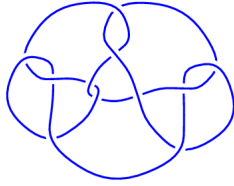
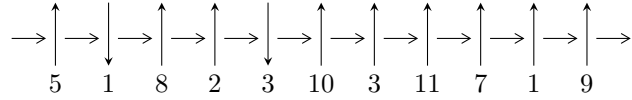


11n₈ (K11n₈)

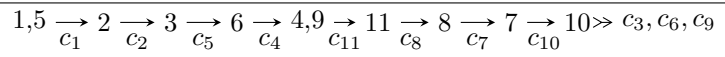


1

Arc Sequences



Solving Sequence



Representation Ideals

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

$$\begin{aligned} I_1^u &= \langle a^6 - 5a^5 + 11a^4 - 12a^3 + 6a^2 - a + 1, a^4 - 3a^3 + 4a^2 - 2a + u + 1, a^5 - 4a^4 + 7a^3 - 6a^2 + b + 2a \rangle \\ I_2^u &= \langle u^{32} - 4u^{31} + \dots + 4u + 1, \\ &\quad 17327884311u^{31} - 51370177786u^{30} + \dots + 50776700428b + 45898407811, \\ &\quad 65060365722u^{31} - 300114124597u^{30} + \dots + 50776700428a + 117492282989 \rangle \end{aligned}$$

There are 2 irreducible components with 38 representations.

¹The knot diagram image is adapter from “C. Livingston and A. H. Moore, KnotInfo: Table of Knot Invariants, <http://www.indiana.edu/~knotinfo>”

$$\text{I. } I_1^u = \langle a^6 - 5a^5 + 11a^4 - 12a^3 + 6a^2 - a + 1, a^4 - 3a^3 + 4a^2 - 2a + u + 1, a^5 - 4a^4 + 7a^3 - 6a^2 + b + 2a \rangle$$

(i) Arc colorings

$$\begin{aligned} a_1 &= \begin{pmatrix} 1 \\ 0 \end{pmatrix} \\ a_5 &= \begin{pmatrix} 0 \\ -a^4 + 3a^3 - 4a^2 + 2a - 1 \end{pmatrix} \\ a_2 &= \begin{pmatrix} 1 \\ -a^4 + 3a^3 - 4a^2 + 2a \end{pmatrix} \\ a_3 &= \begin{pmatrix} a^4 - 3a^3 + 4a^2 - 2a + 1 \\ -a^4 + 3a^3 - 4a^2 + 2a \end{pmatrix} \\ a_6 &= \begin{pmatrix} -1 \\ 0 \end{pmatrix} \\ a_4 &= \begin{pmatrix} a^4 - 3a^3 + 4a^2 - 2a + 1 \\ -a^4 + 3a^3 - 4a^2 + 2a \end{pmatrix} \\ a_9 &= \begin{pmatrix} a \\ -a^5 + 4a^4 - 7a^3 + 6a^2 - 2a \end{pmatrix} \\ a_{11} &= \begin{pmatrix} -a^5 + 4a^4 - 6a^3 + 4a^2 - a + 2 \\ a^3 - 3a^2 + 3a \end{pmatrix} \\ a_8 &= \begin{pmatrix} a^5 - 5a^4 + 10a^3 - 9a^2 + 3a \\ -a^5 + 4a^4 - 6a^3 + 3a^2 + a - 1 \end{pmatrix} \\ a_7 &= \begin{pmatrix} a^5 - 5a^4 + 10a^3 - 9a^2 + 3a \\ -a^5 + 4a^4 - 6a^3 + 3a^2 + a - 1 \end{pmatrix} \\ a_{10} &= \begin{pmatrix} -a^5 + 4a^4 - 7a^3 + 7a^2 - 4a + 2 \\ a^3 - 3a^2 + 3a \end{pmatrix} \\ a_{10} &= \begin{pmatrix} -a^5 + 4a^4 - 7a^3 + 7a^2 - 4a + 2 \\ a^3 - 3a^2 + 3a \end{pmatrix} \end{aligned}$$

