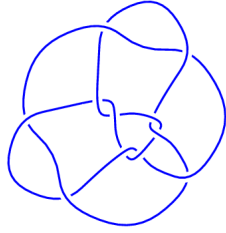
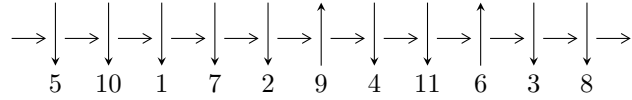


11a<sub>304</sub> (K11a<sub>304</sub>)

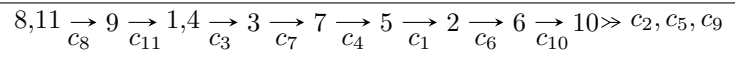


1

**Arc Sequences**



**Solving Sequence**



**Representation Ideals**

$$I = \bigcap_{i=1}^3 I_i^u$$

$$I_1^u = \langle u^8 - u^7 + 4u^6 - 3u^5 + 6u^4 - 3u^3 + 3u^2 - u + 1, a + 1, -u^7 + 2u^6 - 5u^5 + 6u^4 - 8u^3 + 5u^2 + b - 3u + 1 \rangle$$

$$I_2^u = \langle u^{18} + u^{17} + \dots - 4u + 1, a + 1, 4427u^{17} + 4238u^{16} + \dots + 4846b - 789 \rangle$$

$$I_3^u = \langle u^{48} + 5u^{47} + \dots - 314u + 61,$$

$$1.19355 \times 10^{93}u^{47} + 6.16000 \times 10^{93}u^{46} + \dots + 1.64883 \times 10^{93}b + 4.18982 \times 10^{94},$$

$$7.44333 \times 10^{94}u^{47} + 4.07702 \times 10^{95}u^{46} + \dots + 1.00579 \times 10^{95}a + 9.36425 \times 10^{95} \rangle$$

There are 3 irreducible components with 74 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>”

$$I_1^u = \langle u^8 - u^7 + 4u^6 - 3u^5 + 6u^4 - 3u^3 + 3u^2 - u + 1, a + 1, -u^7 + 2u^6 + \dots + b + 1 \rangle$$

I.

(i) Arc colorings

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

$$a_{11} = \begin{pmatrix} -1 \\ u^7 - 2u^6 + 5u^5 - 6u^4 + 8u^3 - 5u^2 + 3u - 1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u \\ -u^7 + u^6 - 3u^5 + 2u^4 - 2u^3 + u - 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -1 \\ u^7 - 2u^6 + 5u^5 - 6u^4 + 8u^3 - 6u^2 + 3u - 1 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} u^7 - 2u^6 + 5u^5 - 6u^4 + 8u^3 - 6u^2 + 3u \\ -u^7 + 3u^6 - 6u^5 + 11u^4 - 12u^3 + 13u^2 - 8u + 3 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u \\ u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u^2 + 1 \\ u^2 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -u^7 + u^6 - 3u^5 + 2u^4 - 3u^3 + u^2 - 1 \\ u^7 - 2u^6 + 6u^5 - 7u^4 + 10u^3 - 7u^2 + 4u - 1 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -u^7 + u^6 - 4u^5 + 3u^4 - 5u^3 + 2u^2 \\ 2u^7 - 3u^6 + 8u^5 - 8u^4 + 11u^3 - 7u^2 + 4u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 2u^7 - 3u^6 + 9u^5 - 9u^4 + 13u^3 - 8u^2 + 4u - 1 \\ -u^7 + 3u^6 - 6u^5 + 11u^4 - 12u^3 + 14u^2 - 8u + 3 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 2u^7 - 3u^6 + 9u^5 - 9u^4 + 13u^3 - 8u^2 + 4u - 1 \\ -u^7 + 3u^6 - 6u^5 + 11u^4 - 12u^3 + 14u^2 - 8u + 3 \end{pmatrix}$$

