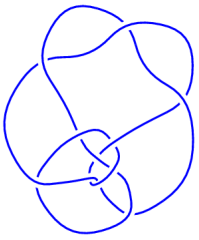
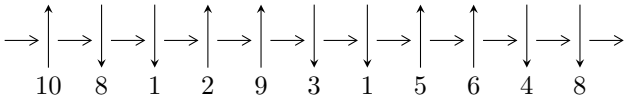
$11n_{153}$ $(K11n_{153})$



[1]

Arc Sequences



Solving Sequence

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

Representation Ideals

$$I = \bigcap_{i=1}^{4} I_i^u$$

$I_1^u = \langle u^3 - 3u^2 + 2u - 1,\ -u^2 + a + 2u,\ -u^2 + b + 2u - 1 \rangle$

$I_2^u = \langle u^5 - 3u^4 + 3u^3 - 2u^2 + u - 1,\ a + u - 1,\ u^2 + b - u \rangle$

$I_3^u = \langle u^{18} + 9u^{17} + \cdots + 33u - 8,$

$969784110565u^{17} + 7522067922888u^{16} + \cdots + 32132860254447b - 9008416143977,$

$9008416143977u^{17} + 73317472411273u^{16} + \cdots + 25706288203576a + 26276930799793 \rangle$

$I_4^u = \langle b^{18} - b^{17} + \cdots - 70b - 19,\ 3.35795 \times 10^{20}u + 5.79878 \times 10^{18}b^{17} + \cdots - 4.39752 \times 10^{20}b + 7.50029 \times 10^{18},$

$4.88581 \times 10^{19}b^{17} - 6.01792 \times 10^{19}b^{16} + \cdots + 1.00738 \times 10^{21}a - 2.23126 \times 10^{21} \rangle$

There are 4 irreducible components with 44 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. $I_1^u = \langle u^3 - 3u^2 + 2u - 1,\ -u^2 + a + 2u,\ -u^2 + b + 2u - 1 \rangle$

(i) Arc colorings

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

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

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

$$a_8 = \begin{pmatrix} u^2 - 2u \\ u^2 - 2u + 1 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -u^2 + 3u - 1 \\ -u^2 + 2u - 1 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u^2 - 2u \\ 0 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 2u^2 - 4u + 1 \\ u^2 - 2u + 1 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} u^2 - 3u \\ -u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -u + 2 \\ -u^2 + u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -u + 2 \\ -u + 1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u^2 - 2u + 1 \\ u^2 - 2u + 1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u^2 - 2u + 1 \\ u^2 - 2u + 1 \end{pmatrix}$$

(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
$u = 0.337641 - 0.562280I$ $a = -0.877439 + 0.744862I$ $b = 0.122561 + 0.744862I$	$1.37919 + 2.82812I$	$3.95284 - 7.28057I$
$u = 0.337641 + 0.562280I$ $a = -0.877439 - 0.744862I$ $b = 0.122561 - 0.744862I$	$1.37919 - 2.82812I$	$3.95284 + 7.28057I$
$u = 2.32472$ $a = 0.754878$ $b = 1.75488$	-2.75839	4.09432

II. $I_2^u = \langle u^5 - 3u^4 + 3u^3 - 2u^2 + u - 1,\ a + u - 1,\ u^2 + b - u \rangle$

(i) Arc colorings

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

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

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

$$a_8 = \begin{pmatrix} -u+1 \\ -u^2+u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -u^4+3u^3-3u^2+2u \\ -u^2+2u-1 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u^4-3u^3+3u^2-u-1 \\ -u^3+3u^2-2u+1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^2+1 \\ -u^2+u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} u^3-2u^2+1 \\ u^3-2u^2+u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -u^3+2u^2-u+1 \\ -u^4+2u^3-u^2 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -u^3+2u^2-u+1 \\ -u+1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 2u^4-6u^3+5u^2-2u \\ u^4-3u^3+3u^2-3u+1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 2u^4-6u^3+5u^2-2u \\ u^4-3u^3+3u^2-3u+1 \end{pmatrix}$$

