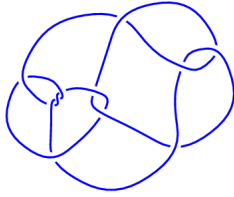
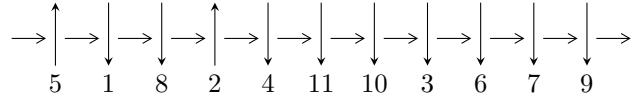


11a₆₁ (K11a₆₁)

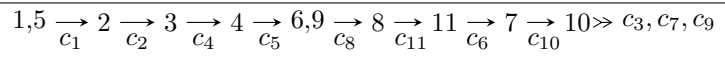


1

Arc Sequences



Solving Sequence



Representation Ideals

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

$$I_1^u = \langle a^6 + a^5 + a^4 + 2a^3 + a^2 + 1, -a^4 - a^3 - a^2 - a + u, -a^5 - a^4 - a^3 - a^2 + b \rangle$$

$$I_2^u = \langle u^{57} - 4u^{56} + \dots + 7u - 1, 8u^{56} - 9u^{55} + \dots + 4b - 7, 11u^{56} - 40u^{55} + \dots + 4a + 1 \rangle$$

There are 2 irreducible components with 63 representations.

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

$$I_1^u = \langle a^6 + a^5 + a^4 + 2a^3 + a^2 + 1, -a^4 - a^3 - a^2 - a + u, -a^5 - a^4 - a^3 - a^2 + b \rangle$$

I.

(i) Arc colorings

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

$$a_5 = \begin{pmatrix} 0 \\ a^4 + a^3 + a^2 + a \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} -a^4 - a^3 - a^2 - a \\ a^4 + a^3 + a^2 + a + 1 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -a^4 - a^3 - a^2 - a \\ a^4 + a^3 + a^2 + a + 1 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} a \\ a^5 + a^4 + a^3 + a^2 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} a \\ a^5 + a^4 + a^3 + a^2 \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} -a^4 + a^3 \\ a^5 + a^4 + a^2 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -a^5 - a^4 - a^3 - a^2 + a \\ a^5 + a^4 + a^3 + a^2 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -a^5 - a^4 - a^3 - a^2 + a \\ a^5 + a^4 + a^3 + a^2 \end{pmatrix}$$

(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
$u = -0.500000 + 0.866025I$ $a = -1.083789 - 0.387453I$ $b = 0.877439 - 0.744862I$	$3.02413 + 0.79824I$	$-6.43615 + 0.68567I$
$u = -0.500000 - 0.866025I$ $a = -1.083789 + 0.387453I$ $b = 0.877439 + 0.744862I$	$3.02413 - 0.79824I$	$-6.43615 - 0.68567I$
$u = -0.500000 + 0.866025I$ $a = 0.206350 - 1.132315I$ $b = 0.877439 + 0.744862I$	$3.02413 - 4.85801I$	$-2.88198 + 6.08229I$
$u = -0.500000 - 0.866025I$ $a = 0.206350 + 1.132315I$ $b = 0.877439 - 0.744862I$	$3.02413 + 4.85801I$	$-2.88198 - 6.08229I$
$u = -0.500000 - 0.866025I$ $a = 0.377439 - 0.653743I$ $b = -0.754878$	$-1.11345 + 2.02988I$	$-12.18187 - 4.49037I$
$u = -0.500000 + 0.866025I$ $a = 0.377439 + 0.653743I$ $b = -0.754878$	$-1.11345 - 2.02988I$	$-12.18187 + 4.49037I$

$$\langle u^{57} - 4u^{56} + \dots + 7u - 1, 8u^{56} - 9u^{55} + \dots + 4b - 7, 11u^{56} - 40u^{55} + \dots + 4a + 1 \rangle$$