(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
$u = -0.265930 - 0.663572I$ $a = -1.00000$ $b = 1.62445 - 0.95813I$	$-7.12528 - 4.91384I$	$-15.9725 + 5.8373I$
$u = -0.265930 + 0.663572I$ $a = -1.00000$ $b = 1.62445 + 0.95813I$	$-7.12528 + 4.91384I$	$-15.9725 - 5.8373I$
$u = -0.239460 - 1.335293I$ $a = -1.00000$ $b = -2.13175 + 0.56567I$	$-1.86433 + 0.65741I$	$-7.52191 - 0.35368I$
$u = -0.239460 + 1.335293I$ $a = -1.00000$ $b = -2.13175 - 0.56567I$	$-1.86433 - 0.65741I$	$-7.52191 + 0.35368I$
$u = 0.495635 - 1.261447I$ $a = -1.00000$ $b = -2.31639 + 0.06726I$	$3.58036 + 6.89137I$	$-7.40021 - 6.36507I$
$u = 0.495635 + 1.261447I$ $a = -1.00000$ $b = -2.31639 - 0.06726I$	$3.58036 - 6.89137I$	$-7.40021 + 6.36507I$
$u = 0.509756 - 0.564785I$ $a = -1.00000$ $b = -0.676307 - 0.513532I$	$-1.17049 + 1.46276I$	$-13.60538 - 3.21811I$
$u = 0.509756 + 0.564785I$ $a = -1.00000$ $b = -0.676307 + 0.513532I$	$-1.17049 - 1.46276I$	$-13.60538 + 3.21811I$

**II.**

$$I_2^u = \langle u^{18} + u^{17} + \dots - 4u + 1, a + 1, 4427u^{17} + 4238u^{16} + \dots + 4846b - 789 \rangle$$

**(i) Arc colorings**

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

$$a_{11} = \begin{pmatrix} -1 \\ -0.913537u^{17} - 0.874536u^{16} + \dots + 0.241436u + 0.162815 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u \\ 0.0390012u^{17} + 0.601940u^{16} + \dots - 2.49133u + 0.913537 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -1 \\ -0.913537u^{17} - 0.874536u^{16} + \dots + 0.241436u + 0.162815 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} -0.913537u^{17} - 0.874536u^{16} + \dots + 0.241436u + 1.16281 \\ -1.84585u^{17} - 1.50186u^{16} + \dots - 1.96574u - 0.151259 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u \\ u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u^2 + 1 \\ u^2 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.0879076u^{17} + 0.221832u^{16} + \dots - 0.647132u - 1.37742 \\ -1.17623u^{17} - 1.25691u^{16} + \dots + 0.905283u - 0.0907965 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0.292612u^{17} + 0.592860u^{16} + \dots - 1.21275u + 0.562939 \\ 0.776310u^{17} + 1.21956u^{16} + \dots - 0.827487u + 0.659926 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.309946u^{17} + 0.249278u^{16} + \dots + 1.12443u - 0.419934 \\ 1.60111u^{17} + 0.745770u^{16} + \dots + 4.80025u - 0.316756 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.309946u^{17} + 0.249278u^{16} + \dots + 1.12443u - 0.419934 \\ 1.60111u^{17} + 0.745770u^{16} + \dots + 4.80025u - 0.316756 \end{pmatrix}$$

