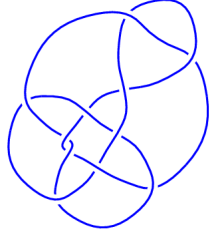
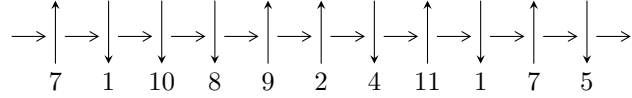


11n<sub>128</sub> (K11n<sub>128</sub>)

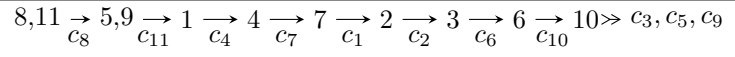


1

**Arc Sequences**



**Solving Sequence**



**Representation Ideals**

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

$$I_1^u = \langle u^{11} - 4u^9 + u^8 + 6u^7 - 4u^6 - 3u^5 + 4u^4 - u^3 + u^2 + u - 3, \\ - 7u^{10} - 4u^9 + 22u^8 - 29u^6 + 17u^5 + 14u^4 - 7u^3 + 3u^2 + 13b - 9u - 1, \\ - 4u^{10} - 6u^9 + 7u^8 + 26u^7 - 24u^6 - 20u^5 + 60u^4 - 4u^3 - 41u^2 + 39a + 32u - 34 \rangle$$

$$I_2^u = \langle u^{32} - u^{31} + \dots - 12u + 1, 9.89687 \times 10^{16}u^{31} - 1.71588 \times 10^{17}u^{30} + \dots + 5.00890 \times 10^{17}b - 1.23096 \times 10^{18} \\ 1.22348 \times 10^{17}u^{31} + 8.03736 \times 10^{17}u^{30} + \dots + 5.00890 \times 10^{17}a + 2.46155 \times 10^{18} \rangle$$

There are 2 irreducible components with 43 representations.

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

$$\langle u^{11} - 4u^9 + \dots + u - 3, -7u^{10} - 4u^9 + \dots + 13b - 1, -4u^{10} - 6u^9 + \dots + 39a - 34 \rangle$$

I.  $I_1^u =$

(i) Arc colorings

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

$$a_{11} = \begin{pmatrix} 0.102564u^{10} + 0.153846u^9 + \dots - 0.820513u + 0.871795 \\ 0.538462u^{10} + 0.307692u^9 + \dots + 0.692308u + 0.0769231 \end{pmatrix}$$

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

$$a_9 = \begin{pmatrix} -0.205128u^{10} + 0.692308u^9 + \dots - 0.358974u + 0.256410 \\ -0.461538u^{10} + 0.307692u^9 + \dots - 0.307692u + 0.0769231 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -0.435897u^{10} - 0.153846u^9 + \dots - 1.51282u + 0.794872 \\ 0.538462u^{10} + 0.307692u^9 + \dots + 0.692308u + 0.0769231 \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.487179u^{10} - 0.769231u^9 + \dots + 1.10256u - 0.358974 \\ 0.384615u^{10} + 0.0769231u^9 + \dots - 0.0769231u + 0.769231 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 1.12821u^{10} - 1.30769u^9 + \dots + 4.97436u - 3.41026 \\ -0.153846u^{10} + 0.769231u^9 + \dots - 1.76923u + 2.69231 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.641026u^{10} + 0.538462u^9 + \dots - 1.87179u + 2.05128 \\ -0.461538u^{10} + 0.307692u^9 + \dots - 1.30769u + 1.07692 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -0.897436u^{10} + 0.153846u^9 + \dots - 2.82051u + 0.871795 \\ 0.538462u^{10} + 0.307692u^9 + \dots + 1.69231u + 0.0769231 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -0.897436u^{10} + 0.153846u^9 + \dots - 2.82051u + 0.871795 \\ 0.538462u^{10} + 0.307692u^9 + \dots + 1.69231u + 0.0769231 \end{pmatrix}$$

