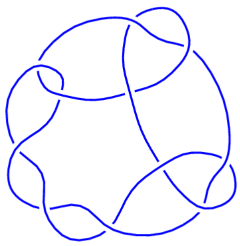
$11a_{46}$ ($K11a_{46}$)



[1]

Arc Sequences

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

Solving Sequence

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

Representation Ideals

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

$$I_1^u = \langle u^{16} - u^{15} - 4u^{14} + 5u^{13} + 7u^{12} - 11u^{11} - 3u^{10} + 11u^9 - 5u^8 - 2u^7 + 8u^6 - 6u^5 - 2u^4 + 5u^3 - u^2 - u + 1,$$
$$u^{14} - u^{13} - 3u^{12} + 4u^{11} + 4u^{10} - 7u^9 + u^8 + 4u^7 - 4u^6 + 2u^5 + 4u^4 - 4u^3 + u^2 + b + u - 1\rangle$$
$$I_2^u = \langle u - 1,\ a + 1,\ b + 2\rangle$$
$$I_3^u = \langle u^{28} - u^{27} + \cdots + 2u - 1,\ u^{27} - 8u^{25} + \cdots + a + 2,\ u^{27} - 9u^{25} + \cdots + b + 2\rangle$$

There are 3 irreducible components with 45 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. $I_1^u = \langle u^{16} - u^{15} + \cdots - u + 1,\ a - 1,\ u^{14} - u^{13} + \cdots + b - 1\rangle$

(i) Arc colorings

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

$$a_{11} = \begin{pmatrix} 1 \\ -u^{14} + u^{13} + \cdots - u + 1 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -u \\ u^{15} - u^{14} + \cdots + u^3 + u^2 \end{pmatrix}$$

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

$$a_1 = \begin{pmatrix} -u^2 + 1 \\ -u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} u^4 - u^2 + 1 \\ u^4 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 1 \\ -u^{14} + u^{13} + \cdots - u + 1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u^4 - u^2 + 1 \\ -u^{14} + u^{13} + \cdots - u + 1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^7 + 2u^5 - 2u^3 \\ u^{15} - u^{14} - 3u^{13} + 4u^{12} + 4u^{11} - 7u^{10} + 4u^8 - 3u^7 + 2u^6 + 3u^5 - 4u^4 + u^2 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} u^{10} - 3u^8 + 4u^6 - u^4 - u^2 + 1 \\ -u^{14} + u^{13} + \cdots - u + 1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} u^{10} - 3u^8 + 4u^6 - u^4 - u^2 + 1 \\ -u^{14} + u^{13} + \cdots - u + 1 \end{pmatrix}$$

(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
$u = -1.255066 - 0.472625I$ $a = 1.00000$ $b = 3.81135 - 0.36321I$	$-12.8673 - 6.3576I$	$-8.01117 + 3.79413I$
$u = -1.255066 + 0.472625I$ $a = 1.00000$ $b = 3.81135 + 0.36321I$	$-12.8673 + 6.3576I$	$-8.01117 - 3.79413I$
$u = -1.048255 - 0.400216I$ $a = 1.00000$ $b = 2.76535 - 1.53191I$	$-4.21490 - 4.31562I$	$-7.10271 + 5.64590I$
$u = -1.048255 + 0.400216I$ $a = 1.00000$ $b = 2.76535 + 1.53191I$	$-4.21490 + 4.31562I$	$-7.10271 - 5.64590I$
$u = -0.735290 - 0.237976I$ $a = 1.00000$ $b = -0.17082 - 1.45067I$	$-1.32039 - 1.29101I$	$-3.35201 + 4.88471I$
$u = -0.735290 + 0.237976I$ $a = 1.00000$ $b = -0.17082 + 1.45067I$	$-1.32039 + 1.29101I$	$-3.35201 - 4.88471I$
$u = 0.034491 - 0.874872I$ $a = 1.00000$ $b = 0.1034627 - 0.0216158I$	$-5.17406 - 3.14776I$	$-1.28039 + 2.42611I$
$u = 0.034491 + 0.874872I$ $a = 1.00000$ $b = 0.1034627 + 0.0216158I$	$-5.17406 + 3.14776I$	$-1.28039 - 2.42611I$
$u = 0.359617 - 0.529211I$ $a = 1.00000$ $b = 0.282646 + 0.137557I$	$1.49968 - 0.85752I$	$4.35846 + 1.06718I$
$u = 0.359617 + 0.529211I$ $a = 1.00000$ $b = 0.282646 - 0.137557I$	$1.49968 + 0.85752I$	$4.35846 - 1.06718I$

