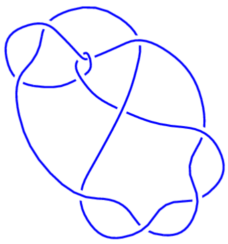
$11n_{63}$ $(K11n_{63})$



1

Arc Sequences

$$\to \downarrow_{4} \to \downarrow_{1} \to \downarrow_{7} \to \downarrow_{2} \to \downarrow_{11} \to \downarrow_{10} \to \downarrow_{4} \to \uparrow_{5} \to \downarrow_{7} \to \downarrow_{6} \to \uparrow_{9} \to$$

Solving Sequence

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

Representation Ideals

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

$$I_1^u = \langle a^4 + a^3 + 3a^2 + 2a + 1,\ b + 1,\ u - 1\rangle$$
$$I_2^u = \langle u^{23} - 5u^{22} + \cdots - 4u + 1,\ u^5 - u^3 + 2u^2 + b + u,\ u^{22} - 4u^{21} + \cdots + 8a - 1\rangle$$

There are 2 irreducible components with 27 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. $I_1^u = \langle a^4 + a^3 + 3a^2 + 2a + 1,\ b + 1,\ u - 1 \rangle$

(i) Arc colorings

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

(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
$u = 1.00000$ $a = -0.395123 - 0.506844I$ $b = -1.00000$	$-1.85594 - 1.41510I$	$-11.17855 + 5.62908I$
$u = 1.00000$ $a = -0.395123 + 0.506844I$ $b = -1.00000$	$-1.85594 + 1.41510I$	$-11.17855 - 5.62908I$
$u = 1.00000$ $a = -0.10488 - 1.55249I$ $b = -1.00000$	$5.14581 - 3.16396I$	$-6.32145 + 1.65351I$
$u = 1.00000$ $a = -0.10488 + 1.55249I$ $b = -1.00000$	$5.14581 + 3.16396I$	$-6.32145 - 1.65351I$

II.

$$\boldsymbol{I^u_2 = \langle u^{23} - 5u^{22} + \cdots - 4u + 1,\ u^5 - u^3 + 2u^2 + b + u,\ u^{22} - 4u^{21} + \cdots + 8a - 1\rangle}$$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -\frac{1}{8}u^{22} + \frac{1}{2}u^{21} + \cdots - \frac{19}{8}u + \frac{1}{8} \\ -u^5 + u^3 - 2u^2 - u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -1.87500u^{22} + 7.75000u^{21} + \cdots - 6.12500u + 2.12500 \\ -\frac{3}{8}u^{22} + \frac{3}{2}u^{21} + \cdots - \frac{1}{8}u + \frac{3}{8} \end{pmatrix}$$
$$a_4 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u^2 + 1 \\ -u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u^4 - u^2 + 1 \\ u^4 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -\frac{13}{2}u^{22} + \frac{57}{2}u^{21} + \cdots - 27u + \frac{19}{2} \\ -3u^{22} + \frac{51}{4}u^{21} + \cdots - \frac{23}{2}u + \frac{15}{4} \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -\frac{23}{4}u^{22} + \frac{107}{4}u^{21} + \cdots - \frac{109}{4}u + 13 \\ -\frac{3}{2}u^{22} + \frac{33}{4}u^{21} + \cdots - \frac{19}{2}u + \frac{21}{4} \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -8u^{22} + \frac{145}{4}u^{21} + \cdots - 34u + \frac{63}{4} \\ -2.75000u^{22} + 11.5000u^{21} + \cdots - 9.25000u + 4.25000 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -8u^{22} + \frac{145}{4}u^{21} + \cdots - 34u + \frac{63}{4} \\ -\frac{15}{4}u^{22} + \frac{71}{4}u^{21} + \cdots - \frac{65}{4}u + 8 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -8u^{22} + \frac{145}{4}u^{21} + \cdots - 34u + \frac{63}{4} \\ -\frac{15}{4}u^{22} + \frac{71}{4}u^{21} + \cdots - \frac{65}{4}u + 8 \end{pmatrix}$$

(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
$u = -1.215142 - 0.309680I$ $a = -0.330209 - 1.218290I$ $b = -2.00634 + 0.40260I$	$5.91283 - 1.29853I$	$-3.45106 + 0.05233I$
$u = -1.215142 + 0.309680I$ $a = -0.330209 + 1.218290I$ $b = -2.00634 - 0.40260I$	$5.91283 + 1.29853I$	$-3.45106 - 0.05233I$
$u = -1.095323 - 0.135004I$ $a = -0.204764 - 0.422200I$ $b = -1.183021 + 0.002185I$	$-1.35992 - 0.76790I$	$-3.34761 - 1.39618I$
$u = -1.095323 + 0.135004I$ $a = -0.204764 + 0.422200I$ $b = -1.183021 - 0.002185I$	$-1.35992 + 0.76790I$	$-3.34761 + 1.39618I$
$u = -0.566410$ $a = 0.541479$ $b = -0.198647$	-0.900453	-11.8238
$u = -0.417445 - 0.531363I$ $a = 1.043713 + 0.336011I$ $b = 0.888143 - 0.622056I$	$0.92312 - 1.99790I$	$-2.34638 + 5.92992I$
$u = -0.417445 + 0.531363I$ $a = 1.043713 - 0.336011I$ $b = 0.888143 + 0.622056I$	$0.92312 + 1.99790I$	$-2.34638 - 5.92992I$
$u = -0.402570 - 0.803293I$ $a = 1.64032 + 0.74276I$ $b = 2.51077 - 0.76252I$	$8.92549 - 3.15334I$	$-1.05029 + 3.26062I$
$u = -0.402570 + 0.803293I$ $a = 1.64032 - 0.74276I$ $b = 2.51077 + 0.76252I$	$8.92549 + 3.15334I$	$-1.05029 - 3.26062I$
$u = 0.437297 - 0.133257I$ $a = -1.30520 + 0.72293I$ $b = -0.725742 + 0.312150I$	$-0.68293 + 1.66090I$	$-3.45266 - 4.83485I$

