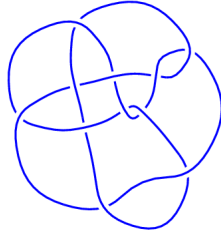
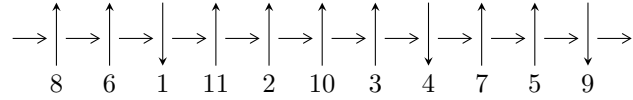


11a<sub>273</sub> (K11a<sub>273</sub>)

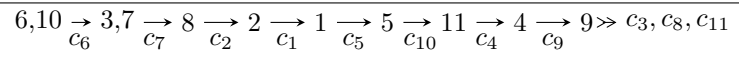


1

**Arc Sequences**



**Solving Sequence**



**Representation Ideals**

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

$$I_1^u = \langle 2b^2 - b + 1, a + 1, u + 1 \rangle$$

$$I_2^u = \langle u^{20} - 4u^{19} + \dots - 6u + 1, 7246464u^{19} - 26199033u^{18} + \dots + 1332607b - 14518963, \\ 38612166u^{19} - 138565656u^{18} + \dots + 1332607a - 92519179 \rangle$$

$$I_3^u = \langle u^{101} - u^{100} + \dots - 8u + 21, \\ - 9.73666 \times 10^{318}u^{100} + 1.85069 \times 10^{319}u^{99} + \dots + 1.92786 \times 10^{320}b - 6.81614 \times 10^{320}, \\ - 4.16542 \times 10^{319}u^{100} + 6.90912 \times 10^{319}u^{99} + \dots + 2.89179 \times 10^{320}a - 1.40664 \times 10^{321} \rangle$$

There are 3 irreducible components with 123 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>”

$$\text{I. } I_1^u = \langle 2b^2 - b + 1, a + 1, u + 1 \rangle$$

(i) Arc colorings

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

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

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

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

$$a_8 = \begin{pmatrix} b - 2 \\ b - 1 \end{pmatrix}$$

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

$$a_1 = \begin{pmatrix} b - 1 \\ b \end{pmatrix}$$

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

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

$$a_4 = \begin{pmatrix} -\frac{1}{2}b + \frac{1}{2} \\ \frac{1}{2}b - \frac{1}{2} \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -2 \\ 2b - 1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -2 \\ 2b - 1 \end{pmatrix}$$

(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
$u = -1.00000$ $a = -1.00000$ $b = 0.250000 - 0.661438I$	3.28987	$10.53125 - 3.72059I$
$u = -1.00000$ $a = -1.00000$ $b = 0.250000 + 0.661438I$	3.28987	$10.53125 + 3.72059I$

II.

$$I_2^u = \langle u^{20} - 4u^{19} + \dots - 6u + 1, 7.25 \times 10^6 u^{19} - 2.62 \times 10^7 u^{18} + \dots + 1.33 \times 10^6 b - 1.45 \times 10^7, 3.86 \times 10^7 u^{19} - 1.39 \times 10^8 u^{18} + \dots + 1.33 \times 10^6 a - 9.25 \times 10^7 \rangle$$

(i) Arc colorings

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

$$a_{10} = \begin{pmatrix} -28.9749u^{19} + 103.981u^{18} + \dots - 253.849u + 69.4272 \\ -5.43781u^{19} + 19.6600u^{18} + \dots - 40.7300u + 10.8952 \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} -0.860935u^{19} - 0.266479u^{18} + \dots + 14.2497u - 16.0693 \\ -7.22770u^{19} + 25.6947u^{18} + \dots - 55.6062u + 15.1348 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -8.08863u^{19} + 25.4283u^{18} + \dots - 41.3565u - 0.934551 \\ -7.22770u^{19} + 25.6947u^{18} + \dots - 55.6062u + 15.1348 \end{pmatrix}$$

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

$$a_1 = \begin{pmatrix} 24.5231u^{19} - 90.1889u^{18} + \dots + 235.264u - 73.7335 \\ -4.40164u^{19} + 16.2681u^{18} + \dots - 40.5082u + 10.6198 \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} -33.3765u^{19} + 120.249u^{18} + \dots - 294.357u + 81.0470 \\ -1.36215u^{19} + 4.54756u^{18} + \dots - 3.85091u + 0.613833 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 8.18906u^{19} - 26.8766u^{18} + \dots + 45.6742u - 1.57337 \\ 7.13884u^{19} - 26.3527u^{18} + \dots + 61.5972u - 16.4995 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 57.0369u^{19} - 204.840u^{18} + \dots + 497.439u - 133.735 \\ -3.34366u^{19} + 11.3876u^{18} + \dots - 21.0620u + 2.58247 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 57.0369u^{19} - 204.840u^{18} + \dots + 497.439u - 133.735 \\ -3.34366u^{19} + 11.3876u^{18} + \dots - 21.0620u + 2.58247 \end{pmatrix}$$

