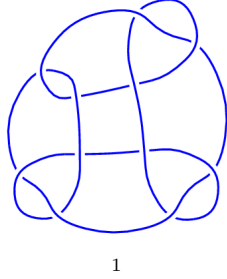
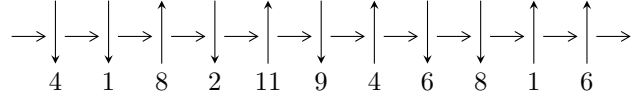


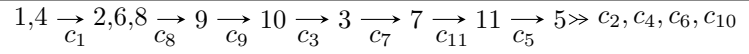
11n₇₄ (K11n₇₄)



Arc Sequences



Solving Sequence



Representation Ideals

$$I = \bigcap_{i=1}^5 I_i^u \bigcap I_1^v$$

$$I_1^u = \langle c, b - 1, u - 1, da - 1 \rangle$$

$$I_2^u = \langle a, c, b - 1, d - 1, u - 1 \rangle$$

$$I_3^u = \langle b, c, u - 1, a + 1, d + 1 \rangle$$

$$I_4^u = \langle u^3 + 2u^2 + 4a + 3u, -u^3 + 4b + u + 2, u^3 + 4d + 3u - 6, u^4 + 2u^3 + 3u^2 - 4u - 4, u^3 + 4u^2 + 8c + 3u - 6 \rangle$$

$$I_5^u = \langle -u^3 - u^2 + 2d - u + 1, u^6 + 3u^5 + 5u^4 + 3u^3 + 2a - 6u + 4, u^7 + 3u^6 + 5u^5 + 3u^4 - u^3 - 7u^2 + 3u + 1, u^6 + 3u^5 + 6u^4 + 4u^3 - u^2 + 4b - 7u + 2, u^6 + 3u^5 + 5u^4 + 4u^3 + u^2 + 2c - 5u + 3 \rangle$$

$$I_1^v = \langle a, d, c - 1, v - 1, b + 1 \rangle$$

There are 6 irreducible components with 14 representations.

There are 1 irreducible components of $\dim_{\mathbb{C}} = 1$ for 11n₇₄

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

$$\mathbf{I. } I_1^u = \langle c, b - 1, u - 1, da - 1 \rangle$$

(i) Arc colorings

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

$$a_4 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

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

$$a_6 = \begin{pmatrix} a \\ 1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0 \\ d \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -a \\ d - 1 \end{pmatrix}$$

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

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

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

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

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

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

(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
$u = \dots$		
$a = \dots$		
$b = \dots$	-1.64493	-7.01802 - 4.61409I
$c = \dots$		
$d = \dots$		

$$\text{II. } I_2^u = \langle a, c, b - 1, d - 1, u - 1 \rangle$$

(i) Arc colorings

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

$$a_4 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

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

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

$$a_8 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

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

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

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

(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
$u = 1.00000$		
$a = 0$		
$b = 1.00000$	0	0
$c = 0$		
$d = 1.00000$		

$$\text{III. } I_3^u = \langle b, c, u - 1, a + 1, d + 1 \rangle$$

(i) Arc colorings

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

$$a_4 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

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

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

$$a_8 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 1 \\ -1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

(ii) Obstruction class = 1

(iii) Cusp Shapes =unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.00000$		
$a = -1.00000$		
$b = 0$	-3.28987	-12.0000
$c = 0$		
$d = -1.00000$		

$$\text{IV. } I_4^u = \langle u^3 + 2u^2 + 4a + 3u, -u^3 + 4b + u + 2, u^3 + 4d + 3u - 6, u^4 + 2u^3 + 3u^2 - 4u - 4, u^3 + 4u^2 + 8c + 3u - 6 \rangle$$

