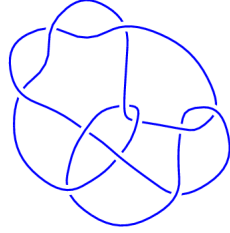
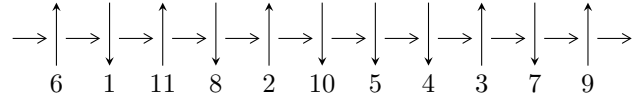


11a₁₆₈ (K11a₁₆₈)

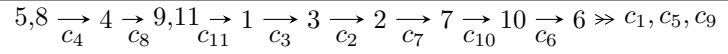


1

Arc Sequences



Solving Sequence



Representation Ideals

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

$$I_1^u = \langle u^{10} + 2u^8 - u^6 + u^5 - 2u^4 + u^3 + u^2 - u + 1, a, b - u \rangle$$

$$I_2^u = \langle u^{14} - u^{13} + 8u^{12} - 7u^{11} + 24u^{10} - 19u^9 + 33u^8 - 25u^7 + 20u^6 - 16u^5 + 6u^4 - 4u^3 + 4u^2 + 1, \\ u^{13} - u^{12} + 7u^{11} - 6u^{10} + 17u^9 - 13u^8 + 17u^7 - 13u^6 + 8u^5 - 7u^4 + 5u^3 - 2u^2 + b + u, \\ -u^{13} + u^{12} - 8u^{11} + 7u^{10} - 24u^9 + 19u^8 - 32u^7 + 24u^6 - 16u^5 + 13u^4 - 3u^3 + 2u^2 + a - 5u \rangle$$

$$I_3^u = \langle u^{66} + 2u^{65} + \dots + 20u + 1, \\ -4.18678 \times 10^{86} u^{65} - 7.97381 \times 10^{86} u^{64} + \dots + 5.65938 \times 10^{85} a - 2.27545 \times 10^{87}, \\ 1.11347 \times 10^{87} u^{65} + 1.87238 \times 10^{87} u^{64} + \dots + 7.35719 \times 10^{86} b + 4.81180 \times 10^{87} \rangle$$

There are 3 irreducible components with 90 representations.

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

$$\text{I. } I_1^u = \langle u^{10} + 2u^8 - u^6 + u^5 - 2u^4 + u^3 + u^2 - u + 1, a, b - u \rangle$$

(i) Arc colorings

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

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

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

$$a_9 = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^3 \\ -u^5 - u^3 + u \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} u^8 + u^6 - u^4 + 1 \\ u^5 + u^3 - u + 1 \end{pmatrix}$$

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

$$a_{10} = \begin{pmatrix} u^3 \\ u^3 + u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -u^5 + u \\ -u^5 - u^3 + u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -u^5 + u \\ -u^5 - u^3 + u \end{pmatrix}$$

(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
$u = -0.962705 - 0.148020I$ $a = 0$ $b = -0.962705 - 0.148020I$	$-2.02988I$	$3.46410I$
$u = -0.962705 + 0.148020I$ $a = 0$ $b = -0.962705 + 0.148020I$	$2.02988I$	$-3.46410I$
$u = -0.137236 - 1.154120I$ $a = 0$ $b = -0.137236 - 1.154120I$	$2.02988I$	$-3.46410I$
$u = -0.137236 + 1.154120I$ $a = 0$ $b = -0.137236 + 1.154120I$	$-2.02988I$	$3.46410I$
$u = -0.045259 - 1.372328I$ $a = 0$ $b = -0.045259 - 1.372328I$	$-2.02988I$	$3.46410I$
$u = -0.045259 + 1.372328I$ $a = 0$ $b = -0.045259 + 1.372328I$	$2.02988I$	$-3.46410I$
$u = 0.301631 - 0.655357I$ $a = 0$ $b = 0.301631 - 0.655357I$	$2.02988I$	$-3.46410I$
$u = 0.301631 + 0.655357I$ $a = 0$ $b = 0.301631 + 0.655357I$	$-2.02988I$	$3.46410I$
$u = 0.843570 - 0.289129I$ $a = 0$ $b = 0.843570 - 0.289129I$	$-2.02988I$	$3.46410I$
$u = 0.843570 + 0.289129I$ $a = 0$ $b = 0.843570 + 0.289129I$	$2.02988I$	$-3.46410I$