(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
$u = -1.172421 - 0.245057I$ $a = -0.364217 + 0.625295I$ $b = -0.225809 - 0.140096I$	$2.56410 - 0.84466I$	$9.03889 + 5.09380I$
$u = -1.172421 + 0.245057I$ $a = -0.364217 - 0.625295I$ $b = -0.225809 + 0.140096I$	$2.56410 + 0.84466I$	$9.03889 - 5.09380I$
$u = -0.837562 - 0.477147I$ $a = -1.138558 - 0.637661I$ $b = 1.31483 - 1.01127I$	$1.12249 + 4.07831I$	$8.09612 - 4.25313I$
$u = -0.837562 + 0.477147I$ $a = -1.138558 + 0.637661I$ $b = 1.31483 + 1.01127I$	$1.12249 - 4.07831I$	$8.09612 + 4.25313I$
$u = -0.836889 - 0.176338I$ $a = 0.366456 + 1.092928I$ $b = -3.11922 + 0.23868I$	$-2.03342 + 0.46303I$	$-9.6886 + 23.5396I$
$u = -0.836889 + 0.176338I$ $a = 0.366456 - 1.092928I$ $b = -3.11922 - 0.23868I$	$-2.03342 - 0.46303I$	$-9.6886 - 23.5396I$
$u = -0.105746 - 1.231280I$ $a = 0.590489 + 0.142713I$ $b = -2.23908 - 0.01689I$	$-4.80980 + 0.48058I$	$-2.92255 + 5.81288I$
$u = -0.105746 + 1.231280I$ $a = 0.590489 - 0.142713I$ $b = -2.23908 + 0.01689I$	$-4.80980 - 0.48058I$	$-2.92255 - 5.81288I$
$u = 0.221031 - 1.292420I$ $a = -0.840043 + 0.317328I$ $b = 1.43028 - 0.03404I$	$-6.55589 + 1.90355I$	$-0.93873 - 1.80301I$
$u = 0.221031 + 1.292420I$ $a = -0.840043 - 0.317328I$ $b = 1.43028 + 0.03404I$	$-6.55589 - 1.90355I$	$-0.93873 + 1.80301I$

Solution to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.414622 - 0.063326I$ $a = -0.62257 + 3.97162I$ $b = 0.594722 + 0.429876I$	$-7.55275 + 4.43078I$	$7.56186 - 0.93053I$
$u = 0.414622 + 0.063326I$ $a = -0.62257 - 3.97162I$ $b = 0.594722 - 0.429876I$	$-7.55275 - 4.43078I$	$7.56186 + 0.93053I$
$u = 0.559985 - 0.361635I$ $a = -0.985080 + 0.253796I$ $b = 2.38060 - 0.60521I$	$-2.09736 - 7.25746I$	$5.4336 + 16.3698I$
$u = 0.559985 + 0.361635I$ $a = -0.985080 - 0.253796I$ $b = 2.38060 + 0.60521I$	$-2.09736 + 7.25746I$	$5.4336 - 16.3698I$
$u = 0.920937 - 0.381458I$ $a = 1.26656 + 0.86155I$ $b = -0.362291 - 0.100203I$	$1.29205 - 1.53764I$	$1.05852 + 6.01902I$
$u = 0.920937 + 0.381458I$ $a = 1.26656 - 0.86155I$ $b = -0.362291 + 0.100203I$	$1.29205 + 1.53764I$	$1.05852 - 6.01902I$
$u = 1.28664 - 0.65541I$ $a = 0.780399 - 0.656824I$ $b = -1.54140 - 0.84346I$	$-2.81189 - 8.50342I$	$2.16622 + 7.62575I$
$u = 1.28664 + 0.65541I$ $a = 0.780399 + 0.656824I$ $b = -1.54140 + 0.84346I$	$-2.81189 + 8.50342I$	$2.16622 - 7.62575I$
$u = 1.54941 - 0.10551I$ $a = -0.053437 + 0.258079I$ $b = -0.232634 + 0.881750I$	$2.78821 - 5.63151I$	$8.69462 + 3.84058I$
$u = 1.54941 + 0.10551I$ $a = -0.053437 - 0.258079I$ $b = -0.232634 - 0.881750I$	$2.78821 + 5.63151I$	$8.69462 - 3.84058I$

$$\text{III. } I_3^u = \langle u^{101} - u^{100} + \dots - 8u + 21, -9.74 \times 10^{318}u^{100} + 1.85 \times 10^{319}u^{99} + \dots + 1.93 \times 10^{320}b - 6.82 \times 10^{320}, -4.17 \times 10^{319}u^{100} + 6.91 \times 10^{319}u^{99} + \dots + 2.89 \times 10^{320}a - 1.41 \times 10^{321} \rangle$$

