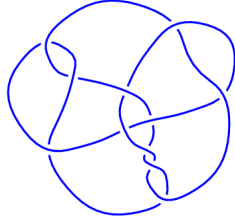
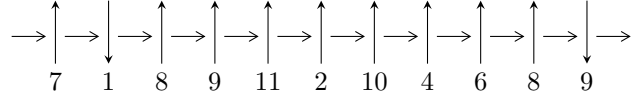


11n₁₀₈ (K11n₁₀₈)

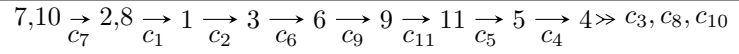


1

Arc Sequences



Solving Sequence



Representation Ideals

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

$$\begin{aligned} I_1^u = & \langle u^{12} + u^{11} + 4u^{10} + 3u^9 + 8u^8 + 5u^7 + 10u^6 + 5u^5 + 7u^4 + 3u^3 + 4u^2 + u + 1, \\ & u^{11} + 3u^9 - u^8 + 5u^7 - 3u^6 + 5u^5 - 5u^4 + 2u^3 - 4u^2 + a + u - 2, \\ & -u^{11} + u^{10} - 2u^9 + 4u^8 - 3u^7 + 7u^6 - 3u^5 + 8u^4 - u^3 + 4u^2 + b - u + 3 \rangle \end{aligned}$$

$$\begin{aligned} I_2^u = & \langle u^{48} + 12u^{46} + \dots + u + 1, -2.70726 \times 10^{41}u^{47} - 8.88694 \times 10^{39}u^{46} + \dots + 3.53065 \times 10^{41}a - 5.45892 \times 10^{41} \\ & 1.51698 \times 10^{41}u^{47} - 2.55741 \times 10^{40}u^{46} + \dots + 3.53065 \times 10^{41}b + 3.08990 \times 10^{41} \rangle \end{aligned}$$

There are 2 irreducible components with 60 representations.

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

$$I_1^u = \langle u^{12} + u^{11} + \dots + u + 1, u^{11} + 3u^9 + \dots + a - 2, -u^{11} + u^{10} + \dots + b + 3 \rangle$$

I.

(i) Arc colorings

$$\begin{aligned}
a_7 &= \begin{pmatrix} 0 \\ u \end{pmatrix} \\
a_{10} &= \begin{pmatrix} -u^{11} - 3u^9 + u^8 - 5u^7 + 3u^6 - 5u^5 + 5u^4 - 2u^3 + 4u^2 - u + 2 \\ u^{11} - u^{10} + 2u^9 - 4u^8 + 3u^7 - 7u^6 + 3u^5 - 8u^4 + u^3 - 4u^2 + u - 3 \end{pmatrix} \\
a_2 &= \begin{pmatrix} 1 \\ 0 \end{pmatrix} \\
a_8 &= \begin{pmatrix} u^{11} + 2u^{10} + 4u^9 + 6u^8 + 7u^7 + 10u^6 + 7u^5 + 10u^4 + 2u^3 + 5u^2 + u + 2 \\ -u^{11} - 2u^{10} + \dots - 3u - 3 \end{pmatrix} \\
a_1 &= \begin{pmatrix} 1 \\ u^2 \end{pmatrix} \\
a_3 &= \begin{pmatrix} u^2 + 1 \\ u^4 \end{pmatrix} \\
a_6 &= \begin{pmatrix} -u \\ u \end{pmatrix} \\
a_9 &= \begin{pmatrix} -u^{11} - u^{10} - 4u^9 - 3u^8 - 8u^7 - 4u^6 - 9u^5 - 2u^4 - 5u^3 + u^2 - 2u + 1 \\ u^{11} + 3u^9 + 6u^7 + 7u^5 - u^4 + 4u^3 - u^2 + 2u - 2 \end{pmatrix} \\
a_{11} &= \begin{pmatrix} -2u^{11} - u^{10} - 6u^9 - 2u^8 - 10u^7 - 3u^6 - 10u^5 - 3u^4 - 4u^3 - 3u^2 - 3u \\ 3u^{11} + u^{10} + 9u^9 + u^8 + 15u^7 + 15u^5 - 2u^4 + 6u^3 + 4u - 2 \end{pmatrix} \\
a_5 &= \begin{pmatrix} u^{10} + u^9 + 3u^8 + 3u^7 + 5u^6 + 5u^5 + 5u^4 + 5u^3 + 2u^2 + 2u + 2 \\ -u^{11} - 3u^{10} + \dots - 5u - 4 \end{pmatrix} \\
a_4 &= \begin{pmatrix} u^7 + u^6 + 3u^5 + 2u^4 + 4u^3 + 3u^2 + 3u + 2 \\ -u^{11} - u^{10} - 3u^9 - 2u^8 - 5u^7 - 3u^6 - 6u^5 - 2u^4 - 3u^3 - u^2 - 3u - 1 \end{pmatrix} \\
a_4 &= \begin{pmatrix} u^7 + u^6 + 3u^5 + 2u^4 + 4u^3 + 3u^2 + 3u + 2 \\ -u^{11} - u^{10} - 3u^9 - 2u^8 - 5u^7 - 3u^6 - 6u^5 - 2u^4 - 3u^3 - u^2 - 3u - 1 \end{pmatrix}
\end{aligned}$$

