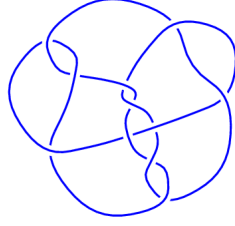
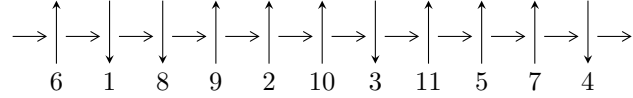


11a<sub>131</sub> (K11a<sub>131</sub>)

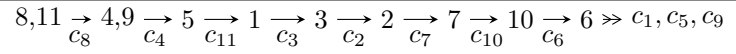


1

**Arc Sequences**



**Solving Sequence**



**Representation Ideals**

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

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

$$I_2^u = \langle u^{77} + u^{76} + \dots - 165u + 29, \\ 1.11979 \times 10^{172} u^{76} - 6.84829 \times 10^{170} u^{75} + \dots + 5.36513 \times 10^{171} b + 1.67058 \times 10^{173}, \\ - 2.36868 \times 10^{173} u^{76} - 1.38009 \times 10^{173} u^{75} + \dots + 1.55589 \times 10^{173} a - 5.57376 \times 10^{174} \rangle$$

There are 2 irreducible components with 89 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>”

$$\langle u^{12} - u^{10} + \dots - 2u^2 + 1, u^{11} + u^8 - u^7 + 3u^5 - u^4 + 2u^3 + a, 2u^{11} - u^9 + \dots + b + 1 \rangle$$

I.  $I_1^u =$

(i) Arc colorings

$$\begin{aligned}
a_8 &= \begin{pmatrix} 0 \\ u \end{pmatrix} \\
a_{11} &= \begin{pmatrix} -u^{11} - u^8 + u^7 - 3u^5 + u^4 - 2u^3 \\ -2u^{11} + u^9 - 2u^8 + 3u^7 + u^6 - 7u^5 + 3u^4 - 2u^3 - u^2 + 4u - 1 \end{pmatrix} \\
a_4 &= \begin{pmatrix} 1 \\ 0 \end{pmatrix} \\
a_9 &= \begin{pmatrix} 4u^{11} - u^9 + 4u^8 - 5u^7 - u^6 + 12u^5 - 5u^4 + 5u^3 - 5u \\ u^{11} - u^9 + u^8 - u^7 - u^6 + 4u^5 - u^4 - u^3 + u^2 - 2u \end{pmatrix} \\
a_5 &= \begin{pmatrix} 4u^{10} - u^8 + 4u^7 - 5u^6 - u^5 + 12u^4 - 5u^3 + 5u^2 - 4 \\ u^{10} - u^8 + u^7 - u^6 - u^5 + 4u^4 - u^3 - u^2 + u - 2 \end{pmatrix} \\
a_1 &= \begin{pmatrix} u^{11} - u^9 + u^8 - 2u^7 - u^6 + 4u^5 - 2u^4 + u^2 - 4u + 1 \\ -2u^{11} + u^9 - 2u^8 + 3u^7 + u^6 - 7u^5 + 3u^4 - 2u^3 - u^2 + 4u - 1 \end{pmatrix} \\
a_3 &= \begin{pmatrix} 1 \\ -u^2 \end{pmatrix} \\
a_2 &= \begin{pmatrix} 2u^{11} - 5u^{10} - u^9 + 4u^8 - 8u^7 + 5u^6 + 9u^5 - 19u^4 + 8u^3 - 4u^2 - 5u + 8 \\ -2u^{11} + u^{10} + u^9 - 2u^8 + 4u^7 - 7u^5 + 6u^4 - 3u^3 + 4u - 1 \end{pmatrix} \\
a_7 &= \begin{pmatrix} u \\ -u^3 + u \end{pmatrix} \\
a_{10} &= \begin{pmatrix} -u^9 - u^6 + u^5 - 3u^3 + u^2 - 2u \\ -u^{11} - u^8 + 2u^7 - 3u^5 + 2u^4 - 3u^3 + 3u - 1 \end{pmatrix} \\
a_6 &= \begin{pmatrix} 2u^{11} - 2u^9 + 2u^8 - 3u^7 - 2u^6 + 8u^5 - 3u^4 - u^3 + 2u^2 - 6u + 1 \\ -3u^{11} + u^{10} + \dots + 5u - 2 \end{pmatrix} \\
a_6 &= \begin{pmatrix} 2u^{11} - 2u^9 + 2u^8 - 3u^7 - 2u^6 + 8u^5 - 3u^4 - u^3 + 2u^2 - 6u + 1 \\ -3u^{11} + u^{10} + \dots + 5u - 2 \end{pmatrix}
\end{aligned}$$

