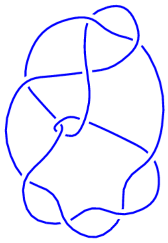
$11n_{88}$ ($K11n_{88}$)



[1]

Arc Sequences

$\rightarrow \uparrow_{6} \rightarrow \downarrow_{1} \rightarrow \downarrow_{8} \rightarrow \downarrow_{9} \rightarrow \uparrow_{2} \rightarrow \downarrow_{3} \rightarrow \downarrow_{11} \rightarrow \downarrow_{4} \rightarrow \downarrow_{5} \rightarrow \downarrow_{1} \rightarrow \downarrow_{8} \rightarrow$

6 1 8 9 2 3 11 4 5 1 8

Solving Sequence

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

Representation Ideals

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

$$\begin{aligned}
I_1^u &= \langle u^2 - u + 1,\ a,\ b + 1\rangle \\
I_2^u &= \langle a^4 + 2a^2 + 4,\ b - 1,\ a^2 + 2u\rangle \\
I_3^u &= \langle u^{11} + 10u^{10} + 43u^9 + 90u^8 + 33u^7 - 281u^6 - 696u^5 - 776u^4 - 422u^3 - 72u^2 + 24u - 1, \\
&\quad - 569915u^{10} - 5649897u^9 + \cdots + 4181332b - 8449886, \\
&\quad - 9934266u^{10} - 99754175u^9 + \cdots + 4181332a - 174758259\rangle
\end{aligned}$$

There are 3 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. $I_1^u = \langle u^2 - u + 1,\ a,\ b + 1\rangle$

(i) Arc colorings

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

$a_8 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$

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

$a_9 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$

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

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

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

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

$a_7 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$

$a_6 = \begin{pmatrix} -1 \\ u - 1 \end{pmatrix}$

$a_{10} = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$

$a_{10} = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$

(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
$u = 0.500000 - 0.866025I$ $a = 0$ $b = -1.00000$	$-1.64493 + 2.02988I$	$-12.00000 - 3.46410I$
$u = 0.500000 + 0.866025I$ $a = 0$ $b = -1.00000$	$-1.64493 - 2.02988I$	$-12.00000 + 3.46410I$

II. $I_2^u = \langle a^4 + 2a^2 + 4,\ b - 1,\ a^2 + 2u \rangle$

(i) Arc colorings

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

(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
$u = 0.500000 - 0.866025I$ $a = -0.70711 - 1.22474I$ $b = 1.00000$	$-6.57974 + 2.02988I$	$-14.0000 - 3.4641I$
$u = 0.500000 + 0.866025I$ $a = -0.70711 + 1.22474I$ $b = 1.00000$	$-6.57974 - 2.02988I$	$-14.0000 + 3.4641I$
$u = 0.500000 + 0.866025I$ $a = 0.70711 - 1.22474I$ $b = 1.00000$	$-6.57974 - 2.02988I$	$-14.0000 + 3.4641I$
$u = 0.500000 - 0.866025I$ $a = 0.70711 + 1.22474I$ $b = 1.00000$	$-6.57974 + 2.02988I$	$-14.0000 - 3.4641I$

III.
$\boldsymbol{I_3^u = \langle u^{11} + 10u^{10} + \cdots + 24u - 1,\ -5.70\times 10^{5}u^{10} - 5.65\times 10^{6}u^{9} + \cdots + 4.18\times 10^{6}b - 8.45\times 10^{6},\ -9.93\times 10^{6}u^{10} - 9.98\times 10^{7}u^{9} + \cdots + 4.18\times 10^{6}a - 1.75\times 10^{8}\rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 2.37586u^{10} + 23.8570u^9 + \cdots - 237.195u + 41.7949 \\ 0.136300u^{10} + 1.35122u^9 + \cdots - 13.8266u + 2.02086 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -2.72957u^{10} - 27.4206u^9 + \cdots + 261.097u - 53.0344 \\ -0.129860u^{10} - 1.26983u^9 + \cdots + 10.1196u - 2.14629 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -1.58645u^{10} - 15.9784u^9 + \cdots + 148.869u - 32.6294 \\ 0.00266685u^{10} - 0.0194938u^9 + \cdots + 3.13583u - 1.09971 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -0.138695u^{10} - 1.35638u^9 + \cdots + 8.05243u - 5.18841 \\ -0.0525199u^{10} - 0.445799u^9 + \cdots - 1.89934u - 0.135010 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -2.14629u^{10} - 21.5928u^9 + \cdots + 203.990u - 41.3914 \\ -0.0389885u^{10} - 0.425795u^9 + \cdots + 7.57946u - 1.71898 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -0.135010u^{10} - 1.40262u^9 + \cdots + 6.96657u - 5.13958 \\ 0.0305644u^{10} + 0.229369u^9 + \cdots - 1.85974u - 0.138695 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -0.135010u^{10} - 1.40262u^9 + \cdots + 6.96657u - 5.13958 \\ -0.0488352u^{10} - 0.492036u^9 + \cdots - 2.98521u - 0.0861747 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -2.18528u^{10} - 22.0186u^9 + \cdots + 211.569u - 43.1104 \\ -0.0389885u^{10} - 0.425795u^9 + \cdots + 7.57946u - 1.71898 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -2.18528u^{10} - 22.0186u^9 + \cdots + 211.569u - 43.1104 \\ -0.0389885u^{10} - 0.425795u^9 + \cdots + 7.57946u - 1.71898 \end{pmatrix}$$