**(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
$u = -0.857117 - 0.325932I$ $a = -1.00000$ $b = -0.569887 + 0.875038I$	$-10.72733 + 4.74355I$	$-14.8235 - 1.3888I$
$u = -0.857117 + 0.325932I$ $a = -1.00000$ $b = -0.569887 - 0.875038I$	$-10.72733 - 4.74355I$	$-14.8235 + 1.3888I$
$u = -0.61297 - 1.38177I$ $a = -1.00000$ $b = -2.67097 + 0.24138I$	$-3.9883 - 16.2483I$	$-8.61000 + 8.11381I$
$u = -0.61297 + 1.38177I$ $a = -1.00000$ $b = -2.67097 - 0.24138I$	$-3.9883 + 16.2483I$	$-8.61000 - 8.11381I$
$u = -0.531929 - 0.836030I$ $a = -1.00000$ $b = -0.478818 - 0.947490I$	$-5.93754 - 0.90931I$	$-12.67105 + 3.59251I$
$u = -0.531929 + 0.836030I$ $a = -1.00000$ $b = -0.478818 + 0.947490I$	$-5.93754 + 0.90931I$	$-12.67105 - 3.59251I$
$u = -0.256117 - 1.267060I$ $a = -1.00000$ $b = -2.27184 - 0.48589I$	$6.34892 - 0.61291I$	$-0.81864 - 1.96169I$
$u = -0.256117 + 1.267060I$ $a = -1.00000$ $b = -2.27184 + 0.48589I$	$6.34892 + 0.61291I$	$-0.81864 + 1.96169I$
$u = -0.106940 - 0.947275I$ $a = -1.00000$ $b = -3.55884 + 1.33317I$	$-6.13065 - 4.90278I$	$-7.01114 + 4.15155I$
$u = -0.106940 + 0.947275I$ $a = -1.00000$ $b = -3.55884 - 1.33317I$	$-6.13065 + 4.90278I$	$-7.01114 - 4.15155I$

Solution to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.237777$ $a = -1.00000$ $b = 0.516116$	-0.811801	-12.0985
$u = 0.406222 - 1.352414I$ $a = -1.00000$ $b = -2.52525 - 0.20338I$	$5.38862 + 5.69558I$	$-1.81453 - 3.55021I$
$u = 0.406222 + 1.352414I$ $a = -1.00000$ $b = -2.52525 + 0.20338I$	$5.38862 - 5.69558I$	$-1.81453 + 3.55021I$
$u = 0.458737 - 0.547198I$ $a = -1.00000$ $b = -0.258817 - 0.335251I$	$-0.39235 + 1.59654I$	$-2.49522 - 4.52605I$
$u = 0.458737 + 0.547198I$ $a = -1.00000$ $b = -0.258817 + 0.335251I$	$-0.39235 - 1.59654I$	$-2.49522 + 4.52605I$
$u = 0.482845 - 1.256566I$ $a = -1.00000$ $b = -2.64003 + 0.57753I$	$0.95391 + 8.87623I$	$-7.74572 - 6.85139I$
$u = 0.482845 + 1.256566I$ $a = -1.00000$ $b = -2.64003 - 0.57753I$	$0.95391 - 8.87623I$	$-7.74572 + 6.85139I$
$u = 0.796765$ $a = -1.00000$ $b = -0.567193$	-6.40721	-14.9219

$$\text{III. } I_3^u = \langle u^{48} + 5u^{47} + \dots - 314u + 61, 1.19 \times 10^{93}u^{47} + 6.16 \times 10^{93}u^{46} + \dots + 1.65 \times 10^{93}b + 4.19 \times 10^{94}, 7.44 \times 10^{94}u^{47} + 4.08 \times 10^{95}u^{46} + \dots + 1.01 \times 10^{95}a + 9.36 \times 10^{95} \rangle$$