II.

$$I_2^u = \langle u^{14} - u^{13} + \dots + 4u^2 + 1, u^{13} - u^{12} + \dots + b + u, -u^{13} + u^{12} + \dots + a - 5u \rangle$$

(i) Arc colorings

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

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

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

$$a_9 = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} u^{13} - u^{12} + \dots - 2u^2 + 5u \\ -u^{13} + u^{12} + \dots + 2u^2 - u \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 2u^{13} - 2u^{12} + \dots - 2u^2 + 5u \\ -u^7 + u^6 - 4u^5 + 3u^4 - 4u^3 + 2u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} u^{10} - u^9 + 6u^8 - 5u^7 + 11u^6 - 8u^5 + 6u^4 - 5u^3 + u^2 - u + 3 \\ -u^6 + u^5 - 3u^4 + 2u^3 - 2u^2 + u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u^{13} - u^{12} + \dots + u + 4 \\ u^{11} - u^{10} + 6u^9 - 5u^8 + 11u^7 - 8u^6 + 5u^5 - 4u^4 - 2u^3 + u^2 + u + 1 \end{pmatrix}$$

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

$$a_{10} = \begin{pmatrix} 2u^{13} - 2u^{12} + \dots - 2u^2 + 7u \\ -u^7 + u^6 - 4u^5 + 3u^4 - 3u^3 + 2u^2 + u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -2u^{13} + 2u^{12} + \dots + 2u^2 - 8u \\ -u^{13} + u^{12} + \dots - 2u^2 - u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -2u^{13} + 2u^{12} + \dots + 2u^2 - 8u \\ -u^{13} + u^{12} + \dots - 2u^2 - u \end{pmatrix}$$

(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
$u = -0.417915 - 0.435917I$		
$a = -0.368319 - 0.814805I$	$-1.31269 + 4.25298I$	$-1.95653 - 2.08128I$
$b = -0.996891 + 0.631806I$		
$u = -0.417915 + 0.435917I$		
$a = -0.368319 + 0.814805I$	$-1.31269 - 4.25298I$	$-1.95653 + 2.08128I$
$b = -0.996891 - 0.631806I$		
$u = -0.160858 - 1.333003I$		
$a = 2.11123 + 0.50460I$	$2.10465 - 6.34173I$	$0.34884 + 6.28453I$
$b = 2.62478 - 0.18670I$		
$u = -0.160858 + 1.333003I$		
$a = 2.11123 - 0.50460I$	$2.10465 + 6.34173I$	$0.34884 - 6.28453I$
$b = 2.62478 + 0.18670I$		
$u = -0.048688 - 0.555632I$		
$a = -0.31137 - 2.63871I$	$-3.87634 - 1.39907I$	$1.20170 + 5.22268I$
$b = -0.336005 - 0.061928I$		
$u = -0.048688 + 0.555632I$		
$a = -0.31137 + 2.63871I$	$-3.87634 + 1.39907I$	$1.20170 - 5.22268I$
$b = -0.336005 + 0.061928I$		
$u = -0.016193 - 1.258421I$		
$a = 0.513120 - 0.405345I$	$-1.20276 + 1.17534I$	$-6.65232 - 0.40861I$
$b = 0.62525 - 1.75947I$		
$u = -0.016193 + 1.258421I$		
$a = 0.513120 + 0.405345I$	$-1.20276 - 1.17534I$	$-6.65232 + 0.40861I$
$b = 0.62525 + 1.75947I$		
$u = 0.11263 - 1.61205I$		
$a = -0.640943 - 0.931033I$	$7.61522 + 3.62847I$	$-8.05550 - 2.25038I$
$b = -0.75146 - 1.29495I$		
$u = 0.11263 + 1.61205I$		
$a = -0.640943 + 0.931033I$	$7.61522 - 3.62847I$	$-8.05550 + 2.25038I$
$b = -0.75146 + 1.29495I$		

