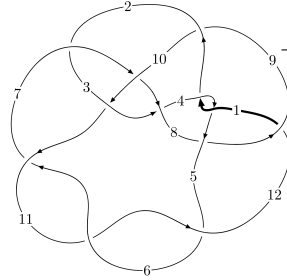
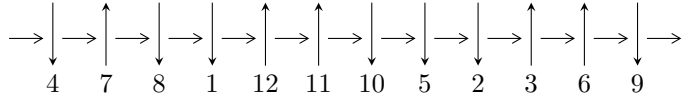


12a<sub>1043</sub> (K12a<sub>1043</sub>)



A knot diagram<sup>1</sup>

**Linearized knot diagram**



**Solving Sequence**

$$5,12 \xrightarrow{c_5} 6,9 \xrightarrow{c_{12}} 1 \xrightarrow{c_4} 4 \xrightarrow{c_1} 2 \xrightarrow{c_8} 8 \xrightarrow{c_3} 3 \xrightarrow{c_{11}} 11 \xrightarrow{c_6} 7 \xrightarrow{c_{10}} 10 \rightsquigarrow c_2, c_7, c_9$$

**Ideals for irreducible components<sup>2</sup> of  $X_{\text{par}}$**

$$I_1^u = \langle 309279332727u^{39} - 6570519786366u^{38} + \dots + 25449616384b - 304514848348160, \\ - 446066672385u^{39} + 9504187459743u^{38} + \dots + 25449616384a + 483336474422784, \\ 3u^{40} - 66u^{39} + \dots - 43008u + 2048 \rangle$$

$$I_2^u = \langle 1.99934 \times 10^{105} a^{21} u^3 + 1.76754 \times 10^{105} a^{20} u^3 + \dots + 2.92106 \times 10^{102} a + 2.33669 \times 10^{103}, \\ a^{21} u^3 - 5a^{20} u^3 + \dots + 24254a - 4243, u^4 + u^3 + 3u^2 + 2u + 1 \rangle$$

$$I_3^u = \langle 1279125u^{24} - 1287228u^{23} + \dots + 965461b - 3643883, \\ 10931649u^{24} + 12210774u^{23} + \dots + 965461a - 9081154, 3u^{25} + 3u^{24} + \dots - 3u + 1 \rangle$$

\* 3 irreducible components of  $\dim_{\mathbb{C}} = 0$ , with total 153 representations.

<sup>1</sup>The image of knot diagram is generated by the software “**Draw programme**” developed by Andrew Bartholomew(<http://www.layer8.co.uk/maths/draw/index.htm#Running-draw>), where we modified some parts for our purpose(<https://github.com/CATsTAILs/LinksPainter>).

<sup>2</sup>All coefficients of polynomials are rational numbers. But the coefficients are sometimes approximated in decimal forms when there is not enough margin.

$$\mathbf{I. } I_1^u = \langle 3.09 \times 10^{11}u^{39} - 6.57 \times 10^{12}u^{38} + \dots + 2.54 \times 10^{10}b - 3.05 \times 10^{14}, -4.46 \times 10^{11}u^{39} + 9.50 \times 10^{12}u^{38} + \dots + 2.54 \times 10^{10}a + 4.83 \times 10^{14}, 3u^{40} - 66u^{39} + \dots - 43008u + 2048 \rangle$$

(i) Arc colorings

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

$$a_{12} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 17.5274u^{39} - 373.451u^{38} + \dots + 369493.u - 18991.9 \\ -12.1526u^{39} + 258.178u^{38} + \dots - 232282.u + 11965.4 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 15.7231u^{39} - 330.923u^{38} + \dots + 230269.u - 11844.6 \\ -14.9846u^{39} + 317.152u^{38} + \dots - 213560.u + 10733.6 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 17.7712u^{39} - 381.885u^{38} + \dots + 379671.u - 19416.9 \\ 3.42698u^{39} - 69.4386u^{38} + \dots - 31264.6u + 1902.33 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 1.54086u^{39} - 32.5131u^{38} + \dots + 7256.97u - 270.009 \\ 5.16740u^{39} - 111.458u^{38} + \dots + 131235.u - 6838.08 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 5.37483u^{39} - 115.274u^{38} + \dots + 137212.u - 7026.50 \\ -12.1526u^{39} + 258.178u^{38} + \dots - 232282.u + 11965.4 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 11.4025u^{39} - 244.818u^{38} + \dots + 259388.u - 13416.8 \\ 1.38575u^{39} - 29.6174u^{38} + \dots + 21819.7u - 1051.89 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u^2 + 1 \\ -u^4 - 2u^2 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 16.5400u^{39} - 352.658u^{38} + \dots + 288678.u - 14393.4 \\ -1.36215u^{39} + 27.8518u^{38} + \dots - 32059.5u + 1831.54 \end{pmatrix}$$