(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
$u = -0.500000 - 0.866025I$		
$a = -0.083789 - 0.387453I$	$-3.02413 - 0.79824I$	$7.63258 - 1.54443I$
$b = -0.877439 + 0.744862I$		
$u = -0.500000 + 0.866025I$		
$a = -0.083789 + 0.387453I$	$-3.02413 + 0.79824I$	$7.63258 + 1.54443I$
$b = -0.877439 - 0.744862I$		
$u = -0.500000 - 0.866025I$		
$a = 1.20635 - 1.13232I$	$-3.02413 + 4.85801I$	$4.05323 - 9.17563I$
$b = -0.877439 - 0.744862I$		
$u = -0.500000 + 0.866025I$		
$a = 1.20635 + 1.13232I$	$-3.02413 - 4.85801I$	$4.05323 + 9.17563I$
$b = -0.877439 + 0.744862I$		
$u = -0.500000 + 0.866025I$		
$a = 1.37744 - 0.65374I$	$1.11345 - 2.02988I$	$15.8142 - 4.6579I$
$b = 0.754878$		
$u = -0.500000 - 0.866025I$		
$a = 1.37744 + 0.65374I$	$1.11345 + 2.02988I$	$15.8142 + 4.6579I$
$b = 0.754878$		

$$\text{II. } I_2^u = \langle u^{32} - 4u^{31} + \dots + 4u + 1, 1.73 \times 10^{10}u^{31} - 5.14 \times 10^{10}u^{30} + \dots + 5.08 \times 10^{10}b + 4.59 \times 10^{10}, 6.51 \times 10^{10}u^{31} - 3.00 \times 10^{11}u^{30} + \dots + 5.08 \times 10^{10}a + 1.17 \times 10^{11} \rangle$$

(i) Arc colorings

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

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

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

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

$$a_6 = \begin{pmatrix} -u^5 - 2u^3 - u \\ u^5 + u^3 + u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -1.28130u^{31} + 5.91047u^{30} + \dots - 2.94899u - 2.31390 \\ -0.341257u^{31} + 1.01169u^{30} + \dots - 2.34798u - 0.903927 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0.466042u^{31} - 2.36981u^{30} + \dots + 6.05202u + 2.89832 \\ -0.115026u^{31} + 0.296752u^{30} + \dots + 0.358069u + 0.384294 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.710734u^{31} + 3.43037u^{30} + \dots - 0.0540527u - 1.07276 \\ -0.587434u^{31} + 1.13312u^{30} + \dots - 1.77017u - 0.710734 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -1.23870u^{31} + 3.83973u^{30} + \dots - 2.78410u - 1.05967 \\ 0.352028u^{31} - 0.853772u^{30} + \dots - 1.08485u - 0.642279 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.581069u^{31} - 2.66656u^{30} + \dots + 5.69396u + 2.51403 \\ -0.115026u^{31} + 0.296752u^{30} + \dots + 0.358069u + 0.384294 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.581069u^{31} - 2.66656u^{30} + \dots + 5.69396u + 2.51403 \\ -0.115026u^{31} + 0.296752u^{30} + \dots + 0.358069u + 0.384294 \end{pmatrix}$$

