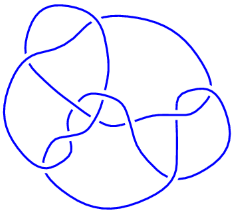
$11n_{135}$ ($K11n_{135}$)



[1]

Arc Sequences

$$\to \underset{7}{\uparrow} \to \underset{1}{\downarrow} \to \underset{9}{\downarrow} \to \underset{11}{\downarrow} \to \underset{10}{\downarrow} \to \underset{2}{\uparrow} \to \underset{3}{\downarrow} \to \underset{11}{\uparrow} \to \underset{5}{\downarrow} \to \underset{3}{\downarrow} \to \underset{5}{\downarrow} \to$$

Solving Sequence

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

Representation Ideals

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

$$\begin{aligned}
I_1^u = \langle & u^8 - 6u^7 + 11u^6 - u^5 - 14u^4 + 4u^3 + 11u^2 - 6u + 1,\ -u^7 + 6u^6 - 10u^5 - 2u^4 + 14u^3 + u^2 + b - 11u + 3, \\
& - 3u^7 + 17u^6 - 27u^5 - 7u^4 + 40u^3 + 2u^2 + a - 32u + 7\rangle \\
I_2^u = \langle & u^{10} + 3u^9 - 4u^8 - 16u^7 + 6u^6 + 37u^5 + 11u^4 - 21u^3 - 16u^2 - 5u - 1, \\
& 7u^9 + 14u^8 - 40u^7 - 71u^6 + 100u^5 + 158u^4 - 51u^3 - 95u^2 + b - 32u - 9, \\
& 9u^9 + 20u^8 - 50u^7 - 104u^6 + 125u^5 + 233u^4 - 59u^3 - 138u^2 + a - 49u - 13\rangle
\end{aligned}$$

There are 2 irreducible components with 18 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.

$$I_1^u = \langle u^8 - 6u^7 + \cdots - 6u + 1,\ -u^7 + 6u^6 + \cdots + b + 3,\ -3u^7 + 17u^6 + \cdots + a + 7\rangle$$

(i) Arc colorings

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

$$a_{10} = \begin{pmatrix} 3u^7 - 17u^6 + 27u^5 + 7u^4 - 40u^3 - 2u^2 + 32u - 7 \\ u^7 - 6u^6 + 10u^5 + 2u^4 - 14u^3 - u^2 + 11u - 3 \end{pmatrix}$$

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

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

$$a_{11} = \begin{pmatrix} 2u^7 - 11u^6 + 17u^5 + 5u^4 - 26u^3 - u^2 + 21u - 4 \\ u^7 - 6u^6 + 10u^5 + 2u^4 - 14u^3 - u^2 + 11u - 3 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 2u^7 - 11u^6 + 17u^5 + 5u^4 - 26u^3 - u^2 + 21u - 4 \\ 2u^7 - 10u^6 + 13u^5 + 7u^4 - 19u^3 - 4u^2 + 15u - 4 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -u^7 + 6u^6 - 11u^5 + u^4 + 14u^3 - 4u^2 - 12u + 8 \\ u^7 - 5u^6 + 6u^5 + 5u^4 - 10u^3 - 4u^2 + 8u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} u^7 - 6u^6 + 11u^5 - u^4 - 14u^3 + 4u^2 + 11u - 5 \\ u - 1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 3u^7 - 17u^6 + 27u^5 + 7u^4 - 40u^3 - 2u^2 + 32u - 7 \\ u^7 - 5u^6 + 7u^5 + 2u^4 - 9u^3 - u^2 + 8u - 2 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -2u^7 + 11u^6 - 17u^5 - 5u^4 + 26u^3 + u^2 - 21u + 4 \\ 2u^6 - 8u^5 + 5u^4 + 12u^3 - 7u^2 - 11u + 4 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -2u^7 + 13u^6 - 25u^5 + 38u^3 - 6u^2 - 32u + 8 \\ 2u^6 - 8u^5 + 5u^4 + 12u^3 - 7u^2 - 11u + 4 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -2u^7 + 13u^6 - 25u^5 + 38u^3 - 6u^2 - 32u + 8 \\ 2u^6 - 8u^5 + 5u^4 + 12u^3 - 7u^2 - 11u + 4 \end{pmatrix}$$