(ii) Obstruction class = -1

$$\mathbf{(iii) } \text{Cusp Shapes} = \frac{10816413693}{6362404096}u^{39} - \frac{115564318683}{3181202048}u^{38} + \dots + \frac{489218830366}{24853141}u - \frac{20767219470}{24853141}$$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
$c_1, c_4$	$3(3u^{40} - 63u^{39} + \dots - 4480u + 256)$
$c_2, c_{10}$	$u^{40} + 4u^{38} + \dots - 3u + 3$
$c_3, c_9$	$u^{40} - 3u^{39} + \dots + 10u + 25$
$c_5, c_6, c_{11}$	$3(3u^{40} - 66u^{39} + \dots - 43008u + 2048)$
$c_7$	$3(3u^{40} - 90u^{39} + \dots - 96u + 16)$
$c_8, c_{12}$	$u^{40} + u^{39} + \dots + 36u + 9$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
$c_1, c_4$	$9(9y^{40} + 207y^{39} + \dots + 876544y + 65536)$
$c_2, c_{10}$	$y^{40} + 8y^{39} + \dots - 63y + 9$
$c_3, c_9$	$y^{40} - 19y^{39} + \dots - 1150y + 625$
$c_5, c_6, c_{11}$	$9(9y^{40} + 306y^{39} + \dots + 2097152y + 4194304)$
$c_7$	$9(9y^{40} - 36y^{39} + \dots - 12928y + 256)$
$c_8, c_{12}$	$y^{40} + y^{39} + \dots + 324y + 81$

(vi) Complex Volumes and Cusp Shapes

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.430076 + 0.939129I$ $a = 0.709951 - 0.050908I$ $b = -0.353142 - 0.644841I$	$2.91207 + 3.15877I$	0
$u = 0.430076 - 0.939129I$ $a = 0.709951 + 0.050908I$ $b = -0.353142 + 0.644841I$	$2.91207 - 3.15877I$	0
$u = 0.231231 + 0.892892I$ $a = -0.389877 - 0.824893I$ $b = -0.646388 + 0.538859I$	$-0.74157 + 1.76866I$	0
$u = 0.231231 - 0.892892I$ $a = -0.389877 + 0.824893I$ $b = -0.646388 - 0.538859I$	$-0.74157 - 1.76866I$	0
$u = 0.797794 + 0.829732I$ $a = 0.079070 + 1.281020I$ $b = 0.99982 - 1.08760I$	$-0.4120 + 15.0532I$	0
$u = 0.797794 - 0.829732I$ $a = 0.079070 - 1.281020I$ $b = 0.99982 + 1.08760I$	$-0.4120 - 15.0532I$	0
$u = 1.143770 + 0.218983I$ $a = 0.669280 + 0.663411I$ $b = -0.620227 - 0.905352I$	$1.46137 - 8.89771I$	0
$u = 1.143770 - 0.218983I$ $a = 0.669280 - 0.663411I$ $b = -0.620227 + 0.905352I$	$1.46137 + 8.89771I$	0
$u = 1.061750 + 0.531482I$ $a = -0.592784 - 0.312411I$ $b = 0.463345 + 0.646754I$	$-0.374138 + 0.723530I$	0
$u = 1.061750 - 0.531482I$ $a = -0.592784 + 0.312411I$ $b = 0.463345 - 0.646754I$	$-0.374138 - 0.723530I$	0

