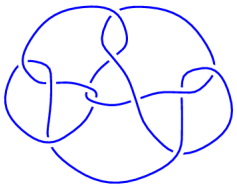
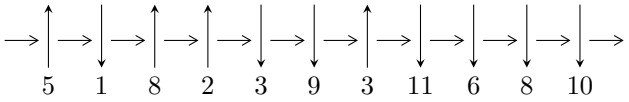
$11n_7$ ($K11n_7$)



[1]

Arc Sequences



Solving Sequence

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

Representation Ideals

$$I = I_1^u \bigcap I_1^v$$

$$\begin{aligned} I_1^u = \langle & u^{39} - 3u^{38} + \cdots + 160u - 64, \\ & - 1.35871 \times 10^{74} u^{38} + 4.22296 \times 10^{74} u^{37} + \cdots + 6.78965 \times 10^{75} b - 7.58203 \times 10^{75}, \\ & 1.97322 \times 10^{74} u^{38} - 5.74566 \times 10^{74} u^{37} + \cdots + 1.35793 \times 10^{76} a + 2.27616 \times 10^{76} \rangle \end{aligned}$$

$$I_1^v = \langle b^6 + 3b^5 + 7b^4 + 4b^3 + b^2 + 2b + 1,\ -19b^5 - 45b^4 - 105b^3 - 11b^2 - 15b + v - 30,\ a \rangle$$

There are 2 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. $I_1^u =$
$\langle u^{39}-3u^{38}+\cdots+160u-64,\ -1.36\times10^{74}u^{38}+4.22\times10^{74}u^{37}+\cdots+6.79\times10^{75}b-7.58\times10^{75},\ 1.97\times10^{74}u^{38}-5.75\times10^{74}u^{37}+\cdots+1.36\times10^{76}a+2.28\times10^{76}\rangle$

(i) Arc colorings

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

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

$$a_4 = \begin{pmatrix}1\\-u^2\end{pmatrix}$$

$$a_{11} = \begin{pmatrix}-0.0145311u^{38}+0.0423119u^{37}+\cdots+4.20910u-1.67620\\0.0200115u^{38}-0.0621970u^{37}+\cdots-9.61102u+1.11671\end{pmatrix}$$

$$a_9 = \begin{pmatrix}-0.0207767u^{38}+0.0602462u^{37}+\cdots+2.06543u-0.671114\\0.0162503u^{38}-0.0497470u^{37}+\cdots-7.62454u+0.958859\end{pmatrix}$$

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

$$a_6 = \begin{pmatrix}0.00471591u^{38}-0.00996442u^{37}+\cdots+5.08469u-0.806754\\0.00561330u^{38}-0.0187349u^{37}+\cdots-2.86181u+0.381508\end{pmatrix}$$

$$a_5 = \begin{pmatrix}0.0103292u^{38}-0.0286993u^{37}+\cdots+2.22288u-0.425246\\0.00561330u^{38}-0.0187349u^{37}+\cdots-2.86181u+0.381508\end{pmatrix}$$

$$a_{10} = \begin{pmatrix}-0.0145311u^{38}+0.0423119u^{37}+\cdots+4.20910u-1.67620\\0.0200871u^{38}-0.0633748u^{37}+\cdots-8.88605u+1.19871\end{pmatrix}$$

$$a_1 = \begin{pmatrix}-0.0103292u^{38}+0.0286993u^{37}+\cdots-2.22288u+0.425246\\0.00178031u^{38}-0.00566997u^{37}+\cdots-2.56686u+0.527957\end{pmatrix}$$

$$a_2 = \begin{pmatrix}0.000822752u^{38}+0.00351950u^{37}+\cdots+2.47747u+0.115491\\-0.00249633u^{38}+0.00737375u^{37}+\cdots+1.50215u+0.140681\end{pmatrix}$$

$$a_2 = \begin{pmatrix}0.000822752u^{38}+0.00351950u^{37}+\cdots+2.47747u+0.115491\\-0.00249633u^{38}+0.00737375u^{37}+\cdots+1.50215u+0.140681\end{pmatrix}$$

