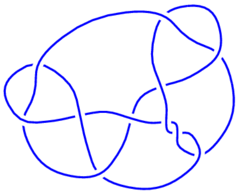
$11n_{107}$ ($K11n_{107}$)



[1]

Arc Sequences

$\rightarrow \downarrow \rightarrow \downarrow \rightarrow \downarrow \rightarrow \uparrow \rightarrow \downarrow \rightarrow \downarrow \rightarrow \downarrow \rightarrow \uparrow \rightarrow \uparrow \rightarrow \downarrow \rightarrow \downarrow \rightarrow$

5 1 8 9 2 11 1 10 5 4 7

Solving Sequence

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

Representation Ideals

$$I = \bigcap_{i=1}^{4} I_i^u$$

$$\begin{aligned}
I_1^u &= \langle a^4 - 2a^2 + 2,\ u + 1,\ a^3 - a^2 + b - 2a + 1\rangle \\
I_2^u &= \langle u^6 - u^5 - 4u^4 + 2u^3 + 10u^2 - 4u - 5,\ -6u^5 + 5u^4 + 22u^3 - 14u^2 + 17b - 34u + 24, \\
&\quad - 26u^5 + 16u^4 + 84u^3 + 13u^2 + 85a - 170u + 19\rangle \\
I_3^u &= \langle u^{11} - u^{10} - 10u^9 + 9u^8 + 32u^7 - 20u^6 - 30u^5 - 8u^4 + 7u^3 + 5u^2 - 1, \\
&\quad - u^9 + 3u^8 + 9u^7 - 26u^6 - 21u^5 + 60u^4 - u^3 + 2u^2 + 8b - 2u + 1, \\
&\quad - 3u^{10} + 8u^9 + 24u^8 - 75u^7 - 41u^6 + 201u^5 - 41u^4 - 73u^3 - 32u^2 + 8a - 5u + 5\rangle \\
I_4^u &= \langle u - 1,\ a,\ b + 1\rangle
\end{aligned}$$

There are 4 irreducible components with 22 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. $\boldsymbol{I_1^u = \langle a^4 - 2a^2 + 2,\ u + 1,\ a^3 - a^2 + b - 2a + 1 \rangle}$

(i) Arc colorings

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

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

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

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} a \\ -a^3 + a^2 + 2a - 1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} a \\ -a^3 + a^2 + a - 1 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} a^2 \\ a^3 - a + 1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -a^3 + a \\ 1 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -a^3 + a + 1 \\ 1 \end{pmatrix}$$

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

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

(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
$u = -1.00000$ $a = -1.098684 - 0.455090I$ $b = -1.55377 + 1.64359I$	$-0.82247 + 3.66386I$	$-8.00000 - 4.00000I$
$u = -1.00000$ $a = -1.098684 + 0.455090I$ $b = -1.55377 - 1.64359I$	$-0.82247 - 3.66386I$	$-8.00000 + 4.00000I$
$u = -1.00000$ $a = 1.098684 - 0.455090I$ $b = 1.55377 - 0.35641I$	$-0.82247 - 3.66386I$	$-8.00000 + 4.00000I$
$u = -1.00000$ $a = 1.098684 + 0.455090I$ $b = 1.55377 + 0.35641I$	$-0.82247 + 3.66386I$	$-8.00000 - 4.00000I$

II. $I_2^u = \langle u^6 - u^5 - 4u^4 + 2u^3 + 10u^2 - 4u - 5,\ -6u^5 + 5u^4 + \cdots + 17b + 24,\ -26u^5 + 16u^4 + \cdots + 85a + 19\rangle$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} \frac{26}{85}u^5 - \frac{16}{85}u^4 + \cdots + 2u - \frac{19}{85} \\ \frac{6}{17}u^5 - \frac{5}{17}u^4 + \cdots + 2u - \frac{24}{17} \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} \frac{26}{85}u^5 - \frac{16}{85}u^4 + \cdots + 2u - \frac{19}{85} \\ u^2 - 2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -\frac{13}{85}u^5 + \frac{8}{85}u^4 + \cdots - u + \frac{52}{85} \\ 1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} \frac{22}{85}u^5 - \frac{7}{85}u^4 + \cdots + u - \frac{3}{85} \\ -\frac{1}{17}u^5 - \frac{2}{17}u^4 + \cdots + u - \frac{13}{17} \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u^2 + 1 \\ u^2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} \frac{1}{5}u^5 - \frac{1}{5}u^4 + \cdots + 2u - \frac{4}{5} \\ -\frac{1}{17}u^5 - \frac{2}{17}u^4 + \cdots + u - \frac{13}{17} \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} \frac{13}{85}u^5 - \frac{8}{85}u^4 + \cdots + u - \frac{52}{85} \\ \frac{3}{17}u^5 + \frac{6}{17}u^4 + \cdots + u - \frac{12}{17} \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} \frac{13}{85}u^5 - \frac{8}{85}u^4 + \cdots + u - \frac{52}{85} \\ \frac{3}{17}u^5 + \frac{6}{17}u^4 + \cdots + u - \frac{12}{17} \end{pmatrix}$$