II. $I_2^u =$

(i) Arc colorings

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

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

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

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

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

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

$$a_9 = \begin{pmatrix} -\frac{11}{4}u^{56} + 10u^{55} + \dots + \frac{67}{4}u - \frac{1}{4} \\ -2u^{56} + \frac{9}{4}u^{55} + \dots - 11u + \frac{7}{4} \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -\frac{9}{4}u^{56} + 16u^{55} + \dots + \frac{189}{4}u - \frac{23}{4} \\ -7u^{56} + \frac{55}{4}u^{55} + \dots - 10u + \frac{9}{4} \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -\frac{1}{4}u^{56} + \frac{3}{4}u^{55} + \dots + \frac{13}{4}u + 2 \\ \frac{1}{4}u^{56} - u^{55} + \dots - \frac{11}{4}u + \frac{1}{4} \end{pmatrix}$$

$$a_7 = \begin{pmatrix} \frac{11}{4}u^{56} - \frac{47}{4}u^{55} + \dots - \frac{121}{4}u + 4 \\ \frac{3}{4}u^{56} + \frac{1}{4}u^{55} + \dots + \frac{59}{4}u - \frac{5}{2} \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -\frac{7}{4}u^{56} + \frac{63}{4}u^{55} + \dots + \frac{223}{4}u - 7 \\ -7u^{56} + \frac{57}{4}u^{55} + \dots - 12u + \frac{11}{4} \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -\frac{7}{4}u^{56} + \frac{63}{4}u^{55} + \dots + \frac{223}{4}u - 7 \\ -7u^{56} + \frac{57}{4}u^{55} + \dots - 12u + \frac{11}{4} \end{pmatrix}$$

(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
$u = -0.800227 - 0.097770I$ $a = -0.55703 + 1.38837I$ $b = 0.340559 - 1.293107I$	$8.22007 + 4.72575I$	$1.80987 - 3.60964I$
$u = -0.800227 + 0.097770I$ $a = -0.55703 - 1.38837I$ $b = 0.340559 + 1.293107I$	$8.22007 - 4.72575I$	$1.80987 + 3.60964I$
$u = -0.782668 - 0.823558I$ $a = -1.38003 - 1.86072I$ $b = 0.318434 + 1.211323I$	$7.55130 - 1.74072I$	$-0.715634 + 0.385325I$
$u = -0.782668 + 0.823558I$ $a = -1.38003 + 1.86072I$ $b = 0.318434 - 1.211323I$	$7.55130 + 1.74072I$	$-0.715634 - 0.385325I$
$u = -0.755939 - 0.930694I$ $a = 0.52607 + 2.29910I$ $b = 0.425194 - 1.323004I$	$7.22101 + 7.54444I$	$-1.53198 - 5.73203I$
$u = -0.755939 + 0.930694I$ $a = 0.52607 - 2.29910I$ $b = 0.425194 + 1.323004I$	$7.22101 - 7.54444I$	$-1.53198 + 5.73203I$
$u = -0.722279 - 0.830660I$ $a = 1.00866 + 1.56975I$ $b = -0.112045 - 0.922007I$	$1.73223 + 1.00864I$	$-4.77172 + 0.80753I$
$u = -0.722279 + 0.830660I$ $a = 1.00866 - 1.56975I$ $b = -0.112045 + 0.922007I$	$1.73223 - 1.00864I$	$-4.77172 - 0.80753I$
$u = -0.718160 - 0.909667I$ $a = -0.49430 - 1.92093I$ $b = -0.337710 + 1.036603I$	$1.48928 + 4.49756I$	$-5.75514 - 6.39928I$
$u = -0.718160 + 0.909667I$ $a = -0.49430 + 1.92093I$ $b = -0.337710 - 1.036603I$	$1.48928 - 4.49756I$	$-5.75514 + 6.39928I$