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.366980 + 1.149690I$ $a = -0.587719 - 1.101030I$ $b = -1.05016 + 1.07975I$	$1.86448 + 4.61004I$	0
$u = 0.366980 - 1.149690I$ $a = -0.587719 + 1.101030I$ $b = -1.05016 - 1.07975I$	$1.86448 - 4.61004I$	0
$u = 0.962991 + 0.729062I$ $a = 0.057833 - 1.141700I$ $b = -0.888065 + 1.057290I$	$-0.88372 + 5.83229I$	0
$u = 0.962991 - 0.729062I$ $a = 0.057833 + 1.141700I$ $b = -0.888065 - 1.057290I$	$-0.88372 - 5.83229I$	0
$u = 0.895035 + 0.886441I$ $a = -0.165708 + 0.723991I$ $b = 0.790089 - 0.501107I$	$-4.31918 + 8.60646I$	0
$u = 0.895035 - 0.886441I$ $a = -0.165708 - 0.723991I$ $b = 0.790089 + 0.501107I$	$-4.31918 - 8.60646I$	0
$u = 0.714926 + 0.070491I$ $a = -0.80903 + 1.42994I$ $b = 0.679194 - 0.965270I$	$5.53685 + 0.79423I$	0
$u = 0.714926 - 0.070491I$ $a = -0.80903 - 1.42994I$ $b = 0.679194 + 0.965270I$	$5.53685 - 0.79423I$	0
$u = 0.434361 + 0.523139I$ $a = -0.45056 - 1.78531I$ $b = -0.738261 + 1.011170I$	$1.76895 + 1.27338I$	$0. - 4.56377I$
$u = 0.434361 - 0.523139I$ $a = -0.45056 + 1.78531I$ $b = -0.738261 - 1.011170I$	$1.76895 - 1.27338I$	$0. + 4.56377I$

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.519767 + 0.325027I$ $a = -0.567043 - 0.806038I$ $b = 0.032746 + 0.603256I$	$0.90033 + 1.11286I$	$3.57927 - 3.43616I$
$u = 0.519767 - 0.325027I$ $a = -0.567043 + 0.806038I$ $b = 0.032746 - 0.603256I$	$0.90033 - 1.11286I$	$3.57927 + 3.43616I$
$u = 0.400531 + 0.362017I$ $a = -1.56564 - 0.64119I$ $b = 0.394968 + 0.823605I$	$2.18207 + 1.75911I$	$3.60232 - 4.80724I$
$u = 0.400531 - 0.362017I$ $a = -1.56564 + 0.64119I$ $b = 0.394968 - 0.823605I$	$2.18207 - 1.75911I$	$3.60232 + 4.80724I$
$u = 0.10737 + 1.52582I$ $a = 0.394221 + 0.366834I$ $b = 0.517395 - 0.640896I$	$-5.33866 + 3.18854I$	0
$u = 0.10737 - 1.52582I$ $a = 0.394221 - 0.366834I$ $b = 0.517395 + 0.640896I$	$-5.33866 - 3.18854I$	0
$u = 0.10832 + 1.54869I$ $a = 0.689279 + 0.757629I$ $b = 1.09867 - 1.14955I$	$-5.20346 + 3.15092I$	0
$u = 0.10832 - 1.54869I$ $a = 0.689279 - 0.757629I$ $b = 1.09867 + 1.14955I$	$-5.20346 - 3.15092I$	0
$u = 0.25142 + 1.65145I$ $a = -0.569813 - 0.870066I$ $b = -1.29361 + 1.15977I$	$-8.6562 + 19.0603I$	0
$u = 0.25142 - 1.65145I$ $a = -0.569813 + 0.870066I$ $b = -1.29361 - 1.15977I$	$-8.6562 - 19.0603I$	0

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.29257 + 1.65671I$		
$a = 0.538073 + 0.853110I$	$-8.82937 + 10.53240I$	0
$b = 1.25593 - 1.14103I$		
$u = 0.29257 - 1.65671I$		
$a = 0.538073 - 0.853110I$	$-8.82937 - 10.53240I$	0
$b = 1.25593 + 1.14103I$		
$u = 0.26892 + 1.66392I$		
$a = -0.295163 - 0.749259I$	$-12.7100 + 12.9921I$	0
$b = -1.167330 + 0.692615I$		
$u = 0.26892 - 1.66392I$		
$a = -0.295163 + 0.749259I$	$-12.7100 - 12.9921I$	0
$b = -1.167330 - 0.692615I$		
$u = 1.38555 + 0.97091I$		
$a = 0.086799 - 0.325668I$	$-2.92234 - 0.70874I$	0
$b = -0.436459 + 0.366956I$		
$u = 1.38555 - 0.97091I$		
$a = 0.086799 + 0.325668I$	$-2.92234 + 0.70874I$	0
$b = -0.436459 - 0.366956I$		
$u = 0.29238 + 1.71673I$		
$a = 0.277808 + 0.672154I$	$-11.76900 + 4.97311I$	0
$b = 1.072680 - 0.673445I$		
$u = 0.29238 - 1.71673I$		
$a = 0.277808 - 0.672154I$	$-11.76900 - 4.97311I$	0
$b = 1.072680 + 0.673445I$		
$u = 0.33425 + 1.71922I$		
$a = -0.008980 - 0.357256I$	$-7.92682 + 6.50746I$	0
$b = -0.611201 + 0.134853I$		
$u = 0.33425 - 1.71922I$		
$a = -0.008980 + 0.357256I$	$-7.92682 - 6.50746I$	0
$b = -0.611201 - 0.134853I$		



