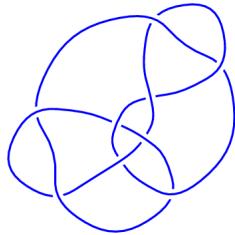
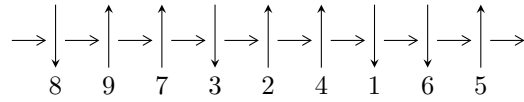


9₃₃ (K9a₁₁)

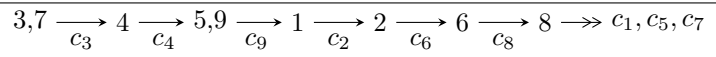


1

Arc Sequences



Solving Sequence



Representation Ideals

$$I = I_1^u$$

$$I_1^u = \langle u^{30} - u^{29} + \dots - 3u + 1, 523552400u^{29} - 519151600u^{28} + \dots + 6282411349b - 519170884, \\ - 571526124u^{29} + 47533644u^{28} + \dots + 6282411349a + 20413019584 \rangle$$

There are 1 irreducible components with 30 representations.

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

I.

$$I_1^u = \langle u^{30} - u^{29} + \dots - 3u + 1, 5.24 \times 10^8 u^{29} - 5.19 \times 10^8 u^{28} + \dots + 6.28 \times 10^9 b - 5.19 \times 10^8, -5.72 \times 10^8 u^{29} + 4.75 \times 10^7 u^{28} + \dots + 6.28 \times 10^9 a + 2.04 \times 10^{10} \rangle$$

(i) Arc colorings

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

$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

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

$$a_9 = \begin{pmatrix} 0.0909724u^{29} - 0.00756615u^{28} + \dots + 2.67520u - 3.24923 \\ -0.0833362u^{29} + 0.0826357u^{28} + \dots + 1.59305u + 0.0826388 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.816944u^{29} - 0.800274u^{28} + \dots + 4.33394u - 3.18861 \\ -0.816587u^{29} + 0.821929u^{28} + \dots + 1.76785u + 0.0219457 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.830556u^{29} - 0.00273693u^{28} + \dots - 3.66064u + 0.113929 \\ 0.833293u^{29} - 0.830507u^{28} + \dots + 2.37774u - 0.830556 \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} 0.732222u^{29} - 0.798905u^{28} + \dots + 2.66425u - 3.24557 \\ -0.733373u^{29} + 0.728883u^{28} + \dots + 2.69552u - 0.0711119 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.732222u^{29} - 0.798905u^{28} + \dots + 2.66425u - 3.24557 \\ -0.733373u^{29} + 0.728883u^{28} + \dots + 2.69552u - 0.0711119 \end{pmatrix}$$

(ii) Obstruction class = -1

$$(iii) \text{ Cusp Shapes} = -\frac{19978037336}{6282411349}u^{29} + \frac{14950008300}{6282411349}u^{28} + \dots + \frac{24593576724}{6282411349}u - \frac{28775538078}{6282411349}$$

(iv) Complex Volumes and Cusp Shapes

Solution to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.874083 - 0.729953I$ $a = -0.810701 + 0.043239I$ $b = 0.692011 + 0.163163I$	$0.99971 + 3.02182I$	$5.70717 - 7.15965I$
$u = -0.874083 + 0.729953I$ $a = -0.810701 - 0.043239I$ $b = 0.692011 - 0.163163I$	$0.99971 - 3.02182I$	$5.70717 + 7.15965I$
$u = -0.739608 - 0.193899I$ $a = 0.491712 + 0.140537I$ $b = -0.711939 - 0.029552I$	$1.50909 + 0.09583I$	$7.75398 + 0.81660I$
$u = -0.739608 + 0.193899I$ $a = 0.491712 - 0.140537I$ $b = -0.711939 + 0.029552I$	$1.50909 - 0.09583I$	$7.75398 - 0.81660I$
$u = -0.630570 - 0.920314I$ $a = -1.078227 + 0.484581I$ $b = 0.527369 + 0.255959I$	$0.59733 + 2.56045I$	$2.74559 - 1.69203I$
$u = -0.630570 + 0.920314I$ $a = -1.078227 - 0.484581I$ $b = 0.527369 - 0.255959I$	$0.59733 - 2.56045I$	$2.74559 + 1.69203I$
$u = -0.611458 - 1.208770I$ $a = 0.528417 - 0.484423I$ $b = -0.632962 - 0.456161I$	$-1.48004 + 5.18678I$	$-0.12994 - 9.32507I$
$u = -0.611458 + 1.208770I$ $a = 0.528417 + 0.484423I$ $b = -0.632962 + 0.456161I$	$-1.48004 - 5.18678I$	$-0.12994 + 9.32507I$
$u = -0.485323 - 0.928263I$ $a = 1.61933 + 1.81589I$ $b = -0.365965 + 0.331561I$	$-1.86283 + 2.41995I$	$7.1505 + 13.4441I$
$u = -0.485323 + 0.928263I$ $a = 1.61933 - 1.81589I$ $b = -0.365965 - 0.331561I$	$-1.86283 - 2.41995I$	$7.1505 - 13.4441I$