(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
$u = -0.730983 - 1.067708I$ $a = -0.783954 + 0.556807I$ $b = 1.35855 - 0.66994I$	$2.81163 + 4.85898I$	$13.04273 - 4.67018I$
$u = -0.730983 + 1.067708I$ $a = -0.783954 - 0.556807I$ $b = 1.35855 + 0.66994I$	$2.81163 - 4.85898I$	$13.04273 + 4.67018I$
$u = -0.632129 - 0.585112I$ $a = -1.10397 + 1.34380I$ $b = 0.559707 - 0.469674I$	$4.36500 + 0.58143I$	$14.6367 + 0.1461I$
$u = -0.632129 + 0.585112I$ $a = -1.10397 - 1.34380I$ $b = 0.559707 + 0.469674I$	$4.36500 - 0.58143I$	$14.6367 - 0.1461I$
$u = -0.138854 - 1.248377I$ $a = -0.381667 + 0.139275I$ $b = -0.115022 - 0.348600I$	$-5.04286 + 3.33069I$	$6.48064 - 3.71539I$
$u = -0.138854 + 1.248377I$ $a = -0.381667 - 0.139275I$ $b = -0.115022 + 0.348600I$	$-5.04286 - 3.33069I$	$6.48064 + 3.71539I$
$u = -0.100519 - 0.675159I$ $a = 1.053101 + 0.625200I$ $b = -2.41399 - 0.59791I$	$-2.69108 - 2.27732I$	$-0.79309 + 1.51304I$
$u = -0.100519 + 0.675159I$ $a = 1.053101 - 0.625200I$ $b = -2.41399 + 0.59791I$	$-2.69108 + 2.27732I$	$-0.79309 - 1.51304I$
$u = 0.539832 - 0.700072I$ $a = -0.674704 - 1.237520I$ $b = -0.287415 - 0.388642I$	$7.43656 - 1.12784I$	$13.7843 + 5.8074I$
$u = 0.539832 + 0.700072I$ $a = -0.674704 + 1.237520I$ $b = -0.287415 + 0.388642I$	$7.43656 + 1.12784I$	$13.7843 - 5.8074I$

Solution to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.562653 - 1.041425I$ $a = -0.608810 - 0.596943I$ $b = 1.39817 + 1.49582I$	$6.28022 - 3.33267I$	$14.8487 + 3.1328I$
$u = 0.562653 + 1.041425I$ $a = -0.608810 + 0.596943I$ $b = 1.39817 - 1.49582I$	$6.28022 + 3.33267I$	$14.8487 - 3.1328I$

$$\text{II. } I_2^u = \langle u^{48} + 12u^{46} + \dots + u + 1, -2.71 \times 10^{41} u^{47} - 8.89 \times 10^{39} u^{46} + \dots + 3.53 \times 10^{41} a - 5.46 \times 10^{41}, 1.52 \times 10^{41} u^{47} - 2.56 \times 10^{40} u^{46} + \dots + 3.53 \times 10^{41} b + 3.09 \times 10^{41} \rangle$$