(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
$u=-0.216341-0.655213I$ $a=\ 1.216341+0.655213I$ $b=\ 0.166160-0.938713I$	$8.18698+5.82350I$	$7.02930-4.66310I$
$u=-0.216341+0.655213I$ $a=\ 1.216341-0.655213I$ $b=\ 0.166160+0.938713I$	$8.18698-5.82350I$	$7.02930+4.66310I$
$u=\ 0.761946-0.720973I$ $a=\ 0.238054+0.720973I$ $b=\ 0.701186+0.377712I$	$1.60363+2.70217I$	$-2.62337-3.99219I$
$u=\ 0.761946+0.720973I$ $a=\ 0.238054-0.720973I$ $b=\ 0.701186-0.377712I$	$1.60363-2.70217I$	$-2.62337+3.99219I$
$u=\ 1.90879$ $a=-0.908791$ $b=-1.73469$	-6.42175	-5.81187

III. $I_3^u =$
$\langle u^{18}+9u^{17}+\cdots+33u-8,\ 9.70\times10^{11}u^{17}+7.52\times10^{12}u^{16}+\cdots+3.21\times10^{12}b-9.01\times10^{12},\ 9.01\times10^{12}u^{17}+7.33\times10^{13}u^{16}+\cdots+2.57\times10^{13}a+2.63\times10^{13}\rangle$

(i) Arc colorings

$$a_1 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_4 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_3 = \begin{pmatrix}u\\u\end{pmatrix}$$
$$a_8 = \begin{pmatrix}-0.350436u^{17}-2.85212u^{16}+\cdots-14.9807u-1.02220\\-0.301804u^{17}-2.34093u^{16}+\cdots-10.5422u+2.80349\end{pmatrix}$$
$$a_2 = \begin{pmatrix}0.0586285u^{17}+0.559036u^{16}+\cdots+5.76685u+2.68018\\-0.0313795u^{17}-0.210283u^{16}+\cdots+0.254559u-0.469028\end{pmatrix}$$
$$a_5 = \begin{pmatrix}0.0586285u^{17}+0.559036u^{16}+\cdots+4.76685u+1.68018\\0.0527118u^{17}+0.425712u^{16}+\cdots+3.31946u-0.795048\end{pmatrix}$$
$$a_7 = \begin{pmatrix}-0.652241u^{17}-5.19305u^{16}+\cdots-25.5229u+1.78129\\-0.301804u^{17}-2.34093u^{16}+\cdots-10.5422u+2.80349\end{pmatrix}$$
$$a_6 = \begin{pmatrix}-0.276927u^{17}-2.23530u^{16}+\cdots-12.7599u-0.633144\\0.0735089u^{17}+0.616821u^{16}+\cdots+2.22084u+0.389054\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}0.291572u^{17}+2.39120u^{16}+\cdots+14.0411u+1.34761\\0.232943u^{17}+1.83217u^{16}+\cdots+9.27426u-2.33257\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}0.291572u^{17}+2.39120u^{16}+\cdots+14.0411u+1.34761\\-0.0313795u^{17}-0.210283u^{16}+\cdots-0.745441u-0.469028\end{pmatrix}$$
$$a_9 = \begin{pmatrix}-0.0193074u^{17}-0.219829u^{16}+\cdots-2.30793u+0.0872167\\0.0800737u^{17}+0.621888u^{16}+\cdots+2.27998u+0.0473338\end{pmatrix}$$
$$a_9 = \begin{pmatrix}-0.0193074u^{17}-0.219829u^{16}+\cdots-2.30793u+0.0872167\\0.0800737u^{17}+0.621888u^{16}+\cdots+2.27998u+0.0473338\end{pmatrix}$$