Solution to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.437297 + 0.133257I$ $a = -1.30520 - 0.72293I$ $b = -0.725742 - 0.312150I$	$-0.68293 - 1.66090I$	$-3.45266 + 4.83485I$
$u = 0.588229 - 0.289273I$ $a = -1.19623 + 2.00856I$ $b = -0.977734 + 0.785272I$	$6.06133 + 3.74831I$	$0.03467 - 4.58469I$
$u = 0.588229 + 0.289273I$ $a = -1.19623 - 2.00856I$ $b = -0.977734 - 0.785272I$	$6.06133 - 3.74831I$	$0.03467 + 4.58469I$
$u = 0.843663 - 1.134513I$ $a = -0.895592 + 0.767748I$ $b = -2.03691 - 1.63946I$	$16.6150 - 2.3845I$	$-0.450202 + 0.532296I$
$u = 0.843663 + 1.134513I$ $a = -0.895592 - 0.767748I$ $b = -2.03691 + 1.63946I$	$16.6150 + 2.3845I$	$-0.450202 - 0.532296I$
$u = 0.871131 - 1.017531I$ $a = -0.289757 + 0.671513I$ $b = -0.689207 - 0.674028I$	$7.83203 - 0.28979I$	$-2.09012 + 1.34957I$
$u = 0.871131 + 1.017531I$ $a = -0.289757 - 0.671513I$ $b = -0.689207 + 0.674028I$	$7.83203 + 0.28979I$	$-2.09012 - 1.34957I$
$u = 0.962074 - 0.924080I$ $a = 0.337189 + 0.383823I$ $b = 0.592636 + 0.031782I$	$4.95941 + 3.41645I$	$-6.52166 - 2.22573I$
$u = 0.962074 + 0.924080I$ $a = 0.337189 - 0.383823I$ $b = 0.592636 - 0.031782I$	$4.95941 - 3.41645I$	$-6.52166 + 2.22573I$
$u = 1.065840 - 0.921777I$ $a = 0.648152 - 0.199540I$ $b = 1.92048 + 0.20940I$	$7.20945 + 7.39071I$	$-3.32519 - 6.20381I$

Solution to I_2^u		$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=$	$1.065840+0.921777I$		
$a=$	$0.648152+0.199540I$	$7.20945-7.39071I$	$-3.32519+6.20381I$
$b=$	$1.92048-0.20940I$		
$u=$	$1.14545-0.94090I$		
$a=$	$0.781632-0.794577I$	$15.6090+9.9000I$	$-1.58759-4.90312I$
$b=$	$3.30624+0.28844I$		
$u=$	$1.14545+0.94090I$		
$a=$	$0.781632+0.794577I$	$15.6090-9.9000I$	$-1.58759+4.90312I$
$b=$	$3.30624-0.28844I$		

III. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1	$(u-1)^4(u^{23}+5u^{22}+\cdots-4u-1)$
c_2	$(u+1)^4(u^{23}+5u^{22}+\cdots+14u+1)$
c_3, c_7	$u^4(u^{23}+u^{22}+\cdots+24u+16)$
c_4	$(u+1)^4(u^{23}+5u^{22}+\cdots-4u-1)$
c_5, c_6	$(u^4-u^3+3u^2-2u+1)(u^{23}+2u^{22}+\cdots+12u^3-1)$
c_8	$(u^4+u^3+u^2+1)(u^{23}+2u^{22}+\cdots+2u-1)$
c_9, c_{10}	$(u^4+u^3+3u^2+2u+1)(u^{23}+2u^{22}+\cdots+12u^3-1)$
c_{11}	$(u^4+u^3+u^2+1)(u^{23}+8u^{22}+\cdots+168u+49)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_4	$(y-1)^4(y^{23}-5y^{22}+\cdots+14y-1)$
c_2	$(y-1)^4(y^{23}+31y^{22}+\cdots+14y-1)$
c_3, c_7	$y^4(y^{23}+27y^{22}+\cdots-2240y-256)$
c_5, c_6, c_9 c_{10}	$(y^4+5y^3+\cdots+2y+1)(y^{23}+28y^{22}+\cdots+60y^2-1)$
c_8	$(y^4+y^3+3y^2+2y+1)(y^{23}-28y^{22}+\cdots-40y^2-1)$
c_{11}	$(y^4+y^3+3y^2+2y+1)(y^{23}-16y^{22}+\cdots+77224y-2401)$