(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
$u = -1.210646 - 0.425814I$ $a = -0.684759 + 0.985370I$ $b = 0.960873 + 0.827624I$	$-2.97178 - 6.11551I$	$1.52678 + 5.55521I$
$u = -1.210646 + 0.425814I$ $a = -0.684759 - 0.985370I$ $b = 0.960873 - 0.827624I$	$-2.97178 + 6.11551I$	$1.52678 - 5.55521I$
$u = -0.754976 - 0.043647I$ $a = 1.69312 + 0.35940I$ $b = -1.52262 + 0.44223I$	$6.38132 + 0.21376I$	$6.25984 + 0.75137I$
$u = -0.754976 + 0.043647I$ $a = 1.69312 - 0.35940I$ $b = -1.52262 - 0.44223I$	$6.38132 - 0.21376I$	$6.25984 - 0.75137I$
$u = 0.044719 - 0.917677I$ $a = -0.002054 + 0.498794I$ $b = -0.232403 - 0.357985I$	$2.40807 - 2.46975I$	$4.62403 + 2.63831I$
$u = 0.044719 + 0.917677I$ $a = -0.002054 - 0.498794I$ $b = -0.232403 + 0.357985I$	$2.40807 + 2.46975I$	$4.62403 - 2.63831I$
$u = 0.102518 - 1.164981I$ $a = 0.006775 + 0.495750I$ $b = -0.265249 + 0.561333I$	$0.61422 + 1.43941I$	$10.88514 - 4.78461I$
$u = 0.102518 + 1.164981I$ $a = 0.006775 - 0.495750I$ $b = -0.265249 - 0.561333I$	$0.61422 - 1.43941I$	$10.88514 + 4.78461I$
$u = 0.833532 - 0.167507I$ $a = -1.22201 + 1.52646I$ $b = 0.514076 + 1.079512I$	$4.38401 + 5.97653I$	$5.35684 - 3.69125I$
$u = 0.833532 + 0.167507I$ $a = -1.22201 - 1.52646I$ $b = 0.514076 - 1.079512I$	$4.38401 - 5.97653I$	$5.35684 + 3.69125I$

	Solution to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u =$	$0.984853 - 0.549799I$		
$a =$	$0.208921 + 0.973538I$	$-0.94624 + 4.30351I$	$-2.15264 - 4.03867I$
$b =$	$-0.95467 + 1.24603I$		
$u =$	$0.984853 + 0.549799I$		
$a =$	$0.208921 - 0.973538I$	$-0.94624 - 4.30351I$	$-2.15264 + 4.03867I$
$b =$	$-0.95467 - 1.24603I$		

$$\text{II. } I_2^u = \langle u^{77} + u^{76} + \dots - 165u + 29, 1.12 \times 10^{172}u^{76} - 6.85 \times 10^{170}u^{75} + \dots + 5.37 \times 10^{171}b + 1.67 \times 10^{173}, -2.37 \times 10^{173}u^{76} - 1.38 \times 10^{173}u^{75} + \dots + 1.56 \times 10^{173}a - 5.57 \times 10^{174} \rangle$$