(i) Arc colorings

$$\begin{aligned} a_7 &= \begin{pmatrix} 0 \\ u \end{pmatrix} \\ a_{10} &= \begin{pmatrix} 0.766788u^{47} + 0.0251708u^{46} + \dots + 0.164071u + 1.54615 \\ -0.429659u^{47} + 0.0724346u^{46} + \dots - 2.67741u - 0.875164 \end{pmatrix} \\ a_2 &= \begin{pmatrix} 1 \\ 0 \end{pmatrix} \\ a_8 &= \begin{pmatrix} 0.322663u^{47} - 0.602755u^{46} + \dots + 3.13105u - 1.73661 \\ -0.109188u^{47} - 0.0229087u^{46} + \dots - 1.75297u + 0.640189 \end{pmatrix} \\ a_1 &= \begin{pmatrix} 1 \\ u^2 \end{pmatrix} \\ a_3 &= \begin{pmatrix} u^2 + 1 \\ u^4 \end{pmatrix} \\ a_6 &= \begin{pmatrix} -u \\ u \end{pmatrix} \\ a_9 &= \begin{pmatrix} 1.06472u^{47} + 0.344126u^{46} + \dots + 0.598805u + 1.64376 \\ -0.727587u^{47} - 0.246520u^{46} + \dots - 3.11215u - 0.972770 \end{pmatrix} \\ a_{11} &= \begin{pmatrix} 0.599807u^{47} - 0.0654044u^{46} + \dots + 6.32362u + 4.07675 \\ -0.649280u^{47} + 0.125140u^{46} + \dots - 4.52987u - 0.940151 \end{pmatrix} \\ a_5 &= \begin{pmatrix} -0.221347u^{47} + 0.967359u^{46} + \dots - 9.15818u + 2.61103 \\ -0.453752u^{47} - 0.874863u^{46} + \dots + 2.71439u - 1.96348 \end{pmatrix} \\ a_4 &= \begin{pmatrix} -0.884277u^{47} + 0.669229u^{46} + \dots - 4.06934u + 1.69715 \\ 0.470816u^{47} - 0.159105u^{46} + \dots + 3.40112u - 0.619755 \end{pmatrix} \\ a_4 &= \begin{pmatrix} -0.884277u^{47} + 0.669229u^{46} + \dots - 4.06934u + 1.69715 \\ 0.470816u^{47} - 0.159105u^{46} + \dots + 3.40112u - 0.619755 \end{pmatrix} \end{aligned}$$

(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
$u = -0.941336 - 0.747392I$ $a = -0.616176 + 0.497628I$ $b = 0.207780 + 0.089537I$	$3.52678 + 2.80965I$	$12.72101 - 4.52739I$
$u = -0.941336 + 0.747392I$ $a = -0.616176 - 0.497628I$ $b = 0.207780 - 0.089537I$	$3.52678 - 2.80965I$	$12.72101 + 4.52739I$
$u = -0.929872$ $a = -1.41886$ $b = 0.440153$	5.55263	20.1448
$u = -0.918656 - 0.227193I$ $a = 0.910590 - 0.833969I$ $b = 0.1296668 - 0.0357852I$	$-0.10143 - 2.03024I$	$9.27605 + 1.57972I$
$u = -0.918656 + 0.227193I$ $a = 0.910590 + 0.833969I$ $b = 0.1296668 + 0.0357852I$	$-0.10143 + 2.03024I$	$9.27605 - 1.57972I$
$u = -0.796507 - 0.983972I$ $a = -0.514905 + 0.397431I$ $b = 1.278404 - 0.522506I$	$2.78226 + 3.51974I$	$11.16150 - 1.38253I$
$u = -0.796507 + 0.983972I$ $a = -0.514905 - 0.397431I$ $b = 1.278404 + 0.522506I$	$2.78226 - 3.51974I$	$11.16150 + 1.38253I$
$u = -0.604419 - 1.211909I$ $a = -0.623406 + 0.760107I$ $b = 1.25709 - 0.98472I$	$2.15454 + 5.46033I$	$6.95643 - 10.69062I$
$u = -0.604419 + 1.211909I$ $a = -0.623406 - 0.760107I$ $b = 1.25709 + 0.98472I$	$2.15454 - 5.46033I$	$6.95643 + 10.69062I$
$u = -0.585474 - 1.204260I$ $a = 0.934193 - 0.462853I$ $b = -1.90619 + 1.08716I$	$-3.03425 + 7.47849I$	$5.84589 - 4.96713I$

