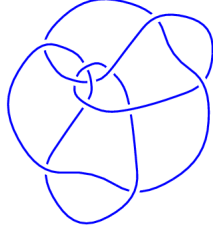
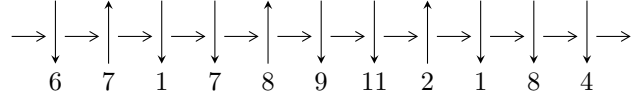


11n₁₆₃ (K11n₁₆₃)

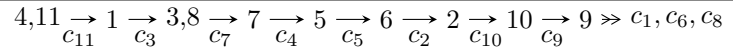


1

Arc Sequences



Solving Sequence



Representation Ideals

$$I = \bigcap_{i=1}^4 I_i^u$$

$$I_1^u = \langle a^6 - 7a^5 + 16a^4 - a^3 + 9a^2 - 2a + 1, -381a^5 + 2593a^4 - 5621a^3 - 561a^2 + 839b - 3789a + 363, 284a^5 - 1891a^4 + 3842a^3 + 1495a^2 + 1622a + 839u + 1599 \rangle$$

$$I_2^u = \langle u^7 - 10u^6 + 45u^5 - 121u^4 + 207u^3 - 206u^2 + 82u + 13, 34u^6 - 243u^5 + 811u^4 - 1651u^3 + 1930u^2 + 75b - 889u - 74, 74u^6 - 298u^5 + 171u^4 + 1589u^3 - 6145u^2 + 975a + 9846u - 5489 \rangle$$

$$I_3^u = \langle u^{16} - 21u^{15} + \dots - 17568u + 2752, -29556769321u^{15} + 530852748217u^{14} + \dots + 435920119264b + 14119778896352, -441243090511u^{15} + 6724222739125u^{14} + \dots + 37489130256704a - 160341912991104 \rangle$$

$$I_4^u = \langle b^{42} + 3b^{41} + \dots + 36b - 1, 1.06854 \times 10^{57}u + 1.44446 \times 10^{54}b^{41} + \dots + 5.81028 \times 10^{57}b + 1.73442 \times 10^{56}, -1.40038 \times 10^{56}b^{41} - 5.22603 \times 10^{56}b^{40} + \dots + 1.06854 \times 10^{57}a - 4.08601 \times 10^{57} \rangle$$

There are 4 irreducible components with 71 representations.

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

$$\text{I. } I_1^u = \langle a^6 - 7a^5 + 16a^4 - a^3 + 9a^2 - 2a + 1, -381a^5 + 839b + \dots - 3789a + 363, 284a^5 + 839u + \dots + 1622a + 1599 \rangle$$

(i) Arc colorings

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

$$a_{11} = \begin{pmatrix} a \\ 0.454112a^5 - 3.09058a^4 + \dots + 4.51609a - 0.432658 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -0.454112a^5 + 3.09058a^4 + \dots - 3.51609a + 0.432658 \\ 0.454112a^5 - 3.09058a^4 + \dots + 4.51609a - 0.432658 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 0.00357569a^5 - 0.252682a^4 + \dots - 0.507747a - 0.680572 \\ -0.0917759a^5 + 0.818832a^4 + \dots + 0.0321812a + 2.13468 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0 \\ -0.338498a^5 + 2.25387a^4 + \dots - 1.93325a - 1.90584 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0.0274136a^5 - 0.270560a^4 + \dots + 0.107271a + 0.115614 \\ -0.338498a^5 + 2.25387a^4 + \dots - 1.93325a - 0.905840 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -0.152563a^5 + 1.11442a^4 + \dots - 0.336114a + 0.704410 \\ 0.588796a^5 - 3.94160a^4 + \dots + 3.39094a + 0.265793 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.152563a^5 + 1.11442a^4 + \dots - 0.336114a + 0.704410 \\ 0.199046a^5 - 1.39928a^4 + \dots - 2.26460a - 1.55185 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.0882002a^5 + 0.566150a^4 + \dots - 0.475566a - 0.545888 \\ -0.207390a^5 + 1.65554a^4 + \dots - 2.55066a + 3.47318 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} a \\ 0.0429082a^5 - 0.0321812a^4 + \dots - 1.09297a + 0.833135 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -0.250298a^5 + 1.68772a^4 + \dots - 1.45769a - 0.359952 \\ 0.228844a^5 - 1.17163a^4 + \dots + 1.50417a + 1.44338 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -0.250298a^5 + 1.68772a^4 + \dots - 1.45769a - 0.359952 \\ 0.228844a^5 - 1.17163a^4 + \dots + 1.50417a + 1.44338 \end{pmatrix}$$