(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
$u=-1.85738-0.59535I$ $a=-0.989524+0.084101I$ $b=-1.88799-0.43291I$	$-1.17978-13.07450I$	$0.56098+6.39967I$
$u=-1.85738+0.59535I$ $a=-0.989524-0.084101I$ $b=-1.88799+0.43291I$	$-1.17978+13.07450I$	$0.56098-6.39967I$
$u=-1.77246-0.37808I$ $a=\ \ 1.060537-0.004179I$ $b=\ \ 1.88134+0.39356I$	$-7.47923-8.86125I$	$-3.00235+6.30100I$
$u=-1.77246+0.37808I$ $a=\ \ 1.060537+0.004179I$ $b=\ \ 1.88134-0.39356I$	$-7.47923+8.86125I$	$-3.00235-6.30100I$
$u=-1.56461-0.17007I$ $a=-1.212666-0.097343I$ $b=-1.88079-0.35855I$	$-6.68818-3.40005I$	$-2.59654+3.50270I$
$u=-1.56461+0.17007I$ $a=-1.212666+0.097343I$ $b=-1.88079+0.35855I$	$-6.68818+3.40005I$	$-2.59654-3.50270I$
$u=-1.09266$ $a=\ \ 1.66916$ $b=\ \ 1.82383$	2.25932	7.45688
$u=-0.843032-0.524058I$ $a=\ \ 0.586941-1.246718I$ $b=\ \ 1.148163-0.743433I$	$2.18663-2.73072I$	$12.5447+6.6202I$
$u=-0.843032+0.524058I$ $a=\ \ 0.586941+1.246718I$ $b=\ \ 1.148163+0.743433I$	$2.18663+2.73072I$	$12.5447-6.6202I$
$u=\ \ 0.177652$ $a=-4.24705$ $b=\ \ 0.754498$	3.37072	0.911937

Solution to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.305459 - 0.432561I$ $a = 0.854284 + 0.273373I$ $b = -0.379199 + 0.286025I$	$-0.589102 + 1.103263I$	$-3.61302 - 5.14507I$
$u = 0.305459 + 0.432561I$ $a = 0.854284 - 0.273373I$ $b = -0.379199 - 0.286025I$	$-0.589102 - 1.103263I$	$-3.61302 + 5.14507I$
$u = 0.32355 - 1.54849I$ $a = -0.154189 + 0.448176I$ $b = -0.644108 - 0.383768I$	$5.90785 + 4.79162I$	$2.11811 - 3.69242I$
$u = 0.32355 + 1.54849I$ $a = -0.154189 - 0.448176I$ $b = -0.644108 + 0.383768I$	$5.90785 - 4.79162I$	$2.11811 + 3.69242I$
$u = 0.439225 - 1.123515I$ $a = 0.064923 - 0.354238I$ $b = 0.369476 + 0.228533I$	$0.29930 + 2.83434I$	$-6.26246 - 4.02020I$
$u = 0.439225 + 1.123515I$ $a = 0.064923 + 0.354238I$ $b = 0.369476 - 0.228533I$	$0.29930 - 2.83434I$	$-6.26246 + 4.02020I$
$u = 0.926749 - 0.681554I$ $a = -0.358863 + 0.335448I$ $b = 0.103949 - 0.555460I$	$3.08255 + 2.45502I$	$4.56614 - 2.39715I$
$u = 0.926749 + 0.681554I$ $a = -0.358863 - 0.335448I$ $b = 0.103949 + 0.555460I$	$3.08255 - 2.45502I$	$4.56614 + 2.39715I$

IV.

$\boldsymbol{I_4^u = \langle b^{18}-b^{17}+\cdots-70b-19,\ 3.36\times10^{20}u+5.80\times10^{18}b^{17}+\cdots-4.40\times10^{20}b+7.50\times10^{18},\ 4.89\times10^{19}b^{17}-6.02\times10^{19}b^{16}+\cdots+1.01\times10^{21}a-2.23\times10^{21}\rangle}$

(i) Arc colorings

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

$$a_4 = \begin{pmatrix}0\\-0.0172688b^{17}+0.0349802b^{16}+\cdots+1.30959b-0.0223359\end{pmatrix}$$

$$a_3 = \begin{pmatrix}-0.0172688b^{17}+0.0349802b^{16}+\cdots+1.30959b-0.0223359\\-0.0172688b^{17}+0.0349802b^{16}+\cdots+1.30959b-0.0223359\end{pmatrix}$$

$$a_8 = \begin{pmatrix}-0.0484999b^{17}+0.0597380b^{16}+\cdots+7.01651b+2.21491\\b\end{pmatrix}$$

$$a_2 = \begin{pmatrix}-0.00407516b^{17}+0.00703124b^{16}+\cdots+0.405138b+2.16792\\-0.0187030b^{17}+0.0307489b^{16}+\cdots+1.70748b+0.618813\end{pmatrix}$$

$$a_5 = \begin{pmatrix}-0.0630446b^{17}+0.125017b^{16}+\cdots+5.10884b-0.145509\\-0.00338953b^{17}+0.0357340b^{16}+\cdots-0.461913b-1.39790\end{pmatrix}$$