$$\text{II. } I_2^u = \langle 2.00 \times 10^{105} a^{21} u^3 + 1.77 \times 10^{105} a^{20} u^3 + \dots + 2.92 \times 10^{102} a + 2.34 \times 10^{103}, a^{21} u^3 - 5a^{20} u^3 + \dots + 24254a - 4243, u^4 + u^3 + 3u^2 + 2u + 1 \rangle$$

(i) Arc colorings

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

$$a_{12} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} a \\ -78.5727a^{21}u^3 - 69.4631a^{20}u^3 + \dots - 0.114796a - 0.918302 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -a^2u \\ -8.74081a^{21}u^3 - 5.12626a^{20}u^3 + \dots + 0.385900a - 0.158208 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -1.89040a^{21}u^3 + 4.17765a^{20}u^3 + \dots - 0.411276a + 1.19408 \\ -6.23246a^{21}u^3 - 3.30996a^{20}u^3 + \dots + 0.0353917a + 0.000856252 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 2.63867a^{21}u^3 + 13.9877a^{20}u^3 + \dots - 0.685670a + 0.182322 \\ -40.5506a^{21}u^3 + 7.86725a^{20}u^3 + \dots + 0.957810a - 0.211076 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -78.5727a^{21}u^3 - 69.4631a^{20}u^3 + \dots + 0.885204a - 0.918302 \\ -78.5727a^{21}u^3 - 69.4631a^{20}u^3 + \dots - 0.114796a - 0.918302 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -87.9371a^{21}u^3 - 42.3152a^{20}u^3 + \dots - 0.483802a + 0.569188 \\ -101.333a^{21}u^3 - 79.9473a^{20}u^3 + \dots - 0.395275a - 0.785595 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u^2 + 1 \\ u^3 + u^2 + 2u + 1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -57.6236a^{21}u^3 - 64.1783a^{20}u^3 + \dots + 1.49037a + 0.268510 \\ -22.6994a^{21}u^3 - 62.7768a^{20}u^3 + \dots - 1.47511a - 0.286750 \end{pmatrix}$$

(ii) Obstruction class = -1

(iii) Cusp Shapes =  $139.745a^{21}u^3 + 269.849a^{20}u^3 + \dots + 8.18196a - 11.5585$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
$c_1, c_4$	$(u^{11} + 3u^{10} + \dots + 2u + 1)^8$
$c_2, c_{10}$	$u^{88} + 3u^{87} + \dots + 313760u + 32689$
$c_3, c_9$	$u^{88} + u^{87} + \dots + 7015212u + 14269049$
$c_5, c_6, c_{11}$	$(u^4 + u^3 + 3u^2 + 2u + 1)^{22}$
$c_7$	$(u^{11} + 5u^{10} + 12u^9 + 15u^8 + 8u^7 - 4u^6 - 8u^5 - 3u^4 + 3u^3 + 3u^2 - 1)^8$
$c_8, c_{12}$	$u^{88} - u^{87} + \dots - 584u + 83$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
$c_1, c_4$	$(y^{11} + 7y^{10} + \dots - 6y - 1)^8$
$c_2, c_{10}$	$y^{88} + 35y^{87} + \dots + 45878166472y + 1068570721$
$c_3, c_9$	$y^{88} - 41y^{87} + \dots - 6370049061361272y + 203605759364401$
$c_5, c_6, c_{11}$	$(y^4 + 5y^3 + 7y^2 + 2y + 1)^{22}$
$c_7$	$(y^{11} - y^{10} + \dots + 6y - 1)^8$
$c_8, c_{12}$	$y^{88} - 21y^{87} + \dots - 714888y + 6889$

