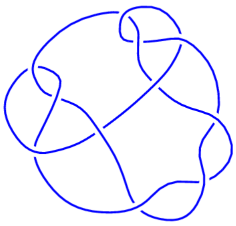
$11a_{175}$ ($K11a_{175}$)



[1]

Arc Sequences

$\rightarrow \downarrow_{6} \rightarrow \downarrow_{1} \rightarrow \uparrow_{8} \rightarrow \uparrow_{11} \rightarrow \downarrow_{10} \rightarrow \downarrow_{2} \rightarrow \uparrow_{3} \rightarrow \uparrow_{4} \rightarrow \downarrow_{5} \rightarrow \downarrow_{9} \rightarrow \uparrow_{7} \rightarrow$

Solving Sequence

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

Representation Ideals

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

$$I_1^u = \langle u + 1 \rangle$$
$$I_2^u = \langle u^{11} - u^{10} - 2u^9 + 2u^8 + 3u^7 - 2u^6 - 2u^5 + 2u^3 - u + 1 \rangle$$
$$I_3^u = \langle u^{40} - u^{39} + \cdots - 3u^3 + 1 \rangle$$

There are 3 irreducible components with 52 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. $I_1^u = \langle u + 1 \rangle$

(i) Arc colorings

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

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

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

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

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

$$a_4 = \begin{pmatrix} 1 \\ -1 \end{pmatrix}$$

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

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

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

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

$$a_2 = \begin{pmatrix} 2 \\ -1 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 2 \\ -1 \end{pmatrix}$$

(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
$u = -1.00000$	-1.64493	-6.00000

II. $I_2^u = \langle u^{11} - u^{10} - 2u^9 + 2u^8 + 3u^7 - 2u^6 - 2u^5 + 2u^3 - u + 1 \rangle$

(i) Arc colorings

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

$$a_{10} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -u^3 \\ u^5 - u^3 + u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} u^6 - u^4 + 1 \\ -u^8 + 2u^6 - 2u^4 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u^{10} + 2u^8 + u^7 - 2u^6 - 2u^5 + 3u^3 - u + 1 \\ -u^8 + 2u^6 - 2u^4 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} u^{10} - u^8 - u^7 + u^6 + 2u^5 + u^4 - 2u^3 + u \\ -u^3 + u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^{10} + 3u^8 + u^7 - 5u^6 - 2u^5 + 3u^4 + 3u^3 - u + 1 \\ -u^2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 2u^{10} - u^9 - 4u^8 + u^7 + 5u^6 + u^5 - 2u^4 - 3u^3 + u^2 + u - 1 \\ u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 2u^{10} - u^9 - 4u^8 + u^7 + 5u^6 + u^5 - 2u^4 - 3u^3 + u^2 - 1 \\ u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 2u^{10} - u^9 - 4u^8 + u^7 + 5u^6 + u^5 - 2u^4 - 3u^3 + u^2 - 1 \\ u \end{pmatrix}$$

(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
$u = -1.081803 - 0.517146I$	$-2.76698 - 9.75515I$	$-4.05162 + 10.29185I$
$u = -1.081803 + 0.517146I$	$-2.76698 + 9.75515I$	$-4.05162 - 10.29185I$
$u = -0.912079$	-1.65611	-5.73715
$u = -0.472789 - 0.800775I$	$9.12060 + 3.24476I$	$5.98156 - 0.51441I$
$u = -0.472789 + 0.800775I$	$9.12060 - 3.24476I$	$5.98156 + 0.51441I$
$u = 0.361975 - 0.559972I$	$1.36102 - 0.98826I$	$4.35867 + 1.84291I$
$u = 0.361975 + 0.559972I$	$1.36102 + 0.98826I$	$4.35867 - 1.84291I$
$u = 1.054491 - 0.371149I$	$-4.87523 + 4.09967I$	$-8.95070 - 5.15592I$
$u = 1.054491 + 0.371149I$	$-4.87523 - 4.09967I$	$-8.95070 + 5.15592I$
$u = 1.094166 - 0.624458I$	$5.3908 + 13.9605I$	$0.53068 - 9.48051I$
$u = 1.094166 + 0.624458I$	$5.3908 - 13.9605I$	$0.53068 + 9.48051I$