(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
$u = -0.880687 - 0.411861I$ $a = 0.384446 + 0.633801I$ $b = -0.077538 - 0.716519I$	$2.76707 + 1.04226I$	$-7.14108 + 0.01449I$
$u = -0.880687 + 0.411861I$ $a = 0.384446 - 0.633801I$ $b = -0.077538 + 0.716519I$	$2.76707 - 1.04226I$	$-7.14108 - 0.01449I$
$u = 0.272591 - 0.146873I$ $a = 1.44122 - 3.46089I$ $b = -0.115448 - 1.155084I$	$6.36547 - 2.93267I$	$4.14670 + 1.68828I$
$u = 0.272591 + 0.146873I$ $a = 1.44122 + 3.46089I$ $b = -0.115448 + 1.155084I$	$6.36547 + 2.93267I$	$4.14670 - 1.68828I$
$u = 1.60890 - 0.18698I$ $a = -0.746630 - 0.202358I$ $b = -1.239094 - 0.185966I$	$-3.52853 - 0.48963I$	$-9.23600 - 1.05814I$
$u = 1.60890 + 0.18698I$ $a = -0.746630 + 0.202358I$ $b = -1.239094 + 0.185966I$	$-3.52853 + 0.48963I$	$-9.23600 + 1.05814I$
$u = 1.99919 - 0.45726I$ $a = 0.420965 + 0.197898I$ $b = 0.932081 + 0.203144I$	$-5.60402 + 3.77609I$	$-14.7696 - 2.3802I$
$u = 1.99919 + 0.45726I$ $a = 0.420965 - 0.197898I$ $b = 0.932081 - 0.203144I$	$-5.60402 - 3.77609I$	$-14.7696 + 2.3802I$

II.

$$\boldsymbol{I_2^u = \langle u^{10}+3u^9+\cdots-5u-1,\ 7u^9+14u^8+\cdots+b-9,\ 9u^9+20u^8+\cdots+a-13\rangle}$$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -9u^9-20u^8+\cdots+49u+13 \\ -7u^9-14u^8+\cdots+32u+9 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -2u^9-3u^8+12u^7+14u^6-30u^5-30u^4+17u^3+18u^2+7u+1 \\ -3u^9-4u^8+18u^7+18u^6-44u^5-39u^4+24u^3+25u^2+10u+2 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -2u^9-6u^8+10u^7+33u^6-25u^5-75u^4+8u^3+43u^2+17u+4 \\ -7u^9-14u^8+\cdots+32u+9 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -2u^9-6u^8+10u^7+33u^6-25u^5-75u^4+8u^3+43u^2+17u+4 \\ -5u^9-13u^8+\cdots+30u+9 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} u^9+u^8-6u^7-4u^6+14u^5+9u^4-7u^3-7u^2-3u+1 \\ 3u^9+4u^8-18u^7-18u^6+44u^5+39u^4-25u^3-24u^2-9u-2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} u^9+u^8-6u^7-4u^6+14u^5+9u^4-7u^3-7u^2-2u \\ -2u^9-2u^8+12u^7+8u^6-28u^5-18u^4+14u^3+14u^2+5u+1 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -9u^9-20u^8+\cdots+49u+13 \\ -2u^8-u^7+13u^6+u^5-30u^4-u^3+15u^2+6u+2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -2u^9-6u^8+10u^7+33u^6-25u^5-75u^4+8u^3+43u^2+17u+4 \\ 6u^9+17u^8+\cdots-37u-11 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 4u^9+11u^8-22u^7-60u^6+60u^5+134u^4-38u^3-75u^2-20u-7 \\ 6u^9+17u^8+\cdots-37u-11 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 4u^9+11u^8-22u^7-60u^6+60u^5+134u^4-38u^3-75u^2-20u-7 \\ 6u^9+17u^8+\cdots-37u-11 \end{pmatrix}$$