(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
$u = -1.14802$ $a = -1.35165$ $b = 1.22763$	5.55891	17.6890
$u = -0.988672 - 0.933470I$ $a = -1.47255 + 0.51973I$ $b = 1.198748 + 0.108112I$	$4.49287 + 3.58059I$	$15.1628 - 6.1458I$
$u = -0.988672 + 0.933470I$ $a = -1.47255 - 0.51973I$ $b = 1.198748 - 0.108112I$	$4.49287 - 3.58059I$	$15.1628 + 6.1458I$
$u = -0.607222 - 0.839985I$ $a = -0.488594 - 0.148224I$ $b = -0.225556 - 0.193839I$	$0.60688 + 2.35983I$	$1.68069 - 4.72936I$
$u = -0.607222 + 0.839985I$ $a = -0.488594 + 0.148224I$ $b = -0.225556 + 0.193839I$	$0.60688 - 2.35983I$	$1.68069 + 4.72936I$
$u = -0.512800 - 0.618429I$ $a = 2.43693 + 0.85304I$ $b = -1.158389 - 0.012405I$	$2.28712 + 1.38183I$	$3.82254 - 3.38886I$
$u = -0.512800 + 0.618429I$ $a = 2.43693 - 0.85304I$ $b = -1.158389 + 0.012405I$	$2.28712 - 1.38183I$	$3.82254 + 3.38886I$
$u = -0.438343 - 0.910233I$ $a = -1.25471 - 2.63396I$ $b = -0.961368 - 0.135359I$	$1.31776 + 2.35125I$	$21.8207 + 1.6456I$
$u = -0.438343 + 0.910233I$ $a = -1.25471 + 2.63396I$ $b = -0.961368 + 0.135359I$	$1.31776 - 2.35125I$	$21.8207 - 1.6456I$
$u = -0.407352 - 1.294032I$ $a = -0.463231 + 0.830063I$ $b = 1.120699 + 0.274244I$	$1.05045 + 5.46747I$	$8.44967 - 8.57452I$

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.407352 + 1.294032I$ $a = -0.463231 - 0.830063I$ $b = 1.120699 - 0.274244I$	$1.05045 - 5.46747I$	$8.44967 + 8.57452I$
$u = -0.246944 - 1.020470I$ $a = -0.297055 - 0.703928I$ $b = 0.195786 - 0.475797I$	$-1.60404 + 2.42369I$	$1.66627 - 4.26671I$
$u = -0.246944 + 1.020470I$ $a = -0.297055 + 0.703928I$ $b = 0.195786 + 0.475797I$	$-1.60404 - 2.42369I$	$1.66627 + 4.26671I$
$u = -0.222533$ $a = -3.08647$ $b = -0.525361$	0.954521	10.1034
$u = -0.157159 - 0.395434I$ $a = -0.59313 + 2.58536I$ $b = -0.687544 + 0.278246I$	$0.876896 - 0.039424I$	$8.12095 + 0.03456I$
$u = -0.157159 + 0.395434I$ $a = -0.59313 - 2.58536I$ $b = -0.687544 - 0.278246I$	$0.876896 + 0.039424I$	$8.12095 - 0.03456I$
$u = 0.237631 - 0.764192I$ $a = 0.549640 - 0.448330I$ $b = 0.754657 + 0.723151I$	$-3.57711 + 1.46097I$	$0.39348 - 5.16672I$
$u = 0.237631 + 0.764192I$ $a = 0.549640 + 0.448330I$ $b = 0.754657 - 0.723151I$	$-3.57711 - 1.46097I$	$0.39348 + 5.16672I$
$u = 0.411691 - 0.642553I$ $a = -1.68228 - 1.31166I$ $b = 0.965567 - 0.732630I$	$-2.97947 - 4.11215I$	$5.06412 - 0.81363I$
$u = 0.411691 + 0.642553I$ $a = -1.68228 + 1.31166I$ $b = 0.965567 + 0.732630I$	$-2.97947 + 4.11215I$	$5.06412 + 0.81363I$