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.708895 - 0.073284I$ $a = 0.351150 - 0.941533I$ $b = -0.192151 + 1.042082I$	$2.36739 + 1.80456I$	$-1.57677 - 4.11913I$
$u = -0.708895 + 0.073284I$ $a = 0.351150 + 0.941533I$ $b = -0.192151 - 1.042082I$	$2.36739 - 1.80456I$	$-1.57677 + 4.11913I$
$u = -0.610136 - 0.543922I$ $a = -1.393620 - 0.207735I$ $b = 0.544710 - 0.046272I$	$3.98401 + 1.43384I$	$-1.02074 - 3.18853I$
$u = -0.610136 + 0.543922I$ $a = -1.393620 + 0.207735I$ $b = 0.544710 + 0.046272I$	$3.98401 - 1.43384I$	$-1.02074 + 3.18853I$
$u = -0.579065 - 0.988208I$ $a = -0.527800 + 1.214045I$ $b = 0.733184 - 0.166462I$	$2.70688 + 3.25300I$	$-4.39402 - 1.56343I$
$u = -0.579065 + 0.988208I$ $a = -0.527800 - 1.214045I$ $b = 0.733184 + 0.166462I$	$2.70688 - 3.25300I$	$-4.39402 + 1.56343I$
$u = -0.411000 - 0.945370I$ $a = 0.758571 - 0.375458I$ $b = -0.159926 - 0.346294I$	$-0.43337 + 1.68301I$	$-2.91269 - 0.19829I$
$u = -0.411000 + 0.945370I$ $a = 0.758571 + 0.375458I$ $b = -0.159926 + 0.346294I$	$-0.43337 - 1.68301I$	$-2.91269 + 0.19829I$
$u = -0.386185 - 1.092592I$ $a = -1.129958 + 0.354062I$ $b = 0.360548 + 1.019793I$	$5.00981 - 0.63384I$	$-1.64435 - 0.40689I$
$u = -0.386185 + 1.092592I$ $a = -1.129958 - 0.354062I$ $b = 0.360548 - 1.019793I$	$5.00981 + 0.63384I$	$-1.64435 + 0.40689I$

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.294254 - 0.900156I$		
$a = 0.889838 - 0.254291I$	$-0.43103 + 1.63888I$	$-4.79988 - 2.71199I$
$b = 0.192184 - 0.303495I$		
$u = -0.294254 + 0.900156I$		
$a = 0.889838 + 0.254291I$	$-0.43103 - 1.63888I$	$-4.79988 + 2.71199I$
$b = 0.192184 + 0.303495I$		
$u = -0.234257 - 1.130475I$		
$a = 0.840745 - 0.057014I$	$4.07584 + 8.10637I$	$-4.24940 - 6.98049I$
$b = 0.59116 - 1.34495I$		
$u = -0.234257 + 1.130475I$		
$a = 0.840745 + 0.057014I$	$4.07584 - 8.10637I$	$-4.24940 + 6.98049I$
$b = 0.59116 + 1.34495I$		
$u = -0.221111 - 1.079493I$		
$a = -0.821842 + 0.181447I$	$-1.42166 + 4.84212I$	$-9.02424 - 7.62059I$
$b = -0.613293 + 1.011206I$		
$u = -0.221111 + 1.079493I$		
$a = -0.821842 - 0.181447I$	$-1.42166 - 4.84212I$	$-9.02424 + 7.62059I$
$b = -0.613293 - 1.011206I$		
$u = -0.070350 - 0.957209I$		
$a = 0.843157 - 0.528242I$	$-0.22072 + 2.23623I$	$-9.39240 - 3.87464I$
$b = 1.012247 - 0.111658I$		
$u = -0.070350 + 0.957209I$		
$a = 0.843157 + 0.528242I$	$-0.22072 - 2.23623I$	$-9.39240 + 3.87464I$
$b = 1.012247 + 0.111658I$		
$u = 0.046272 - 0.846532I$		
$a = -1.18927 + 0.76890I$	$-2.85410 - 0.74308I$	$-13.57323 + 1.00600I$
$b = -0.905005 - 0.577259I$		
$u = 0.046272 + 0.846532I$		
$a = -1.18927 - 0.76890I$	$-2.85410 + 0.74308I$	$-13.57323 - 1.00600I$
$b = -0.905005 + 0.577259I$		