(i) Arc colorings

$$\begin{aligned} a_8 &= \begin{pmatrix} 0 \\ u \end{pmatrix} \\ a_{11} &= \begin{pmatrix} 1.52240u^{76} + 0.887013u^{75} + \dots - 342.159u + 35.8237 \\ -2.08716u^{76} + 0.127645u^{75} + \dots + 193.836u - 31.1378 \end{pmatrix} \\ a_4 &= \begin{pmatrix} 1 \\ 0 \end{pmatrix} \\ a_9 &= \begin{pmatrix} -3.66933u^{76} - 1.32911u^{75} + \dots + 910.616u - 126.541 \\ 0.705067u^{76} - 0.345250u^{75} + \dots - 14.8752u + 5.04376 \end{pmatrix} \\ a_5 &= \begin{pmatrix} 5.24529u^{76} + 0.416065u^{75} + \dots - 928.352u + 128.001 \\ -0.637308u^{76} - 0.0502983u^{75} + \dots + 137.205u - 20.4849 \end{pmatrix} \\ a_1 &= \begin{pmatrix} 3.60956u^{76} + 0.759369u^{75} + \dots - 535.994u + 66.9615 \\ -2.08716u^{76} + 0.127645u^{75} + \dots + 193.836u - 31.1378 \end{pmatrix} \\ a_3 &= \begin{pmatrix} 1 \\ -u^2 \end{pmatrix} \\ a_2 &= \begin{pmatrix} -1.03655u^{76} - 1.28345u^{75} + \dots + 546.373u - 74.6176 \\ -2.18006u^{76} - 0.270645u^{75} + \dots + 410.202u - 64.0620 \end{pmatrix} \\ a_7 &= \begin{pmatrix} u \\ -u^3 + u \end{pmatrix} \\ a_{10} &= \begin{pmatrix} 4.75161u^{76} + 1.28900u^{75} + \dots - 939.940u + 123.090 \\ -1.21070u^{76} + 0.0706919u^{75} + \dots + 156.194u - 25.8612 \end{pmatrix} \\ a_6 &= \begin{pmatrix} 6.09262u^{76} + 0.803265u^{75} + \dots - 1191.13u + 173.076 \\ -2.53637u^{76} - 1.20074u^{75} + \dots + 763.833u - 109.700 \end{pmatrix} \\ a_6 &= \begin{pmatrix} 6.09262u^{76} + 0.803265u^{75} + \dots - 1191.13u + 173.076 \\ -2.53637u^{76} - 1.20074u^{75} + \dots + 763.833u - 109.700 \end{pmatrix} \end{aligned}$$

(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
$u = -1.33814$ $a = 0.190665$ $b = 0.776758$	2.92476	1.67455
$u = -1.32035 - 0.63988I$ $a = 0.421090 - 1.057719I$ $b = -1.19892 - 1.18848I$	$4.7027 - 16.9146I$	$4.60655 + 9.12729I$
$u = -1.32035 + 0.63988I$ $a = 0.421090 + 1.057719I$ $b = -1.19892 + 1.18848I$	$4.7027 + 16.9146I$	$4.60655 - 9.12729I$
$u = -1.273377 - 0.435053I$ $a = 0.387228 - 0.642436I$ $b = -1.142937 - 0.689332I$	$-4.61742 - 6.13658I$	$-3.83158 + 4.92110I$
$u = -1.273377 + 0.435053I$ $a = 0.387228 + 0.642436I$ $b = -1.142937 + 0.689332I$	$-4.61742 + 6.13658I$	$-3.83158 - 4.92110I$
$u = -1.272527 - 0.403885I$ $a = 0.86599 - 1.23266I$ $b = -0.931242 - 0.803098I$	$-1.70122 - 7.58589I$	$3.43094 + 7.39788I$
$u = -1.272527 + 0.403885I$ $a = 0.86599 + 1.23266I$ $b = -0.931242 + 0.803098I$	$-1.70122 + 7.58589I$	$3.43094 - 7.39788I$
$u = -1.24468 - 1.64088I$ $a = -0.179400 - 0.066634I$ $b = -0.325603 + 0.132040I$	$2.31339 - 2.06400I$	$-22.0462 - 12.4650I$
$u = -1.24468 + 1.64088I$ $a = -0.179400 + 0.066634I$ $b = -0.325603 - 0.132040I$	$2.31339 + 2.06400I$	$-22.0462 + 12.4650I$
$u = -1.211326 - 0.130649I$ $a = 0.394570 - 0.818099I$ $b = -0.930426 - 0.388281I$	$-5.89787 + 1.17472I$	$-4.48923 - 2.64206I$

