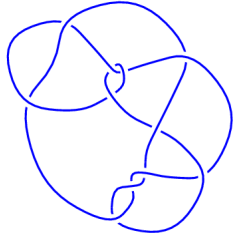
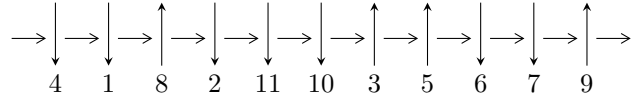


11a₃₄ (K11a₃₄)

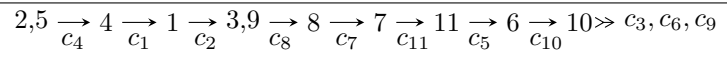


1

Arc Sequences



Solving Sequence



Representation Ideals

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

$$I_1^u = \langle a^5 + a^4 + 2a^3 + a^2 + a + 1, b, u - 1 \rangle$$

$$I_2^u = \langle u^{64} + 6u^{63} + \dots - 3u - 1, -7u^{63} - 62u^{62} + \dots + 4b + 36, -22u^{63} - 173u^{62} + \dots + 4a + 90 \rangle$$

There are 2 irreducible components with 69 representations.

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

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

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

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

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

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

$$a_9 = \begin{pmatrix} a \\ 0 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} a \\ a \end{pmatrix}$$

$$a_7 = \begin{pmatrix} a \\ a \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} a^2 \\ -1 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -a^4 \\ a^2 + 1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -a^4 \\ -a^4 - a^2 - 1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -a^4 \\ -a^4 - a^2 - 1 \end{pmatrix}$$

(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
$u = 1.00000$ $a = -0.766826$ $b = 0$	-4.04602	-9.76978
$u = 1.00000$ $a = -0.455697 - 1.200152I$ $b = 0$	$-7.51750 + 4.40083I$	$-9.05774 - 4.18967I$
$u = 1.00000$ $a = -0.455697 + 1.200152I$ $b = 0$	$-7.51750 - 4.40083I$	$-9.05774 + 4.18967I$
$u = 1.00000$ $a = 0.339110 - 0.822375I$ $b = 0$	$-1.97403 - 1.53058I$	$-5.05737 + 4.09764I$
$u = 1.00000$ $a = 0.339110 + 0.822375I$ $b = 0$	$-1.97403 + 1.53058I$	$-5.05737 - 4.09764I$

$$\text{II. } I_2^u = \langle u^{64} + 6u^{63} + \dots - 3u - 1, -7u^{63} - 62u^{62} + \dots + 4b + 36, -22u^{63} - 173u^{62} + \dots + 4a + 90 \rangle$$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

$$a_1 = \begin{pmatrix} -u^2 + 1 \\ -u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} u^4 - u^2 + 1 \\ u^4 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} \frac{11}{2}u^{63} + \frac{173}{4}u^{62} + \dots - \frac{97}{4}u - \frac{45}{2} \\ \frac{7}{4}u^{63} + \frac{31}{2}u^{62} + \dots - \frac{49}{4}u - 9 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} \frac{11}{2}u^{63} + \frac{173}{4}u^{62} + \dots - \frac{97}{4}u - \frac{45}{2} \\ -\frac{41}{2}u^{63} - 89u^{62} + \dots + 24u + \frac{5}{4} \end{pmatrix}$$

$$a_7 = \begin{pmatrix} \frac{15}{4}u^{63} + \frac{135}{4}u^{62} + \dots - 19u - \frac{37}{2} \\ -\frac{21}{4}u^{63} - \frac{37}{2}u^{62} + \dots + \frac{9}{4}u - \frac{15}{4} \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -0.0625000u^{63} - 0.312500u^{62} + \dots - 0.875000u + 2.06250 \\ -u^{11} + 3u^9 + 2u^8 - 4u^7 - 4u^6 + u^5 + 4u^4 + u^3 - 2u^2 - u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -2u^{63} - \frac{81}{8}u^{62} + \dots + \frac{1}{8}u + \frac{17}{8} \\ -\frac{1}{16}u^{63} - \frac{5}{16}u^{62} + \dots + \frac{9}{8}u + \frac{1}{16} \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} \frac{15}{8}u^{63} + \frac{19}{2}u^{62} + \dots - \frac{15}{8}u - 1 \\ 1.81250u^{63} + 9.18750u^{62} + \dots - 3.75000u - 1.93750 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} \frac{15}{8}u^{63} + \frac{19}{2}u^{62} + \dots - \frac{15}{8}u - 1 \\ 1.81250u^{63} + 9.18750u^{62} + \dots - 3.75000u - 1.93750 \end{pmatrix}$$

