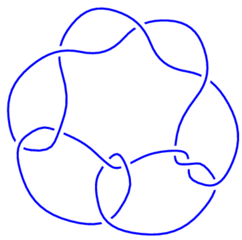
$11a_{58}$ ($K11a_{58}$)



[1]

Arc Sequences

$$\rightarrow \underset{4}{\downarrow} \rightarrow \underset{1}{\downarrow} \rightarrow \underset{8}{\downarrow} \rightarrow \underset{2}{\downarrow} \rightarrow \underset{11}{\uparrow} \rightarrow \underset{10}{\uparrow} \rightarrow \underset{9}{\uparrow} \rightarrow \underset{3}{\downarrow} \rightarrow \underset{7}{\uparrow} \rightarrow \underset{5}{\uparrow} \rightarrow \underset{6}{\uparrow} \rightarrow$$

Solving Sequence

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

Representation Ideals

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

$$I_1^u = \langle u-1,\ a,\ b-1\rangle$$
$$I_2^u = \langle u^{12} - 4u^{10} + u^9 + 6u^8 - 3u^7 - u^6 + 3u^5 - 5u^4 + u^3 + 3u^2 - 2u + 1,\ a,\ b-u\rangle$$
$$I_3^u = \langle u^{29} - 2u^{28} + \cdots - u + 1,\ -u^{27} + u^{26} + \cdots + b - 1,\ u^{28} - u^{27} + \cdots + a - 2u\rangle$$

There are 3 irreducible components with 42 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. $I^u_1 = \langle u - 1,\ a,\ b - 1\rangle$

(i) Arc colorings

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

(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
$u =$	1.00000		
$a =$	0	0	0
$b =$	1.00000		

II. $I_2^u = \langle u^{12} - 4u^{10} + \cdots - 2u + 1,\ a,\ b - u \rangle$

(i) Arc colorings

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

(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
$u = -1.271939 - 0.422443I$ $a = 0$ $b = -1.271939 - 0.422443I$	$-6.79074 + 3.16396I$	$-1.82674 - 2.56480I$
$u = -1.271939 + 0.422443I$ $a = 0$ $b = -1.271939 + 0.422443I$	$-6.79074 - 3.16396I$	$-1.82674 + 2.56480I$
$u = -1.186693 - 0.158407I$ $a = 0$ $b = -1.186693 - 0.158407I$	$0.21101 + 1.41510I$	$1.82674 - 4.90874I$
$u = -1.186693 + 0.158407I$ $a = 0$ $b = -1.186693 + 0.158407I$	$0.21101 - 1.41510I$	$1.82674 + 4.90874I$
$u = 0.031664 - 0.878090I$ $a = 0$ $b = 0.031664 - 0.878090I$	$-6.79074 - 3.16396I$	$-1.82674 + 2.56480I$
$u = 0.031664 + 0.878090I$ $a = 0$ $b = 0.031664 + 0.878090I$	$-6.79074 + 3.16396I$	$-1.82674 - 2.56480I$
$u = 0.241868 - 0.480324I$ $a = 0$ $b = 0.241868 - 0.480324I$	$0.21101 - 1.41510I$	$1.82674 + 4.90874I$
$u = 0.241868 + 0.480324I$ $a = 0$ $b = 0.241868 + 0.480324I$	$0.21101 + 1.41510I$	$1.82674 - 4.90874I$
$u = 0.944825 - 0.321917I$ $a = 0$ $b = 0.944825 - 0.321917I$	$0.21101 + 1.41510I$	$1.82674 - 4.90874I$
$u = 0.944825 + 0.321917I$ $a = 0$ $b = 0.944825 + 0.321917I$	$0.21101 - 1.41510I$	$1.82674 + 4.90874I$

	Solution to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=$	$1.240275-0.455646I$		
$a=$	0	$-6.79074+3.16396I$	$-1.82674-2.56480I$
$b=$	$1.240275-0.455646I$		
$u=$	$1.240275+0.455646I$		
$a=$	0	$-6.79074-3.16396I$	$-1.82674+2.56480I$
$b=$	$1.240275+0.455646I$		

III.

$$\boldsymbol{I^u_3 = \langle u^{29} - 2u^{28} + \cdots - u + 1,\ -u^{27} + u^{26} + \cdots + b - 1,\ u^{28} - u^{27} + \cdots + a - 2u\rangle}$$