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.284796 - 1.355024I$ $a = -1.37974 + 0.57971I$ $b = -1.94391 + 0.22031I$	$4.41438 + 3.29645I$	$4.47890 - 2.20670I$
$u = 0.284796 + 1.355024I$ $a = -1.37974 - 0.57971I$ $b = -1.94391 - 0.22031I$	$4.41438 - 3.29645I$	$4.47890 + 2.20670I$
$u = 0.746225 - 0.244394I$ $a = 0.076030 - 0.157944I$ $b = 0.778239 + 0.277890I$	$0.482214 + 0.495105I$	$1.13492 - 1.08750I$
$u = 0.746225 + 0.244394I$ $a = 0.076030 + 0.157944I$ $b = 0.778239 - 0.277890I$	$0.482214 - 0.495105I$	$1.13492 + 1.08750I$

$$\text{III. } I_3^u = \langle u^{66} + 2u^{65} + \dots + 20u + 1, -4.19 \times 10^{86} u^{65} - 7.97 \times 10^{86} u^{64} + \dots + 5.66 \times 10^{85} a - 2.28 \times 10^{87}, 1.11 \times 10^{87} u^{65} + 1.87 \times 10^{87} u^{64} + \dots + 7.36 \times 10^{86} b + 4.81 \times 10^{87} \rangle$$

(i) Arc colorings

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

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

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

$$a_9 = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 7.39796u^{65} + 14.0896u^{64} + \dots + 635.536u + 40.2067 \\ -1.51345u^{65} - 2.54497u^{64} + \dots - 95.9781u - 6.54027 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 7.25661u^{65} + 13.6822u^{64} + \dots + 636.738u + 40.5655 \\ -1.40546u^{65} - 2.57494u^{64} + \dots - 99.8134u - 7.02372 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -9.56187u^{65} - 16.7545u^{64} + \dots - 539.004u - 28.7676 \\ -0.292404u^{65} - 0.817425u^{64} + \dots - 72.5293u - 4.61166 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -22.7896u^{65} - 40.8899u^{64} + \dots - 1619.74u - 99.3666 \\ 0.761425u^{65} + 1.25796u^{64} + \dots + 40.7979u + 2.70699 \end{pmatrix}$$

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

$$a_{10} = \begin{pmatrix} 7.36136u^{65} + 13.7114u^{64} + \dots + 620.682u + 39.0184 \\ -1.55004u^{65} - 2.92308u^{64} + \dots - 110.832u - 7.72855 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -2.59391u^{65} - 5.72385u^{64} + \dots - 497.725u - 39.0635 \\ 2.20010u^{65} + 3.98328u^{64} + \dots + 141.082u + 8.62665 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -2.59391u^{65} - 5.72385u^{64} + \dots - 497.725u - 39.0635 \\ 2.20010u^{65} + 3.98328u^{64} + \dots + 141.082u + 8.62665 \end{pmatrix}$$

(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
$u = -0.906212 - 0.486094I$		
$a = -0.409431 - 0.309299I$	$-1.99580 - 11.89201I$	$-2.53533 + 9.32290I$
$b = 0.915230 - 0.370065I$		
$u = -0.906212 + 0.486094I$		
$a = -0.409431 + 0.309299I$	$-1.99580 + 11.89201I$	$-2.53533 - 9.32290I$
$b = 0.915230 + 0.370065I$		
$u = -0.872429 - 0.808694I$		
$a = 0.168464 - 0.568847I$	$-1.18063 + 5.94761I$	$-0.47524 - 8.00829I$
$b = -0.186036 + 0.289591I$		
$u = -0.872429 + 0.808694I$		
$a = 0.168464 + 0.568847I$	$-1.18063 - 5.94761I$	$-0.47524 + 8.00829I$
$b = -0.186036 - 0.289591I$		
$u = -0.667940 - 0.345098I$		
$a = -0.623416 - 0.253682I$	$-6.29461 - 3.96507I$	$-7.99453 + 5.64744I$
$b = 0.994853 - 0.716335I$		
$u = -0.667940 + 0.345098I$		
$a = -0.623416 + 0.253682I$	$-6.29461 + 3.96507I$	$-7.99453 - 5.64744I$
$b = 0.994853 + 0.716335I$		
$u = -0.573411 - 0.072871I$		
$a = 1.65752 + 1.17567I$	$-3.18756 - 4.76965I$	$-8.23639 + 7.28041I$
$b = -0.583411 + 0.259317I$		
$u = -0.573411 + 0.072871I$		
$a = 1.65752 - 1.17567I$	$-3.18756 + 4.76965I$	$-8.23639 - 7.28041I$
$b = -0.583411 - 0.259317I$		
$u = -0.416714 - 0.854101I$		
$a = 0.186005 - 1.151591I$	$-4.86658 + 0.02437I$	$-6.26994 + 0.34469I$
$b = -0.285896 + 0.160619I$		
$u = -0.416714 + 0.854101I$		
$a = 0.186005 + 1.151591I$	$-4.86658 - 0.02437I$	$-6.26994 - 0.34469I$
$b = -0.285896 - 0.160619I$		