(i) Arc colorings

$$\begin{aligned} a_8 &= \begin{pmatrix} 0 \\ u \end{pmatrix} \\ a_{11} &= \begin{pmatrix} -0.740050u^{47} - 4.05356u^{46} + \dots + 101.257u - 9.31038 \\ -0.723874u^{47} - 3.73598u^{46} + \dots + 58.6317u - 25.4108 \end{pmatrix} \\ a_9 &= \begin{pmatrix} 0.144862u^{47} - 0.321223u^{46} + \dots + 424.069u - 106.348 \\ 0.145684u^{47} - 0.378256u^{46} + \dots + 358.711u - 66.2412 \end{pmatrix} \\ a_1 &= \begin{pmatrix} -0.740050u^{47} - 4.05356u^{46} + \dots + 101.257u - 9.31038 \\ -0.156309u^{47} - 0.781076u^{46} + \dots - 7.16508u - 3.85883 \end{pmatrix} \\ a_4 &= \begin{pmatrix} 1 \\ 0 \end{pmatrix} \\ a_3 &= \begin{pmatrix} 0.0403867u^{47} + 0.393829u^{46} + \dots - 63.0379u + 8.89542 \\ 0.886672u^{47} + 4.56313u^{46} + \dots - 94.2005u + 33.7713 \end{pmatrix} \\ a_7 &= \begin{pmatrix} u \\ u \end{pmatrix} \\ a_5 &= \begin{pmatrix} u^2 + 1 \\ u^2 \end{pmatrix} \\ a_2 &= \begin{pmatrix} -0.696258u^{47} - 3.70972u^{46} + \dots + 35.4526u + 9.47658 \\ -0.632760u^{47} - 3.14751u^{46} + \dots - 4.65590u - 10.5113 \end{pmatrix} \\ a_6 &= \begin{pmatrix} -1.04265u^{47} - 5.22867u^{46} + \dots - 58.4887u + 3.14813 \\ -0.943596u^{47} - 5.23155u^{46} + \dots + 135.512u - 41.8484 \end{pmatrix} \\ a_{10} &= \begin{pmatrix} -0.178281u^{47} - 1.13825u^{46} + \dots + 43.9290u + 6.09493 \\ -1.05239u^{47} - 5.41675u^{46} + \dots + 93.1989u - 28.0182 \end{pmatrix} \\ a_{10} &= \begin{pmatrix} -0.178281u^{47} - 1.13825u^{46} + \dots + 43.9290u + 6.09493 \\ -1.05239u^{47} - 5.41675u^{46} + \dots + 93.1989u - 28.0182 \end{pmatrix} \end{aligned}$$

(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
$u = -2.28147 - 2.79272I$		
$a = -0.228767 - 0.178927I$	$-1.83976 + 0.26235I$	$18.4351 + 36.8531I$
$b = -3.10682 + 2.16956I$		
$u = -2.28147 + 2.79272I$		
$a = -0.228767 + 0.178927I$	$-1.83976 - 0.26235I$	$18.4351 - 36.8531I$
$b = -3.10682 - 2.16956I$		
$u = -1.291291 - 0.048766I$		
$a = -0.355413 + 0.898270I$	$-8.17000 + 9.69978I$	$-11.19558 - 6.76089I$
$b = -0.051335 - 0.715852I$		
$u = -1.291291 + 0.048766I$		
$a = -0.355413 - 0.898270I$	$-8.17000 - 9.69978I$	$-11.19558 + 6.76089I$
$b = -0.051335 + 0.715852I$		
$u = -0.800467 - 0.719023I$		
$a = 0.190830 - 0.189545I$	$-4.43678 - 0.22592I$	$-13.45627 - 0.52268I$
$b = 0.454645 - 0.824616I$		
$u = -0.800467 + 0.719023I$		
$a = 0.190830 + 0.189545I$	$-4.43678 + 0.22592I$	$-13.45627 + 0.52268I$
$b = 0.454645 + 0.824616I$		
$u = -0.72686 - 1.40262I$		
$a = 0.875338 + 0.166876I$	$1.74071 - 9.53525I$	$-7.20923 + 7.09915I$
$b = 2.46224 - 0.32677I$		
$u = -0.72686 + 1.40262I$		
$a = 0.875338 - 0.166876I$	$1.74071 + 9.53525I$	$-7.20923 - 7.09915I$
$b = 2.46224 + 0.32677I$		
$u = -0.596834 - 0.792322I$		
$a = 0.632821 + 0.697017I$	$-6.06530 - 3.64576I$	$-10.43387 + 2.45073I$
$b = -0.177976 + 1.161761I$		
$u = -0.596834 + 0.792322I$		
$a = 0.632821 - 0.697017I$	$-6.06530 + 3.64576I$	$-10.43387 - 2.45073I$
$b = -0.177976 - 1.161761I$		



