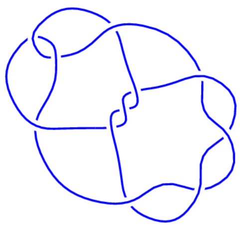
$11a_{142}$ ($K11a_{142}$)



[1]

Arc Sequences

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

Solving Sequence

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

Representation Ideals

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

$$\begin{aligned}
I_1^u &= \langle u^2 + u + 1,\ a,\ b - u - 1\rangle \\
I_2^u &= \langle a^4 + 2a^2 + 4,\ a^2 + 2u,\ a^3 - a^2 + 2b - 2\rangle \\
I_3^u &= \langle u^{35} + 2u^{34} + \cdots - 2u - 1, \\
&\quad 32460619497u^{34} + 81775017971u^{33} + \cdots + 103317924146b + 91675516224, \\
&\quad 7742766828u^{34} + 46632317499u^{33} + \cdots + 103317924146a + 37744598067\rangle
\end{aligned}$$

There are 3 irreducible components with 41 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. $\boldsymbol{I_1^u = \langle u^2 + u + 1,\ a,\ b - u - 1\rangle}$

(i) Arc colorings

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

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

$$a_6 = \begin{pmatrix} u \\ u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u \\ u+1 \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} -u \\ 0 \end{pmatrix}$$

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

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

$$a_9 = \begin{pmatrix} 0 \\ u+1 \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} 0 \\ u+1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0 \\ u+1 \end{pmatrix}$$

(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
$u = -0.500000 - 0.866025I$ $a = 0$ $b = 0.500000 - 0.866025I$	$1.64493 + 2.02988I$	$12.00000 - 3.46410I$
$u = -0.500000 + 0.866025I$ $a = 0$ $b = 0.500000 + 0.866025I$	$1.64493 - 2.02988I$	$12.00000 + 3.46410I$

II. $\boldsymbol{I_2^u = \langle a^4 + 2a^2 + 4,\ a^2 + 2u,\ a^3 - a^2 + 2b - 2 \rangle}$

(i) Arc colorings

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

(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
$u = 0.500000 - 0.866025I$ $a = -0.70711 - 1.22474I$ $b = -0.914214 + 0.866025I$	$6.57974 - 2.02988I$	$14.0000 + 3.4641I$
$u = 0.500000 + 0.866025I$ $a = -0.70711 + 1.22474I$ $b = -0.914214 - 0.866025I$	$6.57974 + 2.02988I$	$14.0000 - 3.4641I$
$u = 0.500000 + 0.866025I$ $a = 0.70711 - 1.22474I$ $b = 1.91421 - 0.86603I$	$6.57974 + 2.02988I$	$14.0000 - 3.4641I$
$u = 0.500000 - 0.866025I$ $a = 0.70711 + 1.22474I$ $b = 1.91421 + 0.86603I$	$6.57974 - 2.02988I$	$14.0000 + 3.4641I$

III.

$\boldsymbol{I_3^u = \langle u^{35} + 2u^{34} + \cdots - 2u - 1,\ 3.25 \times 10^{10} u^{34} + 8.18 \times 10^{10} u^{33} + \cdots + 1.03 \times 10^{11} b + 9.17 \times 10^{10},\ 7.74 \times 10^{9} u^{34} + 4.66 \times 10^{10} u^{33} + \cdots + 1.03 \times 10^{11} a + 3.77 \times 10^{10} \rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -0.0749412u^{34} - 0.451348u^{33} + \cdots + 4.93561u - 0.365325 \\ -0.314182u^{34} - 0.791489u^{33} + \cdots - 0.487129u - 0.887315 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0.0282947u^{34} + 0.237529u^{33} + \cdots + 4.99682u - 0.236186 \\ -0.676103u^{34} - 1.05463u^{33} + \cdots + 0.642125u - 0.275771 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^2 + 1 \\ u^2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -0.666341u^{34} - 1.70708u^{33} + \cdots + 5.66885u + 1.20451 \\ -0.373820u^{34} - 1.21101u^{33} + \cdots + 0.708434u - 0.203556 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0.619075u^{34} + 1.87263u^{33} + \cdots - 3.15772u - 1.08912 \\ -0.129900u^{34} + 0.176302u^{33} + \cdots + 0.145268u - 0.0408582 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u^4 + u^2 + 1 \\ u^4 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 0.275771u^{34} + 1.22764u^{33} + \cdots - 4.02441u - 1.19367 \\ -0.180940u^{34} + 0.145449u^{33} + \cdots + 0.179597u - 0.0282947 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.275771u^{34} + 1.22764u^{33} + \cdots - 4.02441u - 1.19367 \\ -0.180940u^{34} + 0.145449u^{33} + \cdots + 0.179597u - 0.0282947 \end{pmatrix}$$