Solution to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.39675 - 1.48969I$ $a = 1.137864 + 0.404848I$ $b = 1.60914 - 0.25805I$	$5.38489 - 7.07352I$	$2.48563 + 6.79803I$
$u = -0.39675 + 1.48969I$ $a = 1.137864 - 0.404848I$ $b = 1.60914 + 0.25805I$	$5.38489 + 7.07352I$	$2.48563 - 6.79803I$
$u = -0.375224 - 0.518784I$ $a = 0.60323 + 1.44284I$ $b = -0.190750 + 0.457331I$	$2.50610 - 1.55549I$	$4.46271 + 2.30891I$
$u = -0.375224 + 0.518784I$ $a = 0.60323 - 1.44284I$ $b = -0.190750 - 0.457331I$	$2.50610 + 1.55549I$	$4.46271 - 2.30891I$
$u = -0.330575 - 1.296664I$ $a = 1.39257 + 0.59264I$ $b = 1.57241 + 0.15543I$	$3.63938 - 2.52827I$	$-1.147337 - 0.754292I$
$u = -0.330575 + 1.296664I$ $a = 1.39257 - 0.59264I$ $b = 1.57241 - 0.15543I$	$3.63938 + 2.52827I$	$-1.147337 + 0.754292I$
$u = -0.32777 - 1.52977I$ $a = -1.69805 + 0.13610I$ $b = -2.33850 + 0.88105I$	$4.5173 - 16.3689I$	$0.64414 + 8.90280I$
$u = -0.32777 + 1.52977I$ $a = -1.69805 - 0.13610I$ $b = -2.33850 - 0.88105I$	$4.5173 + 16.3689I$	$0.64414 - 8.90280I$
$u = -0.249931 - 0.161893I$ $a = -1.85187 + 1.72252I$ $b = 1.48300 + 0.84282I$	$-1.41728 - 5.05455I$	$-2.35607 + 12.20236I$
$u = -0.249931 + 0.161893I$ $a = -1.85187 - 1.72252I$ $b = 1.48300 - 0.84282I$	$-1.41728 + 5.05455I$	$-2.35607 - 12.20236I$

Solution to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.22588 - 1.46095I$ $a = -2.03657 + 0.46544I$ $b = -2.42751 + 1.18726I$	$-0.42442 - 7.17415I$	$-3.01834 + 6.69201I$
$u = -0.22588 + 1.46095I$ $a = -2.03657 - 0.46544I$ $b = -2.42751 - 1.18726I$	$-0.42442 + 7.17415I$	$-3.01834 - 6.69201I$
$u = -0.220564 - 0.062005I$ $a = 6.31325 - 0.26604I$ $b = -0.292077 + 0.621797I$	$-4.43757 + 1.23820I$	$-13.56359 - 0.66016I$
$u = -0.220564 + 0.062005I$ $a = 6.31325 + 0.26604I$ $b = -0.292077 - 0.621797I$	$-4.43757 - 1.23820I$	$-13.56359 + 0.66016I$
$u = -0.165712 - 1.325674I$ $a = 1.89466 - 0.26296I$ $b = 2.77217 - 1.01197I$	$1.16169 - 7.37354I$	$-2.97369 + 9.83536I$
$u = -0.165712 + 1.325674I$ $a = 1.89466 + 0.26296I$ $b = 2.77217 + 1.01197I$	$1.16169 + 7.37354I$	$-2.97369 - 9.83536I$
$u = -0.14821 - 1.49699I$ $a = 1.49515 + 0.04332I$ $b = 2.25485 + 0.42350I$	$9.11482 - 3.60155I$	$5.17559 + 1.58658I$
$u = -0.14821 + 1.49699I$ $a = 1.49515 - 0.04332I$ $b = 2.25485 - 0.42350I$	$9.11482 + 3.60155I$	$5.17559 - 1.58658I$
$u = -0.083220 - 0.146589I$ $a = -1.16161 + 3.47217I$ $b = -0.986836 + 0.314839I$	$1.48045 - 0.06659I$	$8.57715 - 1.33589I$
$u = -0.083220 + 0.146589I$ $a = -1.16161 - 3.47217I$ $b = -0.986836 - 0.314839I$	$1.48045 + 0.06659I$	$8.57715 + 1.33589I$