(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
$u = -1.303899 - 0.374956I$		
$a = -0.636425 + 0.878595I$	$-3.56282 - 6.44913I$	$-4.62110 + 5.90724I$
$b = 1.059853 + 0.766199I$		
$u = -1.303899 + 0.374956I$		
$a = -0.636425 - 0.878595I$	$-3.56282 + 6.44913I$	$-4.62110 - 5.90724I$
$b = 1.059853 - 0.766199I$		
$u = -1.113084 - 0.252147I$		
$a = 1.243187 + 0.126313I$	$-12.65170 - 1.14869I$	$-5.06516 - 0.05051I$
$b = -0.266277 + 0.765184I$		
$u = -1.113084 + 0.252147I$		
$a = 1.243187 - 0.126313I$	$-12.65170 + 1.14869I$	$-5.06516 + 0.05051I$
$b = -0.266277 - 0.765184I$		
$u = -0.064226 - 0.786482I$		
$a = -0.576520 + 0.820028I$	$0.44585 + 2.19055I$	$-0.27735 - 4.50255I$
$b = -0.735500 + 0.606796I$		
$u = -0.064226 + 0.786482I$		
$a = -0.576520 - 0.820028I$	$0.44585 - 2.19055I$	$-0.27735 + 4.50255I$
$b = -0.735500 - 0.606796I$		
$u = 0.704223 - 0.799205I$		
$a = 0.680741 - 0.256158I$	$-0.834177 + 0.664427I$	$-5.62999 + 1.84817I$
$b = 0.482497 + 0.432213I$		
$u = 0.704223 + 0.799205I$		
$a = 0.680741 + 0.256158I$	$-0.834177 - 0.664427I$	$-5.62999 - 1.84817I$
$b = 0.482497 - 0.432213I$		
$u = 1.130351 - 0.302780I$		
$a = 0.114420 + 1.030366I$	$-2.43632 + 3.36377I$	$-4.69391 - 3.63598I$
$b = -0.722191 + 1.091394I$		
$u = 1.130351 + 0.302780I$		
$a = 0.114420 - 1.030366I$	$-2.43632 - 3.36377I$	$-4.69391 + 3.63598I$
$b = -0.722191 - 1.091394I$		

Solution to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.29327$		
$a = -0.317476$	$-4.68995$	$-8.42499$
$b = 1.36323$		

$$\text{II. } I_2^u = \langle u^{32} - u^{31} + \dots - 12u + 1, 9.90 \times 10^{16}u^{31} - 1.72 \times 10^{17}u^{30} + \dots + 5.01 \times 10^{17}b - 1.23 \times 10^{18}, 1.22 \times 10^{17}u^{31} + 8.04 \times 10^{17}u^{30} + \dots + 5.01 \times 10^{17}a + 2.46 \times 10^{18} \rangle$$

(i) Arc colorings

$$\begin{aligned} a_8 &= \begin{pmatrix} 0 \\ u \end{pmatrix} \\ a_{11} &= \begin{pmatrix} -0.244262u^{31} - 1.60461u^{30} + \dots + 51.1148u - 4.91435 \\ -0.197586u^{31} + 0.342566u^{30} + \dots - 13.4573u + 2.45755 \end{pmatrix} \\ a_5 &= \begin{pmatrix} 1 \\ 0 \end{pmatrix} \\ a_9 &= \begin{pmatrix} 3.39545u^{31} - 1.12542u^{30} + \dots + 65.7600u - 9.37715 \\ 0.771918u^{31} - 0.0178954u^{30} + \dots + 15.0150u - 1.00246 \end{pmatrix} \\ a_1 &= \begin{pmatrix} -0.0466763u^{31} - 1.94718u^{30} + \dots + 64.5722u - 7.37190 \\ -0.197586u^{31} + 0.342566u^{30} + \dots - 13.4573u + 2.45755 \end{pmatrix} \\ a_4 &= \begin{pmatrix} 1 \\ -u^2 \end{pmatrix} \\ a_7 &= \begin{pmatrix} u \\ -u^3 + u \end{pmatrix} \\ a_2 &= \begin{pmatrix} -0.590773u^{31} - 1.76202u^{30} + \dots + 59.4915u - 6.72272 \\ -0.199663u^{31} + 0.213550u^{30} + \dots - 14.7748u + 2.74780 \end{pmatrix} \\ a_3 &= \begin{pmatrix} 4.28025u^{31} + 0.484730u^{30} + \dots + 54.0490u - 3.93592 \\ -2.66133u^{31} - 0.797429u^{30} + \dots - 30.9601u + 3.50979 \end{pmatrix} \\ a_6 &= \begin{pmatrix} -1.93811u^{31} - 0.942980u^{30} + \dots - 25.2538u + 6.08360 \\ 1.07477u^{31} + 0.752123u^{30} + \dots + 0.523274u + 0.239711 \end{pmatrix} \\ a_{10} &= \begin{pmatrix} 0.828985u^{31} - 1.68179u^{30} + \dots + 60.1743u - 5.88389 \\ -0.589274u^{31} + 0.367301u^{30} + \dots - 15.2775u + 2.48408 \end{pmatrix} \\ a_{10} &= \begin{pmatrix} 0.828985u^{31} - 1.68179u^{30} + \dots + 60.1743u - 5.88389 \\ -0.589274u^{31} + 0.367301u^{30} + \dots - 15.2775u + 2.48408 \end{pmatrix} \end{aligned}$$

