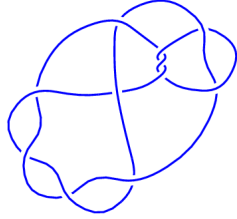
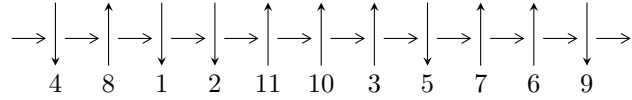


11a₂₅₈ (K11a₂₅₈)

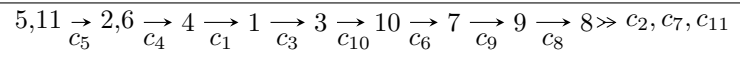


1

Arc Sequences



Solving Sequence



Representation Ideals

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

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

$$I_2^u = \langle u^{41} + 5u^{40} + \dots - 3u - 1, u^{40} + 4u^{39} + \dots + 8b - 1, u^{40} + 4u^{39} + \dots + 8a - 1 \rangle$$

There are 2 irreducible components with 45 representations.

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

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

(i) Arc colorings

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

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

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

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

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

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

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

$$a_{10} = \begin{pmatrix} a^3 + a \\ a^3 - a^2 + 2a - 1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} a^3 - a^2 + 2a - 1 \\ 0 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} a^3 - a^2 + 2a - 1 \\ a^3 - a^2 + 2a - 1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} a^3 - a^2 + 2a - 1 \\ 0 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} a^3 - a^2 + 2a - 1 \\ 0 \end{pmatrix}$$

(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
$u = 1.00000$ $a = 0.10488 - 1.55249I$ $b = -0.89512 - 1.55249I$	$-8.43568 - 3.16396I$	$-5.67855 + 1.65351I$
$u = 1.00000$ $a = 0.10488 + 1.55249I$ $b = -0.89512 + 1.55249I$	$-8.43568 + 3.16396I$	$-5.67855 - 1.65351I$
$u = 1.00000$ $a = 0.395123 - 0.506844I$ $b = -0.604877 - 0.506844I$	$-1.43393 - 1.41510I$	$-0.82145 + 5.62908I$
$u = 1.00000$ $a = 0.395123 + 0.506844I$ $b = -0.604877 + 0.506844I$	$-1.43393 + 1.41510I$	$-0.82145 - 5.62908I$

II.

$$I_2^u = \langle u^{41} + 5u^{40} + \dots - 3u - 1, u^{40} + 4u^{39} + \dots + 8b - 1, u^{40} + 4u^{39} + \dots + 8a - 1 \rangle$$

(i) Arc colorings

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

$$a_{11} = \begin{pmatrix} -\frac{1}{8}u^{40} - \frac{1}{2}u^{39} + \dots + \frac{17}{4}u + \frac{1}{8} \\ -\frac{1}{8}u^{40} - \frac{1}{2}u^{39} + \dots + \frac{5}{4}u + \frac{1}{8} \end{pmatrix}$$

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

$$a_6 = \begin{pmatrix} \frac{9}{8}u^{40} + \frac{17}{4}u^{39} + \dots - 2u - \frac{7}{8} \\ \frac{5}{4}u^{40} + \frac{19}{4}u^{39} + \dots - \frac{5}{4}u - 1 \end{pmatrix}$$

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

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

$$a_3 = \begin{pmatrix} -u^3 + 2u \\ -u^3 + u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -7.50000u^{40} - 28.5000u^{39} + \dots + 17.5000u + 6.50000 \\ -\frac{29}{4}u^{40} - \frac{109}{4}u^{39} + \dots + \frac{55}{4}u + 6 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 13u^{40} + \frac{185}{4}u^{39} + \dots - \frac{85}{4}u - \frac{31}{4} \\ \frac{31}{4}u^{40} + \frac{53}{2}u^{39} + \dots - 11u - \frac{17}{4} \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -\frac{43}{4}u^{40} - \frac{155}{4}u^{39} + \dots + \frac{73}{4}u + 7 \\ -6.50000u^{40} - 25.2500u^{39} + \dots + 12.2500u + 5.25000 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -\frac{43}{4}u^{40} - \frac{155}{4}u^{39} + \dots + \frac{73}{4}u + 7 \\ \frac{53}{4}u^{40} + \frac{95}{2}u^{39} + \dots - 22u - \frac{39}{4} \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -\frac{43}{4}u^{40} - \frac{155}{4}u^{39} + \dots + \frac{73}{4}u + 7 \\ \frac{53}{4}u^{40} + \frac{95}{2}u^{39} + \dots - 22u - \frac{39}{4} \end{pmatrix}$$