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.585474 + 1.204260I$ $a = 0.934193 + 0.462853I$ $b = -1.90619 - 1.08716I$	$-3.03425 - 7.47849I$	$5.84589 + 4.96713I$
$u = -0.499909 - 1.039799I$ $a = 0.791679 - 0.683852I$ $b = -1.67535 - 0.45469I$	$-3.44366 + 6.15745I$	$7.35660 - 5.98847I$
$u = -0.499909 + 1.039799I$ $a = 0.791679 + 0.683852I$ $b = -1.67535 + 0.45469I$	$-3.44366 - 6.15745I$	$7.35660 + 5.98847I$
$u = -0.404207 - 1.040885I$ $a = -0.661689 - 1.055534I$ $b = 1.57736 + 0.35227I$	$-4.08127 + 0.33982I$	$5.63392 - 1.74002I$
$u = -0.404207 + 1.040885I$ $a = -0.661689 + 1.055534I$ $b = 1.57736 - 0.35227I$	$-4.08127 - 0.33982I$	$5.63392 + 1.74002I$
$u = -0.398216 - 0.553392I$ $a = 0.166915 - 0.954149I$ $b = -1.88103 + 0.11548I$	$-1.85237 - 2.17126I$	$11.26403 + 0.26114I$
$u = -0.398216 + 0.553392I$ $a = 0.166915 + 0.954149I$ $b = -1.88103 - 0.11548I$	$-1.85237 + 2.17126I$	$11.26403 - 0.26114I$
$u = -0.361369$ $a = 0.918562$ $b = 0.192100$	0.656820	15.2638
$u = -0.321176 - 1.348335I$ $a = -0.229333 - 0.501506I$ $b = 0.519328 + 1.144245I$	$-5.15741 + 2.22291I$	$6.72402 + 2.42656I$
$u = -0.321176 + 1.348335I$ $a = -0.229333 + 0.501506I$ $b = 0.519328 - 1.144245I$	$-5.15741 - 2.22291I$	$6.72402 - 2.42656I$