Solution to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.211326 + 0.130649I$ $a = 0.394570 + 0.818099I$ $b = -0.930426 + 0.388281I$	$-5.89787 - 1.17472I$	$-4.48923 + 2.64206I$
$u = -1.179491 - 0.706716I$ $a = -0.092116 + 0.939830I$ $b = 0.968404 + 0.845170I$	$0.48900 - 5.35296I$	$4.79389 + 4.22324I$
$u = -1.179491 + 0.706716I$ $a = -0.092116 - 0.939830I$ $b = 0.968404 - 0.845170I$	$0.48900 + 5.35296I$	$4.79389 - 4.22324I$
$u = -1.148929 - 0.468555I$ $a = -0.421638 + 0.915724I$ $b = 1.19846 + 1.45345I$	$0.86302 - 4.48046I$	$5.17101 + 3.46480I$
$u = -1.148929 + 0.468555I$ $a = -0.421638 - 0.915724I$ $b = 1.19846 - 1.45345I$	$0.86302 + 4.48046I$	$5.17101 - 3.46480I$
$u = -1.020669 - 0.758296I$ $a = -0.559796 + 0.002041I$ $b = -0.054669 + 0.332372I$	$1.164468 + 0.722959I$	$7.69350 - 4.18871I$
$u = -1.020669 + 0.758296I$ $a = -0.559796 - 0.002041I$ $b = -0.054669 - 0.332372I$	$1.164468 - 0.722959I$	$7.69350 + 4.18871I$
$u = -1.011983 - 0.499831I$ $a = -0.242063 + 1.104370I$ $b = 0.832566 + 1.115244I$	$-0.33626 - 4.72282I$	$6.97443 + 9.32010I$
$u = -1.011983 + 0.499831I$ $a = -0.242063 - 1.104370I$ $b = 0.832566 - 1.115244I$	$-0.33626 + 4.72282I$	$6.97443 - 9.32010I$
$u = -0.923298 - 0.276341I$ $a = 2.32120 + 1.23862I$ $b = -0.073822 - 0.229055I$	$4.20118 - 6.97147I$	$6.15320 + 11.16079I$

Solution to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.923298 + 0.276341I$ $a = 2.32120 - 1.23862I$ $b = -0.073822 + 0.229055I$	$4.20118 + 6.97147I$	$6.15320 - 11.16079I$
$u = -0.896924 - 0.374361I$ $a = -0.095584 + 0.994589I$ $b = -0.246075 + 1.293252I$	$1.80693 - 4.42620I$	$2.90404 + 6.69820I$
$u = -0.896924 + 0.374361I$ $a = -0.095584 - 0.994589I$ $b = -0.246075 - 1.293252I$	$1.80693 + 4.42620I$	$2.90404 - 6.69820I$
$u = -0.865786 - 0.306816I$ $a = 0.327884 - 0.092008I$ $b = 1.39040 - 1.56388I$	$6.12753 - 1.30742I$	$8.16681 + 3.90506I$
$u = -0.865786 + 0.306816I$ $a = 0.327884 + 0.092008I$ $b = 1.39040 + 1.56388I$	$6.12753 + 1.30742I$	$8.16681 - 3.90506I$
$u = -0.851750 - 0.208072I$ $a = 1.239260 - 0.330786I$ $b = -1.99274 - 0.35899I$	$6.39464 - 1.13968I$	$6.99632 + 6.59514I$
$u = -0.851750 + 0.208072I$ $a = 1.239260 + 0.330786I$ $b = -1.99274 + 0.35899I$	$6.39464 + 1.13968I$	$6.99632 - 6.59514I$
$u = -0.763715 - 0.227475I$ $a = -0.53519 - 2.43464I$ $b = 0.185169 - 1.013597I$	$4.77190 + 4.51965I$	$8.82943 - 1.92531I$
$u = -0.763715 + 0.227475I$ $a = -0.53519 + 2.43464I$ $b = 0.185169 + 1.013597I$	$4.77190 - 4.51965I$	$8.82943 + 1.92531I$
$u = -0.667917 - 0.411478I$ $a = -1.55794 + 0.27882I$ $b = 0.557494 + 0.487318I$	$2.46824 + 1.00702I$	$4.86559 + 3.12651I$