(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
$u = -1.58265 - 0.18117I$ $a = -0.165894 - 1.023684I$ $b = 0.38748 - 4.17159I$	$-19.3092 - 0.9583I$	$-9.77193 + 0.58041I$
$u = -1.58265 + 0.18117I$ $a = -0.165894 + 1.023684I$ $b = 0.38748 + 4.17159I$	$-19.3092 + 0.9583I$	$-9.77193 - 0.58041I$
$u = -1.52685 - 0.19609I$ $a = -0.278069 - 0.548602I$ $b = 0.01713 - 1.76368I$	$-10.55128 - 2.41180I$	$-8.26396 - 0.10124I$
$u = -1.52685 + 0.19609I$ $a = -0.278069 + 0.548602I$ $b = 0.01713 + 1.76368I$	$-10.55128 + 2.41180I$	$-8.26396 + 0.10124I$
$u = -1.52575 - 0.31574I$ $a = 0.116575 + 1.039295I$ $b = 1.94923 + 3.91053I$	$-17.2037 - 11.9877I$	$-8.05676 + 5.99300I$
$u = -1.52575 + 0.31574I$ $a = 0.116575 - 1.039295I$ $b = 1.94923 - 3.91053I$	$-17.2037 + 11.9877I$	$-8.05676 - 5.99300I$
$u = -1.50901 - 0.28951I$ $a = -0.235486 + 0.541376I$ $b = 0.81785 + 2.20014I$	$-9.13999 - 9.48739I$	$-5.97929 + 7.42423I$
$u = -1.50901 + 0.28951I$ $a = -0.235486 - 0.541376I$ $b = 0.81785 - 2.20014I$	$-9.13999 + 9.48739I$	$-5.97929 - 7.42423I$
$u = -1.49556 - 0.25090I$ $a = -0.429849 - 0.015499I$ $b = -0.002514 + 0.418220I$	$-7.31234 - 5.60210I$	$-2.80476 + 2.85114I$
$u = -1.49556 + 0.25090I$ $a = -0.429849 + 0.015499I$ $b = -0.002514 - 0.418220I$	$-7.31234 + 5.60210I$	$-2.80476 - 2.85114I$

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.365970 - 0.031939I$ $a = 0.411373 - 0.351756I$ $b = -0.759245 - 0.489927I$	$-3.50700 - 1.95785I$	$-4.15911 + 3.79195I$
$u = -1.365970 + 0.031939I$ $a = 0.411373 + 0.351756I$ $b = -0.759245 + 0.489927I$	$-3.50700 + 1.95785I$	$-4.15911 - 3.79195I$
$u = -1.359664 - 0.109695I$ $a = 0.011264 - 1.091361I$ $b = -1.11338 - 1.47051I$	$-9.84300 - 4.44580I$	$-7.49047 + 4.00982I$
$u = -1.359664 + 0.109695I$ $a = 0.011264 + 1.091361I$ $b = -1.11338 + 1.47051I$	$-9.84300 + 4.44580I$	$-7.49047 - 4.00982I$
$u = -0.363345 - 0.258087I$ $a = -1.84934 - 3.01924I$ $b = -0.24356 - 1.66754I$	$-7.29387 - 3.70140I$	$0.13489 + 3.24211I$
$u = -0.363345 + 0.258087I$ $a = -1.84934 + 3.01924I$ $b = -0.24356 + 1.66754I$	$-7.29387 + 3.70140I$	$0.13489 - 3.24211I$
$u = -0.218730 - 0.254700I$ $a = -0.55232 - 2.03558I$ $b = 0.120038 - 0.786549I$	$0.06188 - 1.89506I$	$3.00107 + 4.96508I$
$u = -0.218730 + 0.254700I$ $a = -0.55232 + 2.03558I$ $b = 0.120038 + 0.786549I$	$0.06188 + 1.89506I$	$3.00107 - 4.96508I$
$u = 0.002285 - 0.351914I$ $a = 0.99770 - 1.12056I$ $b = 0.400696 - 0.103514I$	$0.739118 + 0.963294I$	$5.38374 - 5.24951I$
$u = 0.002285 + 0.351914I$ $a = 0.99770 + 1.12056I$ $b = 0.400696 + 0.103514I$	$0.739118 - 0.963294I$	$5.38374 + 5.24951I$