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.162479 - 0.997160I$ $a = 0.796642 + 0.082165I$ $b = -1.297063 + 0.362469I$	$-2.18331 + 1.63548I$	$3.97796 - 4.36559I$
$u = -0.162479 + 0.997160I$ $a = 0.796642 - 0.082165I$ $b = -1.297063 - 0.362469I$	$-2.18331 - 1.63548I$	$3.97796 + 4.36559I$
$u = -0.106371 - 0.362688I$ $a = 2.56164 - 0.08908I$ $b = -1.40244 + 0.74659I$	$-2.06429 + 2.66223I$	$9.42585 - 6.21325I$
$u = -0.106371 + 0.362688I$ $a = 2.56164 + 0.08908I$ $b = -1.40244 - 0.74659I$	$-2.06429 - 2.66223I$	$9.42585 + 6.21325I$
$u = 0.11793 - 1.41674I$ $a = -0.334531 + 0.638468I$ $b = 0.738377 - 1.160398I$	$-5.42165 + 4.76380I$	$6.19605 - 6.93136I$
$u = 0.11793 + 1.41674I$ $a = -0.334531 - 0.638468I$ $b = 0.738377 + 1.160398I$	$-5.42165 - 4.76380I$	$6.19605 + 6.93136I$
$u = 0.333524 - 1.091233I$ $a = 0.793898 + 0.506003I$ $b = -1.69619 + 0.30553I$	$-5.53120 - 0.07674I$	$3.78825 + 1.36866I$
$u = 0.333524 + 1.091233I$ $a = 0.793898 - 0.506003I$ $b = -1.69619 - 0.30553I$	$-5.53120 + 0.07674I$	$3.78825 - 1.36866I$
$u = 0.381747 - 0.518500I$ $a = 0.80594 + 1.69233I$ $b = 0.781188 + 0.380254I$	$7.19540 - 0.40564I$	$10.12062 - 3.68058I$
$u = 0.381747 + 0.518500I$ $a = 0.80594 - 1.69233I$ $b = 0.781188 - 0.380254I$	$7.19540 + 0.40564I$	$10.12062 + 3.68058I$

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.448179 - 0.746413I$ $a = -0.85173 - 1.68189I$ $b = 0.538015 + 0.411437I$	$3.91125 - 1.34687I$	$8.42551 + 6.39280I$
$u = 0.448179 + 0.746413I$ $a = -0.85173 + 1.68189I$ $b = 0.538015 - 0.411437I$	$3.91125 + 1.34687I$	$8.42551 - 6.39280I$
$u = 0.459033 - 0.937886I$ $a = -0.870938 - 1.085995I$ $b = 1.60601 + 1.37167I$	$3.26073 - 2.43030I$	$10.07781 + 2.10293I$
$u = 0.459033 + 0.937886I$ $a = -0.870938 + 1.085995I$ $b = 1.60601 - 1.37167I$	$3.26073 + 2.43030I$	$10.07781 - 2.10293I$
$u = 0.485670 - 1.065709I$ $a = 0.599525 + 0.414902I$ $b = -1.34446 - 1.57301I$	$5.39976 - 3.46453I$	$4.57734 + 4.61522I$
$u = 0.485670 + 1.065709I$ $a = 0.599525 - 0.414902I$ $b = -1.34446 + 1.57301I$	$5.39976 + 3.46453I$	$4.57734 - 4.61522I$
$u = 0.490465 - 0.282839I$ $a = 1.05131 - 1.42733I$ $b = -1.182052 + 0.116426I$	$-2.19332 + 2.77840I$	$8.82502 - 3.26643I$
$u = 0.490465 + 0.282839I$ $a = 1.05131 + 1.42733I$ $b = -1.182052 - 0.116426I$	$-2.19332 - 2.77840I$	$8.82502 + 3.26643I$
$u = 0.520417 - 1.079784I$ $a = -0.868092 + 0.833067I$ $b = 1.71003 - 0.29825I$	$-4.30258 - 7.07120I$	$6.19230 + 6.78102I$
$u = 0.520417 + 1.079784I$ $a = -0.868092 - 0.833067I$ $b = 1.71003 + 0.29825I$	$-4.30258 + 7.07120I$	$6.19230 - 6.78102I$

