - 1.01665I$	$4.69191 + 3.41900I$
$u = -0.491191 - 1.050820I$ $a = 0.091527 - 0.524006I$ $b = 0.595593 - 0.161209I$	$-0.62036 + 3.20996I$	$3.63110 - 5.43743I$
$u = -0.491191 + 1.050820I$ $a = 0.091527 + 0.524006I$ $b = 0.595593 + 0.161209I$	$-0.62036 - 3.20996I$	$3.63110 + 5.43743I$
$u = 0.487544 - 0.563965I$ $a = 0.296301 - 0.794811I$ $b = 0.303786 + 0.554609I$	$-1.58196 - 1.29510I$	$-1.93721 - 1.18186I$
$u = 0.487544 + 0.563965I$ $a = 0.296301 + 0.794811I$ $b = 0.303786 - 0.554609I$	$-1.58196 + 1.29510I$	$-1.93721 + 1.18186I$

IV. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1	$(u-1)^4(u^7-u^6+2u^5-2u^4+2u^3-3u^2+u-1)$ $(u^{10}+6u^9+\cdots+10u+4)$
c_2	$(u+1)^4(u^7+3u^6+4u^5-6u^3-9u^2-5u-1)$ $(u^{10}-2u^9+\cdots-20u+16)$
c_3, c_8	$(u^4-u^3-4u^2+4u+7)(u^7-u^6-4u^5+3u^4+5u^3-2u^2-2u-1)$ $(u^{10}+u^9-8u^8-8u^7+16u^6+16u^5+3u^4-2u^3+2u+1)$
c_4, c_{10}	$(u^4-u^3-4u^2+4u+7)(u^7+u^6-4u^5-3u^4+5u^3+2u^2-2u+1)$ $(u^{10}+u^9-8u^8-8u^7+16u^6+16u^5+3u^4-2u^3+2u+1)$
c_5	$(u-1)^4(u^7+u^6+2u^5+2u^4+2u^3+3u^2+u+1)$ $(u^{10}+6u^9+\cdots+10u+4)$
c_6	$(u+2)^4(u^7+2u^6-2u^5-3u^4-3u^3+6u^2-u+1)$ $(u^{10}+12u^9+\cdots+1072u+712)$
c_7, c_9	$(u^4+3u^3+\cdots-6u+13)(u^7+2u^6+\cdots+2u+1)$ $(u^{10}-2u^9+\cdots+12u+1)$
c_{11}	$(u^2-u+1)^2(u^7-2u^6+u^5+2u^4-3u^3+u^2+2u-1)$ $(u^{10}+5u^9+12u^8+15u^7+10u^6+4u^5+6u^4+8u^3+5u^2+3u+2)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_5	$(y-1)^4(y^7+3y^6+4y^5-6y^3-9y^2-5y-1)$ $(y^{10}+2y^9+\cdots+20y+16)$
c_2	$(y-1)^4(y^7-y^6+4y^5-4y^4+2y^3-21y^2+7y-1)$ $(y^{10}+38y^9+\cdots+3216y+256)$
c_3, c_4, c_8 c_{10}	$(y^4-9y^3+\cdots-72y+49)(y^7-9y^6+\cdots-18y^2-1)$ $(y^{10}-17y^9+\cdots-4y+1)$
c_6	$(y-4)^4(y^7-8y^6+10y^5-23y^4+45y^3-24y^2-11y-1)$ $(y^{10}+68y^9+\cdots+2222848y+506944)$
c_7, c_9	$(y^4-5y^3+66y^2+16y+169)$ $(y^7-6y^6+\cdots+2y-1)(y^{10}+46y^9+\cdots-38y+1)$
c_{11}	$(y^2+y+1)^2(y^7-2y^6+3y^5-2y^4+5y^3-9y^2+6y-1)$ $(y^{10}-y^9+14y^8-13y^7+54y^6-42y^5+30y^4+12y^3+y^2+11y+4)$