(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
$u = -1.43379 - 0.69251I$		
$a = 0.437105 + 0.491138I$	$-15.2091 - 0.2793I$	$-8.54524 - 0.16406I$
$b = 1.042802 - 0.178645I$		
$u = -1.43379 + 0.69251I$		
$a = 0.437105 - 0.491138I$	$-15.2091 + 0.2793I$	$-8.54524 + 0.16406I$
$b = 1.042802 + 0.178645I$		
$u = -1.36987 - 0.42119I$		
$a = 0.157634 - 0.791867I$	$-5.87267 - 7.08941I$	$-7.09677 + 5.04780I$
$b = -1.37290 - 0.81577I$		
$u = -1.36987 + 0.42119I$		
$a = 0.157634 + 0.791867I$	$-5.87267 + 7.08941I$	$-7.09677 - 5.04780I$
$b = -1.37290 + 0.81577I$		
$u = -1.295736 - 0.161402I$		
$a = 0.125650 - 0.659439I$	$-14.4931 - 2.6399I$	$-9.17083 + 2.92028I$
$b = 1.19979 - 1.83348I$		
$u = -1.295736 + 0.161402I$		
$a = 0.125650 + 0.659439I$	$-14.4931 + 2.6399I$	$-9.17083 - 2.92028I$
$b = 1.19979 + 1.83348I$		
$u = -1.223502 - 0.038660I$		
$a = 0.702725 + 0.804451I$	$-5.17336 - 1.79108I$	$-9.36406 + 4.29945I$
$b = -0.815453 + 0.142941I$		
$u = -1.223502 + 0.038660I$		
$a = 0.702725 - 0.804451I$	$-5.17336 + 1.79108I$	$-9.36406 - 4.29945I$
$b = -0.815453 - 0.142941I$		
$u = -1.197228 - 0.303844I$		
$a = -0.499776 + 1.233171I$	$-1.91400 - 4.83866I$	$-2.54787 + 6.95016I$
$b = 0.874051 + 0.767936I$		
$u = -1.197228 + 0.303844I$		
$a = -0.499776 - 1.233171I$	$-1.91400 + 4.83866I$	$-2.54787 - 6.95016I$
$b = 0.874051 - 0.767936I$		

