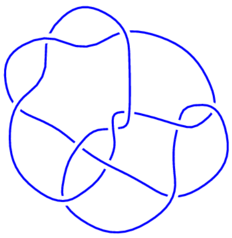
$11n_{110}$ ($K11n_{110}$)



1

Arc Sequences

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

Solving Sequence

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

Representation Ideals

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

$$\begin{aligned}
I_1^u = \langle & u^{10} - 2u^8 + u^7 + 2u^4 - 5u^3 + 4u^2 - u + 1, \\
& -51u^9 + 17u^8 + 128u^7 - 62u^6 - 11u^5 - 28u^4 - 156u^3 + 307u^2 + 95b - 243u + 37, \\
& 79u^9 - 58u^8 - 202u^7 + 178u^6 + 4u^5 - 33u^4 + 169u^3 - 483u^2 + 95a + 572u - 143\rangle \\
I_2^u = \langle & u^{30} + u^{29} + \cdots - u + 3,\ 7.01133 \times 10^{29}u^{29} - 5.45134 \times 10^{29}u^{28} + \cdots + 6.87676 \times 10^{30}b - 6.16413 \times 10^{30}, \\
& -2.02531 \times 10^{31}u^{29} - 2.06823 \times 10^{31}u^{28} + \cdots + 2.06303 \times 10^{31}a + 4.75431 \times 10^{31}\rangle
\end{aligned}$$

There are 2 irreducible components with 40 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. $\boldsymbol{I_1^u = \langle u^{10} - 2u^8 + u^7 + 2u^4 - 5u^3 + 4u^2 - u + 1,\ -51u^9 + 17u^8 + \cdots + 95b + 37,\ 79u^9 - 58u^8 + \cdots + 95a - 143\rangle}$

(i) Arc colorings

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

$$a_{11} = \begin{pmatrix} -0.831579u^9 + 0.610526u^8 + \cdots - 6.02105u + 1.50526 \\ 0.536842u^9 - 0.178947u^8 + \cdots + 2.55789u - 0.389474 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u^9 - u^8 + 2u^7 + u^6 - u^5 - 2u^3 + 3u^2 + u - 2 \\ 0.389474u^9 + 0.536842u^8 + \cdots - 1.67368u + 1.16842 \end{pmatrix}$$

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

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

$$a_5 = \begin{pmatrix} -0.821053u^9 - 0.726316u^8 + \cdots + 0.852632u - 2.46316 \\ 0.210526u^9 + 0.263158u^8 + \cdots - 1.52632u + 1.63158 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -1.02105u^9 + 0.673684u^8 + \cdots - 6.74737u + 1.93684 \\ 0.726316u^9 - 0.242105u^8 + \cdots + 3.28421u - 0.821053 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -1.69474u^9 - 0.768421u^8 + \cdots - 1.66316u - 3.08421 \\ \frac{2}{5}u^9 + \frac{1}{5}u^8 + \cdots - \frac{4}{5}u + \frac{11}{5} \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -0.831579u^9 + 0.610526u^8 + \cdots - 6.02105u + 1.50526 \\ u^9 - 2u^7 + u^6 + 2u^3 - 5u^2 + 4u - 1 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -1.32632u^9 - 0.557895u^8 + \cdots - 1.08421u - 3.97895 \\ 0.821053u^9 + 0.726316u^8 + \cdots - 0.852632u + 2.46316 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 1.51579u^9 - 0.505263u^8 + \cdots + 8.81053u - 3.45263 \\ -0.831579u^9 + 0.610526u^8 + \cdots - 5.02105u + 1.50526 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 1.51579u^9 - 0.505263u^8 + \cdots + 8.81053u - 3.45263 \\ -0.831579u^9 + 0.610526u^8 + \cdots - 5.02105u + 1.50526 \end{pmatrix}$$