(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
$u = -1.39791 - 0.79363I$ $a = 0.245911 - 0.672449I$ $b = 1.14204 + 1.87397I$	$-6.31400 - 2.82812I$	$-9.50976 + 2.97945I$
$u = -1.39791 + 0.79363I$ $a = 0.245911 + 0.672449I$ $b = 1.14204 - 1.87397I$	$-6.31400 + 2.82812I$	$-9.50976 - 2.97945I$
$u = -0.584828$ $a = -1.29077$ $b = -2.09945$	-2.17641	-2.98049
$u = 1.15467$ $a = 0.653762$ $b = 0.204892$	-2.17641	-2.98049
$u = 1.61299 - 0.51351I$ $a = -0.627407 + 0.262048I$ $b = -0.694757 - 0.004545I$	$-6.31400 - 2.82812I$	$-9.50976 + 2.97945I$
$u = 1.61299 + 0.51351I$ $a = -0.627407 - 0.262048I$ $b = -0.694757 + 0.004545I$	$-6.31400 + 2.82812I$	$-9.50976 - 2.97945I$

III.

$\boldsymbol{I_3^u = \langle u^{11}-u^{10}+\cdots+5u^2-1,\ -u^9+3u^8+\cdots+8b+1,\ -3u^{10}+8u^9+\cdots+8a+5\rangle}$

(i) Arc colorings

$$a_1 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_5 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_2 = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_6 = \begin{pmatrix}-u\\-u^3+u\end{pmatrix}$$
$$a_9 = \begin{pmatrix}\frac{3}{8}u^{10}-u^9+\cdots+\frac{5}{8}u-\frac{5}{8}\\\frac{1}{8}u^9-\frac{3}{8}u^8+\cdots+\frac{1}{4}u-\frac{1}{8}\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}\frac{3}{8}u^{10}-u^9+\cdots+\frac{5}{8}u-\frac{5}{8}\\-\frac{1}{8}u^{10}+\frac{3}{8}u^9+\cdots-\frac{1}{8}u+\frac{1}{2}\end{pmatrix}$$
$$a_4 = \begin{pmatrix}-\frac{1}{8}u^{10}+\frac{1}{2}u^9+\cdots-\frac{1}{8}u+\frac{13}{8}\\-\frac{1}{8}u^9+\frac{1}{8}u^8+\cdots+\frac{5}{2}u^2-\frac{1}{8}\end{pmatrix}$$
$$a_8 = \begin{pmatrix}-\frac{1}{8}u^{10}+\frac{1}{8}u^9+\cdots+\frac{5}{2}u^3+\frac{23}{8}u\\-u\end{pmatrix}$$
$$a_3 = \begin{pmatrix}-u^2+1\\u^2\end{pmatrix}$$
$$a_7 = \begin{pmatrix}-\frac{1}{8}u^{10}+\frac{1}{8}u^9+\cdots+\frac{5}{2}u^3+\frac{15}{8}u\\-u\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-\frac{1}{8}u^9+\frac{1}{8}u^8+\cdots+\frac{5}{2}u^2+\frac{7}{8}\\-u^2\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-\frac{1}{8}u^9+\frac{1}{8}u^8+\cdots+\frac{5}{2}u^2+\frac{7}{8}\\-u^2\end{pmatrix}$$