Solution to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.170624 - 1.162780I$ $a = -0.865413 - 0.778375I$ $b = -1.081778 - 0.698388I$	$-11.45544 - 6.47625I$	$-4.15728 + 4.26891I$
$u = -0.170624 + 1.162780I$ $a = -0.865413 + 0.778375I$ $b = -1.081778 + 0.698388I$	$-11.45544 + 6.47625I$	$-4.15728 - 4.26891I$
$u = -0.162858 - 0.639240I$ $a = -1.079956 + 0.870764I$ $b = -0.529074 + 0.422527I$	$1.26710 + 1.27122I$	$4.54373 - 1.02158I$
$u = -0.162858 + 0.639240I$ $a = -1.079956 - 0.870764I$ $b = -0.529074 - 0.422527I$	$1.26710 - 1.27122I$	$4.54373 + 1.02158I$
$u = 0.082800 - 0.471723I$ $a = 1.44494 - 2.58768I$ $b = -0.762439 - 0.930035I$	$-10.18922 + 0.37972I$	$-2.16269 + 0.17573I$
$u = 0.082800 + 0.471723I$ $a = 1.44494 + 2.58768I$ $b = -0.762439 + 0.930035I$	$-10.18922 - 0.37972I$	$-2.16269 - 0.17573I$
$u = 0.138542 - 1.056330I$ $a = 0.700432 - 0.165424I$ $b = 0.733437 - 0.365394I$	$-1.06384 + 2.01989I$	$-6.33778 - 3.45023I$
$u = 0.138542 + 1.056330I$ $a = 0.700432 + 0.165424I$ $b = 0.733437 + 0.365394I$	$-1.06384 - 2.01989I$	$-6.33778 + 3.45023I$
$u = 0.164476 - 0.076390I$ $a = 2.34687 - 3.05088I$ $b = 0.716191 + 0.638089I$	$-1.10961 - 1.48762I$	$-5.18747 + 2.41383I$
$u = 0.164476 + 0.076390I$ $a = 2.34687 + 3.05088I$ $b = 0.716191 - 0.638089I$	$-1.10961 + 1.48762I$	$-5.18747 - 2.41383I$

Solution to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.535771 - 0.550945I$		
$a = -0.0747958 - 0.0848161I$	$-0.34099 + 1.52893I$	$-0.59741 - 5.96300I$
$b = 0.049461 - 0.604800I$		
$u = 0.535771 + 0.550945I$		
$a = -0.0747958 + 0.0848161I$	$-0.34099 - 1.52893I$	$-0.59741 + 5.96300I$
$b = 0.049461 + 0.604800I$		
$u = 1.195331 - 0.230217I$		
$a = -0.143715 - 0.578971I$	$-2.64686 + 1.18437I$	$-3.89291 - 0.66467I$
$b = 1.100620 - 0.617950I$		
$u = 1.195331 + 0.230217I$		
$a = -0.143715 + 0.578971I$	$-2.64686 - 1.18437I$	$-3.89291 + 0.66467I$
$b = 1.100620 + 0.617950I$		
$u = 1.219351 - 0.077393I$		
$a = 0.447699 + 0.856804I$	$-4.27477 + 2.33689I$	$-7.63645 - 2.31412I$
$b = -1.37078 + 1.24326I$		
$u = 1.219351 + 0.077393I$		
$a = 0.447699 - 0.856804I$	$-4.27477 - 2.33689I$	$-7.63645 + 2.31412I$
$b = -1.37078 - 1.24326I$		
$u = 1.224974 - 0.159550I$		
$a = -1.98616 + 0.81810I$	$-13.62097 + 1.88059I$	$-11.51732 - 4.17618I$
$b = 0.670400 - 0.174363I$		
$u = 1.224974 + 0.159550I$		
$a = -1.98616 - 0.81810I$	$-13.62097 - 1.88059I$	$-11.51732 + 4.17618I$
$b = 0.670400 + 0.174363I$		
$u = 1.34905 - 0.49788I$		
$a = 0.052323 + 0.917678I$	$-5.07213 + 3.71163I$	$-7.67058 - 3.05284I$
$b = -0.839959 + 0.308002I$		
$u = 1.34905 + 0.49788I$		
$a = 0.052323 - 0.917678I$	$-5.07213 - 3.71163I$	$-7.67058 + 3.05284I$
$b = -0.839959 - 0.308002I$		
Solution to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.44332 - 0.48895I$		
$a = -0.265560 - 1.125697I$	$-16.5743 + 12.2619I$	$-6.15908 - 5.48895I$
$b = 1.38562 - 0.96493I$		
$u = 1.44332 + 0.48895I$		
$a = -0.265560 + 1.125697I$	$-16.5743 - 12.2619I$	$-6.15908 + 5.48895I$
$b = 1.38562 + 0.96493I$		