Solution to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.667917 + 0.411478I$ $a = -1.55794 - 0.27882I$ $b = 0.557494 - 0.487318I$	$2.46824 - 1.00702I$	$4.86559 - 3.12651I$
$u = -0.491929 - 0.543095I$ $a = -0.948463 + 0.380905I$ $b = -0.097196 + 0.391353I$	$1.227583 + 0.394060I$	$8.56651 - 1.90351I$
$u = -0.491929 + 0.543095I$ $a = -0.948463 - 0.380905I$ $b = -0.097196 - 0.391353I$	$1.227583 - 0.394060I$	$8.56651 + 1.90351I$
$u = -0.177886 - 1.221807I$ $a = 0.626487 - 0.745492I$ $b = 0.690305 - 1.061799I$	$8.28927 + 10.45151I$	$7.76589 - 7.26465I$
$u = -0.177886 + 1.221807I$ $a = 0.626487 + 0.745492I$ $b = 0.690305 + 1.061799I$	$8.28927 - 10.45151I$	$7.76589 + 7.26465I$
$u = -0.110329 - 0.733577I$ $a = -1.16968 + 0.85797I$ $b = -0.328506 + 1.139404I$	$3.84970 + 0.08012I$	$7.97801 + 0.03801I$
$u = -0.110329 + 0.733577I$ $a = -1.16968 - 0.85797I$ $b = -0.328506 - 1.139404I$	$3.84970 - 0.08012I$	$7.97801 - 0.03801I$
$u = -0.104207 - 0.712436I$ $a = 1.02875 + 1.15606I$ $b = 0.533484 + 1.179547I$	$3.61473 - 5.50095I$	$6.98406 + 5.81462I$
$u = -0.104207 + 0.712436I$ $a = 1.02875 - 1.15606I$ $b = 0.533484 - 1.179547I$	$3.61473 + 5.50095I$	$6.98406 - 5.81462I$
$u = 0.191518 - 0.862539I$ $a = 0.141906 - 1.309128I$ $b = 0.945525 - 0.859691I$	$2.70359 + 3.26674I$	$6.64539 - 3.84640I$

Solution to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.191518 + 0.862539I$ $a = 0.141906 + 1.309128I$ $b = 0.945525 + 0.859691I$	$2.70359 - 3.26674I$	$6.64539 + 3.84640I$
$u = 0.230006 - 1.090050I$ $a = -0.759007 - 0.845716I$ $b = -0.641433 - 0.984808I$	$9.74860 - 4.47979I$	$9.94638 + 2.23180I$
$u = 0.230006 + 1.090050I$ $a = -0.759007 + 0.845716I$ $b = -0.641433 + 0.984808I$	$9.74860 + 4.47979I$	$9.94638 - 2.23180I$
$u = 0.279592 - 1.135545I$ $a = 1.71426 - 1.14545I$ $b = 0.821202 + 0.423127I$	$-1.33936 - 1.90829I$	$-3.28849 + 4.48822I$
$u = 0.279592 + 1.135545I$ $a = 1.71426 + 1.14545I$ $b = 0.821202 - 0.423127I$	$-1.33936 + 1.90829I$	$-3.28849 - 4.48822I$
$u = 0.366677 - 0.724507I$ $a = 0.009729 - 0.399586I$ $b = 0.246718 - 0.676774I$	$-0.05781 + 1.76242I$	$0.07414 - 5.41523I$
$u = 0.366677 + 0.724507I$ $a = 0.009729 + 0.399586I$ $b = 0.246718 + 0.676774I$	$-0.05781 - 1.76242I$	$0.07414 + 5.41523I$
$u = 0.442330 - 0.184001I$ $a = -3.93762 - 0.88520I$ $b = -0.432480 - 0.181597I$	$7.54983 - 0.02659I$	$13.77398 - 0.96647I$
$u = 0.442330 + 0.184001I$ $a = -3.93762 + 0.88520I$ $b = -0.432480 + 0.181597I$	$7.54983 + 0.02659I$	$13.77398 + 0.96647I$
$u = 0.775291 - 0.429157I$ $a = -1.044986 - 0.662277I$ $b = 1.77694 - 0.69953I$	$5.46593 - 3.52443I$	$8.01102 + 1.39451I$