(i) Arc colorings

$$\begin{aligned} a_6 &= \begin{pmatrix} 0 \\ u \end{pmatrix} \\ a_{10} &= \begin{pmatrix} 0.144043u^{100} - 0.238922u^{99} + \dots - 8.25773u + 4.86425 \\ 0.0505049u^{100} - 0.0959970u^{99} + \dots + 0.331053u + 3.53560 \end{pmatrix} \\ a_3 &= \begin{pmatrix} 1 \\ 0 \end{pmatrix} \\ a_7 &= \begin{pmatrix} -0.0818995u^{100} + 0.131157u^{99} + \dots + 2.64390u - 1.55314 \\ 0.131208u^{100} - 0.198713u^{99} + \dots - 6.47167u + 4.67340 \end{pmatrix} \\ a_8 &= \begin{pmatrix} 0.0493081u^{100} - 0.0675557u^{99} + \dots - 3.82777u + 3.12026 \\ 0.131208u^{100} - 0.198713u^{99} + \dots - 6.47167u + 4.67340 \end{pmatrix} \\ a_2 &= \begin{pmatrix} 1 \\ u^2 \end{pmatrix} \\ a_1 &= \begin{pmatrix} 0.241696u^{100} - 0.361217u^{99} + \dots - 15.3423u + 8.20929 \\ 0.0863851u^{100} - 0.124875u^{99} + \dots - 3.00954u + 1.30021 \end{pmatrix} \\ a_5 &= \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix} \\ a_{11} &= \begin{pmatrix} 0.210967u^{100} - 0.344136u^{99} + \dots - 11.9562u + 7.04927 \\ 0.00504266u^{100} - 0.0215908u^{99} + \dots + 2.31782u + 2.15468 \end{pmatrix} \\ a_4 &= \begin{pmatrix} -0.152032u^{100} + 0.211868u^{99} + \dots + 12.9626u - 6.91916 \\ -0.152299u^{100} + 0.217869u^{99} + \dots + 7.66986u - 5.91661 \end{pmatrix} \\ a_9 &= \begin{pmatrix} 0.0303781u^{100} - 0.0492432u^{99} + \dots + 1.01729u + 1.14772 \\ -0.0379441u^{100} + 0.0473087u^{99} + \dots + 5.97255u + 0.135355 \end{pmatrix} \\ a_9 &= \begin{pmatrix} 0.0303781u^{100} - 0.0492432u^{99} + \dots + 1.01729u + 1.14772 \\ -0.0379441u^{100} + 0.0473087u^{99} + \dots + 5.97255u + 0.135355 \end{pmatrix} \end{aligned}$$

(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
$u = -1.361172 - 0.133199I$		
$a = 0.078067 - 0.570277I$	$1.71389 - 0.48354I$	$-0.074684 + 0.673574I$
$b = 0.512011 + 0.109339I$		
$u = -1.361172 + 0.133199I$		
$a = 0.078067 + 0.570277I$	$1.71389 + 0.48354I$	$-0.074684 - 0.673574I$
$b = 0.512011 - 0.109339I$		
$u = -1.333447 - 0.274691I$		
$a = -0.333278 + 0.615902I$	$3.20074 - 2.34746I$	$7.10926 + 6.82461I$
$b = 0.005963 + 0.528650I$		
$u = -1.333447 + 0.274691I$		
$a = -0.333278 - 0.615902I$	$3.20074 + 2.34746I$	$7.10926 - 6.82461I$
$b = 0.005963 - 0.528650I$		
$u = -1.33076 - 0.84351I$		
$a = 0.719794 + 0.513172I$	$-3.83195 + 8.38721I$	$-4.59719 - 8.67477I$
$b = -1.64575 + 1.10210I$		
$u = -1.33076 + 0.84351I$		
$a = 0.719794 - 0.513172I$	$-3.83195 - 8.38721I$	$-4.59719 + 8.67477I$
$b = -1.64575 - 1.10210I$		
$u = -1.31453 - 0.55652I$		
$a = 0.820759 + 0.679621I$	$-1.84072 + 8.55312I$	$10.2259 - 9.9993I$
$b = -1.21887 + 0.72971I$		
$u = -1.31453 + 0.55652I$		
$a = 0.820759 - 0.679621I$	$-1.84072 - 8.55312I$	$10.2259 + 9.9993I$
$b = -1.21887 - 0.72971I$		
$u = -1.26307 - 0.75138I$		
$a = -0.877319 - 0.553150I$	$-3.9285 + 18.4008I$	$3.05565 - 9.73700I$
$b = 1.88398 - 1.00126I$		
$u = -1.26307 + 0.75138I$		
$a = -0.877319 + 0.553150I$	$-3.9285 - 18.4008I$	$3.05565 + 9.73700I$
$b = 1.88398 + 1.00126I$		