### III. u-Polynomials

Crossings	u-Polynomials at each crossings
$c_1$	$(u^{11} + 6u^9 + 13u^7 + 15u^5 + u^4 + 9u^3 + 2u^2 + 3u + 1)$ $(u^{32} + u^{31} + \dots - 20u + 1)$
$c_2$	$(u^{11} + 12u^{10} + \dots + 5u - 1)(u^{32} + 47u^{31} + \dots - 80u + 1)$
$c_3$	$(u^{11} - u^{10} - 3u^9 - 3u^8 + u^7 + 7u^6 + 12u^5 + 15u^4 + 11u^3 + 7u^2 + 3u + 1)$ $(u^{32} - 28u^{30} + \dots + 154u + 43)$
$c_4$	$(u^{11} - 4u^9 + u^8 + 6u^7 - 4u^6 - 3u^5 + 4u^4 - u^3 + u^2 + u - 3)$ $(u^{32} + u^{31} + \dots + 12u + 1)$
$c_5$	$(u^{11} - u^{10} + u^9 - u^8 + 4u^7 + u^5 - 4u^4 + 2u^3 + u - 1)$ $(u^{32} + 2u^{31} + \dots - 2606u + 1291)$
$c_6$	$(u^{11} + 6u^9 + 13u^7 + 15u^5 - u^4 + 9u^3 - 2u^2 + 3u - 1)$ $(u^{32} + u^{31} + \dots - 20u + 1)$
$c_7$	$(u^{11} - 4u^9 - u^8 + 6u^7 + 4u^6 - 3u^5 - 4u^4 - u^3 - u^2 + u + 3)$ $(u^{32} + u^{31} + \dots + 12u + 1)$
$c_8$	$(u^{11} + 2u^{10} + u^9 - 4u^8 - 6u^7 - 2u^6 + 9u^5 + 13u^4 + 9u^3 + 2u^2 - u - 1)$ $(u^{32} + 9u^{31} + \dots + 26u + 1)$
$c_9$	$(u^{11} - 9u^{10} + \dots + 17u - 3)(u^{32} + 4u^{31} + \dots - 2696u + 589)$
$c_{10}$	$(u^{11} + 2u^{10} + 5u^9 + 4u^8 + u^7 - u^6 - 6u^5 + 4u^4 - 2u^3 + 3u^2 - 3u + 1)$ $(u^{32} + 3u^{31} + \dots + 7138u + 3929)$
$c_{11}$	$(u^{11} + u^{10} + 2u^8 + 4u^7 + u^6 + 4u^4 + u^3 + u^2 + u + 1)$ $(u^{32} + 2u^{31} + \dots + 34u + 19)$



#### IV. Riley Polynomials

Crossings	Riley Polynomials at each crossings
$c_1, c_6$	$(y^{11} + 12y^{10} + \dots + 5y - 1)(y^{32} + 47y^{31} + \dots - 80y + 1)$
$c_2$	$(y^{11} - 20y^{10} + \dots + 121y - 1)(y^{32} - 117y^{31} + \dots + 5428y + 1)$
$c_3$	$(y^{11} - 7y^{10} + \dots - 5y - 1)(y^{32} - 56y^{31} + \dots + 323982y + 1849)$
$c_4, c_7$	$(y^{11} - 8y^{10} + \dots + 7y - 9)(y^{32} - 25y^{31} + \dots - 34y + 1)$
$c_5$	$(y^{11} + y^{10} + 7y^9 + 9y^8 + 14y^7 + 6y^6 + 17y^5 - 6y^4 + 6y^3 - 4y^2 + y - 1)$ $(y^{32} + 24y^{31} + \dots + 12176136y + 1666681)$
$c_8$	$(y^{11} - 2y^{10} + 5y^9 - 2y^8 + 4y^7 + 43y^5 + 5y^4 + 7y^3 + 4y^2 + 5y - 1)$ $(y^{32} + 9y^{31} + \dots - 248y + 1)$
$c_9$	$(y^{11} - 9y^{10} + \dots - 35y - 9)(y^{32} - 62y^{31} + \dots + 1792760y + 346921)$
$c_{10}$	$(y^{11} + 6y^{10} + 11y^9 - 14y^8 - 71y^7 - 83y^6 - 18y^5 + 18y^3 - 5y^2 + 3y - 1)$ $(y^{32} + 37y^{31} + \dots + 205149034y + 15437041)$
$c_{11}$	$(y^{11} - y^{10} + 4y^9 - 6y^8 + 6y^7 - 17y^6 - 6y^5 - 14y^4 - 9y^3 - 7y^2 - y - 1)$ $(y^{32} - 10y^{31} + \dots - 3322y + 361)$