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.145913 - 0.817129I$ $a = 1.44787 - 1.01076I$ $b = 0.884513 + 1.043556I$	$1.92041 - 4.01720I$	$-8.21820 + 1.67425I$
$u = 0.145913 + 0.817129I$ $a = 1.44787 + 1.01076I$ $b = 0.884513 - 1.043556I$	$1.92041 + 4.01720I$	$-8.21820 - 1.67425I$
$u = 0.174207$ $a = 3.27862$ $b = -0.507940$	-0.822844	-12.1164
$u = 0.293144 - 0.279322I$ $a = -2.67050 + 0.08527I$ $b = 0.668951 - 0.608073I$	$3.36777 + 2.26311I$	$-4.02051 - 3.80459I$
$u = 0.293144 + 0.279322I$ $a = -2.67050 - 0.08527I$ $b = 0.668951 + 0.608073I$	$3.36777 - 2.26311I$	$-4.02051 + 3.80459I$
$u = 0.710335 - 0.874003I$ $a = 0.541401 + 0.977846I$ $b = -1.50306 + 0.11683I$	$0.69484 - 2.72065I$	$-5.28856 + 3.23335I$
$u = 0.710335 + 0.874003I$ $a = 0.541401 - 0.977846I$ $b = -1.50306 - 0.11683I$	$0.69484 + 2.72065I$	$-5.28856 - 3.23335I$
$u = 0.711635 - 0.923729I$ $a = -0.071999 - 1.393304I$ $b = 1.46379 + 0.43402I$	$4.23779 - 6.64103I$	$-2.08485 + 7.15718I$
$u = 0.711635 + 0.923729I$ $a = -0.071999 + 1.393304I$ $b = 1.46379 - 0.43402I$	$4.23779 + 6.64103I$	$-2.08485 - 7.15718I$
$u = 0.716145 - 0.819187I$ $a = -0.945498 - 0.434435I$ $b = 1.40998 - 0.63877I$	$4.56397 + 1.17086I$	$-0.582423 - 0.800500I$

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.716145 + 0.819187I$ $a = -0.945498 + 0.434435I$ $b = 1.40998 + 0.63877I$	$4.56397 - 1.17086I$	$-0.582423 + 0.800500I$
$u = 0.759691 - 1.020254I$ $a = -1.13322 + 1.78580I$ $b = -0.76006 - 1.47046I$	$4.95411 - 10.59556I$	$-4.87701 + 8.34040I$
$u = 0.759691 + 1.020254I$ $a = -1.13322 - 1.78580I$ $b = -0.76006 + 1.47046I$	$4.95411 + 10.59556I$	$-4.87701 - 8.34040I$
$u = 0.766562 - 0.991374I$ $a = 0.96808 - 1.47841I$ $b = 0.729701 + 1.117907I$	$6.01697 - 6.28313I$	$-2.62916 + 2.96475I$
$u = 0.766562 + 0.991374I$ $a = 0.96808 + 1.47841I$ $b = 0.729701 - 1.117907I$	$6.01697 + 6.28313I$	$-2.62916 - 2.96475I$
$u = 0.767113 - 1.038144I$ $a = 1.33064 - 1.89314I$ $b = 0.64323 + 1.67431I$	$10.7235 - 14.3183I$	$-1.16592 + 8.43441I$
$u = 0.767113 + 1.038144I$ $a = 1.33064 + 1.89314I$ $b = 0.64323 - 1.67431I$	$10.7235 + 14.3183I$	$-1.16592 - 8.43441I$
$u = 0.806919 - 0.984385I$ $a = -1.27465 + 1.07750I$ $b = -0.272115 - 0.948431I$	$12.92482 - 4.14012I$	$1.10453 + 2.87092I$
$u = 0.806919 + 0.984385I$ $a = -1.27465 - 1.07750I$ $b = -0.272115 + 0.948431I$	$12.92482 + 4.14012I$	$1.10453 - 2.87092I$
$u = 0.846418 - 0.761999I$ $a = -0.471724 + 1.032251I$ $b = 0.571036 - 1.197994I$	$6.72836 + 0.26468I$	$-1.39302 + 2.25121I$