Solution to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.775291 + 0.429157I$ $a = -1.044986 + 0.662277I$ $b = 1.77694 + 0.69953I$	$5.46593 + 3.52443I$	$8.01102 - 1.39451I$
$u = 0.790743 - 0.263954I$ $a = 0.020265 + 0.999233I$ $b = 0.702372 + 1.092675I$	$1.46625 - 1.20974I$	$1.00332 - 1.70673I$
$u = 0.790743 + 0.263954I$ $a = 0.020265 - 0.999233I$ $b = 0.702372 - 1.092675I$	$1.46625 + 1.20974I$	$1.00332 + 1.70673I$
$u = 0.820378 - 0.379925I$ $a = -0.353302 - 0.119414I$ $b = -1.07683 - 1.94033I$	$5.36519 + 7.03538I$	$8.75195 - 9.18938I$
$u = 0.820378 + 0.379925I$ $a = -0.353302 + 0.119414I$ $b = -1.07683 + 1.94033I$	$5.36519 - 7.03538I$	$8.75195 + 9.18938I$
$u = 0.896422 - 0.265763I$ $a = 1.59624 - 0.19441I$ $b = -0.896447 + 0.240867I$	$1.15451 + 3.72703I$	$0.06859 - 4.84496I$
$u = 0.896422 + 0.265763I$ $a = 1.59624 + 0.19441I$ $b = -0.896447 - 0.240867I$	$1.15451 - 3.72703I$	$0.06859 + 4.84496I$
$u = 0.970357 - 0.344452I$ $a = -0.34245 - 2.20145I$ $b = 0.308323 - 0.950950I$	$6.12754 + 2.96766I$	$9.90168 - 5.36804I$
$u = 0.970357 + 0.344452I$ $a = -0.34245 + 2.20145I$ $b = 0.308323 + 0.950950I$	$6.12754 - 2.96766I$	$9.90168 + 5.36804I$
$u = 1.073864 - 0.675324I$ $a = -0.173654 - 0.220310I$ $b = -0.088509 - 0.909871I$	$0.02842 + 2.19997I$	$4.77678 - 3.74049I$

Solution to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.073864 + 0.675324I$ $a = -0.173654 + 0.220310I$ $b = -0.088509 + 0.909871I$	$0.02842 - 2.19997I$	$4.77678 + 3.74049I$
$u = 1.087154 - 0.216785I$ $a = 0.764396 + 1.089042I$ $b = -1.21056 + 0.85013I$	$-3.63556 + 3.63723I$	$-1.60436 - 2.23706I$
$u = 1.087154 + 0.216785I$ $a = 0.764396 - 1.089042I$ $b = -1.21056 - 0.85013I$	$-3.63556 - 3.63723I$	$-1.60436 + 2.23706I$
$u = 1.097940 - 0.358861I$ $a = -0.293445 - 0.681430I$ $b = 0.927950 - 0.663131I$	$-2.05915 + 1.76225I$	$0.563340 - 0.534729I$
$u = 1.097940 + 0.358861I$ $a = -0.293445 + 0.681430I$ $b = 0.927950 + 0.663131I$	$-2.05915 - 1.76225I$	$0.563340 + 0.534729I$
$u = 1.220995 - 0.424375I$ $a = 0.500219 + 0.866691I$ $b = -1.42946 + 1.36925I$	$-0.15779 + 9.61338I$	$3.12887 - 8.47056I$
$u = 1.220995 + 0.424375I$ $a = 0.500219 - 0.866691I$ $b = -1.42946 - 1.36925I$	$-0.15779 - 9.61338I$	$3.12887 + 8.47056I$
$u = 1.262295 - 0.607915I$ $a = -0.438601 - 1.152260I$ $b = 1.07068 - 1.17729I$	$6.51212 + 10.46963I$	$6.66252 - 5.36542I$
$u = 1.262295 + 0.607915I$ $a = -0.438601 + 1.152260I$ $b = 1.07068 + 1.17729I$	$6.51212 - 10.46963I$	$6.66252 + 5.36542I$
$u = 1.265008 - 0.301142I$ $a = 0.724719 - 0.281751I$ $b = -0.134847 + 0.233685I$	$-0.23261 + 3.64167I$	$2.17098 - 2.37480I$

Solution to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.265008 + 0.301142I$ $a = 0.724719 + 0.281751I$ $b = -0.134847 - 0.233685I$	$-0.23261 - 3.64167I$	$2.17098 + 2.37480I$
$u = 1.300529 - 0.421555I$ $a = 0.291768 + 0.925268I$ $b = -0.637650 + 0.514327I$	$-4.57880 + 4.18550I$	$-2.95420 - 3.20373I$
$u = 1.300529 + 0.421555I$ $a = 0.291768 - 0.925268I$ $b = -0.637650 - 0.514327I$	$-4.57880 - 4.18550I$	$-2.95420 + 3.20373I$
$u = 1.31184 - 0.73020I$ $a = 0.109741 + 0.862849I$ $b = -1.052207 + 0.706854I$	$-0.77093 + 10.59391I$	$2.33294 - 8.73930I$
$u = 1.31184 + 0.73020I$ $a = 0.109741 - 0.862849I$ $b = -1.052207 - 0.706854I$	$-0.77093 - 10.59391I$	$2.33294 + 8.73930I$
$u = 1.32320 - 1.63039I$ $a = 0.115629 - 0.123507I$ $b = 0.378182 - 0.091629I$	$2.00559 - 2.59230I$	$-21.8153 - 13.3624I$
$u = 1.32320 + 1.63039I$ $a = 0.115629 + 0.123507I$ $b = 0.378182 + 0.091629I$	$2.00559 + 2.59230I$	$-21.8153 + 13.3624I$