(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
$u=-1.015771-0.563299I$ $a=-0.400629+0.467419I$ $b=-0.589409-0.852841I$	$1.33536+1.46808I$	$4.04275-4.37387I$
$u=-1.015771+0.563299I$ $a=-0.400629-0.467419I$ $b=-0.589409+0.852841I$	$1.33536-1.46808I$	$4.04275+4.37387I$
$u=-0.764144-0.288695I$ $a=1.26262-0.65906I$ $b=-0.15031+1.56666I$	$-2.82585+1.96097I$	$-4.21009-0.40138I$
$u=-0.764144+0.288695I$ $a=1.26262+0.65906I$ $b=-0.15031-1.56666I$	$-2.82585-1.96097I$	$-4.21009+0.40138I$
$u=-0.58641-1.60233I$ $a=0.021261+0.795333I$ $b=-0.05289-2.62347I$	$-5.09332+8.17367I$	$-3.75441-5.17214I$
$u=-0.58641+1.60233I$ $a=0.021261-0.795333I$ $b=-0.05289+2.62347I$	$-5.09332-8.17367I$	$-3.75441+5.17214I$
$u=-0.525627-0.805732I$ $a=-0.429621+0.235494I$ $b=0.035751-0.891969I$	$1.15178+1.50599I$	$2.56109-2.72315I$
$u=-0.525627+0.805732I$ $a=-0.429621-0.235494I$ $b=0.035751+0.891969I$	$1.15178-1.50599I$	$2.56109+2.72315I$
$u=-0.391025-0.528783I$ $a=0.25451+1.68510I$ $b=0.000923-0.452010I$	$2.88333+1.52566I$	$-2.95623-6.42875I$
$u=-0.391025+0.528783I$ $a=0.25451-1.68510I$ $b=0.000923+0.452010I$	$2.88333-1.52566I$	$-2.95623+6.42875I$

Solution to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.362636-1.289161I$ $a=-0.653617-0.135764I$ $b=\ \ 0.1117599-0.0736303I$	$-1.45248+3.13609I$	$-0.74981-2.49452I$
$u=-0.362636+1.289161I$ $a=-0.653617+0.135764I$ $b=\ \ 0.1117599+0.0736303I$	$-1.45248-3.13609I$	$-0.74981+2.49452I$
$u=-0.32507-1.55745I$ $a=-0.191541-0.850101I$ $b=-0.68404+2.14659I$	$-8.99304+6.36082I$	$-7.31007-4.20770I$
$u=-0.32507+1.55745I$ $a=-0.191541+0.850101I$ $b=-0.68404-2.14659I$	$-8.99304-6.36082I$	$-7.31007+4.20770I$
$u=-0.277331-0.646400I$ $a=-1.58033+0.79557I$ $b=-0.375450-0.246768I$	$2.42328-4.44150I$	$-7.41017+1.05267I$
$u=-0.277331+0.646400I$ $a=-1.58033-0.79557I$ $b=-0.375450+0.246768I$	$2.42328+4.44150I$	$-7.41017-1.05267I$
$u=\ \ 0.023739-0.376403I$ $a=\ \ 0.00176-2.42806I$ $b=\ \ 0.45391+3.98939I$	$-1.32570-2.15384I$	$-38.3073+0.3658I$
$u=\ \ 0.023739+0.376403I$ $a=\ \ 0.00176+2.42806I$ $b=\ \ 0.45391-3.98939I$	$-1.32570+2.15384I$	$-38.3073-0.3658I$
$u=\ \ 0.08279-1.46418I$ $a=\ \ 0.642531-0.155659I$ $b=\ \ 0.115784-0.127405I$	$-5.68977+0.80789I$	$-5.63151-0.39749I$
$u=\ \ 0.08279+1.46418I$ $a=\ \ 0.642531+0.155659I$ $b=\ \ 0.115784+0.127405I$	$-5.68977-0.80789I$	$-5.63151+0.39749I$