$$a_7 = \begin{pmatrix}-0.0484999b^{17}+0.0597380b^{16}+\cdots+8.01651b+2.21491\\b\end{pmatrix}$$

$$a_6 = \begin{pmatrix}-0.0501779b^{17}+0.0916511b^{16}+\cdots+7.57612b+0.906895\\-0.00167799b^{17}+0.0319131b^{16}+\cdots+0.559617b-1.30801\end{pmatrix}$$

$$a_{11} = \begin{pmatrix}-0.0112381b^{17}+0.0200761b^{16}+\cdots+1.18009b+1.92150\\-b^2\end{pmatrix}$$

$$a_{10} = \begin{pmatrix}-0.0112381b^{17}+0.0200761b^{16}+\cdots+1.18009b+1.92150\\-0.0172688b^{17}+0.0349802b^{16}+\cdots+1.30959b-0.0223359\end{pmatrix}$$

$$a_9 = \begin{pmatrix}0.0112234b^{17}-0.0124132b^{16}+\cdots-3.65216b+1.32808\\-0.0518292b^{17}+0.0784022b^{16}+\cdots+2.67123b+2.63473\end{pmatrix}$$

$$a_9 = \begin{pmatrix}0.0112234b^{17}-0.0124132b^{16}+\cdots-3.65216b+1.32808\\-0.0518292b^{17}+0.0784022b^{16}+\cdots+2.67123b+2.63473\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes =unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \quad 1.84670 + 0.28282I$ $a = -0.800440 + 0.197532I$ $b = -1.82421 - 0.34894I$	$-6.54435 - 1.10969I$	$-7.44626 + 6.23947I$
$u = \quad 1.84670 - 0.28282I$ $a = -0.800440 - 0.197532I$ $b = -1.82421 + 0.34894I$	$-6.54435 + 1.10969I$	$-7.44626 - 6.23947I$
$u = \quad 2.34883$ $a = -0.914908$ $b = -1.55835$	-3.74294	-6.33330
$u = \quad 1.56322 - 0.67610I$ $a = -1.125691 - 0.064721I$ $b = -1.374430 - 0.128030I$	$-1.41694 + 3.41073I$	$-2.11762 - 4.39642I$
$u = \quad 1.56322 + 0.67610I$ $a = -1.125691 + 0.064721I$ $b = -1.374430 + 0.128030I$	$-1.41694 - 3.41073I$	$-2.11762 + 4.39642I$
$u = -0.429712 + 0.174291I$ $a = \quad 0.891018 - 0.617423I$ $b = -0.331141 - 1.139144I$	$0.48389 - 2.21388I$	$-3.75885 + 3.04598I$
$u = -0.429712 - 0.174291I$ $a = \quad 0.891018 + 0.617423I$ $b = -0.331141 + 1.139144I$	$0.48389 + 2.21388I$	$-3.75885 - 3.04598I$
$u = -0.654621 - 0.397677I$ $a = -0.53124 - 1.95480I$ $b = -0.307920 - 0.142926I$	$6.88147 + 5.50049I$	$-0.51063 - 2.97298I$
$u = -0.654621 + 0.397677I$ $a = -0.53124 + 1.95480I$ $b = -0.307920 + 0.142926I$	$6.88147 - 5.50049I$	$-0.51063 + 2.97298I$
$u = -0.429712 + 0.174291I$ $a = \quad 0.26158 - 2.54485I$ $b = \quad 0.275270 - 0.420610I$	$0.48389 - 2.21388I$	$-3.75885 + 3.04598I$

Solution to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.429712-0.174291I$ $a=\ 0.26158+2.54485I$ $b=\ 0.275270+0.420610I$	$0.48389+2.21388I$	$-3.75885-3.04598I$
$u=-0.654621-0.397677I$ $a=-0.440463+0.049244I$ $b=\ 0.42962-1.49091I$	$6.88147+5.50049I$	$-0.51063-2.97298I$
$u=-0.654621+0.397677I$ $a=-0.440463-0.049244I$ $b=\ 0.42962+1.49091I$	$6.88147-5.50049I$	$-0.51063+2.97298I$
$u=\ 1.84670+0.28282I$ $a=\ 0.993459+0.036806I$ $b=\ 1.53404-0.13840I$	$-6.54435-1.10969I$	$-7.44626+6.23947I$
$u=\ 1.84670-0.28282I$ $a=\ 0.993459-0.036806I$ $b=\ 1.53404+0.13840I$	$-6.54435+1.10969I$	$-7.44626-6.23947I$
$u=\ 1.56322-0.67610I$ $a=\ 0.710837+0.389342I$ $b=\ 1.80346-0.65991I$	$-1.41694+3.41073I$	$-2.11762-4.39642I$
$u=\ 1.56322+0.67610I$ $a=\ 0.710837-0.389342I$ $b=\ 1.80346+0.65991I$	$-1.41694-3.41073I$	$-2.11762+4.39642I$
$u=\ 2.34883$ $a=\ 0.663457$ $b=\ 2.14896$	-3.74294	-6.33330

V. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1, c_4	$(u^3-u+1)(u^5-2u^4+\cdots-u+1)(u^{18}+2u^{17}+\cdots-2u+1)$ $(u^{18}+7u^{17}+\cdots+18u+1)$
c_2	$(u^3-3u^2+2u-1)(u^5+3u^4+4u^3+3u^2+u+1)$ $(u^{18}-2u^{16}+\cdots+5u-1)(u^{18}+u^{17}+\cdots+80u-47)$
c_3	$(u^3+3u^2+2u+1)(u^5+3u^4+3u^3+2u^2+u+1)$ $(u^9+7u^8+16u^7+7u^6-19u^5-11u^4+20u^3+6u^2-11u+3)^2$ $(u^{18}-9u^{17}+\cdots-33u-8)$
c_5	$(u^3-u-1)(u^5-u^4-3u^3+2u^2+3u-1)$ $(u^9-u^8-4u^7+3u^6+5u^5-u^4-2u^3-2u^2+u-1)^2$ $(u^{18}+6u^{17}+\cdots-3u+2)$
c_6, c_{11}	$(u^3-2u^2+u-1)(u^5-u^3+\cdots-2u+1)(u^{18}-13u^{16}+\cdots+u+1)$ $(u^{18}+u^{17}+\cdots+70u-19)$
c_7	$(u^3+2u^2+u+1)(u^5-u^3+\cdots-2u-1)(u^{18}-13u^{16}+\cdots+u+1)$ $(u^{18}+u^{17}+\cdots+70u-19)$
c_8, c_9	$(u^3-u+1)(u^5+u^4-3u^3-2u^2+3u+1)$ $(u^9-u^8-4u^7+3u^6+5u^5-u^4-2u^3-2u^2+u-1)^2$ $(u^{18}+6u^{17}+\cdots-3u+2)$
c_{10}	$(u+1)^{18}(u^3-u^2+1)(u^5-u^4+u^3+u^2-2u+1)$ $(u^{18}-17u^{17}+\cdots-4352u+512)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_4	$(y^3-2y^2+y-1)(y^5-2y^4+3y^3+y^2-y-1)$ $(y^{18}-5y^{17}+\cdots-156y+1)(y^{18}+2y^{17}+\cdots-2y+1)$
c_2	$(y^3-5y^2-2y-1)(y^5-y^4-7y^2-5y-1)$ $(y^{18}-9y^{17}+\cdots-34788y+2209)(y^{18}-4y^{17}+\cdots-35y+1)$
c_3	$(y^3-5y^2-2y-1)(y^5-3y^4-y^3-4y^2-3y-1)$ $(-9+85y-410y^2+908y^3-1359y^4+1049y^5-463y^6+120y^7-17y^8+y^9)^2$ $(y^{18}-13y^{17}+\cdots-2017y+64)$
c_5, c_8, c_9	$(y^3-2y^2+y-1)(y^5-7y^4+19y^3-24y^2+13y-1)$ $(y^9-9y^8+32y^7-55y^6+45y^5-19y^4+16y^3-10y^2-3y-1)^2$ $(y^{18}-18y^{17}+\cdots+35y+4)$
c_6, c_7, c_{11}	$(y^3-2y^2-3y-1)(y^5-2y^4-3y^3-1)(y^{18}-26y^{17}+\cdots-7y+1)$ $(y^{18}-21y^{17}+\cdots-3456y+361)$
c_{10}	$(y-1)^{18}(y^3-y^2+2y-1)(y^5+y^4-y^3-3y^2+2y-1)$ $(y^{18}-y^{17}+\cdots+458752y+262144)$