(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
$u = -1.49757 - 0.34799I$ $a = 0.499793 - 0.290729I$ $b = -0.729854 - 0.051330I$	$-3.86861 - 3.23765I$	$0.07935 + 4.10700I$
$u = -1.49757 + 0.34799I$ $a = 0.499793 + 0.290729I$ $b = -0.729854 + 0.051330I$	$-3.86861 + 3.23765I$	$0.07935 - 4.10700I$
$u = -0.298418 - 1.046748I$ $a = 0.391518 + 0.620969I$ $b = 1.033941 - 0.503039I$	$0.81616 - 2.31326I$	$-2.65364 + 2.24652I$
$u = -0.298418 + 1.046748I$ $a = 0.391518 - 0.620969I$ $b = 1.033941 + 0.503039I$	$0.81616 + 2.31326I$	$-2.65364 - 2.24652I$
$u = -0.038142 - 0.505061I$ $a = 0.45686 + 3.00794I$ $b = 0.380444 - 1.223427I$	$4.70910 - 3.41496I$	$-0.88361 + 1.66102I$
$u = -0.038142 + 0.505061I$ $a = 0.45686 - 3.00794I$ $b = 0.380444 + 1.223427I$	$4.70910 + 3.41496I$	$-0.88361 - 1.66102I$
$u = 0.728854 - 0.747094I$ $a = 0.194612 + 0.619258I$ $b = -1.338216 - 0.457187I$	$-0.92810 + 4.66670I$	$-4.84081 - 6.38694I$
$u = 0.728854 + 0.747094I$ $a = 0.194612 - 0.619258I$ $b = -1.338216 + 0.457187I$	$-0.92810 - 4.66670I$	$-4.84081 + 6.38694I$
$u = 1.105276 - 0.236790I$ $a = -1.042780 - 0.579452I$ $b = 0.653686 - 0.055765I$	$-2.37349 - 0.80372I$	$-1.70130 + 5.71756I$
$u = 1.105276 + 0.236790I$ $a = -1.042780 + 0.579452I$ $b = 0.653686 + 0.055765I$	$-2.37349 + 0.80372I$	$-1.70130 - 5.71756I$

II.

$$\boldsymbol{I_2^u = \langle u^{30}+u^{29}+\cdots-u+3,\ 7.01\times10^{29}u^{29}-5.45\times10^{29}u^{28}+\cdots+6.88\times10^{30}b-6.16\times10^{30},\ -2.03\times10^{31}u^{29}-2.07\times10^{31}u^{28}+\cdots+2.06\times10^{31}a+4.75\times10^{31}\rangle}$$

(i) Arc colorings

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

$$a_{11} = \begin{pmatrix}0.981717u^{29}+1.00252u^{28}+\cdots+6.54990u-2.30453\\-0.101957u^{29}+0.0792719u^{28}+\cdots+1.58400u+0.896371\end{pmatrix}$$

$$a_4 = \begin{pmatrix}-0.171174u^{29}-0.537001u^{28}+\cdots+0.874298u-1.48983\\0.920838u^{29}+1.53111u^{28}+\cdots+8.89870u+1.81728\end{pmatrix}$$

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

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

$$a_5 = \begin{pmatrix}-0.0967599u^{29}-0.378765u^{28}+\cdots+2.87884u-0.756491\\0.846424u^{29}+1.37287u^{28}+\cdots+6.89415u+1.08394\end{pmatrix}$$

$$a_1 = \begin{pmatrix}1.16177u^{29}+1.28260u^{28}+\cdots+8.98715u-1.69844\\-0.282005u^{29}-0.200805u^{28}+\cdots-0.853251u+0.290280\end{pmatrix}$$

$$a_2 = \begin{pmatrix}-0.479626u^{29}-0.560802u^{28}+\cdots-3.19408u-0.293090\\0.853896u^{29}+1.21011u^{28}+\cdots+6.04638u+0.258826\end{pmatrix}$$

$$a_{10} = \begin{pmatrix}0.981717u^{29}+1.00252u^{28}+\cdots+6.54990u-2.30453\\-0.455808u^{29}-0.362118u^{28}+\cdots-1.34035u+0.833966\end{pmatrix}$$

$$a_6 = \begin{pmatrix}-0.559702u^{29}-1.16445u^{28}+\cdots+0.866034u+0.256872\\0.765369u^{29}+1.71185u^{28}+\cdots+7.64914u+4.71234\end{pmatrix}$$

$$a_7 = \begin{pmatrix}0.241953u^{29}-0.128725u^{28}+\cdots-1.54903u-5.30580\\-0.489529u^{29}-0.357631u^{28}+\cdots-2.75754u+1.62556\end{pmatrix}$$

$$a_7 = \begin{pmatrix}0.241953u^{29}-0.128725u^{28}+\cdots-1.54903u-5.30580\\-0.489529u^{29}-0.357631u^{28}+\cdots-2.75754u+1.62556\end{pmatrix}$$