(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
$u = -1.158260 - 0.642246I$ $a = 0.740466 - 1.151513I$ $b = -1.10091 - 2.08401I$	$-3.0092 - 14.9742I$	$-5.60781 + 9.37467I$
$u = -1.158260 + 0.642246I$ $a = 0.740466 + 1.151513I$ $b = -1.10091 + 2.08401I$	$-3.0092 + 14.9742I$	$-5.60781 - 9.37467I$
$u = -1.141569 - 0.645684I$ $a = -0.686516 + 1.086283I$ $b = 0.95345 + 2.03149I$	$2.46662 - 11.29941I$	$-1.16462 + 9.08913I$
$u = -1.141569 + 0.645684I$ $a = -0.686516 - 1.086283I$ $b = 0.95345 - 2.03149I$	$2.46662 + 11.29941I$	$-1.16462 - 9.08913I$
$u = -1.120229 - 0.587049I$ $a = -0.421357 + 1.242946I$ $b = 1.03910 + 1.52076I$	$-5.55732 - 5.80431I$	$-7.98721 + 4.74735I$
$u = -1.120229 + 0.587049I$ $a = -0.421357 - 1.242946I$ $b = 1.03910 - 1.52076I$	$-5.55732 + 5.80431I$	$-7.98721 - 4.74735I$
$u = -1.112543 - 0.635620I$ $a = 0.544265 - 1.035223I$ $b = -0.79204 - 1.82116I$	$1.05339 - 7.31803I$	$-3.59936 + 4.11166I$
$u = -1.112543 + 0.635620I$ $a = 0.544265 + 1.035223I$ $b = -0.79204 + 1.82116I$	$1.05339 + 7.31803I$	$-3.59936 - 4.11166I$
$u = -1.069948 - 0.670430I$ $a = 0.488364 - 0.775380I$ $b = -0.34605 - 1.82017I$	$1.75966 - 7.47908I$	$-1.96934 + 6.72010I$
$u = -1.069948 + 0.670430I$ $a = 0.488364 + 0.775380I$ $b = -0.34605 + 1.82017I$	$1.75966 + 7.47908I$	$-1.96934 - 6.72010I$

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.020454 - 0.679591I$ $a = -0.331768 + 0.598328I$ $b = 0.04207 + 1.58461I$	$4.64291 - 3.88634I$	$2.43594 + 2.51707I$
$u = -1.020454 + 0.679591I$ $a = -0.331768 - 0.598328I$ $b = 0.04207 - 1.58461I$	$4.64291 + 3.88634I$	$2.43594 - 2.51707I$
$u = -0.992827 - 0.415428I$ $a = 0.63363 + 1.42551I$ $b = 0.724130 + 0.422523I$	$-7.74951 - 6.19199I$	$-8.16905 + 7.63016I$
$u = -0.992827 + 0.415428I$ $a = 0.63363 - 1.42551I$ $b = 0.724130 - 0.422523I$	$-7.74951 + 6.19199I$	$-8.16905 - 7.63016I$
$u = -0.973032 - 0.693774I$ $a = 0.200940 - 0.415997I$ $b = 0.225248 - 1.361642I$	$0.150980 - 0.347116I$	$-2.28908 + 0.53037I$
$u = -0.973032 + 0.693774I$ $a = 0.200940 + 0.415997I$ $b = 0.225248 + 1.361642I$	$0.150980 + 0.347116I$	$-2.28908 - 0.53037I$
$u = -0.937787 - 0.443683I$ $a = -0.702787 - 1.120738I$ $b = -0.526415 - 0.450965I$	$-1.65255 - 3.56868I$	$-3.94595 + 7.64427I$
$u = -0.937787 + 0.443683I$ $a = -0.702787 + 1.120738I$ $b = -0.526415 + 0.450965I$	$-1.65255 + 3.56868I$	$-3.94595 - 7.64427I$
$u = -0.893518 - 0.335213I$ $a = -1.28655 - 1.23443I$ $b = -0.512456 - 0.174202I$	$-7.13968 + 3.33308I$	$-5.83224 + 2.07669I$
$u = -0.893518 + 0.335213I$ $a = -1.28655 + 1.23443I$ $b = -0.512456 + 0.174202I$	$-7.13968 - 3.33308I$	$-5.83224 - 2.07669I$