Solution to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.101788 - 1.392135I$ $a = 0.258295 - 0.919920I$ $b = 0.65375 + 2.18067I$	$-5.43179 - 1.52389I$	$-4.49323 + 0.71316I$
$u = 0.101788 + 1.392135I$ $a = 0.258295 + 0.919920I$ $b = 0.65375 - 2.18067I$	$-5.43179 + 1.52389I$	$-4.49323 - 0.71316I$
$u = 0.14680 - 1.57664I$ $a = -0.340464 - 0.843420I$ $b = -0.62348 + 2.12772I$	$-9.33600 - 3.03011I$	$-7.58951 + 2.63816I$
$u = 0.14680 + 1.57664I$ $a = -0.340464 + 0.843420I$ $b = -0.62348 - 2.12772I$	$-9.33600 + 3.03011I$	$-7.58951 - 2.63816I$
$u = 0.274747$ $a = -3.03443$ $b = 0.503610$	-1.20362	-8.91674
$u = 0.40659 - 1.39442I$ $a = 0.345713 + 0.549146I$ $b = -0.00006 - 2.05405I$	$0.05191 + 4.16636I$	$-0.57665 - 9.00427I$
$u = 0.40659 + 1.39442I$ $a = 0.345713 - 0.549146I$ $b = -0.00006 + 2.05405I$	$0.05191 - 4.16636I$	$-0.57665 + 9.00427I$
$u = 0.45680 - 1.86686I$ $a = -0.031347 + 0.713289I$ $b = 0.03721 - 2.58839I$	$-10.41507 - 3.75787I$	$-8.66055 + 3.06635I$
$u = 0.45680 + 1.86686I$ $a = -0.031347 - 0.713289I$ $b = 0.03721 + 2.58839I$	$-10.41507 + 3.75787I$	$-8.66055 - 3.06635I$
$u = 0.51700 - 1.43416I$ $a = 0.666754 - 0.161021I$ $b = -0.0860983 + 0.1075653I$	$-4.49350 - 8.17612I$	$-3.77298 + 5.44747I$

Solution to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.51700 + 1.43416I$ $a = 0.666754 + 0.161021I$ $b = -0.0860983 - 0.1075653I$	$-4.49350 + 8.17612I$	$-3.77298 - 5.44747I$
$u = 0.612697 - 0.489080I$ $a = -1.115050 - 0.268415I$ $b = 0.003550 - 0.690228I$	$-1.92828 - 0.12066I$	$-7.15424 + 0.12690I$
$u = 0.612697 + 0.489080I$ $a = -1.115050 + 0.268415I$ $b = 0.003550 + 0.690228I$	$-1.92828 + 0.12066I$	$-7.15424 - 0.12690I$
$u = 0.77088 - 1.59345I$ $a = 0.035485 + 0.801642I$ $b = 0.02106 - 2.63014I$	$-8.1954 - 13.8902I$	$-5.93452 + 8.00354I$
$u = 0.77088 + 1.59345I$ $a = 0.035485 - 0.801642I$ $b = 0.02106 + 2.63014I$	$-8.1954 + 13.8902I$	$-5.93452 - 8.00354I$
$u = 0.792668 - 0.169516I$ $a = -0.128021 + 0.417461I$ $b = 0.713084 - 0.803498I$	$-0.39510 + 2.82136I$	$0.57403 - 4.29661I$
$u = 0.792668 + 0.169516I$ $a = -0.128021 - 0.417461I$ $b = 0.713084 + 0.803498I$	$-0.39510 - 2.82136I$	$0.57403 + 4.29661I$
$u = 1.69889 - 0.01850I$ $a = 0.648911 + 0.174171I$ $b = 1.163139 - 0.325427I$	$-3.35360 - 5.46941I$	$-6.70822 + 8.69559I$
$u = 1.69889 + 0.01850I$ $a = 0.648911 - 0.174171I$ $b = 1.163139 + 0.325427I$	$-3.35360 + 5.46941I$	$-6.70822 - 8.69559I$