III. $I_3^u = \langle u^{40} - u^{39} + \cdots - 3u^3 + 1 \rangle$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u^3 \\ u^5 - u^3 + u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} u^6 - u^4 + 1 \\ -u^8 + 2u^6 - 2u^4 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u^{11} + 2u^9 - 2u^7 + u^3 \\ u^{13} - 3u^{11} + 5u^9 - 4u^7 + 2u^5 - u^3 + u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u^{16} + 3u^{14} - 5u^{12} + 4u^{10} - u^8 + 1 \\ u^{18} - 4u^{16} + 9u^{14} - 12u^{12} + 11u^{10} - 8u^8 + 6u^6 - 4u^4 + u^2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u^{21} - 4u^{19} + 9u^{17} - 12u^{15} + 10u^{13} - 6u^{11} + 3u^9 - 2u^7 - u^5 + 2u^3 - u \\ -u^{23} + 5u^{21} + \cdots - 2u^3 + u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u^{39} + 8u^{37} + \cdots + 15u^7 - 6u^5 \\ -u^{38} + 9u^{36} + \cdots + u^3 - 1 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -u^{39} + u^{38} + \cdots - u^3 + 1 \\ -u^{38} + 9u^{36} + \cdots + u^3 - 1 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -u^{39} + u^{38} + \cdots - u^3 + 1 \\ -u^{38} + 9u^{36} + \cdots + u^3 - 1 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes =unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I^u_3	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.119575 - 0.049168I$	$1.78732 + 6.69475I$	$-2.60998 - 4.97701I$
$u = -1.119575 + 0.049168I$	$1.78732 - 6.69475I$	$-2.60998 + 4.97701I$
$u = -1.087959 - 0.626575I$	$7.28190 - 8.60190I$	$3.29856 + 5.07396I$
$u = -1.087959 + 0.626575I$	$7.28190 + 8.60190I$	$3.29856 - 5.07396I$
$u = -1.071009 - 0.632590I$	$7.58837 - 5.35722I$	$3.80298 + 4.77693I$
$u = -1.071009 + 0.632590I$	$7.58837 + 5.35722I$	$3.80298 - 4.77693I$
$u = -1.065390 - 0.469454I$	$-4.22715 - 2.78049I$	$-7.53200 + 3.56896I$
$u = -1.065390 + 0.469454I$	$-4.22715 + 2.78049I$	$-7.53200 - 3.56896I$
$u = -0.989179 - 0.332673I$	$-1.87696 - 1.08776I$	$-3.66948 + 0.80831I$
$u = -0.989179 + 0.332673I$	$-1.87696 + 1.08776I$	$-3.66948 - 0.80831I$
$u = -0.912778 - 0.528712I$	0.112919	1.81750
$u = -0.912778 + 0.528712I$	0.112919	1.81750
$u = -0.674204 - 0.548152I$	$0.79488 - 4.38017I$	$2.87668 + 6.69250I$
$u = -0.674204 + 0.548152I$	$0.79488 + 4.38017I$	$2.87668 - 6.69250I$
$u = -0.502219 - 0.792060I$	9.28815	6.23474
$u = -0.502219 + 0.792060I$	9.28815	6.23474
$u = -0.289073 - 0.622325I$	$-0.55874 + 5.32051I$	$-0.06135 - 6.50240I$
$u = -0.289073 + 0.622325I$	$-0.55874 - 5.32051I$	$-0.06135 + 6.50240I$
$u = -0.138437 - 0.513103I$	$-1.87696 - 1.08776I$	$-3.66948 + 0.80831I$
$u = -0.138437 + 0.513103I$	$-1.87696 + 1.08776I$	$-3.66948 - 0.80831I$
$u = 0.461488 - 0.804643I$	$7.28190 - 8.60190I$	$3.29856 + 5.07396I$
$u = 0.461488 + 0.804643I$	$7.28190 + 8.60190I$	$3.29856 - 5.07396I$
$u = 0.475874 - 0.769365I$	$3.57846 - 1.46542I$	$0.189647 + 0.302471I$
$u = 0.475874 + 0.769365I$	$3.57846 + 1.46542I$	$0.189647 - 0.302471I$
$u = 0.515254 - 0.788495I$	$7.58837 + 5.35722I$	$3.80298 - 4.77693I$
$u = 0.515254 + 0.788495I$	$7.58837 - 5.35722I$	$3.80298 + 4.77693I$
$u = 0.565990 - 0.536897I$	1.96889	5.82360
$u = 0.565990 + 0.536897I$	1.96889	5.82360
$u = 0.976421 - 0.536361I$	$0.79488 + 4.38017I$	$2.87668 - 6.69250I$
$u = 0.976421 + 0.536361I$	$0.79488 - 4.38017I$	$2.87668 + 6.69250I$