Solution to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.419790 - 0.765608I$		
$a = -0.38715 - 1.97907I$	$-1.28380 + 1.43143I$	$-4.72992 - 7.90920I$
$b = -0.071716 - 0.565767I$		
$u = -0.419790 + 0.765608I$		
$a = -0.38715 + 1.97907I$	$-1.28380 - 1.43143I$	$-4.72992 + 7.90920I$
$b = -0.071716 + 0.565767I$		
$u = 0.066161 - 1.287721I$		
$a = 0.153531 + 0.197790I$	$-6.75726 + 4.69908I$	$-5.55546 - 4.95856I$
$b = 0.644560 + 0.905239I$		
$u = 0.066161 + 1.287721I$		
$a = 0.153531 - 0.197790I$	$-6.75726 - 4.69908I$	$-5.55546 + 4.95856I$
$b = 0.644560 - 0.905239I$		
$u = 0.104954 - 0.846587I$		
$a = -1.013573 - 0.508000I$	$-1.84656 + 1.46172I$	$-3.40911 - 4.12645I$
$b = -0.214087 - 1.056248I$		
$u = 0.104954 + 0.846587I$		
$a = -1.013573 + 0.508000I$	$-1.84656 - 1.46172I$	$-3.40911 + 4.12645I$
$b = -0.214087 + 1.056248I$		
$u = 0.365761 - 0.979876I$		
$a = -1.59795 - 1.33270I$	$-4.52085 - 1.19841I$	$-7.97414 + 1.50646I$
$b = 1.43354 - 0.57946I$		
$u = 0.365761 + 0.979876I$		
$a = -1.59795 + 1.33270I$	$-4.52085 + 1.19841I$	$-7.97414 - 1.50646I$
$b = 1.43354 + 0.57946I$		
$u = 0.368067 - 0.266876I$		
$a = -2.50293 + 0.01848I$	$-1.90369 + 1.10699I$	$-1.88237 - 2.02123I$
$b = 0.498568 - 0.860476I$		
$u = 0.368067 + 0.266876I$		
$a = -2.50293 - 0.01848I$	$-1.90369 - 1.10699I$	$-1.88237 + 2.02123I$
$b = 0.498568 + 0.860476I$		

Solution to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.488147 - 1.019986I$ $a = 0.469424 - 0.779563I$ $b = 0.91649 + 1.42667I$	$-3.68107 - 4.90989I$	$-5.62064 + 7.63658I$
$u = 0.488147 + 1.019986I$ $a = 0.469424 + 0.779563I$ $b = 0.91649 - 1.42667I$	$-3.68107 + 4.90989I$	$-5.62064 - 7.63658I$
$u = 0.606261 - 1.034691I$ $a = 1.77136 + 0.83961I$ $b = -1.26265 + 1.09290I$	$1.20556 - 7.17470I$	$1.40394 + 7.73482I$
$u = 0.606261 + 1.034691I$ $a = 1.77136 - 0.83961I$ $b = -1.26265 - 1.09290I$	$1.20556 + 7.17470I$	$1.40394 - 7.73482I$
$u = 0.651249 - 1.142682I$ $a = -1.59583 - 0.80518I$ $b = 1.15164 - 1.02775I$	$-2.77714 - 13.28046I$	$-1.34939 + 8.37714I$
$u = 0.651249 + 1.142682I$ $a = -1.59583 + 0.80518I$ $b = 1.15164 + 1.02775I$	$-2.77714 + 13.28046I$	$-1.34939 - 8.37714I$
$u = 0.702308 - 0.543288I$ $a = 1.12249 + 1.09131I$ $b = -1.170125 - 0.757580I$	$2.66519 + 2.12888I$	$4.79788 - 2.27450I$
$u = 0.702308 + 0.543288I$ $a = 1.12249 - 1.09131I$ $b = -1.170125 + 0.757580I$	$2.66519 - 2.12888I$	$4.79788 + 2.27450I$
$u = 0.907923 - 0.426568I$ $a = -1.169898 - 0.764529I$ $b = 1.065261 + 0.854723I$	$-0.60287 + 7.55963I$	$1.09191 - 4.94493I$
$u = 0.907923 + 0.426568I$ $a = -1.169898 + 0.764529I$ $b = 1.065261 - 0.854723I$	$-0.60287 - 7.55963I$	$1.09191 + 4.94493I$

II. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1, c_7	$(u^{30} + u^{29} + \dots + 5u + 1)$
c_2	$(u^{30} + 5u^{29} + \dots + u + 1)$
c_3, c_6	$(u^{30} + u^{29} + \dots + 3u + 1)$
c_4	$(u^{30} + 13u^{29} + \dots + 3u + 1)$
c_5	$(u^{30} + 3u^{29} + \dots + u + 1)$
c_8	$(u^{30} + 3u^{29} + \dots + 9u + 1)$
c_9	$(u^{30} + u^{29} + \dots - 11u + 1)$

III. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_7	$(y^{30} - 19y^{29} + \dots - 5y + 1)$
c_2	$(y^{30} - 3y^{29} + \dots - 5y + 1)$
c_3, c_6	$(y^{30} + 13y^{29} + \dots + 3y + 1)$
c_4	$(y^{30} + 9y^{29} + \dots + 39y + 1)$
c_5	$(y^{30} + 5y^{29} + \dots + 3y + 1)$
c_8	$(y^{30} - 27y^{29} + \dots + 11y + 1)$
c_9	$(y^{30} - 23y^{29} + \dots - 9y + 1)$