(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
$u = -2.51273 - 0.34743I$ $a = 0.717456 + 0.144601I$ $b = 1.97688 - 0.71300I$	$-12.58098 - 1.38651I$	$-13.48038 + 0.69811I$
$u = -2.51273 + 0.34743I$ $a = 0.717456 - 0.144601I$ $b = 1.97688 + 0.71300I$	$-12.58098 + 1.38651I$	$-13.48038 - 0.69811I$
$u = -1.75327 - 2.19395I$ $a = -0.539260 + 0.494592I$ $b = -2.21938 - 0.57715I$	$13.7044 - 7.4448I$	$-12.73851 + 2.77525I$
$u = -1.75327 + 2.19395I$ $a = -0.539260 - 0.494592I$ $b = -2.21938 + 0.57715I$	$13.7044 + 7.4448I$	$-12.73851 - 2.77525I$
$u = -1.047950 - 0.797283I$ $a = -0.470008 + 0.545761I$ $b = -0.723376 - 0.590700I$	$-3.55618 - 2.69456I$	$-12.98158 + 3.53797I$
$u = -1.047950 + 0.797283I$ $a = -0.470008 - 0.545761I$ $b = -0.723376 + 0.590700I$	$-3.55618 + 2.69456I$	$-12.98158 - 3.53797I$
$u = -0.746948 - 0.623690I$ $a = 0.408421 + 0.283080I$ $b = 0.333924 - 0.361452I$	$-0.58979 - 1.50760I$	$-5.46704 + 3.06669I$
$u = -0.746948 + 0.623690I$ $a = 0.408421 - 0.283080I$ $b = 0.333924 + 0.361452I$	$-0.58979 + 1.50760I$	$-5.46704 - 3.06669I$
$u = 0.0529590$ $a = 25.8220$ $b = 1.10452$	-6.50002	-13.6591
$u = 0.116044$ $a = -4.00162$ $b = -0.568678$	-0.828081	-11.8313

Solution to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.95280$ $a = -1.05363$ $b = -2.27195$	18.3080	-11.1746

IV. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1	$(u^2-u+1)^2(u^2+u+1)$ $(u^{11}+2u^{10}+7u^9+10u^8+17u^7+19u^6+14u^5+18u^4+6u^2-6u+1)$
c_2	$(u^2+u+1)^3(u^{11}+10u^{10}+\cdots+24u-1)$
c_3, c_4, c_8 c_9	$u^2(u^2-2)^2$ $(u^{11}+u^{10}-10u^9-9u^8+37u^7+31u^6-54u^5-48u^4+8u^3-4u+4)$
c_5	$(u^2-u+1)(u^2+u+1)^2$ $(u^{11}+2u^{10}+7u^9+10u^8+17u^7+19u^6+14u^5+18u^4+6u^2-6u+1)$
c_6	$(u^2-u+1)^2(u^2+u+1)(u^{11}+2u^{10}+\cdots-90u-13)$
c_7	$(u-1)^2(u+1)^4(u^{11}+3u^{10}+\cdots-u-7)$
c_{10}	$(u-1)^6(u^{11}+23u^{10}+\cdots+225u+49)$
c_{11}	$(u-1)^4(u+1)^2(u^{11}+3u^{10}+\cdots-u-7)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_5	$(y^2+y+1)^3(y^{11}+10y^{10}+\cdots+24y-1)$
c_2	$(y^2+y+1)^3(y^{11}-14y^{10}+\cdots+432y-1)$
c_3, c_4, c_8 c_9	$y^2(y-2)^4(y^{11}-21y^{10}+\cdots+16y-16)$
c_6	$(y^2+y+1)^3(y^{11}-38y^{10}+\cdots+4460y-169)$
c_7, c_{11}	$(y-1)^6(y^{11}-23y^{10}+\cdots+225y-49)$
c_{10}	$(y-1)^6(y^{11}-63y^{10}+\cdots-61879y-2401)$