(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
$u = -1.91166 - 0.13941I$ $a = -1.71182 - 0.70510I$ $b = -3.17411 - 1.58657I$	$-17.7391 - 8.0399I$	$-7.30663 + 2.83159I$
$u = -1.91166 + 0.13941I$ $a = -1.71182 + 0.70510I$ $b = -3.17411 + 1.58657I$	$-17.7391 + 8.0399I$	$-7.30663 - 2.83159I$
$u = -1.85920$ $a = 2.10858$ $b = 3.92027$	-13.1860	-6.15586
$u = -0.672782 - 0.035203I$ $a = 0.07501 - 1.84158I$ $b = 0.115292 - 1.236343I$	$5.72141 + 3.10928I$	$-8.09311 - 4.32692I$
$u = -0.672782 + 0.035203I$ $a = 0.07501 + 1.84158I$ $b = 0.115292 + 1.236343I$	$5.72141 - 3.10928I$	$-8.09311 + 4.32692I$
$u = -0.125563 - 0.292930I$ $a = -0.451377 - 1.260813I$ $b = 0.312653 - 0.290533I$	$-0.422559 + 0.990373I$	$-6.71540 - 6.78739I$
$u = -0.125563 + 0.292930I$ $a = -0.451377 + 1.260813I$ $b = 0.312653 + 0.290533I$	$-0.422559 - 0.990373I$	$-6.71540 + 6.78739I$
$u = 1.07196$ $a = -0.382834$ $b = 0.410385$	-1.55504	-5.61011
$u = 1.60362 - 0.62517I$ $a = 0.225319 + 0.092507I$ $b = -0.419159 - 0.007483I$	$-4.86323 + 4.26845I$	$-7.00188 - 6.39401I$
$u = 1.60362 + 0.62517I$ $a = 0.225319 - 0.092507I$ $b = -0.419159 + 0.007483I$	$-4.86323 - 4.26845I$	$-7.00188 + 6.39401I$

III. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1	$(u^8+2u^6+\cdots-u+1)(u^{10}+6u^9+\cdots+14u+4)$
c_2	$(u^8+4u^7+10u^6+16u^5+19u^4+15u^3+8u^2+3u+1)$ $(u^{10}+4u^9+\cdots+36u+16)$
c_3, c_{11}	$(u^8+u^6+u^5-2u^4-u+1)$ $(u^{10}+u^9-10u^8-30u^7+42u^6+25u^5-18u^4-7u^3-10u^2-2u-1)$
c_4	$(u^8+u^6-u^5-2u^4+u+1)$ $(u^{10}+u^9-10u^8-30u^7+42u^6+25u^5-18u^4-7u^3-10u^2-2u-1)$
c_5, c_{10}	$(u^8-u^7-2u^4+u^3+u^2+1)$ $(u^{10}+2u^9-12u^8-41u^7+4u^6-65u^5+12u^4+18u^3-8u^2-u+1)$
c_6	$(u^8+2u^6+\cdots+u+1)(u^{10}+6u^9+\cdots+14u+4)$
c_7	$(u^8+2u^6+\cdots+3u+1)(u^{10}+6u^9+\cdots+42u+180)$
c_8	$(u^8+7u^7+17u^6+15u^5+u^4+5u^2+2u+1)$ $(u^{10}+4u^9-3u^8-29u^7-21u^6+48u^5+80u^4+47u^3+16u^2+5u+1)$
c_9	$(u^8+u^7-2u^4-u^3+u^2+1)$ $(u^{10}+2u^9-12u^8-41u^7+4u^6-65u^5+12u^4+18u^3-8u^2-u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_6	$(y^8 + 4y^7 + 10y^6 + 16y^5 + 19y^4 + 15y^3 + 8y^2 + 3y + 1)$ $(y^{10} + 4y^9 + \cdots + 36y + 16)$
c_2	$(y^8 + 4y^7 + 10y^6 + 20y^5 + 19y^4 + 3y^3 + 12y^2 + 7y + 1)$ $(y^{10} + 4y^9 + \cdots - 1648y + 256)$
c_3, c_4, c_{11}	$(y^8 + 2y^7 - 3y^6 - 5y^5 + 6y^4 + 4y^3 - 4y^2 - y + 1)$ $(y^{10} - 21y^9 + \cdots + 16y + 1)$
c_5, c_9, c_{10}	$(y^8 - y^7 - 4y^6 + 4y^5 + 6y^4 - 5y^3 - 3y^2 + 2y + 1)$ $(y^{10} - 28y^9 + \cdots - 17y + 1)$
c_7	$(y^8 + 4y^7 + 6y^6 - 11y^5 + 33y^4 + 43y^3 + 21y^2 + y + 1)$ $(y^{10} - 56y^9 + \cdots + 244836y + 32400)$
c_8	$(y^8 - 15y^7 + 81y^6 - 181y^5 + 145y^4 - 16y^3 + 27y^2 + 6y + 1)$ $(y^{10} - 22y^9 + \cdots + 7y + 1)$