(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
$u = -1.87744 - 0.74486I$		
$a = -0.224492 - 0.676864I$	$4.74081 + 3.77083I$	$-0.87324 - 6.91540I$
$b = -0.039862 - 0.693124I$		
$u = -1.87744 + 0.74486I$		
$a = -0.224492 + 0.676864I$	$4.74081 - 3.77083I$	$-0.87324 + 6.91540I$
$b = -0.039862 + 0.693124I$		
$u = -1.87744 + 0.74486I$		
$a = 0.144897 - 0.311699I$	$4.74081 - 3.77083I$	$-0.87324 + 6.91540I$
$b = -0.08270 - 1.43799I$		
$u = -1.87744 - 0.74486I$		
$a = 0.144897 + 0.311699I$	$4.74081 + 3.77083I$	$-0.87324 - 6.91540I$
$b = -0.08270 + 1.43799I$		
$u = -0.245122$		
$a = 3.57960 - 1.95694I$	-2.90188	-8.25352
$b = -0.877439 - 0.479689I$		
$u = -0.245122$		
$a = 3.57960 + 1.95694I$	-2.90188	-8.25352
$b = -0.877439 + 0.479689I$		

$$\text{II. } I_2^u = \langle u^7 - 10u^6 + \dots + 82u + 13, 34u^6 - 243u^5 + \dots + 75b - 74, 74u^6 - 298u^5 + \dots + 975a - 5489 \rangle$$

(i) Arc colorings

$$\begin{aligned} a_4 &= \begin{pmatrix} 1 \\ 0 \end{pmatrix} \\ a_{11} &= \begin{pmatrix} -0.0758974u^6 + 0.305641u^5 + \dots - 10.0985u + 5.62974 \\ -0.453333u^6 + 3.24000u^5 + \dots + 11.8533u + 0.986667 \end{pmatrix} \\ a_1 &= \begin{pmatrix} 0.377436u^6 - 2.93436u^5 + \dots - 21.9518u + 4.64308 \\ -0.453333u^6 + 3.24000u^5 + \dots + 11.8533u + 0.986667 \end{pmatrix} \\ a_3 &= \begin{pmatrix} 0.212308u^6 - 1.62974u^5 + \dots - 14.2021u + 5.38256 \\ -0.213333u^6 + 1.42667u^5 + \dots + 4.48000u + 0.0133333 \end{pmatrix} \\ a_8 &= \begin{pmatrix} 0 \\ u \end{pmatrix} \\ a_7 &= \begin{pmatrix} 0.00102564u^6 + 0.203077u^5 + \dots + 9.72205u - 4.39590 \\ 0.213333u^6 - 1.42667u^5 + \dots - 3.48000u - 0.0133333 \end{pmatrix} \\ a_5 &= \begin{pmatrix} -0.297436u^6 + 2.44103u^5 + \dots + 15.9385u + 0.143590 \\ 0.173333u^6 - 0.680000u^5 + \dots + 6.02667u + 1.09333 \end{pmatrix} \\ a_6 &= \begin{pmatrix} -0.297436u^6 + 2.44103u^5 + \dots + 15.9385u + 0.143590 \\ 1.10667u^6 - 8.54667u^5 + \dots - 41.5733u - 5.84000 \end{pmatrix} \\ a_2 &= \begin{pmatrix} 0.375385u^6 - 3.00718u^5 + \dots - 22.0626u + 2.76821 \\ -0.893333u^6 + 7.12000u^5 + \dots + 36.0933u + 4.82667 \end{pmatrix} \\ a_{10} &= \begin{pmatrix} -0.0758974u^6 + 0.305641u^5 + \dots - 10.0985u + 5.62974 \\ 0.840000u^6 - 6.34667u^5 + \dots - 26.3067u - 4.90667 \end{pmatrix} \\ a_9 &= \begin{pmatrix} -0.243077u^6 + 1.87077u^5 + \dots + 13.8738u - 2.17231 \\ 1.09333u^6 - 8.52000u^5 + \dots - 42.2933u - 6.02667 \end{pmatrix} \\ a_9 &= \begin{pmatrix} -0.243077u^6 + 1.87077u^5 + \dots + 13.8738u - 2.17231 \\ 1.09333u^6 - 8.52000u^5 + \dots - 42.2933u - 6.02667 \end{pmatrix} \end{aligned}$$