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.674452 - 1.194326I$ $a = 0.981295 + 0.572996I$ $b = -2.05005 - 1.07562I$	$-1.3361 - 14.6102I$	$8.09331 + 8.42578I$
$u = 0.674452 + 1.194326I$ $a = 0.981295 - 0.572996I$ $b = -2.05005 + 1.07562I$	$-1.3361 + 14.6102I$	$8.09331 - 8.42578I$
$u = 0.706876 - 0.959813I$ $a = -1.113878 - 0.269922I$ $b = 1.86890 + 0.51778I$	$2.97315 - 6.07189I$	$11.5551 + 10.8395I$
$u = 0.706876 + 0.959813I$ $a = -1.113878 + 0.269922I$ $b = 1.86890 - 0.51778I$	$2.97315 + 6.07189I$	$11.5551 - 10.8395I$
$u = 0.757890 - 0.744138I$ $a = -0.330028 - 1.128433I$ $b = -0.022736 + 0.298296I$	$3.63018 + 0.51155I$	$11.50496 - 4.41570I$
$u = 0.757890 + 0.744138I$ $a = -0.330028 + 1.128433I$ $b = -0.022736 - 0.298296I$	$3.63018 - 0.51155I$	$11.50496 + 4.41570I$
$u = 1.008190 - 0.399133I$ $a = 0.871224 + 0.951733I$ $b = -0.0707079 + 0.0668180I$	$1.11909 + 8.52957I$	$10.59618 - 5.34140I$
$u = 1.008190 + 0.399133I$ $a = 0.871224 - 0.951733I$ $b = -0.0707079 - 0.0668180I$	$1.11909 - 8.52957I$	$10.59618 + 5.34140I$

III. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1	$(u^{12} + u^{11} + \dots + u + 1)(u^{48} + 12u^{46} + \dots + u + 1)$
c_2	$(u^{12} + 7u^{11} + \dots + 7u + 1)(u^{48} + 24u^{47} + \dots + 13u + 1)$
c_3, c_4	$(u^{12} - 5u^{10} + u^9 + 11u^8 - 4u^7 - 16u^6 + 5u^5 + 15u^4 - 2u^3 - 6u^2 + 1)$ $(u^{48} + u^{47} + \dots - 16u - 11)$
c_5	$(u^{12} + u^{10} - 3u^9 - 2u^7 + 4u^6 - u^5 + 3u^4 + u^3 - 4u^2 + 1)$ $(u^{48} + 3u^{47} + \dots - 14u + 1)$
c_6	$(u^{12} - u^{11} + \dots - u + 1)(u^{48} + 12u^{46} + \dots + u + 1)$
c_7	$(u^{12} + 2u^{11} + \dots + 2u + 1)(u^{48} + u^{47} + \dots - 268u - 119)$
c_8	$(u^{12} - 5u^{10} - u^9 + 11u^8 + 4u^7 - 16u^6 - 5u^5 + 15u^4 + 2u^3 - 6u^2 + 1)$ $(u^{48} + u^{47} + \dots - 16u - 11)$
c_9	$(u^{12} - 4u^{10} + u^9 + 3u^8 - u^7 + 4u^6 - 2u^5 - 3u^3 + u^2 + 1)$ $(u^{48} + u^{47} + \dots - 10u - 27)$
c_{10}	$(u^{12} - 2u^{11} + \dots - 2u + 1)(u^{48} + u^{47} + \dots - 268u - 119)$
c_{11}	$(u^{12} + 2u^{11} - u^{10} - 2u^9 + 3u^8 + u^7 + u^6 + 7u^5 + 2u^4 + 2u^2 + 1)$ $(u^{48} + 5u^{47} + \dots + 22u + 1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_6	$(y^{12} + 7y^{11} + \dots + 7y + 1)(y^{48} + 24y^{47} + \dots + 13y + 1)$
c_2	$(y^{12} + 3y^{11} + \dots - y + 1)(y^{48} + 8y^{47} + \dots - 71y + 1)$
c_3, c_4, c_8	$(y^{12} - 10y^{11} + \dots - 12y + 1)(y^{48} - 17y^{47} + \dots - 2302y + 121)$
c_5	$(y^{12} + 2y^{11} + \dots - 8y + 1)(y^{48} + 35y^{47} + \dots - 126y + 1)$
c_7, c_{10}	$(y^{12} - 10y^{11} + \dots + 2y + 1)(y^{48} - 25y^{47} + \dots - 291260y + 14161)$
c_9	$(y^{12} - 8y^{11} + \dots + 2y + 1)(y^{48} - 19y^{47} + \dots - 6904y + 729)$
c_{11}	$(y^{12} - 6y^{11} + \dots + 4y + 1)(y^{48} - 37y^{47} + \dots + 18y + 1)$