(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
$u=-0.977766-0.745926I$ $a=-1.037317+0.953863I$ $b=-1.91284-1.19085I$	$-19.2201-4.8251I$	$15.9965+1.0222I$
$u=-0.977766+0.745926I$ $a=-1.037317-0.953863I$ $b=-1.91284+1.19085I$	$-19.2201+4.8251I$	$15.9965-1.0222I$
$u=-0.865217-0.848965I$ $a=\ 0.970540-0.988559I$ $b=\ 2.58373+1.38210I$	$12.35469-0.09189I$	$14.08101-0.09478I$
$u=-0.865217+0.848965I$ $a=\ 0.970540+0.988559I$ $b=\ 2.58373-1.38210I$	$12.35469+0.09189I$	$14.08101+0.09478I$
$u=-0.828085-0.901739I$ $a=\ 0.501820+0.512401I$ $b=\ 0.552852+0.294807I$	$7.57337+3.08858I$	$11.98726-2.45837I$
$u=-0.828085+0.901739I$ $a=\ 0.501820-0.512401I$ $b=\ 0.552852-0.294807I$	$7.57337-3.08858I$	$11.98726+2.45837I$
$u=-0.823406-0.959886I$ $a=-0.909363+0.964576I$ $b=-3.11841-0.86700I$	$12.00652+6.36730I$	$13.30840-4.78387I$
$u=-0.823406+0.959886I$ $a=-0.909363-0.964576I$ $b=-3.11841+0.86700I$	$12.00652-6.36730I$	$13.30840+4.78387I$
$u=-0.821304-1.068831I$ $a=\ 0.880603-0.914960I$ $b=\ 3.01675+0.26510I$	$19.2288+11.4138I$	$14.7783-5.5180I$
$u=-0.821304+1.068831I$ $a=\ 0.880603+0.914960I$ $b=\ 3.01675-0.26510I$	$19.2288-11.4138I$	$14.7783+5.5180I$

Solution to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.636715$ $a=\ \ 1.58822$ $b=\ \ 0.151723$	5.84048	16.2437
$u=-0.598513-0.848442I$ $a=-0.321012-0.258200I$ $b=-0.317779-0.205493I$	$0.70287+2.35372I$	$3.69812-3.90292I$
$u=-0.598513+0.848442I$ $a=-0.321012+0.258200I$ $b=-0.317779+0.205493I$	$0.70287-2.35372I$	$3.69812+3.90292I$
$u=-0.322119-1.048396I$ $a=-0.404877+0.587645I$ $b=-0.822147+0.840804I$	$2.70500+3.34459I$	$11.31994-5.51487I$
$u=-0.322119+1.048396I$ $a=-0.404877-0.587645I$ $b=-0.822147-0.840804I$	$2.70500-3.34459I$	$11.31994+5.51487I$
$u=-0.283578$ $a=-1.44652$ $b=-0.322512$	0.605164	16.5254
$u=-0.126584-0.841634I$ $a=\ \ 0.513118-0.420028I$ $b=\ \ 0.845866-0.040802I$	$-1.54201+1.37506I$	$2.61836-5.92080I$
$u=-0.126584+0.841634I$ $a=\ \ 0.513118+0.420028I$ $b=\ \ 0.845866+0.040802I$	$-1.54201-1.37506I$	$2.61836+5.92080I$
$u=\ \ 0.274108-0.691178I$ $a=-0.349938+0.526472I$ $b=-0.769682-0.835221I$	$1.31539-1.16539I$	$7.47416-2.51618I$
$u=\ \ 0.274108+0.691178I$ $a=-0.349938-0.526472I$ $b=-0.769682+0.835221I$	$1.31539+1.16539I$	$7.47416+2.51618I$