(vi) Complex Volumes and Cusp Shapes

Solutions to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.395123 + 0.506844I$ $a = 0.907790 + 0.226548I$ $b = -0.647304 + 1.109790I$	$3.19680 + 3.58563I$	$3.66733 - 1.31877I$
$u = -0.395123 + 0.506844I$ $a = -0.017246 - 0.753773I$ $b = -1.163050 + 0.611843I$	$-2.23683 + 1.28930I$	$-7.64088 + 4.99207I$
$u = -0.395123 + 0.506844I$ $a = 1.277480 + 0.112709I$ $b = -0.886862 + 0.535701I$	$0.32630 + 4.50932I$	$-7.34372 - 5.11480I$
$u = -0.395123 + 0.506844I$ $a = 0.578173 + 1.190000I$ $b = -0.944476 - 0.408288I$	$-3.81269 - 1.41510I$	$-16.4346 + 4.9087I$
$u = -0.395123 + 0.506844I$ $a = -0.281884 + 0.537705I$ $b = 1.71358 - 1.04898I$	$-1.29627 - 6.63139I$	$-4.6093 + 13.9215I$
$u = -0.395123 + 0.506844I$ $a = -0.72321 - 1.21563I$ $b = 0.189954 - 0.056607I$	$-1.85793 + 0.83268I$	$-7.80908 - 0.15485I$
$u = -0.395123 + 0.506844I$ $a = 0.43939 + 1.37682I$ $b = -0.568100 - 0.987543I$	$-1.85793 - 3.66289I$	$-7.80908 + 9.97234I$
$u = -0.395123 + 0.506844I$ $a = 0.53617 + 1.38915I$ $b = 0.292755 - 1.302630I$	$-2.23683 - 4.11951I$	$-7.64088 + 4.82542I$
$u = -0.395123 + 0.506844I$ $a = 0.40425 - 1.54629I$ $b = 1.31383 + 1.13328I$	$3.19680 - 6.41584I$	$3.66733 + 11.13625I$
$u = -0.395123 + 0.506844I$ $a = -0.40252 - 1.54965I$ $b = 0.831592 + 0.177152I$	$-3.81269 - 1.41510I$	$-16.4346 + 4.9087I$

Solutions to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.395123 + 0.506844I$ $a = -1.50585 - 0.57585I$ $b = 0.561889 - 0.602950I$	$0.32630 + 4.50932I$	$-7.34372 - 5.11480I$
$u = -0.395123 + 0.506844I$ $a = 0.251194 + 0.178954I$ $b = -0.901890 - 0.113767I$	$-1.85793 + 0.83268I$	$-7.80908 - 0.15485I$
$u = -0.395123 + 0.506844I$ $a = 0.66841 - 1.64193I$ $b = 0.871448 + 0.321314I$	$-1.85793 - 3.66289I$	$-7.80908 + 9.97234I$
$u = -0.395123 + 0.506844I$ $a = -1.81056 + 0.60810I$ $b = -1.292500 - 0.105875I$	$-1.29627 + 3.80118I$	0
$u = -0.395123 + 0.506844I$ $a = -1.98119 + 0.26736I$ $b = 0.473513 - 0.370593I$	$3.19680 + 3.58563I$	0
$u = -0.395123 + 0.506844I$ $a = -1.10659 - 1.68743I$ $b = -0.407184 + 1.157940I$	$-1.29627 + 3.80118I$	0
$u = -0.395123 + 0.506844I$ $a = -1.86351 - 0.84193I$ $b = -0.388860 - 0.289092I$	$-2.23683 + 1.28930I$	0
$u = -0.395123 + 0.506844I$ $a = 0.08448 + 2.04846I$ $b = -0.924867 - 1.064220I$	$0.32630 - 7.33953I$	0
$u = -0.395123 + 0.506844I$ $a = 1.87864 - 0.88694I$ $b = 0.915937 + 0.277129I$	$-2.23683 - 4.11951I$	0
$u = -0.395123 + 0.506844I$ $a = 0.42118 - 2.15310I$ $b = 1.071630 + 0.766574I$	$0.32630 - 7.33953I$	0