Solution to $I_3^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.579065 - 0.197316I$ $a = -0.23645 - 1.78528I$ $b = -0.108214 - 0.269994I$	$1.82625 + 2.21677I$	$-1.73188 - 4.68950I$
$u = -0.579065 + 0.197316I$ $a = -0.23645 + 1.78528I$ $b = -0.108214 + 0.269994I$	$1.82625 - 2.21677I$	$-1.73188 + 4.68950I$
$u = -0.542205 - 1.034905I$ $a = 0.550346 - 0.600481I$ $b = 0.242196 - 0.100812I$	$-3.16425 - 4.93690I$	$-9.72258 + 5.53812I$
$u = -0.542205 + 1.034905I$ $a = 0.550346 + 0.600481I$ $b = 0.242196 + 0.100812I$	$-3.16425 + 4.93690I$	$-9.72258 - 5.53812I$
$u = -0.502747 - 1.142596I$ $a = -0.380851 + 0.962562I$ $b = -0.051335 + 0.715852I$	$-8.17000 - 9.69978I$	$-11.19558 + 6.76089I$
$u = -0.502747 + 1.142596I$ $a = -0.380851 - 0.962562I$ $b = -0.051335 - 0.715852I$	$-8.17000 + 9.69978I$	$-11.19558 - 6.76089I$
$u = -0.330498 - 1.145321I$ $a = 1.201793 - 0.093121I$ $b = 2.25735 + 0.37692I$	$4.61294 - 5.64930I$	$-2.87192 + 2.20392I$
$u = -0.330498 + 1.145321I$ $a = 1.201793 + 0.093121I$ $b = 2.25735 - 0.37692I$	$4.61294 + 5.64930I$	$-2.87192 - 2.20392I$
$u = -0.174573 - 0.917402I$ $a = 0.714007 + 0.786439I$ $b = -0.177976 - 1.161761I$	$-6.06530 + 3.64576I$	$-10.43387 - 2.45073I$
$u = -0.174573 + 0.917402I$ $a = 0.714007 - 0.786439I$ $b = -0.177976 + 1.161761I$	$-6.06530 - 3.64576I$	$-10.43387 + 2.45073I$

Solution to $I_3^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.099389 - 0.960926I$ $a = 1.41531 + 0.01548I$ $b = 2.60667 - 0.70175I$	$-0.47769 - 2.08395I$	$-4.74669 + 3.16145I$
$u = -0.099389 + 0.960926I$ $a = 1.41531 - 0.01548I$ $b = 2.60667 + 0.70175I$	$-0.47769 + 2.08395I$	$-4.74669 - 3.16145I$
$u = -0.061740 - 0.876312I$ $a = -1.17704 - 1.09617I$ $b = -0.960843 - 0.043439I$	$-0.782529 + 1.065845I$	$-2.95105 - 0.35875I$
$u = -0.061740 + 0.876312I$ $a = -1.17704 + 1.09617I$ $b = -0.960843 + 0.043439I$	$-0.782529 - 1.065845I$	$-2.95105 + 0.35875I$
$u = -0.022232 - 1.047100I$ $a = -2.71214 + 2.12126I$ $b = -3.10682 + 2.16956I$	$-1.83976 + 0.26235I$	$18.4351 + 36.8531I$
$u = -0.022232 + 1.047100I$ $a = -2.71214 - 2.12126I$ $b = -3.10682 - 2.16956I$	$-1.83976 - 0.26235I$	$18.4351 - 36.8531I$
$u = 0.100648 - 0.894015I$ $a = 0.494606 - 1.061476I$ $b = 1.029254 - 0.404165I$	$-0.282838 - 0.252163I$	$-7.62766 + 0.43499I$
$u = 0.100648 + 0.894015I$ $a = 0.494606 + 1.061476I$ $b = 1.029254 + 0.404165I$	$-0.282838 + 0.252163I$	$-7.62766 - 0.43499I$
$u = 0.125787 - 1.361551I$ $a = 0.706473 + 0.007729I$ $b = 2.60667 + 0.70175I$	$-0.47769 + 2.08395I$	$-4.74669 - 3.16145I$
$u = 0.125787 + 1.361551I$ $a = 0.706473 - 0.007729I$ $b = 2.60667 - 0.70175I$	$-0.47769 - 2.08395I$	$-4.74669 + 3.16145I$