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.846418 + 0.761999I$ $a = -0.471724 - 1.032251I$ $b = 0.571036 + 1.197994I$	$6.72836 - 0.26468I$	$-1.39302 - 2.25121I$
$u = 0.864422 - 0.721606I$ $a = 0.74235 - 1.40599I$ $b = -0.62330 + 1.47673I$	$5.87637 + 4.55093I$	$-3.16383 - 3.59669I$
$u = 0.864422 + 0.721606I$ $a = 0.74235 + 1.40599I$ $b = -0.62330 - 1.47673I$	$5.87637 - 4.55093I$	$-3.16383 + 3.59669I$
$u = 0.880016 - 0.800315I$ $a = -0.098223 - 1.121401I$ $b = -0.203921 + 1.080732I$	$13.49996 - 2.10845I$	$1.94269 + 2.17164I$
$u = 0.880016 + 0.800315I$ $a = -0.098223 + 1.121401I$ $b = -0.203921 - 1.080732I$	$13.49996 + 2.10845I$	$1.94269 - 2.17164I$
$u = 0.892838 - 0.709779I$ $a = -0.72817 + 1.72293I$ $b = 0.54713 - 1.65321I$	$11.7431 + 8.1696I$	$0.48680 - 3.72548I$
$u = 0.892838 + 0.709779I$ $a = -0.72817 - 1.72293I$ $b = 0.54713 + 1.65321I$	$11.7431 - 8.1696I$	$0.48680 + 3.72548I$

III. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1	$(u^2 + u + 1)^3(u^{57} + 4u^{56} + \dots + 7u + 1)$
c_2, c_5	$(u^2 + u + 1)^3(u^{57} + 18u^{56} + \dots + 23u - 1)$
c_3, c_8	$u^6(u^{57} + u^{56} + \dots + 160u + 64)$
c_4	$(u^2 - u + 1)^3(u^{57} + 4u^{56} + \dots + 7u + 1)$
c_6, c_7	$(u^3 - u^2 + 2u - 1)^2(u^{57} + 3u^{56} + \dots - 6u - 1)$
c_9	$(u^3 - u^2 + 1)^2(u^{57} + 3u^{56} + \dots - 624u + 73)$
c_{10}	$(u^3 + u^2 + 2u + 1)^2(u^{57} + 3u^{56} + \dots - 6u - 1)$
c_{11}	$(u^3 - u^2 + 1)^2(u^{57} + 11u^{56} + \dots - 2040u - 209)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_4	$(y^2 + y + 1)^3(y^{57} + 18y^{56} + \dots + 23y - 1)$
c_2, c_5	$(y^2 + y + 1)^3(y^{57} + 46y^{56} + \dots + 1015y - 1)$
c_3, c_8	$y^6(y^{57} + 35y^{56} + \dots - 39936y - 4096)$
c_6, c_7, c_{10}	$(y^3 + 3y^2 + 2y - 1)^2(y^{57} + 53y^{56} + \dots + 6y - 1)$
c_9	$(y^3 - y^2 + 2y - 1)^2(y^{57} + 9y^{56} + \dots - 41762y - 5329)$
c_{11}	$(y^3 - y^2 + 2y - 1)^2(y^{57} + 29y^{56} + \dots - 624082y - 43681)$