Solution to I_1^u		$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u =$	$0.807171 - 0.504072I$		
$a =$	1.00000	$1.82651 + 4.13679I$	$2.56414 - 7.87070I$
$b =$	$1.22201 + 0.77364I$		
$u =$	$0.807171 + 0.504072I$		
$a =$	1.00000	$1.82651 - 4.13679I$	$2.56414 + 7.87070I$
$b =$	$1.22201 - 0.77364I$		
$u =$	$1.079148 - 0.504952I$		
$a =$	1.00000	$-2.62432 + 9.39287I$	$-3.86862 - 9.95391I$
$b =$	$2.75838 + 0.73276I$		
$u =$	$1.079148 + 0.504952I$		
$a =$	1.00000	$-2.62432 - 9.39287I$	$-3.86862 + 9.95391I$
$b =$	$2.75838 - 0.73276I$		
$u =$	$1.258184 - 0.499599I$		
$a =$	1.00000	$-12.4913 + 13.0634I$	$-7.30770 - 8.20106I$
$b =$	$3.72763 + 0.22914I$		
$u =$	$1.258184 + 0.499599I$		
$a =$	1.00000	$-12.4913 - 13.0634I$	$-7.30770 + 8.20106I$
$b =$	$3.72763 - 0.22914I$		

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

(i) Arc colorings

$a_5 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$

$a_{11} = \begin{pmatrix} -1 \\ -2 \end{pmatrix}$

$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$

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

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

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

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

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

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

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

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

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

(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
$u = \quad 1.00000$ $a = -1.00000$ $b = -2.00000$	-3.28987	-12.0000

III.

$$\boldsymbol{I_3^u = \langle u^{28} - u^{27} + \cdots + 2u - 1,\ u^{27} - 8u^{25} + \cdots + a + 2,\ u^{27} - 9u^{25} + \cdots + b + 2\rangle}$$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u^{27} + 8u^{25} + \cdots + 4u - 2 \\ -u^{27} + 9u^{25} + \cdots + u - 2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -2u^{27} + u^{26} + \cdots + 5u - 3 \\ -2u^{27} + u^{26} + \cdots + u - 2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u^2 + 1 \\ -u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u^4 - u^2 + 1 \\ u^4 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -u^{27} + 8u^{25} + \cdots + 4u - 2 \\ -1 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -2u^{27} + 16u^{25} + \cdots + 4u - 3 \\ -2u^{27} + 16u^{25} + \cdots + u - 2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -2u^{27} + 16u^{25} + \cdots + 4u - 3 \\ -2u^{27} + 16u^{25} + \cdots + u - 2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -2u^{27} + 16u^{25} + \cdots + 3u - 3 \\ -2u^{27} + 16u^{25} + \cdots + u - 2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -2u^{27} + 16u^{25} + \cdots + 3u - 3 \\ -2u^{27} + 16u^{25} + \cdots + u - 2 \end{pmatrix}$$

(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
$u = -1.279725 - 0.439354I$ $a = -0.768303 + 0.625256I$ $b = -2.81304 + 0.03933I$	$-12.94108 + 3.26499I$	$-8.09314 - 2.49004I$
$u = -1.279725 + 0.439354I$ $a = -0.768303 - 0.625256I$ $b = -2.81304 - 0.03933I$	$-12.94108 - 3.26499I$	$-8.09314 + 2.49004I$
$u = -1.255165 - 0.447404I$ $a = -0.216330 - 0.627902I$ $b = -0.592295 - 1.106501I$	$-9.09089 - 1.51934I$	$-4.87778 + 0.64840I$
$u = -1.255165 + 0.447404I$ $a = -0.216330 + 0.627902I$ $b = -0.592295 + 1.106501I$	$-9.09089 + 1.51934I$	$-4.87778 - 0.64840I$
$u = -1.180860 - 0.240994I$ $a = -0.797739 + 0.453035I$ $b = -2.32391 + 0.15137I$	$-4.64212 + 1.98638I$	$-7.34408 - 5.08636I$
$u = -1.180860 + 0.240994I$ $a = -0.797739 - 0.453035I$ $b = -2.32391 - 0.15137I$	$-4.64212 - 1.98638I$	$-7.34408 + 5.08636I$
$u = -1.13074$ $a = -0.679225$ $b = -1.86844$	-2.55923	2.09269
$u = -0.997731 - 0.254321I$ $a = \quad 0.017892 - 0.435939I$ $b = -0.762112 - 0.396686I$	$-1.87700 - 0.85224I$	$-4.40198 + 0.38712I$
$u = -0.997731 + 0.254321I$ $a = \quad 0.017892 + 0.435939I$ $b = -0.762112 + 0.396686I$	$-1.87700 + 0.85224I$	$-4.40198 - 0.38712I$
$u = -0.128720 - 0.430400I$ $a = \quad 0.09399 - 2.29004I$ $b = -0.762112 + 0.396686I$	$-1.87700 + 0.85224I$	$-4.40198 - 0.38712I$