Solution to $I_3^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.168869 - 0.454140I$ $a = 0.612471 - 0.252497I$ $b = -0.035449 - 0.331779I$	$-0.00702 + 3.32914I$	$6.84099 - 4.86309I$
$u = -1.168869 + 0.454140I$ $a = 0.612471 + 0.252497I$ $b = -0.035449 + 0.331779I$	$-0.00702 - 3.32914I$	$6.84099 + 4.86309I$
$u = -1.164454 - 0.593434I$ $a = -0.655954 - 0.422201I$ $b = 1.44335 - 0.86354I$	$2.72612 + 2.16280I$	$9.45697 - 0.57028I$
$u = -1.164454 + 0.593434I$ $a = -0.655954 + 0.422201I$ $b = 1.44335 + 0.86354I$	$2.72612 - 2.16280I$	$9.45697 + 0.57028I$
$u = -1.14364$ $a = -0.100251$ $b = 0.547588$	$1.94160$	$2.90121$
$u = -1.094723 - 0.541791I$ $a = -0.878021 + 0.680182I$ $b = 0.092673 - 0.221133I$	$-0.40633 + 11.38169I$	$5.18682 - 8.13192I$
$u = -1.094723 + 0.541791I$ $a = -0.878021 - 0.680182I$ $b = 0.092673 + 0.221133I$	$-0.40633 - 11.38169I$	$5.18682 + 8.13192I$
$u = -1.081338 - 0.153780I$ $a = 0.815760 - 0.421824I$ $b = -0.003411 + 0.779985I$	$3.61554 - 0.53392I$	$18.1773 + 6.5335I$
$u = -1.081338 + 0.153780I$ $a = 0.815760 + 0.421824I$ $b = -0.003411 - 0.779985I$	$3.61554 + 0.53392I$	$18.1773 - 6.5335I$
$u = -1.051071 - 0.490677I$ $a = -0.898180 - 0.872397I$ $b = 1.45747 + 0.08616I$	$-6.12272 - 1.23674I$	$0.626481 + 1.047357I$

Solution to $I_3^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.051071 + 0.490677I$ $a = -0.898180 + 0.872397I$ $b = 1.45747 - 0.08616I$	$-6.12272 + 1.23674I$	$0.626481 - 1.047357I$
$u = -1.030082 - 0.379499I$ $a = -0.532850 - 0.907751I$ $b = 1.87787 - 1.33471I$	$-0.75196 + 1.66188I$	$3.50012 + 2.55507I$
$u = -1.030082 + 0.379499I$ $a = -0.532850 + 0.907751I$ $b = 1.87787 + 1.33471I$	$-0.75196 - 1.66188I$	$3.50012 - 2.55507I$
$u = -0.946347 - 0.283313I$ $a = 1.32658 - 0.79713I$ $b = -0.357049 - 0.264722I$	$1.62429 + 1.14001I$	$13.19922 + 4.57286I$
$u = -0.946347 + 0.283313I$ $a = 1.32658 + 0.79713I$ $b = -0.357049 + 0.264722I$	$1.62429 - 1.14001I$	$13.19922 - 4.57286I$
$u = -0.916650 - 0.501453I$ $a = 1.043097 + 0.804117I$ $b = -1.63669 + 1.35000I$	$0.50891 + 4.92178I$	$4.79399 - 10.08944I$
$u = -0.916650 + 0.501453I$ $a = 1.043097 - 0.804117I$ $b = -1.63669 - 1.35000I$	$0.50891 - 4.92178I$	$4.79399 + 10.08944I$
$u = -0.898621 - 0.192907I$ $a = 0.334552 + 0.978954I$ $b = -3.24842 - 0.62252I$	$-1.92376 + 0.50897I$	$47.5709 + 5.6468I$
$u = -0.898621 + 0.192907I$ $a = 0.334552 - 0.978954I$ $b = -3.24842 + 0.62252I$	$-1.92376 - 0.50897I$	$47.5709 - 5.6468I$
$u = -0.849844 - 0.576194I$ $a = 0.730973 + 0.423233I$ $b = -1.01460 + 1.23549I$	$1.30478 + 2.43791I$	$7.78536 - 3.01979I$