II. $\boldsymbol{I_1^v = \langle b^6 + 3b^5 + 7b^4 + 4b^3 + b^2 + 2b + 1,\ -19b^5 + v + \cdots - 15b - 30,\ a\rangle}$

(i) Arc colorings

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

$$a_8 = \begin{pmatrix} 19b^5 + 45b^4 + 105b^3 + 11b^2 + 15b + 30 \\ 0 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0 \\ b \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 19b^5 + 45b^4 + 105b^3 + 11b^2 + 15b + 30 \\ 8b^5 + 19b^4 + 44b^3 + 4b^2 + 5b + 12 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 19b^5 + 45b^4 + 105b^3 + 11b^2 + 15b + 30 \\ 0 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -12b^5 - 27b^4 - 63b^3 + b^2 - 9b - 18 \\ -14b^5 - 33b^4 - 77b^3 - 7b^2 - 11b - 21 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -26b^5 - 60b^4 - 140b^3 - 6b^2 - 20b - 39 \\ -14b^5 - 33b^4 - 77b^3 - 7b^2 - 11b - 21 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -32b^5 - 75b^4 - 175b^3 - 14b^2 - 25b - 50 \\ b \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 12b^5 + 27b^4 + 63b^3 - b^2 + 9b + 18 \\ 14b^5 + 33b^4 + 77b^3 + 7b^2 + 11b + 21 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 42b^5 + 98b^4 + 228b^3 + 14b^2 + 28b + 64 \\ 14b^5 + 33b^4 + 77b^3 + 7b^2 + 11b + 22 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 42b^5 + 98b^4 + 228b^3 + 14b^2 + 28b + 64 \\ 14b^5 + 33b^4 + 77b^3 + 7b^2 + 11b + 22 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes =unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I_1^v	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$v=-0.162359+0.281214I$ $a=0$ $b=-1.16236-2.01326I$	$-1.11345-2.02988I$	$-2.22484-4.65789I$
$v=-0.162359-0.281214I$ $a=0$ $b=-1.16236+2.01326I$	$-1.11345+2.02988I$	$-2.22484+4.65789I$
$v=1.31813-1.15851I$ $a=0$ $b=-0.655769-0.011266I$	$3.02413+0.79824I$	$-0.92725+3.21674I$
$v=1.31813+1.15851I$ $a=0$ $b=-0.655769+0.011266I$	$3.02413-0.79824I$	$-0.92725-3.21674I$
$v=0.34423-1.72078I$ $a=0$ $b=0.318128-0.573545I$	$3.02413-4.85801I$	$2.65209+7.50333I$
$v=0.34423+1.72078I$ $a=0$ $b=0.318128+0.573545I$	$3.02413+4.85801I$	$2.65209-7.50333I$

III. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1	$(u^2+u+1)^3(u^{39}+4u^{38}+\cdots+10u-1)$
c_2	$(u^2+u+1)^3(u^{39}+22u^{38}+\cdots+170u-1)$
c_3, c_7	$u^6(u^{39}+3u^{38}+\cdots+160u+64)$
c_4	$(u^2-u+1)^3(u^{39}+4u^{38}+\cdots+10u-1)$
c_5	$(u^2+u+1)^3(u^{39}+4u^{38}+\cdots+602u+49)$
c_6	$(u^3-u^2+2u-1)^2(u^{39}+3u^{38}+\cdots-3u-1)$
c_8	$(u^3+u^2-1)^2(u^{39}+3u^{38}+\cdots-5u-1)$
c_9	$(u^3+u^2+2u+1)^2(u^{39}+3u^{38}+\cdots-3u-1)$
c_{10}	$(u^3-u^2+1)^2(u^{39}+3u^{38}+\cdots-5u-1)$
c_{11}	$(u^3+u^2+2u+1)^2(u^{39}+23u^{38}+\cdots+u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_4	$(y^2+y+1)^3(y^{39}+22y^{38}+\cdots+170y-1)$
c_2	$(y^2+y+1)^3(y^{39}-6y^{38}+\cdots+31510y-1)$
c_3, c_7	$y^6(y^{39}+35y^{38}+\cdots-23552y-4096)$
c_5	$(y^2+y+1)^3(y^{39}-34y^{38}+\cdots+391706y-2401)$
c_6, c_9	$(y^3+3y^2+2y-1)^2(y^{39}+9y^{38}+\cdots+y-1)$
c_8, c_{10}	$(y^3-y^2+2y-1)^2(y^{39}-23y^{38}+\cdots+y-1)$
c_{11}	$(y^3+3y^2+2y-1)^2(y^{39}-11y^{38}+\cdots+117y-1)$