Solution to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.128720 + 0.430400I$ $a = 0.09399 + 2.29004I$ $b = -0.762112 - 0.396686I$	$-1.87700 - 0.85224I$	$-4.40198 + 0.38712I$
$u = -0.009396 - 0.884908I$ $a = -0.49048 - 1.42362I$ $b = -0.592295 + 1.106501I$	$-9.09089 + 1.51934I$	$-4.87778 - 0.64840I$
$u = -0.009396 + 0.884908I$ $a = -0.49048 + 1.42362I$ $b = -0.592295 - 1.106501I$	$-9.09089 - 1.51934I$	$-4.87778 + 0.64840I$
$u = 0.053235 - 0.909759I$ $a = -0.44970 + 1.39586I$ $b = -0.493874 - 1.107781I$	$-8.82756 - 8.01486I$	$-4.36796 + 5.37427I$
$u = 0.053235 + 0.909759I$ $a = -0.44970 - 1.39586I$ $b = -0.493874 + 1.107781I$	$-8.82756 + 8.01486I$	$-4.36796 - 5.37427I$
$u = 0.266232 - 0.686741I$ $a = -0.08865 + 1.51025I$ $b = -0.412229 - 0.572795I$	$-0.31026 - 4.88256I$	$-0.31401 + 6.44337I$
$u = 0.266232 + 0.686741I$ $a = -0.08865 - 1.51025I$ $b = -0.412229 + 0.572795I$	$-0.31026 + 4.88256I$	$-0.31401 - 6.44337I$
$u = 0.644858 - 0.497518I$ $a = 0.253733 + 0.967274I$ $b = -0.336635$	2.27008	4.70520
$u = 0.644858 + 0.497518I$ $a = 0.253733 - 0.967274I$ $b = -0.336635$	2.27008	4.70520
$u = 0.768027$ $a = -1.47227$ $b = -1.86844$	-2.55923	2.09269

Solution to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.013553 - 0.462956I$ $a = -0.038732 + 0.659867I$ $b = -0.412229 + 0.572795I$	$-0.31026 + 4.88256I$	$-0.31401 - 6.44337I$
$u = 1.013553 + 0.462956I$ $a = -0.038732 - 0.659867I$ $b = -0.412229 - 0.572795I$	$-0.31026 - 4.88256I$	$-0.31401 + 6.44337I$
$u = 1.051197 - 0.342720I$ $a = -0.947852 - 0.538284I$ $b = -2.32391 + 0.15137I$	$-4.64212 + 1.98638I$	$-7.34408 - 5.08636I$
$u = 1.051197 + 0.342720I$ $a = -0.947852 + 0.538284I$ $b = -2.32391 - 0.15137I$	$-4.64212 - 1.98638I$	$-7.34408 + 5.08636I$
$u = 1.245953 - 0.483423I$ $a = -0.209098 + 0.649042I$ $b = -0.493874 + 1.107781I$	$-8.82756 + 8.01486I$	$-4.36796 - 5.37427I$
$u = 1.245953 + 0.483423I$ $a = -0.209098 - 0.649042I$ $b = -0.493874 - 1.107781I$	$-8.82756 - 8.01486I$	$-4.36796 + 5.37427I$
$u = 1.257925 - 0.462599I$ $a = -0.782997 - 0.637213I$ $b = -2.81304 + 0.03933I$	$-12.94108 + 3.26499I$	$-8.09314 - 2.49004I$
$u = 1.257925 + 0.462599I$ $a = -0.782997 + 0.637213I$ $b = -2.81304 - 0.03933I$	$-12.94108 - 3.26499I$	$-8.09314 + 2.49004I$

IV. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1, c_5	$(u-1)(u^{16}+u^{15}+\cdots+u+1)(u^{28}+u^{27}+\cdots-2u-1)$
c_2, c_{11}	$(u+1)(u^{16}+9u^{15}+\cdots+3u+1)(u^{28}+17u^{27}+\cdots-4u+1)$
c_3, c_7	u $(-1-u+2u^2+2u^3-2u^4-6u^5+4u^6+6u^7-3u^8-5u^9+4u^{10}+2u^{11}-u^{12}-u^{13}+u^{14})$ $(u^{16}+3u^{15}+\cdots+2u+2)$
c_4, c_{10}	$(u+1)(u^{16}+u^{15}+\cdots+u+1)(u^{28}+u^{27}+\cdots-2u-1)$
c_6, c_8, c_9	u $(1+5u+12u^2+32u^3+62u^4+106u^5+142u^6+152u^7+137u^8+97u^9+62u^{10}+28u^{11}+1$ $(u^{16}+3u^{15}+\cdots-11u^2+4)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_4, c_5 c_{10}	$(y-1)(y^{16}-9y^{15}+\cdots-3y+1)(y^{28}-17y^{27}+\cdots+4y+1)$
c_2, c_{11}	$(y-1)(y^{16}-y^{15}+\cdots+5y+1)(y^{28}-13y^{27}+\cdots-28y+1)$
c_3, c_7	y $(1-5y+12y^2-32y^3+62y^4-106y^5+142y^6-152y^7+137y^8-97y^9+62y^{10}-28y^{11}+13$ $(y^{16}-3y^{15}+\cdots-11y^2+4)$
c_6, c_8, c_9	y $(1-y-52y^2-312y^3-778y^4-914y^5-46y^6+1420y^7+2397y^8+2247y^9+1346y^{10}+520$ $(y^{16}+17y^{15}+\cdots-88y+16)$