Solution to $I_3^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.849844 + 0.576194I$ $a = 0.730973 - 0.423233I$ $b = -1.01460 - 1.23549I$	$1.30478 - 2.43791I$	$7.78536 + 3.01979I$
$u = -0.729051 - 0.494950I$ $a = -0.377452 - 1.008227I$ $b = 1.65150 - 0.11419I$	$-0.051694 - 0.795294I$	$5.51068 + 2.54673I$
$u = -0.729051 + 0.494950I$ $a = -0.377452 + 1.008227I$ $b = 1.65150 + 0.11419I$	$-0.051694 + 0.795294I$	$5.51068 - 2.54673I$
$u = -0.613912 - 0.069626I$ $a = 0.34440 - 1.59384I$ $b = -1.48386 - 1.13833I$	$-2.80969 - 0.46563I$	$4.32235 - 1.19351I$
$u = -0.613912 + 0.069626I$ $a = 0.34440 + 1.59384I$ $b = -1.48386 + 1.13833I$	$-2.80969 + 0.46563I$	$4.32235 + 1.19351I$
$u = -0.583047 - 0.341702I$ $a = 1.12346 + 2.37459I$ $b = -0.618051 + 0.484478I$	$-7.77259 + 4.99480I$	$1.36077 - 11.66122I$
$u = -0.583047 + 0.341702I$ $a = 1.12346 - 2.37459I$ $b = -0.618051 - 0.484478I$	$-7.77259 - 4.99480I$	$1.36077 + 11.66122I$
$u = -0.46375 - 1.48673I$ $a = -0.651700 - 0.362170I$ $b = 1.73737 - 0.05493I$	$-6.73436 - 0.42071I$	$-3.32320 - 0.50940I$
$u = -0.46375 + 1.48673I$ $a = -0.651700 + 0.362170I$ $b = 1.73737 + 0.05493I$	$-6.73436 + 0.42071I$	$-3.32320 + 0.50940I$
$u = -0.454110 - 1.241827I$ $a = 0.775477 + 0.655506I$ $b = -1.66585 + 0.00822I$	$-6.55585 - 11.40725I$	$0.73029 + 7.08213I$

Solution to $I_3^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.454110 + 1.241827I$ $a = 0.775477 - 0.655506I$ $b = -1.66585 - 0.00822I$	$-6.55585 + 11.40725I$	$0.73029 - 7.08213I$
$u = -0.345087 - 0.548844I$ $a = -0.451674 + 1.242646I$ $b = 1.218296 - 0.284005I$	$-2.53838 - 6.84507I$	$2.77683 + 3.78330I$
$u = -0.345087 + 0.548844I$ $a = -0.451674 - 1.242646I$ $b = 1.218296 + 0.284005I$	$-2.53838 + 6.84507I$	$2.77683 - 3.78330I$
$u = -0.315729 - 0.254943I$ $a = 1.001382 - 0.220287I$ $b = 0.437899 + 0.452467I$	$0.846080 + 0.799596I$	$7.63536 - 5.31715I$
$u = -0.315729 + 0.254943I$ $a = 1.001382 + 0.220287I$ $b = 0.437899 - 0.452467I$	$0.846080 - 0.799596I$	$7.63536 + 5.31715I$
$u = -0.158223 - 0.759419I$ $a = 0.284192 + 0.748126I$ $b = -0.561727 - 0.132405I$	$0.18427 + 2.75704I$	$5.69129 - 3.15816I$
$u = -0.158223 + 0.759419I$ $a = 0.284192 - 0.748126I$ $b = -0.561727 + 0.132405I$	$0.18427 - 2.75704I$	$5.69129 + 3.15816I$
$u = 0.092103 - 1.292002I$ $a = 0.550823 - 0.043635I$ $b = -2.07761 + 0.20904I$	$-4.69490 + 0.90727I$	$2.61899 - 10.38125I$
$u = 0.092103 + 1.292002I$ $a = 0.550823 + 0.043635I$ $b = -2.07761 - 0.20904I$	$-4.69490 - 0.90727I$	$2.61899 + 10.38125I$
$u = 0.100348 - 0.818854I$ $a = -1.088305 + 0.691451I$ $b = 1.77202 + 0.06110I$	$-1.49835 + 6.68804I$	$1.72474 - 6.98621I$