Solution to I^u_3	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.047754 - 0.294823I$	$-4.22715 - 2.78049I$	$-7.53200 + 3.56896I$
$u = 1.047754 + 0.294823I$	$-4.22715 + 2.78049I$	$-7.53200 - 3.56896I$
$u = 1.053774 - 0.517468I$	$-0.55874 + 5.32051I$	$-0.06135 - 6.50240I$
$u = 1.053774 + 0.517468I$	$-0.55874 - 5.32051I$	$-0.06135 + 6.50240I$
$u = 1.062888 - 0.635226I$	5.95204	1.53406
$u = 1.062888 + 0.635226I$	5.95204	1.53406
$u = 1.077536 - 0.613425I$	$1.78732 + 6.69475I$	$-2.60998 - 4.97701I$
$u = 1.077536 + 0.613425I$	$1.78732 - 6.69475I$	$-2.60998 + 4.97701I$
$u = 1.112843 - 0.027837I$	$3.57846 - 1.46542I$	$0.189647 + 0.302471I$
$u = 1.112843 + 0.027837I$	$3.57846 + 1.46542I$	$0.189647 - 0.302471I$

IV. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1, c_5, c_6 c_9	$(u-1)(u^{11}+u^{10}-2u^9-2u^8+3u^7+2u^6-2u^5+2u^3-u-1)$ $(u^{40}+u^{39}+\cdots+3u^3+1)$
c_2, c_{10}	$(u+1)(u^{11}+5u^{10}+\cdots+u+1)(u^{40}+17u^{39}+\cdots+2u^2+1)$
c_3, c_7, c_8	$(u+1)(u^{11}+4u^{10}+\cdots-5u^2+4)$ $(1-2u-13u^2-4u^3+35u^4+38u^5-16u^6-78u^7+15u^8+90u^9-47u^{10}-114u^{11}+72u^{12}$
c_4, c_{11}	$u(u^{11}+u^9-2u^8+7u^7-u^6+4u^5+3u^4+12u^3+8u^2+5u-1)$ $(u^{40}+3u^{39}+\cdots-6u+3)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_5, c_6 c_9	$(y-1)(y^{11}-5y^{10}+\cdots+y-1)(y^{40}-17y^{39}+\cdots+2y^2+1)$
c_2	$(y-1)(y^{11}+3y^{10}+\cdots-7y-1)(y^{40}+11y^{39}+\cdots+4y+1)$
c_3, c_7, c_8	$(y-1)(y^{11}-10y^{10}+\cdots+40y-16)$ $(1-30y+223y^2-806y^3+1663y^4-3312y^5+8864y^6-1.92\times10^4y^7+3.19\times10^4y^8-4.41$
c_4, c_{11}	$(y)(y^{11}+2y^{10}+\cdots+41y-1)(y^{40}-5y^{39}+\cdots-282y+9)$
c_{10}	$(y-1)(y^{11}+3y^{10}+\cdots-7y-1)(y^{40}+11y^{39}+\cdots+4y+1)$