(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
$u = -0.118649$ $a = 6.91932$ $b = -0.820970$	-2.80107	-14.6220
$u = 0.82578 - 2.05137I$ $a = 0.304947 + 0.014644I$ $b = 0.281861 - 0.613464I$	$0.77714 + 4.87266I$	$-5.32028 - 10.34979I$
$u = 0.82578 + 2.05137I$ $a = 0.304947 - 0.014644I$ $b = 0.281861 + 0.613464I$	$0.77714 - 4.87266I$	$-5.32028 + 10.34979I$
$u = 1.91651 - 0.65528I$ $a = -0.195336 - 0.619841I$ $b = -0.780534 - 1.059931I$	$-1.42367 - 6.15520I$	$-4.27125 + 4.83482I$
$u = 1.91651 + 0.65528I$ $a = -0.195336 + 0.619841I$ $b = -0.780534 + 1.059931I$	$-1.42367 + 6.15520I$	$-4.27125 - 4.83482I$
$u = 2.31703 - 0.30512I$ $a = -0.107732 + 0.520378I$ $b = -0.090842 + 1.238602I$	$6.98186 + 4.35553I$	$4.40252 - 4.67318I$
$u = 2.31703 + 0.30512I$ $a = -0.107732 - 0.520378I$ $b = -0.090842 - 1.238602I$	$6.98186 - 4.35553I$	$4.40252 + 4.67318I$

$$\text{III. } I_3^u = \langle u^{16} - 21u^{15} + \dots - 17568u + 2752, -2.96 \times 10^{10}u^{15} + 5.31 \times 10^{11}u^{14} + \dots + 4.36 \times 10^{11}b + 1.41 \times 10^{13}, -4.41 \times 10^{11}u^{15} + 6.72 \times 10^{12}u^{14} + \dots + 3.75 \times 10^{13}a - 1.60 \times 10^{14} \rangle$$

(i) Arc colorings

$$\begin{aligned} a_4 &= \begin{pmatrix} 1 \\ 0 \end{pmatrix} \\ a_{11} &= \begin{pmatrix} 0.0117699u^{15} - 0.179365u^{14} + \dots - 27.0258u + 4.27702 \\ 0.0678032u^{15} - 1.21778u^{14} + \dots + 211.051u - 32.3907 \end{pmatrix} \\ a_1 &= \begin{pmatrix} -0.0560333u^{15} + 1.03841u^{14} + \dots - 238.076u + 36.6678 \\ 0.0678032u^{15} - 1.21778u^{14} + \dots + 211.051u - 32.3907 \end{pmatrix} \\ a_3 &= \begin{pmatrix} 0.0607426u^{15} - 1.16347u^{14} + \dots + 378.513u - 58.2972 \\ -0.0850767u^{15} + 1.58941u^{14} + \dots - 419.831u + 66.9675 \end{pmatrix} \\ a_8 &= \begin{pmatrix} 0 \\ u \end{pmatrix} \\ a_7 &= \begin{pmatrix} 0.0243341u^{15} - 0.425940u^{14} + \dots + 41.3187u - 7.67028 \\ 0.0850767u^{15} - 1.58941u^{14} + \dots + 420.831u - 66.9675 \end{pmatrix} \\ a_5 &= \begin{pmatrix} -0.0595148u^{15} + 1.20997u^{14} + \dots - 771.154u + 133.973 \\ 0.157359u^{15} - 2.90869u^{14} + \dots + 515.077u - 70.3464 \end{pmatrix} \\ a_6 &= \begin{pmatrix} -0.0595148u^{15} + 1.20997u^{14} + \dots - 771.154u + 133.973 \\ 0.108684u^{15} - 2.14136u^{14} + \dots + 1051.20u - 179.987 \end{pmatrix} \\ a_2 &= \begin{pmatrix} 0.0393557u^{15} - 0.763716u^{14} + \dots + 358.545u - 59.2544 \\ -0.0857712u^{15} + 1.79955u^{14} + \dots - 1332.64u + 235.465 \end{pmatrix} \\ a_{10} &= \begin{pmatrix} 0.0117699u^{15} - 0.179365u^{14} + \dots - 27.0258u + 4.27702 \\ -0.138288u^{15} + 2.64888u^{14} + \dots - 947.725u + 154.204 \end{pmatrix} \\ a_9 &= \begin{pmatrix} -0.0263539u^{15} + 0.503265u^{14} + \dots - 82.9724u + 11.1102 \\ -0.117609u^{15} + 2.35326u^{14} + \dots - 1199.35u + 202.211 \end{pmatrix} \\ a_9 &= \begin{pmatrix} -0.0263539u^{15} + 0.503265u^{14} + \dots - 82.9724u + 11.1102 \\ -0.117609u^{15} + 2.35326u^{14} + \dots - 1199.35u + 202.211 \end{pmatrix} \end{aligned}$$