Solutions to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.395123 + 0.506844I$ $a = -0.13382 + 2.69650I$ $b = -0.624000 - 0.815866I$	$3.19680 - 6.41584I$	0
$u = -0.395123 + 0.506844I$ $a = 2.92664 + 1.09934I$ $b = 0.161153 + 0.355331I$	$-1.29627 - 6.63139I$	0
$u = -0.395123 - 0.506844I$ $a = 0.907790 - 0.226548I$ $b = -0.647304 - 1.109790I$	$3.19680 - 3.58563I$	$3.66733 + 1.31877I$
$u = -0.395123 - 0.506844I$ $a = -0.017246 + 0.753773I$ $b = -1.163050 - 0.611843I$	$-2.23683 - 1.28930I$	$-7.64088 - 4.99207I$
$u = -0.395123 - 0.506844I$ $a = 1.277480 - 0.112709I$ $b = -0.886862 - 0.535701I$	$0.32630 - 4.50932I$	$-7.34372 + 5.11480I$
$u = -0.395123 - 0.506844I$ $a = 0.578173 - 1.190000I$ $b = -0.944476 + 0.408288I$	$-3.81269 + 1.41510I$	$-16.4346 - 4.9087I$
$u = -0.395123 - 0.506844I$ $a = -0.281884 - 0.537705I$ $b = 1.71358 + 1.04898I$	$-1.29627 + 6.63139I$	$-4.6093 - 13.9215I$
$u = -0.395123 - 0.506844I$ $a = -0.72321 + 1.21563I$ $b = 0.189954 + 0.056607I$	$-1.85793 - 0.83268I$	$-7.80908 + 0.15485I$
$u = -0.395123 - 0.506844I$ $a = 0.43939 - 1.37682I$ $b = -0.568100 + 0.987543I$	$-1.85793 + 3.66289I$	$-7.80908 - 9.97234I$
$u = -0.395123 - 0.506844I$ $a = 0.53617 - 1.38915I$ $b = 0.292755 + 1.302630I$	$-2.23683 + 4.11951I$	$-7.64088 - 4.82542I$

Solutions to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.395123 - 0.506844I$ $a = 0.40425 + 1.54629I$ $b = 1.31383 - 1.13328I$	$3.19680 + 6.41584I$	$3.66733 - 11.13625I$
$u = -0.395123 - 0.506844I$ $a = -0.40252 + 1.54965I$ $b = 0.831592 - 0.177152I$	$-3.81269 + 1.41510I$	$-16.4346 - 4.9087I$
$u = -0.395123 - 0.506844I$ $a = -1.50585 + 0.57585I$ $b = 0.561889 + 0.602950I$	$0.32630 - 4.50932I$	$-7.34372 + 5.11480I$
$u = -0.395123 - 0.506844I$ $a = 0.251194 - 0.178954I$ $b = -0.901890 + 0.113767I$	$-1.85793 - 0.83268I$	$-7.80908 + 0.15485I$
$u = -0.395123 - 0.506844I$ $a = 0.66841 + 1.64193I$ $b = 0.871448 - 0.321314I$	$-1.85793 + 3.66289I$	$-7.80908 - 9.97234I$
$u = -0.395123 - 0.506844I$ $a = -1.81056 - 0.60810I$ $b = -1.292500 + 0.105875I$	$-1.29627 - 3.80118I$	0
$u = -0.395123 - 0.506844I$ $a = -1.98119 - 0.26736I$ $b = 0.473513 + 0.370593I$	$3.19680 - 3.58563I$	0
$u = -0.395123 - 0.506844I$ $a = -1.10659 + 1.68743I$ $b = -0.407184 - 1.157940I$	$-1.29627 - 3.80118I$	0
$u = -0.395123 - 0.506844I$ $a = -1.86351 + 0.84193I$ $b = -0.388860 + 0.289092I$	$-2.23683 - 1.28930I$	0
$u = -0.395123 - 0.506844I$ $a = 0.08448 - 2.04846I$ $b = -0.924867 + 1.064220I$	$0.32630 + 7.33953I$	0

Solutions to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.395123 - 0.506844I$ $a = 1.87864 + 0.88694I$ $b = 0.915937 - 0.277129I$	$-2.23683 + 4.11951I$	0
$u = -0.395123 - 0.506844I$ $a = 0.42118 + 2.15310I$ $b = 1.071630 - 0.766574I$	$0.32630 + 7.33953I$	0
$u = -0.395123 - 0.506844I$ $a = -0.13382 - 2.69650I$ $b = -0.624000 + 0.815866I$	$3.19680 + 6.41584I$	0
$u = -0.395123 - 0.506844I$ $a = 2.92664 - 1.09934I$ $b = 0.161153 - 0.355331I$	$-1.29627 + 6.63139I$	0
$u = -0.10488 + 1.55249I$ $a = -0.461183 + 0.892316I$ $b = -1.063630 - 0.517160I$	$-10.81440 - 3.16396I$	$-20.0881 + 2.5648I$
$u = -0.10488 + 1.55249I$ $a = 0.495958 - 0.888062I$ $b = 1.24404 + 1.37283I$	$-6.67544 - 9.08839I$	$-10.9972 + 12.5883I$
$u = -0.10488 + 1.55249I$ $a = -0.218137 + 1.032250I$ $b = -0.442822 - 0.518019I$	$-8.85968 - 0.91618I$	$-11.46256 - 2.49880I$
$u = -0.10488 + 1.55249I$ $a = -0.938059 + 0.686154I$ $b = -1.114430 - 0.398815I$	$-8.85968 - 5.41175I$	$-11.46256 + 7.62840I$
$u = -0.10488 + 1.55249I$ $a = -0.626036 + 0.515485I$ $b = -1.90563 - 1.18371I$	$-3.80495 - 8.16470I$	$0.01385 + 8.79231I$
$u = -0.10488 + 1.55249I$ $a = -0.826373 + 0.857145I$ $b = -1.32669 - 0.86311I$	$-6.67544 - 9.08839I$	$-10.9972 + 12.5883I$