Solution to $I_3^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.100348 + 0.818854I$ $a = -1.088305 - 0.691451I$ $b = 1.77202 - 0.06110I$	$-1.49835 - 6.68804I$	$1.72474 + 6.98621I$
$u = 0.165088 - 0.329292I$ $a = 1.08471 - 2.03866I$ $b = -0.509979 + 0.455873I$	$0.18393 + 2.19511I$	$5.16572 - 4.08072I$
$u = 0.165088 + 0.329292I$ $a = 1.08471 + 2.03866I$ $b = -0.509979 - 0.455873I$	$0.18393 - 2.19511I$	$5.16572 + 4.08072I$
$u = 0.245911 - 1.026020I$ $a = -1.207172 + 0.103115I$ $b = 1.168548 + 0.705543I$	$-6.36070 - 3.12946I$	$-1.98397 + 7.58733I$
$u = 0.245911 + 1.026020I$ $a = -1.207172 - 0.103115I$ $b = 1.168548 - 0.705543I$	$-6.36070 + 3.12946I$	$-1.98397 - 7.58733I$
$u = 0.265912 - 0.216702I$ $a = 1.167255 - 0.414893I$ $b = 1.94967 - 0.91165I$	$-2.27749 - 6.83721I$	$-1.32361 + 0.76248I$
$u = 0.265912 + 0.216702I$ $a = 1.167255 + 0.414893I$ $b = 1.94967 + 0.91165I$	$-2.27749 + 6.83721I$	$-1.32361 - 0.76248I$
$u = 0.285861 - 0.588825I$ $a = 1.48337 - 0.48993I$ $b = -1.57311 + 0.27137I$	$-3.64603 + 1.09291I$	$-2.86206 - 2.09431I$
$u = 0.285861 + 0.588825I$ $a = 1.48337 + 0.48993I$ $b = -1.57311 - 0.27137I$	$-3.64603 - 1.09291I$	$-2.86206 + 2.09431I$
$u = 0.377834 - 0.906188I$ $a = 1.13471 - 0.91965I$ $b = -1.45597 + 0.10180I$	$-4.23278 + 3.89315I$	$2.97786 - 5.50198I$

Solution to $I_3^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.377834 + 0.906188I$ $a = 1.13471 + 0.91965I$ $b = -1.45597 - 0.10180I$	$-4.23278 - 3.89315I$	$2.97786 + 5.50198I$
$u = 0.392606 - 0.625339I$ $a = -0.004498 + 0.732882I$ $b = -0.723655 + 0.156233I$	$-3.80282 + 0.02260I$	$-0.528964 - 0.458699I$
$u = 0.392606 + 0.625339I$ $a = -0.004498 - 0.732882I$ $b = -0.723655 - 0.156233I$	$-3.80282 - 0.02260I$	$-0.528964 + 0.458699I$
$u = 0.443677 - 0.469538I$ $a = 1.63372 - 1.79428I$ $b = -0.958282 - 0.859125I$	$-8.17127 + 4.22535I$	$-4.33881 + 0.83044I$
$u = 0.443677 + 0.469538I$ $a = 1.63372 + 1.79428I$ $b = -0.958282 + 0.859125I$	$-8.17127 - 4.22535I$	$-4.33881 - 0.83044I$
$u = 0.561094 - 1.263435I$ $a = -0.657194 + 0.555042I$ $b = 1.57378 + 0.39724I$	$-7.34821 + 2.77790I$	$-3.91645 - 6.77366I$
$u = 0.561094 + 1.263435I$ $a = -0.657194 - 0.555042I$ $b = 1.57378 - 0.39724I$	$-7.34821 - 2.77790I$	$-3.91645 + 6.77366I$
$u = 0.629150 - 0.715151I$ $a = -0.715185 + 1.188980I$ $b = 0.621645 + 0.413985I$	$-6.20705 - 0.67372I$	$-1.44384 + 3.03787I$
$u = 0.629150 + 0.715151I$ $a = -0.715185 - 1.188980I$ $b = 0.621645 - 0.413985I$	$-6.20705 + 0.67372I$	$-1.44384 - 3.03787I$
$u = 0.877763 - 0.436514I$ $a = -1.23168 - 0.95729I$ $b = 0.453667 + 0.444178I$	$2.09103 - 1.79734I$	$11.98843 + 5.51665I$

Solution to $I_3^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.877763 + 0.436514I$ $a = -1.23168 + 0.95729I$ $b = 0.453667 - 0.444178I$	$2.09103 + 1.79734I$	$11.98843 - 5.51665I$
$u = 0.902489 - 0.756069I$ $a = -1.009086 + 0.061357I$ $b = 1.62187 + 0.82163I$	$-0.02059 - 5.96503I$	$7.49624 + 7.45250I$
$u = 0.902489 + 0.756069I$ $a = -1.009086 - 0.061357I$ $b = 1.62187 - 0.82163I$	$-0.02059 + 5.96503I$	$7.49624 - 7.45250I$
$u = 0.915965 - 0.599718I$ $a = -0.369737 - 1.091364I$ $b = -0.441158 + 0.142319I$	$0.156931 + 0.687508I$	$5.34460 - 3.08579I$
$u = 0.915965 + 0.599718I$ $a = -0.369737 + 1.091364I$ $b = -0.441158 - 0.142319I$	$0.156931 - 0.687508I$	$5.34460 + 3.08579I$
$u = 0.983392 - 0.618220I$ $a = 0.967390 - 0.429807I$ $b = -1.52767 - 0.04858I$	$-5.13070 - 4.43406I$	$-0.37002 + 4.96767I$
$u = 0.983392 + 0.618220I$ $a = 0.967390 + 0.429807I$ $b = -1.52767 + 0.04858I$	$-5.13070 + 4.43406I$	$-0.37002 - 4.96767I$
$u = 1.031922 - 0.315360I$ $a = -0.927247 + 0.843561I$ $b = 1.20456 + 0.78320I$	$2.28947 - 4.75466I$	$12.3895 + 7.4083I$
$u = 1.031922 + 0.315360I$ $a = -0.927247 - 0.843561I$ $b = 1.20456 - 0.78320I$	$2.28947 + 4.75466I$	$12.3895 - 7.4083I$
$u = 1.062013 - 0.544856I$ $a = 0.555092 + 0.500242I$ $b = -0.360118 + 0.105253I$	$-1.91279 - 4.66251I$	$2.68730 + 5.27410I$