(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
$u=-2.12503-0.26101I$ $a=-0.290985-0.440399I$ $b=-0.182852-0.486960I$	$19.6194-2.9792I$	$-10.19163+0.32130I$
$u=-2.12503+0.26101I$ $a=-0.290985+0.440399I$ $b=-0.182852+0.486960I$	$19.6194+2.9792I$	$-10.19163-0.32130I$
$u=-0.545394-0.228769I$ $a=-1.33039+1.45574I$ $b=-0.360191-1.128510I$	$0.85115-4.56323I$	$-3.37160+8.19390I$
$u=-0.545394+0.228769I$ $a=-1.33039-1.45574I$ $b=-0.360191+1.128510I$	$0.85115+4.56323I$	$-3.37160-8.19390I$
$u=-0.274543-0.521423I$ $a=1.40016-1.09226I$ $b=0.227630+0.840526I$	$1.43107+1.62893I$	$-1.305997-0.384907I$
$u=-0.274543+0.521423I$ $a=1.40016+1.09226I$ $b=0.227630-0.840526I$	$1.43107-1.62893I$	$-1.305997+0.384907I$
$u=0.453577-0.111302I$ $a=1.072630-0.857607I$ $b=-0.228216+0.200046I$	$-1.063060+0.421255I$	$-8.79110-2.32258I$
$u=0.453577+0.111302I$ $a=1.072630+0.857607I$ $b=-0.228216-0.200046I$	$-1.063060-0.421255I$	$-8.79110+2.32258I$
$u=1.95195$ $a=-0.690239$ $b=-3.46146$	-12.7233	-6.15863
$u=2.01541-0.39561I$ $a=0.493703+0.453711I$ $b=2.77436-1.78824I$	$-17.7667+9.2729I$	$-8.26036-4.31721I$

Solution to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=2.01541+0.39561I$ $a=0.493703-0.453711I$ $b=2.77436+1.78824I$	$-17.7667-9.2729I$	$-8.26036+4.31721I$

IV. $I^u_4 = \langle u - 1,\ a,\ b + 1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes =unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.00000$ $a = 0$ $b = -1.00000$	-3.28987	-12.0000

V. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1, c_6, c_7	$(u-1)(u+1)^4(u^6+u^5-4u^4-2u^3+10u^2+4u-5)$ $(u^{11}+u^{10}-10u^9-9u^8+32u^7+20u^6-30u^5+8u^4+7u^3-5u^2+1)$
c_2	$(u+1)^5(u^6+9u^5+40u^4+102u^3+156u^2+116u+25)$ $(u^{11}+21u^{10}+\cdots+10u+1)$
c_3	$(u)(-1+2u-u^2+u^3)^2(u^4+2u^2+2)(u^{11}+3u^{10}+\cdots-38u+26)$
c_4, c_9	$u(u^3-u^2+1)^2(u^4-2u^2+2)$ $(u^{11}+3u^{10}+2u^9-5u^8-10u^7-4u^6+8u^5+10u^4-8u^2-6u-2)$
c_5, c_{11}	$(u-1)^4(u+1)(u^6+u^5-4u^4-2u^3+10u^2+4u-5)$ $(u^{11}+u^{10}-10u^9-9u^8+32u^7+20u^6-30u^5+8u^4+7u^3-5u^2+1)$
c_8	$(u)(2+2u+u^2)^2(1+2u+u^2+u^3)^2(u^{11}+5u^{10}+\cdots+4u+4)$
c_{10}	$(u)(1+2u-3u^2+u^3)^2(u^4+2u^2+2)(u^{11}+9u^{10}+\cdots+82u+22)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_5, c_6 c_7, c_{11}	$(y-1)^5(y^6-9y^5+40y^4-102y^3+156y^2-116y+25)$ $(y^{11}-21y^{10}+\cdots+10y-1)$
c_2	$(y-1)^5(y^6-y^5+76y^4+38y^3+2672y^2-5656y+625)$ $(y^{11}-77y^{10}+\cdots+18y-1)$
c_3	$y(y^2+2y+2)^2(y^3+3y^2+2y-1)^2$ $(y^{11}-53y^{10}+\cdots-6252y-676)$
c_4, c_9	$(y)(2-2y+y^2)^2(-1+2y-y^2+y^3)^2(y^{11}-5y^{10}+\cdots+4y-4)$
c_8	$(y)(y^2+4)^2(-1+2y+3y^2+y^3)^2(y^{11}+3y^{10}+\cdots-176y-16)$
c_{10}	$(y)(2+2y+y^2)^2(-1+10y-5y^2+y^3)^2(y^{11}-y^{10}+\cdots+740y-484)$