(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
$u = -0.000405 - 0.662211I$		
$a = 0.556138 - 0.419958I$	$-0.389238 - 1.281376I$	$-3.68762 + 5.53338I$
$b = -0.278326 - 0.368111I$		
$u = -0.000405 + 0.662211I$		
$a = 0.556138 + 0.419958I$	$-0.389238 + 1.281376I$	$-3.68762 - 5.53338I$
$b = -0.278326 + 0.368111I$		
$u = 0.60471 - 2.47011I$		
$a = -0.236318 + 0.042491I$	$0.98282 - 4.26271I$	$-0.536037 - 0.693456I$
$b = -0.037947 + 0.609427I$		
$u = 0.60471 + 2.47011I$		
$a = -0.236318 - 0.042491I$	$0.98282 + 4.26271I$	$-0.536037 + 0.693456I$
$b = -0.037947 - 0.609427I$		
$u = 0.793907 - 0.499745I$		
$a = 0.850796 - 0.625481I$	$3.94475 - 1.12356I$	$1.32088 - 0.73756I$
$b = 0.362872 - 0.921754I$		
$u = 0.793907 + 0.499745I$		
$a = 0.850796 + 0.625481I$	$3.94475 + 1.12356I$	$1.32088 + 0.73756I$
$b = 0.362872 + 0.921754I$		
$u = 1.23110 - 1.02971I$		
$a = -0.044538 - 0.844171I$	$-2.56347 - 5.89381I$	$-14.0887 + 6.8568I$
$b = -0.924080 - 0.993395I$		
$u = 1.23110 + 1.02971I$		
$a = -0.044538 + 0.844171I$	$-2.56347 + 5.89381I$	$-14.0887 - 6.8568I$
$b = -0.924080 + 0.993395I$		
$u = 1.60084 - 0.94297I$		
$a = 0.169681 + 0.631764I$	$-4.45687 + 2.76976I$	$-6.60351 - 1.02062I$
$b = 0.867369 + 0.851352I$		
$u = 1.60084 + 0.94297I$		
$a = 0.169681 - 0.631764I$	$-4.45687 - 2.76976I$	$-6.60351 + 1.02062I$
$b = 0.867369 - 0.851352I$		

Solution to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.60758 - 0.73452I$	$3.11555 - 2.14731I$	$-0.93627 + 3.92704I$
$a = 0.211695 - 0.555796I$		
$b = -0.067924 - 1.048980I$		
$u = 1.60758 + 0.73452I$	$3.11555 + 2.14731I$	$-0.93627 - 3.92704I$
$a = 0.211695 + 0.555796I$		
$b = -0.067924 + 1.048980I$		
$u = 2.32974 - 0.75524I$	$-2.2047 - 16.1487I$	$-3.69661 + 9.09082I$
$a = 0.169301 + 0.571227I$		
$b = 0.82584 + 1.20295I$		
$u = 2.32974 + 0.75524I$	$-2.2047 + 16.1487I$	$-3.69661 - 9.09082I$
$a = 0.169301 - 0.571227I$		
$b = 0.82584 - 1.20295I$		
$u = 2.33253 - 1.08528I$	$-0.89621 - 7.24124I$	$-3.27217 + 13.36826I$
$a = -0.066291 - 0.546568I$		
$b = -0.74781 - 1.20294I$		
$u = 2.33253 + 1.08528I$	$-0.89621 + 7.24124I$	$-3.27217 - 13.36826I$
$a = -0.066291 + 0.546568I$		
$b = -0.74781 + 1.20294I$		

IV.