Solution to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.296694 - 0.331969I$ $a = -2.27324 - 2.35258I$ $b = -1.61763 + 0.07335I$	$6.70444 - 0.15451I$	$13.90887 - 1.35548I$
$u = 0.296694 + 0.331969I$ $a = -2.27324 + 2.35258I$ $b = -1.61763 - 0.07335I$	$6.70444 + 0.15451I$	$13.90887 + 1.35548I$
$u = 0.320045 - 1.222315I$ $a = -0.378241 - 1.257204I$ $b = -1.230742 - 0.361738I$	$11.20697 - 4.43486I$	$12.64075 + 3.18316I$
$u = 0.320045 + 1.222315I$ $a = -0.378241 + 1.257204I$ $b = -1.230742 + 0.361738I$	$11.20697 + 4.43486I$	$12.64075 - 3.18316I$
$u = 0.325844 - 0.938180I$ $a = 0.53322 + 1.40211I$ $b = 1.46442 + 0.18768I$	$4.71864 - 2.64789I$	$7.08970 + 4.86854I$
$u = 0.325844 + 0.938180I$ $a = 0.53322 - 1.40211I$ $b = 1.46442 - 0.18768I$	$4.71864 + 2.64789I$	$7.08970 - 4.86854I$
$u = 0.708770 - 0.819682I$ $a = 0.416137 + 0.684166I$ $b = 1.178678 - 0.680992I$	$3.37741 - 0.53913I$	$12.96867 - 0.98562I$
$u = 0.708770 + 0.819682I$ $a = 0.416137 - 0.684166I$ $b = 1.178678 + 0.680992I$	$3.37741 + 0.53913I$	$12.96867 + 0.98562I$
$u = 0.718682 - 0.897135I$ $a = -0.663101 - 0.408390I$ $b = -1.74833 + 0.56292I$	$3.15741 - 4.91553I$	$11.80461 + 7.26359I$
$u = 0.718682 + 0.897135I$ $a = -0.663101 + 0.408390I$ $b = -1.74833 - 0.56292I$	$3.15741 + 4.91553I$	$11.80461 - 7.26359I$

Solution to I_3^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.816316 - 0.988755I$ $a = 0.842961 + 0.239413I$ $b = 1.86931 - 0.35492I$	$10.22046 - 8.11783I$	$13.7681 + 6.1510I$
$u = 0.816316 + 0.988755I$ $a = 0.842961 - 0.239413I$ $b = 1.86931 + 0.35492I$	$10.22046 + 8.11783I$	$13.7681 - 6.1510I$
$u = 0.883114 - 0.814079I$ $a = -0.281639 - 0.925403I$ $b = -0.750242 + 0.337544I$	$10.76678 + 1.81479I$	$14.8433 - 1.1672I$
$u = 0.883114 + 0.814079I$ $a = -0.281639 + 0.925403I$ $b = -0.750242 - 0.337544I$	$10.76678 - 1.81479I$	$14.8433 + 1.1672I$
$u = 0.959133$ $a = 1.77896$ $b = 1.72319$	15.4583	16.6589

IV. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1	$(u^2-u+1)^2(u^2+u+1)(u^{35}+2u^{34}+\cdots-2u-1)$
c_2, c_6	$(u^2+u+1)^3(u^{35}+10u^{34}+\cdots+4u-1)$
c_3, c_4, c_8 c_9	$u^2(u^2-2)^2(u^{35}+u^{34}+\cdots-12u+4)$
c_5	$(u^2-u+1)(u^2+u+1)^2(u^{35}+2u^{34}+\cdots-2u-1)$
c_7	$(u-1)^4(u+1)^2(u^{35}+3u^{34}+\cdots+7u-7)$
c_{10}, c_{11}	$(u-1)^2(u+1)^4(u^{35}+3u^{34}+\cdots+7u-7)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_5	$(y^2+y+1)^3(y^{35}+10y^{34}+\cdots+4y-1)$
c_2, c_6	$(y^2+y+1)^3(y^{35}+34y^{34}+\cdots+108y-1)$
c_3, c_4, c_8 c_9	$y^2(y-2)^4(y^{35}-45y^{34}+\cdots+80y-16)$
c_7, c_{10}, c_{11}	$(y-1)^6(y^{35}-39y^{34}+\cdots+749y-49)$