(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
$u = -1.20349 - 1.15802I$ $a = -0.837597 + 0.568132I$ $b = 1.47811 + 0.10440I$	$10.88757 + 3.99108I$	$1.34517 - 2.29289I$
$u = -1.20349 + 1.15802I$ $a = -0.837597 - 0.568132I$ $b = 1.47811 - 0.10440I$	$10.88757 - 3.99108I$	$1.34517 + 2.29289I$
$u = -1.116605 - 0.020132I$ $a = 1.045224 + 0.221858I$ $b = -0.560758 - 0.205214I$	$-2.62675 - 0.08468I$	$-4.72619 - 2.64005I$
$u = -1.116605 + 0.020132I$ $a = 1.045224 - 0.221858I$ $b = -0.560758 + 0.205214I$	$-2.62675 + 0.08468I$	$-4.72619 + 2.64005I$
$u = -1.07609 - 1.18578I$ $a = 0.548246 - 1.054381I$ $b = -1.65500 + 0.65507I$	$11.2229 - 12.5494I$	$0.76232 + 6.35479I$
$u = -1.07609 + 1.18578I$ $a = 0.548246 + 1.054381I$ $b = -1.65500 - 0.65507I$	$11.2229 + 12.5494I$	$0.76232 - 6.35479I$
$u = -0.899919 - 0.738427I$ $a = 0.648903 - 0.426245I$ $b = -1.58129 + 0.11364I$	$0.32537 - 4.54381I$	$1.91240 + 4.46685I$
$u = -0.899919 + 0.738427I$ $a = 0.648903 + 0.426245I$ $b = -1.58129 - 0.11364I$	$0.32537 + 4.54381I$	$1.91240 - 4.46685I$
$u = -0.605367 - 1.027857I$ $a = 0.148214 + 1.032035I$ $b = 0.998159 - 0.324362I$	$1.65136 - 1.24421I$	$1.024611 - 0.505616I$
$u = -0.605367 + 1.027857I$ $a = 0.148214 - 1.032035I$ $b = 0.998159 + 0.324362I$	$1.65136 + 1.24421I$	$1.024611 + 0.505616I$

Solution to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.333418 - 0.491825I$ $a = 0.457016 + 0.878069I$ $b = -0.066357 - 0.474768I$	$-0.104103 - 1.239119I$	$-1.20094 + 5.47066I$
$u = -0.333418 + 0.491825I$ $a = 0.457016 - 0.878069I$ $b = -0.066357 + 0.474768I$	$-0.104103 + 1.239119I$	$-1.20094 - 5.47066I$
$u = -0.269585 - 0.962091I$ $a = 0.120660 + 0.861970I$ $b = 1.140285 - 0.736299I$	$1.43336 - 3.12326I$	$2.11949 + 6.95210I$
$u = -0.269585 + 0.962091I$ $a = 0.120660 - 0.861970I$ $b = 1.140285 + 0.736299I$	$1.43336 + 3.12326I$	$2.11949 - 6.95210I$
$u = 0.020674 - 0.772128I$ $a = 0.42115 + 2.51775I$ $b = 0.0536954 + 0.0853904I$	$5.64984 - 3.06569I$	$7.90048 + 1.52459I$
$u = 0.020674 + 0.772128I$ $a = 0.42115 - 2.51775I$ $b = 0.0536954 - 0.0853904I$	$5.64984 + 3.06569I$	$7.90048 - 1.52459I$
$u = 0.173082 - 0.653523I$ $a = -0.20992 - 2.06536I$ $b = 0.15519 + 2.17942I$	$5.14615 + 3.90437I$	$9.12338 - 9.65977I$
$u = 0.173082 + 0.653523I$ $a = -0.20992 + 2.06536I$ $b = 0.15519 - 2.17942I$	$5.14615 - 3.90437I$	$9.12338 + 9.65977I$
$u = 0.187483 - 0.399716I$ $a = -2.05853 - 0.16469I$ $b = -1.049510 - 0.300006I$	$-0.95851 + 2.62649I$	$-5.25510 - 4.40076I$
$u = 0.187483 + 0.399716I$ $a = -2.05853 + 0.16469I$ $b = -1.049510 + 0.300006I$	$-0.95851 - 2.62649I$	$-5.25510 + 4.40076I$