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.877389 - 0.392010I$ $a = 1.07361 + 1.02505I$ $b = 0.449245 + 0.266112I$	$-1.309429 + 0.220190I$	$-2.16669 + 0.94520I$
$u = -0.877389 + 0.392010I$ $a = 1.07361 - 1.02505I$ $b = 0.449245 - 0.266112I$	$-1.309429 - 0.220190I$	$-2.16669 - 0.94520I$
$u = -0.664716 - 0.815312I$ $a = 0.533357 - 0.618444I$ $b = -0.881055 - 0.435104I$	$1.08775 - 5.28117I$	$-1.05969 + 4.93100I$
$u = -0.664716 + 0.815312I$ $a = 0.533357 + 0.618444I$ $b = -0.881055 + 0.435104I$	$1.08775 + 5.28117I$	$-1.05969 - 4.93100I$
$u = -0.609798 - 0.820670I$ $a = -0.681635 + 0.705691I$ $b = 0.707746 + 0.697358I$	$5.88443 - 1.71228I$	$4.06856 + 3.31380I$
$u = -0.609798 + 0.820670I$ $a = -0.681635 - 0.705691I$ $b = 0.707746 - 0.697358I$	$5.88443 + 1.71228I$	$4.06856 - 3.31380I$
$u = -0.532956 - 0.840222I$ $a = 0.866026 - 0.838271I$ $b = -0.439737 - 1.050097I$	$3.37131 + 1.86053I$	$0.48220 - 1.64307I$
$u = -0.532956 + 0.840222I$ $a = 0.866026 + 0.838271I$ $b = -0.439737 + 1.050097I$	$3.37131 - 1.86053I$	$0.48220 + 1.64307I$
$u = -0.456437 - 0.835020I$ $a = 1.057674 - 0.883491I$ $b = -0.048745 - 1.196979I$	$3.02952 + 1.83201I$	$-0.533486 + 0.085386I$
$u = -0.456437 + 0.835020I$ $a = 1.057674 + 0.883491I$ $b = -0.048745 + 1.196979I$	$3.02952 - 1.83201I$	$-0.533486 - 0.085386I$

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.419131 - 0.889734I$ $a = -1.11949 + 1.03075I$ $b = -0.08535 + 1.55311I$	$4.64833 + 5.64259I$	$2.08406 - 5.05177I$
$u = -0.419131 + 0.889734I$ $a = -1.11949 - 1.03075I$ $b = -0.08535 - 1.55311I$	$4.64833 - 5.64259I$	$2.08406 + 5.05177I$
$u = -0.391619 - 0.909051I$ $a = 1.18044 - 1.08392I$ $b = 0.24266 - 1.69763I$	$-0.68966 + 9.28326I$	$-2.58149 - 5.59909I$
$u = -0.391619 + 0.909051I$ $a = 1.18044 + 1.08392I$ $b = 0.24266 + 1.69763I$	$-0.68966 - 9.28326I$	$-2.58149 + 5.59909I$
$u = -0.351732$ $a = -2.23952$ $b = -0.384059$	-2.82174	-1.06544
$u = -0.343126 - 0.747550I$ $a = -1.33363 + 0.77362I$ $b = -0.519089 + 0.878241I$	$-3.31779 + 0.73149I$	$-4.68252 - 0.78081I$
$u = -0.343126 + 0.747550I$ $a = -1.33363 - 0.77362I$ $b = -0.519089 - 0.878241I$	$-3.31779 - 0.73149I$	$-4.68252 + 0.78081I$
$u = 0.128319 - 0.267317I$ $a = 1.36352 - 1.11645I$ $b = 0.458138 + 0.480394I$	$-0.038168 + 1.118320I$	$-0.73760 - 6.33469I$
$u = 0.128319 + 0.267317I$ $a = 1.36352 + 1.11645I$ $b = 0.458138 - 0.480394I$	$-0.038168 - 1.118320I$	$-0.73760 + 6.33469I$
$u = 0.225686 - 0.483491I$ $a = -1.40635 + 0.59944I$ $b = -0.875813 - 0.785579I$	$-5.22435 + 3.56448I$	$-6.01720 - 4.77516I$