Solutions to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.10488 + 1.55249I$ $a = 0.207448 - 0.731849I$ $b = 0.96687 + 1.52829I$	$-8.85968 - 5.41175I$	$-11.46256 + 7.62840I$
$u = -0.10488 + 1.55249I$ $a = 0.285531 - 0.704398I$ $b = 1.33695 + 0.80957I$	$-10.81440 - 3.16396I$	$-20.0881 + 2.5648I$
$u = -0.10488 + 1.55249I$ $a = 0.690763 - 0.277309I$ $b = 0.279626 - 0.077482I$	$-3.80495 + 1.83677I$	$0.01385 - 3.66271I$
$u = -0.10488 + 1.55249I$ $a = 0.267837 + 0.681491I$ $b = 0.96295 - 1.99576I$	$-8.29802 + 2.05233I$	$-8.26277 - 6.44798I$
$u = -0.10488 + 1.55249I$ $a = 0.607253 + 1.124130I$ $b = 0.352803 - 0.362834I$	$-9.23857 - 0.45956I$	$-11.29436 + 2.64813I$
$u = -0.10488 + 1.55249I$ $a = -0.035023 - 0.663384I$ $b = -0.29712 + 2.09193I$	$-9.23857 - 5.86837I$	$-11.29436 + 2.48147I$
$u = -0.10488 + 1.55249I$ $a = -0.026839 + 0.644591I$ $b = -0.483773 - 0.157378I$	$-6.67544 + 2.76046I$	$-10.99719 - 7.45875I$
$u = -0.10488 + 1.55249I$ $a = -1.354220 - 0.099900I$ $b = -1.033570 - 0.015201I$	$-9.23857 - 5.86837I$	$-11.29436 + 2.48147I$
$u = -0.10488 + 1.55249I$ $a = 1.32139 + 0.53100I$ $b = 1.086100 - 0.344342I$	$-8.29802 + 2.05233I$	$-8.26277 - 6.44798I$
$u = -0.10488 + 1.55249I$ $a = 0.67645 - 1.27316I$ $b = 0.734630 + 1.025980I$	$-3.80495 - 8.16470I$	$0. + 8.79231I$

Solutions to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.10488 + 1.55249I$ $a = 0.312972 - 0.306376I$ $b = 1.57967 + 0.44691I$	$-8.85968 - 0.91618I$	$-11.46256 - 2.49880I$
$u = -0.10488 + 1.55249I$ $a = 0.079956 - 0.317012I$ $b = 0.997908 + 0.109270I$	$-6.67544 + 2.76046I$	$-10.99719 - 7.45875I$
$u = -0.10488 + 1.55249I$ $a = 0.247931 + 0.210501I$ $b = 1.80889 - 0.82486I$	$-9.23857 - 0.45956I$	$-11.29436 + 2.64813I$
$u = -0.10488 + 1.55249I$ $a = 0.061794 + 0.175940I$ $b = -0.358075 - 1.101490I$	$-3.80495 + 1.83677I$	$0.01385 - 3.66271I$
$u = -0.10488 + 1.55249I$ $a = -0.065207 - 0.143109I$ $b = -2.24387 + 1.80044I$	$-8.29802 - 8.38025I$	$-8.2628 + 11.5776I$
$u = -0.10488 + 1.55249I$ $a = -1.25164 - 1.36078I$ $b = -0.229015 + 0.086225I$	$-8.29802 - 8.38025I$	0
$u = -0.10488 - 1.55249I$ $a = -0.461183 - 0.892316I$ $b = -1.063630 + 0.517160I$	$-10.81440 + 3.16396I$	$-20.0881 - 2.5648I$
$u = -0.10488 - 1.55249I$ $a = 0.495958 + 0.888062I$ $b = 1.24404 - 1.37283I$	$-6.67544 + 9.08839I$	$-10.9972 - 12.5883I$
$u = -0.10488 - 1.55249I$ $a = -0.218137 - 1.032250I$ $b = -0.442822 + 0.518019I$	$-8.85968 + 0.91618I$	$-11.46256 + 2.49880I$
$u = -0.10488 - 1.55249I$ $a = -0.938059 - 0.686154I$ $b = -1.114430 + 0.398815I$	$-8.85968 + 5.41175I$	$-11.46256 - 7.62840I$