(i) Arc colorings

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

$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

$$a_6 = \begin{pmatrix} -\frac{1}{4}u^3 - \frac{1}{2}u^2 - \frac{3}{4}u \\ \frac{1}{4}u^3 - \frac{1}{4}u - \frac{1}{2} \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -\frac{1}{8}u^3 - \frac{1}{2}u^2 - \frac{3}{8}u + \frac{3}{4} \\ -\frac{1}{4}u^3 - \frac{3}{4}u + \frac{3}{2} \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -\frac{1}{4}u^3 - \frac{1}{2}u^2 - \frac{3}{4}u \\ -\frac{1}{4}u^3 - u^2 - \frac{3}{4}u + \frac{5}{2} \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} \frac{5}{8}u^3 - \frac{9}{8}u - \frac{5}{4} \\ -\frac{1}{2}u^3 + \frac{1}{2}u \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} -\frac{1}{8}u^3 - \frac{1}{2}u^2 - \frac{3}{8}u + \frac{3}{4} \\ \frac{1}{4}u^3 + u^2 - \frac{9}{4}u + \frac{1}{2} \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -\frac{1}{8}u^3 + \frac{5}{8}u + \frac{5}{4} \\ \frac{1}{2}u^3 - \frac{1}{2}u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

(ii) Obstruction class = -1

(iii) Cusp Shapes = unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.20711 - 1.83612I$ $a = -0.750000 - 0.380272I$ $b = 2.41421$ $c = 0.85355 - 1.29833I$ $d = -0.20711 + 1.83612I$	17.2718	0
$u = -1.20711 + 1.83612I$ $a = -0.750000 + 0.380272I$ $b = 2.41421$ $c = 0.85355 + 1.29833I$ $d = -0.20711 - 1.83612I$	17.2718	0
$u = -0.726339$ $a = 0.376768$ $b = -0.414214$ $c = 0.806492$ $d = 2.14055$	-2.46740	0
$u = 1.14055$ $a = -1.87677$ $b = -0.414214$ $c = -0.513599$ $d = 0.273661$	-2.46740	0

$$\mathbf{V. } I_5^u = \langle -u^3 - u^2 + 2d - u + 1, u^6 + 3u^5 + \dots + 2a + 4, u^7 + 3u^6 + \dots + 3u + 1, u^6 + 3u^5 + \dots + 4b + 2, u^6 + 3u^5 + \dots + 2c + 3 \rangle$$

(i) Arc colorings

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

$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

$$a_6 = \begin{pmatrix} -\frac{1}{2}u^6 - \frac{3}{2}u^5 + \dots + 3u - 2 \\ -\frac{1}{4}u^6 - \frac{3}{4}u^5 + \dots + \frac{7}{4}u - \frac{1}{2} \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -\frac{1}{2}u^6 - \frac{3}{2}u^5 + \dots + \frac{5}{2}u - \frac{3}{2} \\ \frac{1}{2}u^3 + \frac{1}{2}u^2 + \frac{1}{2}u - \frac{1}{2} \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -\frac{1}{2}u^6 - \frac{3}{2}u^5 + \dots + 3u - 2 \\ \frac{1}{4}u^5 + \frac{1}{4}u^4 + \dots + \frac{1}{4}u - \frac{3}{4} \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -\frac{1}{2}u^6 - u^5 + \dots + \frac{5}{2}u - 2 \\ -\frac{1}{4}u^5 - \frac{1}{4}u^4 + u^2 + \frac{1}{4}u - \frac{3}{4} \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} -\frac{1}{2}u^6 - \frac{3}{2}u^5 + \dots + \frac{5}{2}u - \frac{3}{2} \\ -\frac{1}{2}u^5 - u^4 + \dots + u - \frac{1}{2} \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} \frac{1}{2}u^6 + \frac{5}{4}u^5 + \dots - \frac{11}{4}u + \frac{11}{4} \\ \frac{1}{4}u^5 + \frac{1}{4}u^4 - u^2 - \frac{1}{4}u + \frac{3}{4} \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