### III. u-Polynomials

Crossings	u-Polynomials at each crossings
$c_1$	$(u^{12} - 2u^{11} + \dots - 2u + 1)(u^{77} + u^{76} + \dots + 15u + 1)$
$c_2$	$(u^{12} + 6u^{11} + \dots + 6u + 1)(u^{77} + 29u^{76} + \dots - 41u - 1)$
$c_3$	$(u^{12} - u^{10} + u^9 - u^8 - u^7 + 4u^6 - u^5 - u^4 + u^3 - 2u^2 + 1)$ $(u^{77} + u^{76} + \dots - 165u + 29)$
$c_4$	$(u^{12} - 2u^{10} - u^9 - u^8 + u^7 + 4u^6 + u^5 - u^4 - u^3 - u^2 + 1)$ $(u^{77} + u^{76} + \dots - 1709u - 751)$
$c_5$	$(u^{12} + 2u^{11} + \dots + 2u + 1)(u^{77} + u^{76} + \dots + 15u + 1)$
$c_6$	$(u^{12} - 4u^{11} + \dots - 2u + 1)(u^{77} + u^{76} + \dots + 2607u + 121)$
$c_7$	$(u^{12} - u^{10} - u^9 - u^8 + u^7 + 4u^6 + u^5 - u^4 - u^3 - 2u^2 + 1)$ $(u^{77} + u^{76} + \dots - 165u + 29)$
$c_8$	$(u^{12} + 2u^{11} + u^{10} + 4u^8 - 15u^6 - 17u^5 + 9u^4 + 31u^3 + 24u^2 + 8u + 1)$ $(u^{77} + 9u^{76} + \dots + 21u + 1)$
$c_9$	$(u^{12} - 2u^{10} + u^9 - u^8 - u^7 + 4u^6 - u^5 - u^4 + u^3 - u^2 + 1)$ $(u^{77} + u^{76} + \dots - 1709u - 751)$
$c_{10}$	$(u^{12} + 4u^{11} + \dots + 2u + 1)(u^{77} + u^{76} + \dots + 2607u + 121)$
$c_{11}$	$(u^{12} - 3u^{11} + \dots - 4u + 1)(u^{77} + 2u^{76} + \dots - 11u - 1)$

#### IV. Riley Polynomials

Crossings	Riley Polynomials at each crossings
$c_1$	$(y^{12} + 6y^{11} + \dots + 6y + 1)(y^{77} + 29y^{76} + \dots - 41y - 1)$
$c_2$	$(y^{12} + 6y^{11} + \dots - 2y + 1)(y^{77} + 45y^{76} + \dots - 1989y - 1)$
$c_3, c_7$	$(y^{12} - 2y^{11} + \dots - 4y + 1)(y^{77} - 39y^{76} + \dots + 32561y - 841)$
$c_4$	$(y^{12} - 4y^{11} + \dots - 2y + 1)(y^{77} - 57y^{76} + \dots - 8745353y - 564001)$
$c_5$	$(y^{12} + 6y^{11} + \dots + 6y + 1)(y^{77} + 29y^{76} + \dots - 41y - 1)$
$c_6$	$(y^{12} - 12y^{11} + \dots - 6y + 1)(y^{77} - 61y^{76} + \dots + 895279y - 14641)$
$c_8$	$(y^{12} - 2y^{11} + \dots - 16y + 1)(y^{77} - 7y^{76} + \dots + 53y - 1)$
$c_9$	$(y^{12} - 4y^{11} + \dots - 2y + 1)(y^{77} - 57y^{76} + \dots - 8745353y - 564001)$
$c_{10}$	$(y^{12} - 12y^{11} + \dots - 6y + 1)(y^{77} - 61y^{76} + \dots + 895279y - 14641)$
$c_{11}$	$(y^{12} - y^{11} + \dots + 8y + 1)(y^{77} + 2y^{76} + \dots - 43y - 1)$