Solution to $I_3^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.215349 - 1.080451I$ $a = -0.072906 + 0.550479I$ $b = -0.108214 - 0.269994I$	$1.82625 + 2.21677I$	$-1.73188 - 4.68950I$
$u = 0.215349 + 1.080451I$ $a = -0.072906 - 0.550479I$ $b = -0.108214 + 0.269994I$	$1.82625 - 2.21677I$	$-1.73188 + 4.68950I$
$u = 0.289040 - 0.014513I$ $a = 2.63784 + 2.62007I$ $b = 0.454645 - 0.824616I$	$-4.43678 - 0.22592I$	$-13.45627 - 0.52268I$
$u = 0.289040 + 0.014513I$ $a = 2.63784 - 2.62007I$ $b = 0.454645 + 0.824616I$	$-4.43678 + 0.22592I$	$-13.45627 + 0.52268I$
$u = 0.365070 - 1.196053I$ $a = -0.162895 - 0.619557I$ $b = -0.647164 - 0.281770I$	$-2.69997 + 4.12763I$	$-10.48837 - 3.99209I$
$u = 0.365070 + 1.196053I$ $a = -0.162895 + 0.619557I$ $b = -0.647164 + 0.281770I$	$-2.69997 - 4.12763I$	$-10.48837 + 3.99209I$
$u = 0.402181 - 1.349061I$ $a = 1.102352 + 0.210154I$ $b = 2.46224 + 0.32677I$	$1.74071 + 9.53525I$	$-7.20923 - 7.09915I$
$u = 0.402181 + 1.349061I$ $a = 1.102352 - 0.210154I$ $b = 2.46224 - 0.32677I$	$1.74071 - 9.53525I$	$-7.20923 + 7.09915I$
$u = 0.50384 - 1.34566I$ $a = 0.827124 - 0.064090I$ $b = 2.25735 - 0.37692I$	$4.61294 + 5.64930I$	$-2.87192 - 2.20392I$
$u = 0.50384 + 1.34566I$ $a = 0.827124 + 0.064090I$ $b = 2.25735 + 0.37692I$	$4.61294 - 5.64930I$	$-2.87192 + 2.20392I$

Solution to $I_3^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.800491 - 0.031350I$ $a = -0.39693 - 1.50969I$ $b = -0.647164 + 0.281770I$	$-2.69997 - 4.12763I$	$-10.48837 + 3.99209I$
$u = 0.800491 + 0.031350I$ $a = -0.39693 + 1.50969I$ $b = -0.647164 - 0.281770I$	$-2.69997 + 4.12763I$	$-10.48837 - 3.99209I$
$u = 0.887919 - 1.099131I$ $a = -0.454979 + 0.423721I$ $b = -0.960843 - 0.043439I$	$-0.782529 + 1.065845I$	$-2.95105 - 0.35875I$
$u = 0.887919 + 1.099131I$ $a = -0.454979 - 0.423721I$ $b = -0.960843 + 0.043439I$	$-0.782529 - 1.065845I$	$-2.95105 + 0.35875I$
$u = 0.899195 - 0.549021I$ $a = 0.360667 - 0.774028I$ $b = 1.029254 + 0.404165I$	$-0.282838 + 0.252163I$	$-7.62766 - 0.43499I$
$u = 0.899195 + 0.549021I$ $a = 0.360667 + 0.774028I$ $b = 1.029254 - 0.404165I$	$-0.282838 - 0.252163I$	$-7.62766 + 0.43499I$
$u = 0.919842 - 0.243972I$ $a = 0.829511 - 0.905077I$ $b = 0.242196 + 0.100812I$	$-3.16425 + 4.93690I$	$-9.72258 - 5.53812I$
$u = 0.919842 + 0.243972I$ $a = 0.829511 + 0.905077I$ $b = 0.242196 - 0.100812I$	$-3.16425 - 4.93690I$	$-9.72258 + 5.53812I$