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.427524 - 0.839075I$ $a = -0.581735 - 0.280785I$ $b = 1.62693 - 0.17110I$	$3.55287 - 0.89069I$	$4.27167 + 0.33793I$
$u = 0.427524 + 0.839075I$ $a = -0.581735 + 0.280785I$ $b = 1.62693 + 0.17110I$	$3.55287 + 0.89069I$	$4.27167 - 0.33793I$
$u = 0.721305 - 0.682042I$ $a = -0.24593 + 1.66689I$ $b = -1.106171 - 0.510090I$	$2.53446 + 5.24872I$	$0.77194 - 8.29520I$
$u = 0.721305 + 0.682042I$ $a = -0.24593 - 1.66689I$ $b = -1.106171 + 0.510090I$	$2.53446 - 5.24872I$	$0.77194 + 8.29520I$
$u = 1.02997 - 1.17794I$ $a = -0.685808 - 0.944877I$ $b = 1.75451 + 0.55706I$	$12.05585 + 5.16332I$	$1.89858 - 2.30543I$
$u = 1.02997 + 1.17794I$ $a = -0.685808 + 0.944877I$ $b = 1.75451 - 0.55706I$	$12.05585 - 5.16332I$	$1.89858 + 2.30543I$
$u = 1.18215 - 1.08924I$ $a = 0.875701 + 0.808086I$ $b = -1.52906 - 0.04459I$	$11.56267 + 3.12726I$	$1.97467 - 2.33151I$
$u = 1.18215 + 1.08924I$ $a = 0.875701 - 0.808086I$ $b = -1.52906 + 0.04459I$	$11.56267 - 3.12726I$	$1.97467 + 2.33151I$
$u = 1.262288 - 0.300892I$ $a = -0.312270 - 0.344335I$ $b = -0.158737 + 0.404400I$	$-4.76031 + 3.13588I$	$-9.92249 - 3.96046I$
$u = 1.262288 + 0.300892I$ $a = -0.312270 + 0.344335I$ $b = -0.158737 - 0.404400I$	$-4.76031 - 3.13588I$	$-9.92249 + 3.96046I$

III. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1	$(u^{10}+u^9+3u^8+2u^7+5u^6+2u^5+5u^4+3u^2+1)$ $(u^{30}+3u^{28}+\cdots+6u+1)$
c_2	$(u^{10}+5u^9+\cdots+6u+1)(u^{30}+6u^{29}+\cdots+4u+1)$
c_3	$(u^{10}-2u^8+2u^7+u^6-5u^5+4u^4+4u^3-4u^2-u+1)$ $(u^{30}+u^{29}+\cdots-5u+1)$
c_4, c_5	$(u^{10}-u^9-4u^8+4u^7+4u^6-5u^5+u^4+2u^3-2u^2+1)$ $(u^{30}+u^{27}+\cdots-4u+19)$
c_6	$(u^{10}-u^9+3u^8-2u^7+5u^6-2u^5+5u^4+3u^2+1)$ $(u^{30}+3u^{28}+\cdots+6u+1)$
c_7	$(u^{10}+u^9-4u^8-4u^7+6u^6+7u^5-2u^4-6u^3-u^2+2u+1)$ $(u^{30}-20u^{28}+\cdots+702u+143)$
c_8	$(u^{10}-2u^8+\cdots+u+1)(u^{30}+u^{29}+\cdots-u+3)$
c_9	$(u^{10}+u^9-4u^8-4u^7+4u^6+5u^5+u^4-2u^3-2u^2+1)$ $(u^{30}+u^{27}+\cdots-4u+19)$
c_{10}	$(u^{10}-u^9-4u^8+4u^7+6u^6-7u^5-2u^4+6u^3-u^2-2u+1)$ $(u^{30}-20u^{28}+\cdots+702u+143)$
c_{11}	$(u^{10}+u^9+3u^8+u^6-2u^5+3u^4+u^3+2u^2+1)$ $(u^{30}+4u^{29}+\cdots+14u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_6	$(y^{10}+5y^9+\cdots+6y+1)(y^{30}+6y^{29}+\cdots+4y+1)$
c_2	$(y^{10}+5y^9+\cdots+2y+1)(y^{30}+42y^{29}+\cdots+124y+1)$
c_3	$(y^{10}-4y^9+6y^8-3y^6-15y^5+48y^4-56y^3+32y^2-9y+1)$ $(y^{30}-27y^{29}+\cdots+89y+1)$
c_4, c_5, c_9	$(y^{10}-9y^9+32y^8-56y^7+48y^6-15y^5-3y^4+6y^2-4y+1)$ $(y^{30}+30y^{28}+\cdots+5798y+361)$
c_7	$(y^{10}-9y^9+\cdots-6y+1)(y^{30}-40y^{29}+\cdots-169052y+20449)$
c_8	$(y^{10}-4y^9+4y^8+3y^7-4y^5+2y^4-9y^3+10y^2+7y+1)$ $(y^{30}+y^{29}+\cdots+149y+9)$
c_{10}	$(y^{10}-9y^9+\cdots-6y+1)(y^{30}-40y^{29}+\cdots-169052y+20449)$
c_{11}	$(y^{10}+5y^9+\cdots+4y+1)(y^{30}+30y^{29}+\cdots-30y+1)$