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.225686 + 0.483491I$ $a = -1.40635 - 0.59944I$ $b = -0.875813 + 0.785579I$	$-5.22435 - 3.56448I$	$-6.01720 + 4.77516I$
$u = 0.585040 - 0.547652I$ $a = 1.173320 + 0.133471I$ $b = 0.29248 + 1.81878I$	$-4.32280 - 4.18388I$	$-5.22738 + 1.96403I$
$u = 0.585040 + 0.547652I$ $a = 1.173320 - 0.133471I$ $b = 0.29248 - 1.81878I$	$-4.32280 + 4.18388I$	$-5.22738 - 1.96403I$
$u = 0.666250 - 0.485739I$ $a = -0.947737 - 0.246057I$ $b = 0.08934 - 1.68988I$	$0.748257 - 0.939190I$	$0.11212 + 1.46039I$
$u = 0.666250 + 0.485739I$ $a = -0.947737 + 0.246057I$ $b = 0.08934 + 1.68988I$	$0.748257 + 0.939190I$	$0.11212 - 1.46039I$
$u = 0.828655 - 0.501923I$ $a = 0.769664 + 0.626806I$ $b = -0.78773 + 1.73357I$	$-1.58334 + 2.05666I$	$-3.50948 - 3.64139I$
$u = 0.828655 + 0.501923I$ $a = 0.769664 - 0.626806I$ $b = -0.78773 - 1.73357I$	$-1.58334 - 2.05666I$	$-3.50948 + 3.64139I$
$u = 0.931777 - 0.448729I$ $a = 0.484827 + 0.760174I$ $b = -1.15643 + 1.29499I$	$-1.60289 + 1.70495I$	$-6.10429 - 1.65168I$
$u = 0.931777 + 0.448729I$ $a = 0.484827 - 0.760174I$ $b = -1.15643 - 1.29499I$	$-1.60289 - 1.70495I$	$-6.10429 + 1.65168I$
$u = 0.963951 - 0.534258I$ $a = -0.612266 - 0.990897I$ $b = 1.56384 - 1.62337I$	$-0.18871 + 5.19299I$	$-2.32409 - 6.82469I$

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.963951 + 0.534258I$ $a = -0.612266 + 0.990897I$ $b = 1.56384 + 1.62337I$	$-0.18871 - 5.19299I$	$-2.32409 + 6.82469I$
$u = 0.994333 - 0.553374I$ $a = 0.597651 + 1.100952I$ $b = -1.80697 + 1.63180I$	$-5.53651 + 8.66838I$	$-7.02146 - 6.83230I$
$u = 0.994333 + 0.553374I$ $a = 0.597651 - 1.100952I$ $b = -1.80697 - 1.63180I$	$-5.53651 - 8.66838I$	$-7.02146 + 6.83230I$
$u = 1.051898 - 0.438038I$ $a = -0.219745 - 0.980745I$ $b = 1.61096 - 0.82033I$	$-7.47816 + 0.17720I$	$-10.16711 - 0.76361I$
$u = 1.051898 + 0.438038I$ $a = -0.219745 + 0.980745I$ $b = 1.61096 + 0.82033I$	$-7.47816 - 0.17720I$	$-10.16711 + 0.76361I$
$u = 1.139116 - 0.155002I$ $a = -0.375203 + 0.413966I$ $b = -0.620502 - 0.009774I$	$-2.38212 + 0.33638I$	$-5.62748 + 1.67456I$
$u = 1.139116 + 0.155002I$ $a = -0.375203 - 0.413966I$ $b = -0.620502 + 0.009774I$	$-2.38212 - 0.33638I$	$-5.62748 - 1.67456I$
$u = 1.204273 - 0.244911I$ $a = 0.474563 - 0.721935I$ $b = 0.941502 + 0.271292I$	$-7.96725 + 2.25757I$	$-9.66731 + 0.06011I$
$u = 1.204273 + 0.244911I$ $a = 0.474563 + 0.721935I$ $b = 0.941502 - 0.271292I$	$-7.96725 - 2.25757I$	$-9.66731 - 0.06011I$
$u = 1.24126$ $a = -0.722414$ $b = -0.269394$	-2.98700	-1.16655