(i) Arc colorings

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

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

$$a_2 = \begin{pmatrix}1\\u^2\end{pmatrix}$$

$$a_3 = \begin{pmatrix}-u^2+1\\u^2\end{pmatrix}$$

$$a_6 = \begin{pmatrix}-u^{28}+u^{27}+\cdots-6u^2+2u\\u^{27}-u^{26}+\cdots-u^2+1\end{pmatrix}$$

$$a_{11} = \begin{pmatrix}-u^{25}+8u^{23}+\cdots-4u^2+3u\\-u^{28}+u^{27}+\cdots-u+1\end{pmatrix}$$

$$a_5 = \begin{pmatrix}-u\\-u^3+u\end{pmatrix}$$

$$a_{10} = \begin{pmatrix}-u^{28}+u^{27}+\cdots-4u^2+2u\\-u^{28}+2u^{27}+\cdots-5u^2+2\end{pmatrix}$$

$$a_7 = \begin{pmatrix}-u^{28}+u^{27}+\cdots-4u^2+u\\-2u^{28}+3u^{27}+\cdots-8u^2+3\end{pmatrix}$$

$$a_9 = \begin{pmatrix}-u^{28}+u^{27}+\cdots-3u^2+u\\-3u^{28}+4u^{27}+\cdots-12u^2+4\end{pmatrix}$$

$$a_8 = \begin{pmatrix}-u^{28}+u^{27}+\cdots-2u^3-3u^2\\-4u^{28}+5u^{27}+\cdots-15u^2+5\end{pmatrix}$$

$$a_8 = \begin{pmatrix}-u^{28}+u^{27}+\cdots-2u^3-3u^2\\-4u^{28}+5u^{27}+\cdots-15u^2+5\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes =unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I_3^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.257115-0.448584I$ $a=\ \ 0.704471+0.741241I$ $b=-0.008721+0.887960I$	$-10.71028-1.52343I$	$-5.35413+0.68771I$
$u=-1.257115+0.448584I$ $a=\ \ 0.704471-0.741241I$ $b=-0.008721-0.887960I$	$-10.71028+1.52343I$	$-5.35413-0.68771I$
$u=-1.237428-0.470287I$ $a=-0.82863-1.97410I$ $b=\ \ 1.286004-0.418935I$	$-6.68464-6.20004I$	$-1.73580+3.81481I$
$u=-1.237428+0.470287I$ $a=-0.82863+1.97410I$ $b=\ \ 1.286004+0.418935I$	$-6.68464+6.20004I$	$-1.73580-3.81481I$
$u=-1.062616-0.280483I$ $a=\ \ 0.822036+0.588542I$ $b=-0.063245+0.516212I$	$-3.02142-1.01433I$	$-6.77496+0.83339I$
$u=-1.062616+0.280483I$ $a=\ \ 0.822036-0.588542I$ $b=-0.063245-0.516212I$	$-3.02142+1.01433I$	$-6.77496-0.83339I$
$u=-0.972190-0.408832I$ $a=-2.12668-2.40827I$ $b=\ \ 1.242321-0.189774I$	$0.91595-3.56420I$	$0.67873+4.99863I$
$u=-0.972190+0.408832I$ $a=-2.12668+2.40827I$ $b=\ \ 1.242321+0.189774I$	$0.91595+3.56420I$	$0.67873-4.99863I$
$u=-0.888826$ $a=\ \ 0.722046$ $b=-0.193938$	-1.29813	-8.53893
$u=-0.426002-0.324266I$ $a=-3.81749+0.31265I$ $b=\ \ 1.189732+0.056062I$	$2.39907+0.12369I$	$3.50407+1.07759I$

Solution to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.426002 + 0.324266I$ $a = -3.81749 - 0.31265I$ $b = 1.189732 - 0.056062I$	$2.39907 - 0.12369I$	$3.50407 - 1.07759I$
$u = -0.014978 - 0.851014I$ $a = -1.46295 + 0.66868I$ $b = 1.249689 + 0.417811I$	$-3.02235 + 1.47420I$	$1.47993 - 0.60903I$
$u = -0.014978 + 0.851014I$ $a = -1.46295 - 0.66868I$ $b = 1.249689 - 0.417811I$	$-3.02235 - 1.47420I$	$1.47993 + 0.60903I$
$u = 0.074758 - 0.894541I$ $a = 1.50134 + 0.55093I$ $b = -1.301316 + 0.407588I$	$-2.63518 - 7.77071I$	$2.10858 + 5.30383I$
$u = 0.074758 + 0.894541I$ $a = 1.50134 - 0.55093I$ $b = -1.301316 - 0.407588I$	$-2.63518 + 7.77071I$	$2.10858 - 5.30383I$
$u = 0.359435 - 0.685270I$ $a = 2.23815 + 0.27468I$ $b = -1.311938 + 0.179476I$	$4.98921 - 3.78682I$	$7.27007 + 4.16727I$
$u = 0.359435 + 0.685270I$ $a = 2.23815 - 0.27468I$ $b = -1.311938 - 0.179476I$	$4.98921 + 3.78682I$	$7.27007 - 4.16727I$
$u = 0.678336 - 0.303222I$ $a = -0.425800 + 0.584678I$ $b = 0.529946 + 0.329108I$	$0.93542 + 1.41053I$	$5.39446 - 5.74020I$
$u = 0.678336 + 0.303222I$ $a = -0.425800 - 0.584678I$ $b = 0.529946 - 0.329108I$	$0.93542 - 1.41053I$	$5.39446 + 5.74020I$
$u = 0.739200 - 0.575207I$ $a = 2.46695 - 1.00249I$ $b = -1.342149 - 0.040293I$	$6.61715 + 2.27209I$	$8.89752 - 3.80982I$