Solution to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.08249 - 1.41692I$ $a = -1.69883 - 1.16635I$ $b = -2.02550 - 0.31479I$	$3.82726 - 6.26660I$	$4.35393 + 6.23166I$
$u = -0.08249 + 1.41692I$ $a = -1.69883 + 1.16635I$ $b = -2.02550 + 0.31479I$	$3.82726 + 6.26660I$	$4.35393 - 6.23166I$
$u = -0.069349 - 1.340808I$ $a = 1.23643 - 0.79110I$ $b = 1.74389 - 1.65192I$	$0.1230114 + 0.0150349I$	$-2.00180 + 1.32326I$
$u = -0.069349 + 1.340808I$ $a = 1.23643 + 0.79110I$ $b = 1.74389 + 1.65192I$	$0.1230114 - 0.0150349I$	$-2.00180 - 1.32326I$
$u = -0.06454 - 1.60674I$ $a = -0.749185 + 0.153782I$ $b = -1.166326 - 0.079571I$	$8.00774 + 2.72139I$	$5.67340 - 3.59670I$
$u = -0.06454 + 1.60674I$ $a = -0.749185 - 0.153782I$ $b = -1.166326 + 0.079571I$	$8.00774 - 2.72139I$	$5.67340 + 3.59670I$
$u = 0.01612 - 1.42296I$ $a = 1.99860 - 0.50129I$ $b = 2.35916 + 0.16275I$	$6.72384 - 0.00894I$	$6.25359 + 0.72085I$
$u = 0.01612 + 1.42296I$ $a = 1.99860 + 0.50129I$ $b = 2.35916 - 0.16275I$	$6.72384 + 0.00894I$	$6.25359 - 0.72085I$
$u = 0.020319 - 1.299989I$ $a = -2.28151 + 0.29282I$ $b = -2.36637 + 0.74211I$	$2.04523 + 4.42740I$	$0.06553 - 3.55579I$
$u = 0.020319 + 1.299989I$ $a = -2.28151 - 0.29282I$ $b = -2.36637 - 0.74211I$	$2.04523 - 4.42740I$	$0.06553 + 3.55579I$

Solution to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.08196 - 1.56913I$		
$a = 0.96444 + 1.30923I$	$7.97540 + 3.77535I$	$12.7373 - 9.7511I$
$b = 1.17097 + 1.68059I$		
$u = 0.08196 + 1.56913I$		
$a = 0.96444 - 1.30923I$	$7.97540 - 3.77535I$	$12.7373 + 9.7511I$
$b = 1.17097 - 1.68059I$		
$u = 0.147111 - 1.392372I$		
$a = -1.44192 - 0.19276I$	$3.63388 + 3.20673I$	$1.15757 - 3.87425I$
$b = -2.11634 - 0.81884I$		
$u = 0.147111 + 1.392372I$		
$a = -1.44192 + 0.19276I$	$3.63388 - 3.20673I$	$1.15757 + 3.87425I$
$b = -2.11634 + 0.81884I$		
$u = 0.16038 - 1.62157I$		
$a = 0.480376 + 0.193463I$	$8.18428 + 3.39136I$	$6.60752 + 1.70089I$
$b = 0.674298 + 0.021711I$		
$u = 0.16038 + 1.62157I$		
$a = 0.480376 - 0.193463I$	$8.18428 - 3.39136I$	$6.60752 - 1.70089I$
$b = 0.674298 - 0.021711I$		
$u = 0.19567 - 1.50708I$		
$a = -1.43330 + 0.12638I$	$7.89254 + 9.07916I$	$2.78014 - 7.11336I$
$b = -2.31543 + 0.43951I$		
$u = 0.19567 + 1.50708I$		
$a = -1.43330 - 0.12638I$	$7.89254 - 9.07916I$	$2.78014 + 7.11336I$
$b = -2.31543 - 0.43951I$		
$u = 0.22888 - 1.39667I$		
$a = -1.54830 + 0.23723I$	$3.81529 + 4.03349I$	$-1.84548 - 6.24296I$
$b = -2.28322 - 0.00989I$		
$u = 0.22888 + 1.39667I$		
$a = -1.54830 - 0.23723I$	$3.81529 - 4.03349I$	$-1.84548 + 6.24296I$
$b = -2.28322 + 0.00989I$		