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.829030 - 0.999225I$	$5.75444 - 7.24046I$	$7.29722 + 4.74884I$
$a = 0.630834 - 0.065885I$		
$b = 0.039106 + 1.099538I$		
$u = 0.829030 + 0.999225I$	$5.75444 + 7.24046I$	$7.29722 - 4.74884I$
$a = 0.630834 + 0.065885I$		
$b = 0.039106 - 1.099538I$		
$u = 0.842421 - 1.093728I$	$9.8984 - 13.0980I$	$9.25603 + 7.22038I$
$a = -1.53412 - 1.22066I$		
$b = 1.35984 - 0.55004I$		
$u = 0.842421 + 1.093728I$	$9.8984 + 13.0980I$	$9.25603 - 7.22038I$
$a = -1.53412 + 1.22066I$		
$b = 1.35984 + 0.55004I$		
$u = 0.883634 - 0.956116I$	$10.18448 - 5.08130I$	$10.26358 + 3.28255I$
$a = 1.60874 + 1.14616I$		
$b = -1.34427 + 0.57687I$		
$u = 0.883634 + 0.956116I$	$10.18448 + 5.08130I$	$10.26358 - 3.28255I$
$a = 1.60874 - 1.14616I$		
$b = -1.34427 - 0.57687I$		
$u = 0.901533 - 0.826115I$	$6.30379 + 0.82960I$	$8.30496 - 0.12180I$
$a = -0.534327 + 0.197105I$		
$b = -0.091685 - 1.072877I$		
$u = 0.901533 + 0.826115I$	$6.30379 - 0.82960I$	$8.30496 + 0.12180I$
$a = -0.534327 - 0.197105I$		
$b = -0.091685 + 1.072877I$		
$u = 0.907454 - 0.905430I$	$10.34722 - 1.52704I$	$10.46079 + 1.65098I$
$a = 1.190936 + 0.400729I$		
$b = -1.40337 - 0.49810I$		
$u = 0.907454 + 0.905430I$	$10.34722 + 1.52704I$	$10.46079 - 1.65098I$
$a = 1.190936 - 0.400729I$		
$b = -1.40337 + 0.49810I$		
Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.030376 - 0.755077I$	$11.00118 + 6.27983I$	$10.83996 - 2.99292I$
$a = -1.378019 - 0.265871I$		
$b = 1.38664 + 0.47203I$		
$u = 1.030376 + 0.755077I$	$11.00118 - 6.27983I$	$10.83996 + 2.99292I$
$a = -1.378019 + 0.265871I$		
$b = 1.38664 - 0.47203I$		

III. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1	$(u^2 + u + 1)^3(u^{32} + 4u^{31} + \dots - 4u + 1)$
c_2	$(u^2 + u + 1)^3(u^{32} + 8u^{31} + \dots - 4u + 1)$
c_3, c_7	$u^6(u^{32} + 3u^{31} + \dots - 32u + 64)$
c_4	$(u^2 - u + 1)^3(u^{32} + 4u^{31} + \dots - 4u + 1)$
c_5	$(u^2 + u + 1)^3(u^{32} + 4u^{31} + \dots + 5956u + 3137)$
c_6	$(u^3 + u^2 + 2u + 1)^2(u^{32} + 3u^{31} + \dots - 3u - 1)$
c_8	$(u^3 - u^2 + 1)^2(u^{32} + 3u^{31} + \dots + 5u - 1)$
c_9	$(u^3 - u^2 + 2u - 1)^2(u^{32} + 3u^{31} + \dots - 3u - 1)$
c_{10}	$(u^3 + u^2 + 2u + 1)^2(u^{32} + 21u^{31} + \dots + 11u + 1)$
c_{11}	$(u^3 + u^2 - 1)^2(u^{32} + 3u^{31} + \dots + 5u - 1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_4	$(y^2 + y + 1)^3(y^{32} + 8y^{31} + \dots - 4y + 1)$
c_2	$(y^2 + y + 1)^3(y^{32} + 36y^{31} + \dots - 400y + 1)$
c_3, c_7	$y^6(y^{32} - 35y^{31} + \dots - 50176y + 4096)$
c_5	$(y^2 + y + 1)^3(y^{32} + 64y^{31} + \dots + 3.78942 \times 10^7 y + 9840769)$
c_6, c_9	$(y^3 + 3y^2 + 2y - 1)^2(y^{32} + 3y^{31} + \dots - 11y + 1)$
c_8, c_{11}	$(y^3 - y^2 + 2y - 1)^2(y^{32} - 21y^{31} + \dots - 11y + 1)$
c_{10}	$(y^3 + 3y^2 + 2y - 1)^2(y^{32} - 17y^{31} + \dots + 225y + 1)$