Solution to $I_3^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.062013 + 0.544856I$ $a = 0.555092 - 0.500242I$ $b = -0.360118 - 0.105253I$	$-1.91279 + 4.66251I$	$2.68730 - 5.27410I$
$u = 1.099837 - 0.497352I$ $a = -0.658065 + 0.857069I$ $b = 1.90449 - 0.17262I$	$-6.12003 - 8.35828I$	$-0.40464 + 8.00095I$
$u = 1.099837 + 0.497352I$ $a = -0.658065 - 0.857069I$ $b = 1.90449 + 0.17262I$	$-6.12003 + 8.35828I$	$-0.40464 - 8.00095I$
$u = 1.117407 - 0.041834I$ $a = -0.973283 + 0.290540I$ $b = 0.264344 + 0.035785I$	$4.76348 - 1.49515I$	$16.4972 + 4.3512I$
$u = 1.117407 + 0.041834I$ $a = -0.973283 - 0.290540I$ $b = 0.264344 - 0.035785I$	$4.76348 + 1.49515I$	$16.4972 - 4.3512I$
$u = 1.117635 - 0.747660I$ $a = 0.419014 - 0.476873I$ $b = -1.65245 + 0.11493I$	$-3.94300 - 3.16462I$	$-1.25002 + 4.22395I$
$u = 1.117635 + 0.747660I$ $a = 0.419014 + 0.476873I$ $b = -1.65245 - 0.11493I$	$-3.94300 + 3.16462I$	$-1.25002 - 4.22395I$
$u = 1.126051 - 0.553731I$ $a = -0.661207 + 0.841331I$ $b = 1.24571 + 1.17879I$	$-1.20250 - 5.71658I$	$2.72295 + 7.82087I$
$u = 1.126051 + 0.553731I$ $a = -0.661207 - 0.841331I$ $b = 1.24571 - 1.17879I$	$-1.20250 + 5.71658I$	$2.72295 - 7.82087I$
$u = 1.134994 - 0.247699I$ $a = 0.495815 - 0.692962I$ $b = -0.70431 - 1.40706I$	$1.31820 + 3.86141I$	$5.84928 - 2.48248I$



Solution to $I_3^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.134994 + 0.247699I$ $a = 0.495815 + 0.692962I$ $b = -0.70431 + 1.40706I$	$1.31820 - 3.86141I$	$5.84928 + 2.48248I$
$u = 1.154093 - 0.639825I$ $a = -1.009557 + 0.701105I$ $b = 1.83334 + 0.82663I$	$-1.90244 - 9.55301I$	$7.03928 + 11.89534I$
$u = 1.154093 + 0.639825I$ $a = -1.009557 - 0.701105I$ $b = 1.83334 - 0.82663I$	$-1.90244 + 9.55301I$	$7.03928 - 11.89534I$
$u = 1.172909 - 0.542644I$ $a = 0.758411 - 0.698694I$ $b = -1.89532 - 1.31112I$	$1.48534 - 11.59499I$	$5.83853 + 9.65722I$
$u = 1.172909 + 0.542644I$ $a = 0.758411 + 0.698694I$ $b = -1.89532 + 1.31112I$	$1.48534 + 11.59499I$	$5.83853 - 9.65722I$
$u = 1.26083 - 0.76249I$ $a = 0.752543 - 0.510669I$ $b = -1.89741 - 0.80900I$	$-4.91117 - 9.93167I$	$-0.81661 + 8.53464I$
$u = 1.26083 + 0.76249I$ $a = 0.752543 + 0.510669I$ $b = -1.89741 + 0.80900I$	$-4.91117 + 9.93167I$	$-0.81661 - 8.53464I$
$u = 1.273989 - 0.318647I$ $a = 0.562561 + 0.324337I$ $b = -0.133596 - 0.333612I$	$4.60191 - 6.62398I$	$10.83270 + 5.35463I$
$u = 1.273989 + 0.318647I$ $a = 0.562561 - 0.324337I$ $b = -0.133596 + 0.333612I$	$4.60191 + 6.62398I$	$10.83270 - 5.35463I$
$u = 1.74884 - 0.04976I$ $a = 0.094780 - 0.491894I$ $b = -0.055440 - 0.420225I$	$2.00350 - 6.10245I$	$1.02242 + 7.34433I$
Solution to $I_3^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.74884 + 0.04976I$ $a = 0.094780 + 0.491894I$ $b = -0.055440 + 0.420225I$	$2.00350 + 6.10245I$	$1.02242 - 7.34433I$