Solution to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.739200 + 0.575207I$ $a = 2.46695 + 1.00249I$ $b = -1.342149 + 0.040293I$	$6.61715 - 2.27209I$	$8.89752 + 3.80982I$
$u = 1.029202 - 0.437563I$ $a = -0.711833 + 0.635826I$ $b = 0.230236 + 0.672244I$	$-1.85869 + 5.19499I$	$-2.04173 - 8.30480I$
$u = 1.029202 + 0.437563I$ $a = -0.711833 - 0.635826I$ $b = 0.230236 - 0.672244I$	$-1.85869 - 5.19499I$	$-2.04173 + 8.30480I$
$u = 1.040505 - 0.532887I$ $a = 1.61127 - 1.86164I$ $b = -1.333982 - 0.244603I$	$3.04589 + 8.42692I$	$3.52830 - 8.66921I$
$u = 1.040505 + 0.532887I$ $a = 1.61127 + 1.86164I$ $b = -1.333982 + 0.244603I$	$3.04589 - 8.42692I$	$3.52830 + 8.66921I$
$u = 1.245918 - 0.505749I$ $a = 0.86036 - 1.85625I$ $b = -1.320522 - 0.424615I$	$-6.1783 + 12.8069I$	$-0.92308 - 8.12569I$
$u = 1.245918 + 0.505749I$ $a = 0.86036 + 1.85625I$ $b = -1.320522 + 0.424615I$	$-6.1783 - 12.8069I$	$-0.92308 + 8.12569I$
$u = 1.247387 - 0.482397I$ $a = -0.692230 + 0.727568I$ $b = 0.050913 + 0.910185I$	$-10.46167 + 8.03356I$	$-4.76249 - 5.59744I$
$u = 1.247387 + 0.482397I$ $a = -0.692230 - 0.727568I$ $b = 0.050913 - 0.910185I$	$-10.46167 - 8.03356I$	$-4.76249 + 5.59744I$

IV. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1, c_4	$(u+1)(u^{12}-4u^{10}+\cdots+2u+1)$ $(u^{29}+2u^{28}+\cdots-u-1)$
c_2	$(u+1)(u^{12}+8u^{11}+\cdots-2u+1)(u^{29}+16u^{28}+\cdots+7u+1)$
c_3, c_8	$(u)(1+u^2+u^3+u^4)^3(u^{29}-2u^{28}+\cdots+2u-2)$
c_5, c_{10}, c_{11}	$(u-1)(u^{12}-4u^{10}+\cdots-2u+1)$ $(u^{29}+2u^{28}+\cdots+3u+1)$
c_6, c_7, c_9	$(u)(1+2u+3u^2+u^3+u^4)^3(u^{29}+6u^{28}+\cdots+8u-4)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_4	$(y-1)(y^{12}-8y^{11}+\cdots+2y+1)(y^{29}-16y^{28}+\cdots+7y-1)$
c_2	$(y-1)(y^{12}-8y^{11}+\cdots+2y+1)(y^{29}-4y^{28}+\cdots-17y-1)$
c_3, c_8	$(y)(1+2y+3y^2+y^3+y^4)^3(y^{29}+6y^{28}+\cdots+8y-4)$
c_5, c_{10}, c_{11}	$(y-1)(y^{12}-8y^{11}+\cdots+2y+1)(y^{29}-24y^{28}+\cdots+23y-1)$
c_6, c_7, c_9	$(y)(1+2y+7y^2+5y^3+y^4)^3(y^{29}+30y^{28}+\cdots+504y-16)$