Solution to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.28878 - 1.53850I$ $a = 1.68064 + 0.26149I$ $b = 2.27246 + 0.94003I$	$6.64257 + 10.26796I$	$2.96313 - 5.50981I$
$u = 0.28878 + 1.53850I$ $a = 1.68064 - 0.26149I$ $b = 2.27246 - 0.94003I$	$6.64257 - 10.26796I$	$2.96313 + 5.50981I$
$u = 0.289030 - 0.733195I$ $a = 0.269222 + 0.085645I$ $b = -0.281380 - 0.919007I$	$0.35093 + 2.50495I$	$1.76854 - 6.87309I$
$u = 0.289030 + 0.733195I$ $a = 0.269222 - 0.085645I$ $b = -0.281380 + 0.919007I$	$0.35093 - 2.50495I$	$1.76854 + 6.87309I$
$u = 0.31978 - 1.52431I$ $a = -1.147632 + 0.303238I$ $b = -1.69914 - 0.29144I$	$6.02312 + 2.42646I$	$4.52437 - 0.02629I$
$u = 0.31978 + 1.52431I$ $a = -1.147632 - 0.303238I$ $b = -1.69914 + 0.29144I$	$6.02312 - 2.42646I$	$4.52437 + 0.02629I$
$u = 0.544932 - 0.561773I$ $a = -0.694039 + 1.226977I$ $b = 0.053790 + 0.210405I$	$1.17857 + 6.31445I$	$0.48719 - 8.26296I$
$u = 0.544932 + 0.561773I$ $a = -0.694039 - 1.226977I$ $b = 0.053790 - 0.210405I$	$1.17857 - 6.31445I$	$0.48719 + 8.26296I$
$u = 0.581774 - 0.213776I$ $a = -1.189231 + 0.250015I$ $b = 0.394717 + 0.196591I$	$-1.48654 + 0.69916I$	$-4.61313 - 2.12935I$
$u = 0.581774 + 0.213776I$ $a = -1.189231 - 0.250015I$ $b = 0.394717 - 0.196591I$	$-1.48654 - 0.69916I$	$-4.61313 + 2.12935I$

Solution to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.587178 - 0.240909I$		
$a = -0.624779 + 0.819922I$	$-1.40850 + 1.04300I$	$-5.70485 - 4.49521I$
$b = 0.406663 + 0.115389I$		
$u = 0.587178 + 0.240909I$		
$a = -0.624779 - 0.819922I$	$-1.40850 - 1.04300I$	$-5.70485 + 4.49521I$
$b = 0.406663 - 0.115389I$		
$u = 0.824132 - 0.542833I$		
$a = 0.417611 - 0.249556I$	$-0.11868 + 6.20190I$	$-0.39797 - 5.84571I$
$b = -0.813571 - 0.444731I$		
$u = 0.824132 + 0.542833I$		
$a = 0.417611 + 0.249556I$	$-0.11868 - 6.20190I$	$-0.39797 + 5.84571I$
$b = -0.813571 + 0.444731I$		
$u = 0.890863 - 0.642807I$		
$a = -0.306361 - 0.475040I$	$0.032145 - 0.573668I$	$-0.08375 + 4.06060I$
$b = 0.180671 + 0.221971I$		
$u = 0.890863 + 0.642807I$		
$a = -0.306361 + 0.475040I$	$0.032145 + 0.573668I$	$-0.08375 - 4.06060I$
$b = 0.180671 - 0.221971I$		