#### IV. u-Polynomials

Crossings	u-Polynomials at each crossings
$c_1$	$(u-1)^2(u^{20} + 2u^{19} + \dots - 10u^2 + 1)(u^{101} + 3u^{100} + \dots + 4162u - 679)$
$c_2$	$(u+1)^2(u^{20} - 4u^{19} + \dots - 6u + 1)(u^{101} + u^{100} + \dots - 8u - 21)$
$c_3$	$(2u^2 - u + 1)(u^{20} + 8u^{19} + \dots + 2u^2 + 1)(2u^{101} + 3u^{100} + \dots + 35u + 7)$
$c_4$	$(2u^2 - u + 1)(u^{20} + 4u^{19} + \dots - 8u + 1)$ $(2u^{101} + 5u^{100} + \dots - 157973u - 15557)$
$c_5$	$(u-1)^2(u^{20} + 4u^{19} + \dots + 6u + 1)(u^{101} + u^{100} + \dots - 8u - 21)$
$c_6$	$(u+1)^2(u^{20} + 6u^{19} + \dots + 2u + 1)(u^{101} + 5u^{100} + \dots + 2016u - 189)$
$c_7$	$(2u^2 - 3u + 2)(u^{20} + 6u^{18} + \dots + 7u + 5)$ $(2u^{101} + u^{100} + \dots - 16872u + 3626)$
$c_8$	$(u^2 - u + 2)(u^{20} - 2u^{18} + \dots - u^3 + 1)(u^{101} + 2u^{100} + \dots + 4109u + 922)$
$c_9$	$(u-1)^2(u^{20} - 6u^{19} + \dots - 2u + 1)(u^{101} + 5u^{100} + \dots + 2016u - 189)$
$c_{10}$	$(2u^2 + u + 1)(u^{20} - 4u^{19} + \dots + 8u + 1)$ $(2u^{101} + 5u^{100} + \dots - 157973u - 15557)$
$c_{11}$	$u^2(u^{20} + 4u^{19} + \dots + 71u + 7)(u^{101} + 7u^{100} + \dots + 278u + 48)$

### V. Riley Polynomials

Crossings	Riley Polynomials at each crossings
$c_1$	$(y-1)^2(y^{20} - 12y^{19} + \dots - 20y + 1)$ $(y^{101} - 3y^{100} + \dots - 13847930y - 461041)$
$c_2, c_5$	$(y-1)^2(y^{20} - 8y^{19} + \dots - 18y + 1)$ $(y^{101} - 47y^{100} + \dots + 6868y - 441)$
$c_3$	$(4y^2 + 3y + 1)(y^{20} - 14y^{19} + \dots + 4y + 1)$ $(4y^{101} - 25y^{100} + \dots - 1127y - 49)$
$c_4$	$(4y^2 + 3y + 1)(y^{20} + 6y^{19} + \dots - 10y + 1)$ $(12y^{101} + 789y^{100} + \dots - 7603957731y - 726060747)$
$c_6$	$(y-1)^2(y^{20} + 12y^{19} + \dots + 20y + 1)$ $(y^{101} + 57y^{100} + \dots + 1976562y - 35721)$
$c_7$	$(4y^2 - y + 4)(y^{20} + 12y^{19} + \dots + 11y + 25)$ $(4y^{101} + 11y^{100} + \dots + 641716604y - 13147876)$
$c_8$	$(y^2 + 3y + 4)(y^{20} - 4y^{19} + \dots - 12y^2 + 1)$ $(y^{101} - 18y^{100} + \dots + 29207333y - 850084)$
$c_9$	$(y-1)^2(y^{20} + 12y^{19} + \dots + 20y + 1)$ $(y^{101} + 57y^{100} + \dots + 1976562y - 35721)$
$c_{10}$	$(4y^2 + 3y + 1)(y^{20} + 6y^{19} + \dots - 10y + 1)$ $(12y^{101} + 789y^{100} + \dots - 7603957731y - 726060747)$
$c_{11}$	$y^2(y^{20} - 18y^{19} + \dots - 435y + 49)$ $(y^{101} - 27y^{100} + \dots + 20068y - 2304)$