#### IV. u-Polynomials

Crossings	u-Polynomials at each crossings
$c_1$	$(u^8 - 4u^6 + \dots - u + 1)(u^{18} - 9u^{16} + \dots - 2u - 1)$ $(u^{48} + 3u^{47} + \dots - 2258u + 319)$
$c_2$	$(u^8 - 4u^6 + \dots + u + 1)(u^{18} - 9u^{16} + \dots - 2u - 1)$ $(u^{48} + 3u^{47} + \dots - 2258u + 319)$
$c_3$	$(u^8 - 2u^6 - u^5 + 16u^4 + 32u^3 + 24u^2 + 8u + 1)$ $(u^{18} + 17u^{17} + \dots - 640u - 64)(u^{48} - 8u^{47} + \dots - 4u + 1)$
$c_4, c_8$	$(u^8 - u^7 + \dots - u + 1)(u^{18} + u^{17} + \dots - 4u + 1)$ $(u^{48} + 5u^{47} + \dots - 314u + 61)$
$c_5$	$(u^8 - 4u^6 + \dots + u + 1)(u^{18} - 9u^{16} + \dots - 2u - 1)$ $(u^{48} + 3u^{47} + \dots - 2258u + 319)$
$c_6$	$(u^8 + 2u^7 + 5u^6 + 2u^5 + 4u^4 - 2u^3 + u^2 - u + 1)$ $(u^{18} + 11u^{17} + \dots + 208u + 16)$ $(1 - 2u + 28u^2 - 72u^3 + 117u^4 - 172u^5 + 180u^6 - 154u^7 + 194u^8 - 192u^9 + 384u^{10} - 550u^{11})$
$c_7, c_{11}$	$(u^8 + u^7 + \dots + u + 1)(u^{18} + u^{17} + \dots - 4u + 1)$ $(u^{48} + 5u^{47} + \dots - 314u + 61)$
$c_9$	$(u^8 - 2u^7 + 5u^6 - 2u^5 + 4u^4 + 2u^3 + u^2 + u + 1)$ $(u^{18} + 11u^{17} + \dots + 208u + 16)$ $(1 - 2u + 28u^2 - 72u^3 + 117u^4 - 172u^5 + 180u^6 - 154u^7 + 194u^8 - 192u^9 + 384u^{10} - 550u^{11})$
$c_{10}$	$(u - 1)(u^8 - 4u^6 + \dots - u + 1)(u^{18} - 9u^{16} + \dots - 2u - 1)$ $(u^{47} + 4u^{46} + \dots + 1939u - 319)$

## V. Riley Polynomials

Crossings	Riley Polynomials at each crossings
$c_1, c_5$	$(y^8 - 8y^7 + 28y^6 - 54y^5 + 62y^4 - 45y^3 + 23y^2 - 7y + 1)$ $(y^{18} - 18y^{17} + \dots + 6y + 1)(y^{48} - 37y^{47} + \dots + 318056y + 101761)$
$c_2$	$(y^8 - 8y^7 + 28y^6 - 54y^5 + 62y^4 - 45y^3 + 23y^2 - 7y + 1)$ $(y^{18} - 18y^{17} + \dots + 6y + 1)(y^{48} - 37y^{47} + \dots + 318056y + 101761)$
$c_3$	$(y^8 - 4y^7 + 36y^6 - 17y^5 + 226y^4 - 244y^3 + 96y^2 - 16y + 1)$ $(y^{18} - 3y^{17} + \dots - 24576y + 4096)(y^{48} + 12y^{47} + \dots + 16y + 1)$
$c_4, c_7, c_8$ $c_{11}$	$(y^8 + 7y^7 + 22y^6 + 39y^5 + 42y^4 + 29y^3 + 15y^2 + 5y + 1)$ $(y^{18} + 13y^{17} + \dots - 14y + 1)(y^{48} + 31y^{47} + \dots - 55164y + 3721)$
$c_6, c_9$	$(y^8 + 6y^7 + 25y^6 + 46y^5 + 40y^4 + 18y^3 + 5y^2 + y + 1)$ $(y^{18} + 11y^{17} + \dots - 12160y + 256)(y^{48} + 40y^{47} + \dots + 104y + 1)$
$c_{10}$	$(y^8 - 8y^7 + 28y^6 - 54y^5 + 62y^4 - 45y^3 + 23y^2 - 7y + 1)$ $(y^{18} - 18y^{17} + \dots + 6y + 1)(y^{48} - 37y^{47} + \dots + 318056y + 101761)$