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.261316 - 0.123198I$	$-1.20405 - 2.76775I$	$-0.87874 + 6.15771I$
$a = 0.751816 - 0.396861I$		
$b = 0.394848 + 0.320235I$		
$u = 1.261316 + 0.123198I$	$-1.20405 + 2.76775I$	$-0.87874 - 6.15771I$
$a = 0.751816 + 0.396861I$		
$b = 0.394848 - 0.320235I$		
$u = 1.289964 - 0.151015I$	$-6.51086 - 6.10114I$	$-6.19620 + 5.87303I$
$a = -0.828136 + 0.506005I$		
$b = -0.408746 - 0.485141I$		
$u = 1.289964 + 0.151015I$	$-6.51086 + 6.10114I$	$-6.19620 - 5.87303I$
$a = -0.828136 - 0.506005I$		
$b = -0.408746 + 0.485141I$		

III. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1	$(u - 1)^5(u^{64} + 6u^{63} + \dots - 3u - 1)$
c_2	$(u + 1)^5(u^{64} + 30u^{63} + \dots + 3u + 1)$
c_3, c_7	$u^5(u^{64} + u^{63} + \dots + 96u + 32)$
c_4	$(u + 1)^5(u^{64} + 6u^{63} + \dots - 3u - 1)$
c_5	$(u^5 - 3u^4 + \dots - u + 1)(u^{64} + 6u^{63} + \dots - 5u - 1)$
c_6	$(u^5 + u^4 + \dots + u - 1)(u^{64} + 2u^{63} + \dots + u - 1)$
c_8	$(u^5 + u^4 + \dots + u + 1)(u^{64} + 2u^{63} + \dots - 8204u - 1960)$
c_9, c_{10}	$(u^5 - u^4 + \dots + u + 1)(u^{64} + 2u^{63} + \dots + u - 1)$
c_{11}	$(u^5 + u^4 + \dots + u + 1)(u^{64} + 14u^{63} + \dots + 2787u + 207)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_4	$(y - 1)^5(y^{64} - 30y^{63} + \dots - 3y + 1)$
c_2	$(y - 1)^5(y^{64} + 14y^{63} + \dots + 13y + 1)$
c_3, c_7	$y^5(y^{64} - 33y^{63} + \dots - 14848y + 1024)$
c_5	$(y^5 - y^4 + \dots + 3y - 1)(y^{64} - 2y^{63} + \dots - 9y + 1)$
c_6	$(y^5 - 5y^4 + \dots - y - 1)(y^{64} - 58y^{63} + \dots - y + 1)$
c_8	$(y^5 + 3y^4 + 4y^3 + y^2 - y - 1)$ $(y^{64} - 18y^{63} + \dots - 40328176y + 3841600)$
c_9	$(y^5 - 5y^4 + \dots - y - 1)(y^{64} - 58y^{63} + \dots - y + 1)$
c_{10}	$(y^5 - 5y^4 + \dots - y - 1)(y^{64} - 58y^{63} + \dots - y + 1)$
c_{11}	$(y^5 + 3y^4 + \dots - y - 1)(y^{64} + 18y^{63} + \dots + 1021851y + 42849)$