(ii) Obstruction class = -1

(iii) Cusp Shapes = unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I_5^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.56387 - 1.00084I$ $a = -0.666881 - 0.919602I$ $b = 1.84642 - 0.60235I$ $c = -0.544347 + 1.185976I$ $d = -0.12253 - 2.10558I$	$14.9463 - 10.4045I$	$-1.17625 + 4.09895I$
$u = -1.56387 + 1.00084I$ $a = -0.666881 + 0.919602I$ $b = 1.84642 + 0.60235I$ $c = -0.544347 - 1.185976I$ $d = -0.12253 + 2.10558I$	$14.9463 + 10.4045I$	$-1.17625 - 4.09895I$
$u = -0.46828 - 1.59550I$ $a = 0.812628 + 0.339128I$ $b = -1.45546 + 1.12941I$ $c = 0.97317 - 1.11623I$ $d = -0.16054 + 1.45536I$	$5.28066 - 2.46552I$	$0.37200 + 1.61165I$
$u = -0.46828 + 1.59550I$ $a = 0.812628 - 0.339128I$ $b = -1.45546 - 1.12941I$ $c = 0.97317 + 1.11623I$ $d = -0.16054 - 1.45536I$	$5.28066 + 2.46552I$	$0.37200 - 1.61165I$
$u = -0.222829$ $a = -2.65729$ $b = -0.869789$ $c = -2.06517$ $d = -0.592120$	1.26042	8.87751
$u = 0.643564 - 0.238013I$ $a = -0.317102 + 0.524945I$ $b = 0.543935 + 0.251709I$ $c = -0.396234 + 0.938255I$ $d = 0.079132 - 0.413310I$	$-1.11796 + 1.29283I$	$-4.63450 - 5.74515I$
$u = 0.643564 + 0.238013I$ $a = -0.317102 - 0.524945I$ $b = 0.543935 - 0.251709I$ $c = -0.396234 - 0.938255I$ $d = 0.079132 + 0.413310I$	$-1.11796 - 1.29283I$	$-4.63450 + 5.74515I$

$$\text{VI. } I_1^v = \langle a, d, c - 1, v - 1, b + 1 \rangle$$

(i) Arc colorings

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

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

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

(ii) Obstruction class = 1

(iii) Cusp Shapes =unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I_1^v	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$v = 1.00000$		
$a = 0$		
$b = -1.00000$	0	0
$c = 1.00000$		
$d = 0$		

VII. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1, c_6	$u(u-1)^2(u^4 + 2u^3 + 3u^2 - 4u - 4)$ $(u^7 + 3u^6 + 5u^5 + 3u^4 - u^3 - 7u^2 + 3u + 1)$
c_2, c_9	$u(u+1)^2(u^4 + 2u^3 + 17u^2 - 40u + 16)$ $(u^7 + u^6 + 5u^5 + 29u^4 + 67u^3 - 61u^2 + 23u - 1)$
c_3, c_7	$u^3(u^2 + 4u + 2)^2(u^7 - 6u^5 + 4u^4 + 32u^3 - 12u^2 + 16u - 8)$
c_4, c_8	$u(u+1)^2(u^4 + 2u^3 + 3u^2 - 4u - 4)$ $(u^7 + 3u^6 + 5u^5 + 3u^4 - u^3 - 7u^2 + 3u + 1)$
c_5, c_{11}	$(u)(u-1)(u+1)(-1 + 2u + u^2)^2(u^7 + u^6 + \dots - 8u - 4)$
c_{10}	$u(u+1)^2(u^2 + 6u + 1)^2$ $(u^7 + 9u^6 + 46u^5 + 142u^4 + 297u^3 + 249u^2 + 88u + 16)$

VIII. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_4, c_6 c_8	$y(y-1)^2(y^4 + 2y^3 + 17y^2 - 40y + 16)$ $(y^7 + y^6 + 5y^5 + 29y^4 + 67y^3 - 61y^2 + 23y - 1)$
c_2, c_9	$y(y-1)^2(y^4 + 30y^3 + 481y^2 - 1056y + 256)$ $(y^7 + 9y^6 + 101y^5 - 3y^4 + 8259y^3 - 581y^2 + 407y - 1)$
c_3, c_7	$y^3(y^2 - 12y + 4)^2$ $(y^7 - 12y^6 + 100y^5 - 368y^4 + 928y^3 + 944y^2 + 64y - 64)$
c_5, c_{11}	$y(y-1)^2(y^2 - 6y + 1)^2$ $(y^7 - 9y^6 + 46y^5 - 142y^4 + 297y^3 - 249y^2 + 88y - 16)$
c_{10}	$y(y-1)^2(y^2 - 34y + 1)^2$ $(y^7 + 11y^6 + 154y^5 + 2854y^4 + 25301y^3 - 14273y^2 - 224y - 256)$