$$I_4^u = \langle b^{42} + 3b^{41} + \dots + 36b - 1, 1.07 \times 10^{57}u + 1.44 \times 10^{54}b^{41} + \dots + 5.81 \times 10^{57}b + 1.73 \times 10^{56}, -1.40 \times 10^{56}b^{41} - 5.23 \times 10^{56}b^{40} + \dots + 1.07 \times 10^{57}a - 4.09 \times 10^{57} \rangle$$

(i) Arc colorings

$$\begin{aligned} a_4 &= \begin{pmatrix} 1 \\ 0 \end{pmatrix} \\ a_{11} &= \begin{pmatrix} 0.131056b^{41} + 0.489083b^{40} + \dots + 2.10520b + 3.82393 \\ b \end{pmatrix} \\ a_1 &= \begin{pmatrix} 0.131056b^{41} + 0.489083b^{40} + \dots + 1.10520b + 3.82393 \\ b \end{pmatrix} \\ a_3 &= \begin{pmatrix} -0.0959156b^{41} - 0.364103b^{40} + \dots + 0.894078b + 0.868944 \\ -b^2 \end{pmatrix} \\ a_8 &= \begin{pmatrix} 0 \\ -0.00135181b^{41} - 0.0548997b^{40} + \dots - 5.43760b - 0.162317 \end{pmatrix} \\ a_7 &= \begin{pmatrix} -0.119064b^{41} - 0.472322b^{40} + \dots - 7.98618b - 4.45525 \\ 0.0141628b^{41} + 0.00940518b^{40} + \dots - 6.21390b - 0.171261 \end{pmatrix} \\ a_5 &= \begin{pmatrix} 0.148029b^{41} + 0.630260b^{40} + \dots + 6.76282b + 2.40057 \\ 0.0112564b^{41} + 0.0526931b^{40} + \dots + 6.71272b - 0.0765764 \end{pmatrix} \\ a_6 &= \begin{pmatrix} 0.148029b^{41} + 0.630260b^{40} + \dots + 6.76282b + 2.40057 \\ -0.102175b^{41} - 0.310838b^{40} + \dots + 4.37894b - 0.245729 \end{pmatrix} \\ a_2 &= \begin{pmatrix} 0.0500454b^{41} + 0.143426b^{40} + \dots + 2.14274b + 2.27870 \\ 0.0207909b^{41} + 0.0926943b^{40} + \dots + 5.40135b - 0.0458921 \end{pmatrix} \\ a_{10} &= \begin{pmatrix} 0.131056b^{41} + 0.489083b^{40} + \dots + 2.10520b + 3.82393 \\ 0.0254152b^{41} + 0.0929738b^{40} + \dots - 4.34981b - 0.222058 \end{pmatrix} \\ a_9 &= \begin{pmatrix} -0.0936849b^{41} - 0.300727b^{40} + \dots - 3.23666b - 1.59520 \\ 0.0104584b^{41} + 0.0306330b^{40} + \dots - 5.14311b - 0.234716 \end{pmatrix} \\ a_9 &= \begin{pmatrix} -0.0936849b^{41} - 0.300727b^{40} + \dots - 3.23666b - 1.59520 \\ 0.0104584b^{41} + 0.0306330b^{40} + \dots - 5.14311b - 0.234716 \end{pmatrix} \end{aligned}$$

(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
$u = -0.308841$ $a = -0.0895387$ $b = -1.20681$	-2.39902	9.38223
$u = -0.016772 - 0.205290I$ $a = 2.95953 + 3.45976I$ $b = -1.181089 - 0.555383I$	$-3.87464 + 0.10689I$	$-16.3307 - 2.6685I$
$u = -0.016772 + 0.205290I$ $a = 2.95953 - 3.45976I$ $b = -1.181089 + 0.555383I$	$-3.87464 - 0.10689I$	$-16.3307 + 2.6685I$
$u = -0.627447 - 0.290311I$ $a = 0.89427 - 1.11609I$ $b = -0.998691 - 0.783756I$	$-3.16717 - 1.07030I$	$-12.89268 + 5.67416I$
$u = -0.627447 + 0.290311I$ $a = 0.89427 + 1.11609I$ $b = -0.998691 + 0.783756I$	$-3.16717 + 1.07030I$	$-12.89268 - 5.67416I$
$u = -2.06199 + 0.57208I$ $a = -0.136705 - 0.534778I$ $b = -0.903022 - 0.809434I$	$-2.75188 - 4.82047I$	$-10.54242 + 4.40996I$
$u = -2.06199 - 0.57208I$ $a = -0.136705 + 0.534778I$ $b = -0.903022 + 0.809434I$	$-2.75188 + 4.82047I$	$-10.54242 - 4.40996I$
$u = -0.627447 + 0.290311I$ $a = 1.78705 - 0.42227I$ $b = -0.885119 - 0.440669I$	$-3.16717 + 1.07030I$	$-12.89268 - 5.67416I$
$u = -0.627447 - 0.290311I$ $a = 1.78705 + 0.42227I$ $b = -0.885119 + 0.440669I$	$-3.16717 - 1.07030I$	$-12.89268 + 5.67416I$
$u = 0.542676 - 0.314003I$ $a = 1.63803 - 0.45348I$ $b = -0.884140 - 0.948082I$	$-2.33356 - 1.75773I$	$-7.03716 + 6.33959I$