IV. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1	$(u^2 + u + 1)^5(u^{14} - u^{13} + \dots + 4u^2 + 1)(u^{66} - 5u^{65} + \dots - 70u + 28)$
c_2	$(u^2 + u + 1)^5(u^{14} + 7u^{13} + \dots + 8u + 1)$ $(u^{66} + 27u^{65} + \dots + 5684u + 784)$
c_3	$(u^{10} + 2u^8 - u^6 - u^5 - 2u^4 - u^3 + u^2 + u + 1)$ $(u^{14} + 2u^{11} - 2u^{10} - u^9 - u^8 - 2u^7 + 4u^6 + 2u^5 - 2u^3 - u + 1)$ $(u^{66} + 7u^{65} + \dots - 293u + 131)$
c_4	$(u^{10} + 2u^8 + \dots - u + 1)(u^{14} - u^{13} + \dots + 4u^2 + 1)$ $(u^{66} + 2u^{65} + \dots + 20u + 1)$
c_5	$(u^2 + u + 1)^5(u^{14} + u^{13} + \dots + 4u^2 + 1)(u^{66} - 5u^{65} + \dots - 70u + 28)$
c_6	$(u^{10} + 4u^9 + 2u^8 - 8u^7 - 5u^6 + 9u^5 + 4u^4 - 5u^3 - u^2 + u + 1)$ $(u^{14} + 2u^{13} + \dots + u + 1)(u^{66} - 3u^{65} + \dots + 49u + 23)$
c_7, c_8	$(u^{10} + 2u^8 + \dots - u + 1)(u^{14} + u^{13} + \dots + 4u^2 + 1)$ $(u^{66} + 2u^{65} + \dots + 20u + 1)$
c_9	$(u^{10} - 2u^8 + 4u^7 + u^6 - 5u^5 + 16u^4 - 11u^3 + 7u^2 - 3u + 1)$ $(u^{14} + u^{13} + 2u^{11} - 2u^9 + 4u^8 + 2u^7 - u^6 + u^5 - 2u^4 - 2u^3 + 1)$ $(u^{66} + 2u^{64} + \dots - 24u + 1)$
c_{10}	$(u^{10} + 4u^9 + 2u^8 - 8u^7 - 5u^6 + 9u^5 + 4u^4 - 5u^3 - u^2 + u + 1)$ $(u^{14} - 2u^{13} + \dots - u + 1)(u^{66} - 3u^{65} + \dots + 49u + 23)$
c_{11}	$(u^{10} + 4u^9 + 2u^8 - 8u^7 - 5u^6 + 9u^5 + 4u^4 - 5u^3 - u^2 + u + 1)$ $(u^{14} - 4u^{12} + \dots - 6u + 1)(u^{66} + 5u^{65} + \dots + 3276u + 667)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_5	$(y^2 + y + 1)^5(y^{14} + 7y^{13} + \dots + 8y + 1)$ $(y^{66} + 27y^{65} + \dots + 5684y + 784)$
c_2	$(y^2 + y + 1)^5(y^{14} + 7y^{13} + \dots + 4y + 1)$ $(y^{66} + 27y^{65} + \dots + 5306896y + 614656)$
c_3	$(y^{10} + 4y^9 + 2y^8 - 8y^7 - 5y^6 + 9y^5 + 4y^4 - 5y^3 - y^2 + y + 1)$ $(y^{14} - 4y^{12} + \dots - y + 1)(y^{66} - 15y^{65} + \dots - 380599y + 17161)$
c_4, c_7, c_8	$(y^{10} + 4y^9 + 2y^8 - 8y^7 - 5y^6 + 9y^5 + 4y^4 - 5y^3 - y^2 + y + 1)$ $(y^{14} + 15y^{13} + \dots + 8y + 1)(y^{66} + 72y^{65} + \dots - 2y + 1)$
c_6, c_{10}	$(y^{10} - 12y^9 + \dots - 3y + 1)(y^{14} - 14y^{13} + \dots - 13y + 1)$ $(y^{66} - 33y^{65} + \dots - 12015y + 529)$
c_9	$(y^{10} - 4y^9 + 6y^8 + 12y^7 - 9y^6 + 69y^5 + 180y^4 + 75y^3 + 15y^2 + 5y + 1)$ $(y^{14} - y^{13} + \dots - 4y^2 + 1)(y^{66} + 4y^{65} + \dots - 30y + 1)$
c_{11}	$(y^{10} - 12y^9 + \dots - 3y + 1)(y^{14} - 8y^{13} + \dots - 6y + 1)$ $(y^{66} - 15y^{65} + \dots - 11892756y + 444889)$