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.064994 - 0.588385I$ $a = 2.52659 - 0.35703I$ $b = 0.497557 + 0.347689I$	$-5.44874 + 2.20051I$	$-0.49288 - 3.58387I$
$u = 0.064994 + 0.588385I$ $a = 2.52659 + 0.35703I$ $b = 0.497557 - 0.347689I$	$-5.44874 - 2.20051I$	$-0.49288 + 3.58387I$
$u = 0.450262 - 0.797995I$ $a = -0.447834 + 0.814481I$ $b = -0.040046 + 1.223008I$	$-2.77750 + 5.51756I$	$-3.79773 - 7.77564I$
$u = 0.450262 + 0.797995I$ $a = -0.447834 - 0.814481I$ $b = -0.040046 - 1.223008I$	$-2.77750 - 5.51756I$	$-3.79773 + 7.77564I$
$u = 0.451556 - 0.680540I$ $a = 0.458537 + 0.469762I$ $b = -0.064813 + 0.604513I$	$-0.98467 + 2.16041I$	$0.30534 - 3.36601I$
$u = 0.451556 + 0.680540I$ $a = 0.458537 - 0.469762I$ $b = -0.064813 - 0.604513I$	$-0.98467 - 2.16041I$	$0.30534 + 3.36601I$
$u = 0.463101 - 0.864387I$ $a = -1.38884 + 0.89316I$ $b = 0.00016 + 1.91545I$	$-10.75102 + 7.67961I$	$-5.88345 - 5.74816I$
$u = 0.463101 + 0.864387I$ $a = -1.38884 - 0.89316I$ $b = 0.00016 - 1.91545I$	$-10.75102 - 7.67961I$	$-5.88345 + 5.74816I$
$u = 0.644526 - 0.652721I$ $a = 0.843661 - 0.304939I$ $b = -0.369469 - 0.080340I$	$-3.46087 - 0.57126I$	$-6.38744 + 1.36032I$
$u = 0.644526 + 0.652721I$ $a = 0.843661 + 0.304939I$ $b = -0.369469 + 0.080340I$	$-3.46087 + 0.57126I$	$-6.38744 - 1.36032I$

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.720117 - 0.732589I$		
$a = 1.19187 - 1.03395I$	$-11.55895 - 2.26622I$	$-7.69126 + 0.18572I$
$b = -0.894217 - 0.895332I$		
$u = 0.720117 + 0.732589I$		
$a = 1.19187 + 1.03395I$	$-11.55895 + 2.26622I$	$-7.69126 - 0.18572I$
$b = -0.894217 + 0.895332I$		
$u = 0.984199 - 0.167639I$		
$a = 0.095272 + 0.438182I$	$-1.84031 + 0.69258I$	$-6.89864 + 1.74884I$
$b = -0.854127 + 0.635027I$		
$u = 0.984199 + 0.167639I$		
$a = 0.095272 - 0.438182I$	$-1.84031 - 0.69258I$	$-6.89864 - 1.74884I$
$b = -0.854127 - 0.635027I$		
$u = 1.123465 - 0.320823I$		
$a = -0.347957 + 1.278862I$	$-8.62893 + 1.18234I$	$-6.12242 + 0.09680I$
$b = -1.46601 + 2.25189I$		
$u = 1.123465 + 0.320823I$		
$a = -0.347957 - 1.278862I$	$-8.62893 - 1.18234I$	$-6.12242 - 0.09680I$
$b = -1.46601 - 2.25189I$		
$u = 1.34522$		
$a = -0.382415$	-3.09864	-0.703579
$b = -0.411122$		
$u = 1.409359 - 0.075417I$		
$a = -0.259656 - 0.542452I$	$-5.20973 + 3.10308I$	$-5.68137 - 4.55677I$
$b = 0.34262 - 2.46670I$		
$u = 1.409359 + 0.075417I$		
$a = -0.259656 + 0.542452I$	$-5.20973 - 3.10308I$	$-5.68137 + 4.55677I$
$b = 0.34262 + 2.46670I$		
$u = 1.46107 - 0.09654I$		
$a = -0.006389 - 1.108921I$	$-13.2971 + 5.0740I$	$-7.49177 - 2.86395I$
$b = 1.48020 - 4.84555I$		
Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.46107 + 0.09654I$		
$a = -0.006389 + 1.108921I$	$-13.2971 - 5.0740I$	$-7.49177 + 2.86395I$
$b = 1.48020 + 4.84555I$		

III. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1	$(u - 1)^4(u^{41} + 5u^{40} + \dots - 3u - 1)$
c_2, c_7	$u^4(u^{41} + u^{40} + \dots + 8u + 16)$
c_3, c_4	$(u + 1)^4(u^{41} + 5u^{40} + \dots - 3u - 1)$
c_5, c_6	$(u^4 + u^3 + 3u^2 + 2u + 1)(u^{41} + 2u^{40} + \dots - 3u - 1)$
c_8	$(u^4 - u^3 + u^2 + 1)(u^{41} + 2u^{40} + \dots - 20u - 100)$
c_9, c_{10}	$(u^4 - u^3 + 3u^2 - 2u + 1)(u^{41} + 2u^{40} + \dots - 3u - 1)$
c_{11}	$(u^4 - u^3 + u^2 + 1)(u^{41} + 12u^{40} + \dots + 549u + 131)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_3, c_4	$(y - 1)^4(y^{41} - 41y^{40} + \dots - 13y - 1)$
c_2, c_7	$y^4(y^{41} + 27y^{40} + \dots - 960y - 256)$
c_5, c_6, c_9 c_{10}	$(y^4 + 5y^3 + \dots + 2y + 1)(y^{41} + 48y^{40} + \dots - 7y - 1)$
c_8	$(y^4 + y^3 + 3y^2 + 2y + 1)(y^{41} - 24y^{40} + \dots - 163800y - 10000)$
c_{11}	$(y^4 + y^3 + 3y^2 + 2y + 1)(y^{41} - 12y^{40} + \dots + 112237y - 17161)$