Solution to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.542676 + 0.314003I$ $a = 1.63803 + 0.45348I$ $b = -0.884140 + 0.948082I$	$-2.33356 + 1.75773I$	$-7.03716 - 6.33959I$
$u = -2.07528 + 0.45358I$ $a = -0.232004 - 0.517525I$ $b = -0.84147 - 1.24514I$	$-1.69311 - 7.34221I$	$-7.2251 + 12.7560I$
$u = -2.07528 - 0.45358I$ $a = -0.232004 + 0.517525I$ $b = -0.84147 + 1.24514I$	$-1.69311 + 7.34221I$	$-7.2251 - 12.7560I$
$u = -1.122398 - 0.849741I$ $a = -0.168717 - 0.235919I$ $b = -0.549689 - 0.965680I$	$0.21083 - 2.02252I$	$-3.27794 + 3.16369I$
$u = -1.122398 + 0.849741I$ $a = -0.168717 + 0.235919I$ $b = -0.549689 + 0.965680I$	$0.21083 + 2.02252I$	$-3.27794 - 3.16369I$
$u = -0.778011 - 0.849086I$ $a = -0.835960 + 0.076453I$ $b = -0.221318 - 0.954664I$	$2.51518 - 5.37801I$	$0.71786 + 8.23406I$
$u = -0.778011 + 0.849086I$ $a = -0.835960 - 0.076453I$ $b = -0.221318 + 0.954664I$	$2.51518 + 5.37801I$	$0.71786 - 8.23406I$
$u = 2.50074 - 0.29686I$ $a = 0.081192 - 0.306283I$ $b = -0.175620 - 1.395207I$	$5.06212 - 3.17952I$	$3.66314 - 2.07098I$
$u = 2.50074 + 0.29686I$ $a = 0.081192 + 0.306283I$ $b = -0.175620 + 1.395207I$	$5.06212 + 3.17952I$	$3.66314 + 2.07098I$
$u = -1.67496 + 0.29782I$ $a = -0.088066 - 0.447964I$ $b = -0.06930 - 1.59935I$	$4.77684 - 4.89958I$	$-1.86079 + 9.83067I$

Solution to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.67496 - 0.29782I$ $a = -0.088066 + 0.447964I$ $b = -0.06930 + 1.59935I$	$4.77684 + 4.89958I$	$-1.86079 - 9.83067I$
$u = -1.122398 + 0.849741I$ $a = 0.725362 - 0.311218I$ $b = -0.011102 - 0.408161I$	$0.21083 + 2.02252I$	$-3.27794 - 3.16369I$
$u = -1.122398 - 0.849741I$ $a = 0.725362 + 0.311218I$ $b = -0.011102 + 0.408161I$	$0.21083 - 2.02252I$	$-3.27794 + 3.16369I$
$u = -0.308841$ $a = 3.90754$ $b = 0.0276533$	-2.39902	9.38223
$u = 2.50074 - 0.29686I$ $a = -0.003942 - 0.558386I$ $b = 0.112117 - 0.790036I$	$5.06212 - 3.17952I$	$3.66314 - 2.07098I$
$u = 2.50074 + 0.29686I$ $a = -0.003942 + 0.558386I$ $b = 0.112117 + 0.790036I$	$5.06212 + 3.17952I$	$3.66314 + 2.07098I$
$u = -1.67496 - 0.29782I$ $a = -0.124469 - 0.932727I$ $b = 0.280918 - 0.724094I$	$4.77684 + 4.89958I$	$-1.86079 - 9.83067I$
$u = -1.67496 + 0.29782I$ $a = -0.124469 + 0.932727I$ $b = 0.280918 + 0.724094I$	$4.77684 - 4.89958I$	$-1.86079 + 9.83067I$
$u = -2.06199 - 0.57208I$ $a = 0.305513 - 0.477312I$ $b = 0.587817 - 1.024499I$	$-2.75188 + 4.82047I$	$-10.54242 - 4.40996I$
$u = -2.06199 + 0.57208I$ $a = 0.305513 + 0.477312I$ $b = 0.587817 + 1.024499I$	$-2.75188 - 4.82047I$	$-10.54242 + 4.40996I$

Solution to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.016772 - 0.205290I$		
$a = 3.15435 - 5.49556I$	$-3.87464 + 0.10689I$	$-16.3307 - 2.6685I$
$b = 0.660616 - 0.665590I$		
$u = -0.016772 + 0.205290I$		
$a = 3.15435 + 5.49556I$	$-3.87464 - 0.10689I$	$-16.3307 + 2.6685I$
$b = 0.660616 + 0.665590I$		
$u = -0.778011 + 0.849086I$		
$a = 0.741022 - 0.418338I$	$2.51518 + 5.37801I$	$0.71786 - 8.23406I$
$b = 0.715301 - 0.650320I$		
$u = -0.778011 - 0.849086I$		
$a = 0.741022 + 0.418338I$	$2.51518 - 5.37801I$	$0.71786 + 8.23406I$
$b = 0.715301 + 0.650320I$		
$u = -2.07528 - 0.45358I$		
$a = 0.261831 - 0.657214I$	$-1.69311 + 7.34221I$	$-7.2251 - 12.7560I$
$b = 0.716213 - 0.968774I$		
$u = -2.07528 + 0.45358I$		
$a = 0.261831 + 0.657214I$	$-1.69311 - 7.34221I$	$-7.2251 + 12.7560I$
$b = 0.716213 + 0.968774I$		
$u = 0.542676 - 0.314003I$		
$a = -0.46325 - 2.01509I$	$-2.33356 - 1.75773I$	$-7.03716 + 6.33959I$
$b = 0.746526 - 0.760439I$		
$u = 0.542676 + 0.314003I$		
$a = -0.46325 + 2.01509I$	$-2.33356 + 1.75773I$	$-7.03716 - 6.33959I$
$b = 0.746526 + 0.760439I$		
$u = -0.532144 + 0.352576I$		
$a = -1.00642 - 1.80126I$	$-4.12482 + 9.03603I$	$-5.90532 - 6.27658I$
$b = 0.819992 - 0.955539I$		
$u = -0.532144 - 0.352576I$		
$a = -1.00642 + 1.80126I$	$-4.12482 - 9.03603I$	$-5.90532 + 6.27658I$
$b = 0.819992 + 0.955539I$		
Solution to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.532144 - 0.352576I$		
$a = -1.89762 - 0.53836I$	$-4.12482 - 9.03603I$	$-5.90532 + 6.27658I$
$b = 1.170643 - 0.603687I$		
$u = -0.532144 + 0.352576I$		
$a = -1.89762 + 0.53836I$	$-4.12482 + 9.03603I$	$-5.90532 - 6.27658I$
$b = 1.170643 + 0.603687I$		

V. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1, c_6	$(u^6 - 2u^3 + 4u^2 - 3u + 1)(u^7 - u^6 + u^5 - u^4 + 3u^3 - u^2 - 1)$ $(u^{16} + u^{15} + \dots + u + 1)(u^{42} + u^{41} + \dots + 7u - 1)$
c_2, c_5	$(u^6 + 3u^5 + 4u^4 + 4u^3 + 3u^2 + u + 1)$ $(u^7 - u^6 + \dots + 5u - 1)(u^{16} + u^{15} + \dots + 15u^2 + 1)$ $(u^{42} + 7u^{40} + \dots - 1895u + 457)$
c_3, c_{10}	$(u^6 + 2u^5 + 4u^4 + 5u^3 + 4u^2 + 2u + 1)$ $(u^7 + 2u^6 + \dots + u + 1)(u^{16} + 4u^{14} + \dots + 2u + 1)$ $(u^{42} + 3u^{41} + \dots + 36u - 1)$
c_4	$(u^3 + u^2 - 1)^2(u^7 - 6u^6 + 22u^5 - 53u^4 + 84u^3 - 80u^2 + 42u - 9)$ $(u^{16} - 13u^{15} + \dots - 352u + 64)$ $(7 + 43u + 50u^2 - 187u^3 - 525u^4 - 101u^5 + 1124u^6 + 1369u^7 - 241u^8 - 1732u^9 - 1220u^{10} + \dots)$
c_7, c_{11}	$(u^6 - 2u^5 + 4u^4 - 5u^3 + 4u^2 - 2u + 1)$ $(u^7 - 2u^6 + \dots + u - 1)(u^{16} + 4u^{14} + \dots + 2u + 1)$ $(u^{42} + 3u^{41} + \dots + 36u - 1)$
c_8	$(u^3 + u^2 - 1)^2(u^7 - 2u^6 + u^5 + 2u^4 - 2u^3 + u^2 + u - 1)$ $(u^{16} + 13u^{15} + \dots + 36u + 8)$ $(-1 + 5u - 18u^2 + 49u^3 - 109u^4 + 201u^5 - 316u^6 + 437u^7 - 539u^8 + 602u^9 - 598u^{10} + 522u^{11} - 271u^{12} + \dots)$
c_9	$(u^3 - u - 1)^2(u^7 - u^6 - u^5 + 2u^4 - 2u^3 - u^2 + 2u - 1)$ $(u^{16} + 16u^{15} + \dots + 544u + 64)$ $(-1 + 9u - 24u^2 + 3u^3 + 63u^4 - 37u^5 - 91u^6 + 104u^7 - 9u^8 - 62u^9 + 82u^{10} - 9u^{11} - 78u^{12} + \dots)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_6	$(y^6 + 8y^4 + \dots - y + 1)(y^7 + y^6 + \dots - 2y - 1)$ $(y^{16} - 3y^{15} + \dots - 5y + 1)(y^{42} - y^{41} + \dots - 45y + 1)$
c_2, c_5	$(y^6 - y^5 - 2y^4 + 4y^3 + 9y^2 + 5y + 1)$ $(y^7 + 5y^6 + \dots + 15y - 1)(y^{16} + 9y^{15} + \dots + 30y + 1)$ $(y^{42} + 14y^{41} + \dots + 2544657y + 208849)$
c_3, c_7, c_{10} c_{11}	$(y^6 + 4y^5 + 4y^4 + y^3 + 4y^2 + 4y + 1)$ $(y^7 + 4y^6 + 8y^5 + 10y^4 + 4y^3 - 4y^2 - 3y - 1)$ $(y^{16} + 8y^{15} + \dots + 12y + 1)(y^{42} + 11y^{41} + \dots - 1288y + 1)$
c_4	$(y^3 - y^2 + 2y - 1)^2$ $(y^7 + 8y^6 + 16y^5 + 11y^4 + 316y^3 - 298y^2 + 324y - 81)$ $(y^{16} + 5y^{15} + \dots + 40448y + 4096)$ $(-49 + 1149y - 1.12 \times 10^4 y^2 + 6.30 \times 10^4 y^3 - 2.29 \times 10^5 y^4 + 5.71 \times 10^5 y^5 - 1.01 \times 10^6 y^6 + \dots)$
c_8	$(y^3 - y^2 + 2y - 1)^2(y^7 - 2y^6 + 5y^5 - 2y^4 - 2y^3 - y^2 + 3y - 1)$ $(y^{16} - y^{15} + \dots + 496y + 64)$ $(-1 - 11y - 52y^2 - 145y^3 - 267y^4 - 241y^5 + 232y^6 + 1399y^7 + 3173y^8 + 4948y^9 + 5920y^{10} - \dots)$
c_9	$(y^3 - 2y^2 + y - 1)^2(y^7 - 3y^6 + y^5 + 2y^4 + 2y^3 - 5y^2 + 2y - 1)$ $(y^{16} - 4y^{15} + \dots + 23552y + 4096)$ $(-1 + 33y - 396y^2 + 2185y^3 - 6705y^4 + 1.21 \times 10^4 y^5 - 1.16 \times 10^4 y^6 + 1082y^7 + 1.06 \times 10^4 y^8 - \dots)$