Solutions to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.10488 - 1.55249I$ $a = -0.626036 - 0.515485I$ $b = -1.90563 + 1.18371I$	$-3.80495 + 8.16470I$	$0.01385 - 8.79231I$
$u = -0.10488 - 1.55249I$ $a = -0.826373 - 0.857145I$ $b = -1.32669 + 0.86311I$	$-6.67544 + 9.08839I$	$-10.9972 - 12.5883I$
$u = -0.10488 - 1.55249I$ $a = 0.207448 + 0.731849I$ $b = 0.96687 - 1.52829I$	$-8.85968 + 5.41175I$	$-11.46256 - 7.62840I$
$u = -0.10488 - 1.55249I$ $a = 0.285531 + 0.704398I$ $b = 1.33695 - 0.80957I$	$-10.81440 + 3.16396I$	$-20.0881 - 2.5648I$
$u = -0.10488 - 1.55249I$ $a = 0.690763 + 0.277309I$ $b = 0.279626 + 0.077482I$	$-3.80495 - 1.83677I$	$0.01385 + 3.66271I$
$u = -0.10488 - 1.55249I$ $a = 0.267837 - 0.681491I$ $b = 0.96295 + 1.99576I$	$-8.29802 - 2.05233I$	$-8.26277 + 6.44798I$
$u = -0.10488 - 1.55249I$ $a = 0.607253 - 1.124130I$ $b = 0.352803 + 0.362834I$	$-9.23857 + 0.45956I$	$-11.29436 - 2.64813I$
$u = -0.10488 - 1.55249I$ $a = -0.035023 + 0.663384I$ $b = -0.29712 - 2.09193I$	$-9.23857 + 5.86837I$	$-11.29436 - 2.48147I$
$u = -0.10488 - 1.55249I$ $a = -0.026839 - 0.644591I$ $b = -0.483773 + 0.157378I$	$-6.67544 - 2.76046I$	$-10.99719 + 7.45875I$
$u = -0.10488 - 1.55249I$ $a = -1.354220 + 0.099900I$ $b = -1.033570 + 0.015201I$	$-9.23857 + 5.86837I$	$-11.29436 - 2.48147I$

Solutions to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.10488 - 1.55249I$ $a = 1.32139 - 0.53100I$ $b = 1.086100 + 0.344342I$	$-8.29802 - 2.05233I$	$-8.26277 + 6.44798I$
$u = -0.10488 - 1.55249I$ $a = 0.67645 + 1.27316I$ $b = 0.734630 - 1.025980I$	$-3.80495 + 8.16470I$	$0. - 8.79231I$
$u = -0.10488 - 1.55249I$ $a = 0.312972 + 0.306376I$ $b = 1.57967 - 0.44691I$	$-8.85968 + 0.91618I$	$-11.46256 + 2.49880I$
$u = -0.10488 - 1.55249I$ $a = 0.079956 + 0.317012I$ $b = 0.997908 - 0.109270I$	$-6.67544 - 2.76046I$	$-10.99719 + 7.45875I$
$u = -0.10488 - 1.55249I$ $a = 0.247931 - 0.210501I$ $b = 1.80889 + 0.82486I$	$-9.23857 + 0.45956I$	$-11.29436 - 2.64813I$
$u = -0.10488 - 1.55249I$ $a = 0.061794 - 0.175940I$ $b = -0.358075 + 1.101490I$	$-3.80495 - 1.83677I$	$0.01385 + 3.66271I$
$u = -0.10488 - 1.55249I$ $a = -0.065207 + 0.143109I$ $b = -2.24387 - 1.80044I$	$-8.29802 + 8.38025I$	$-8.2628 - 11.5776I$
$u = -0.10488 - 1.55249I$ $a = -1.25164 + 1.36078I$ $b = -0.229015 - 0.086225I$	$-8.29802 + 8.38025I$	$0$

III.

$$I_3^u = \langle 1.28 \times 10^6 u^{24} - 1.29 \times 10^6 u^{23} + \dots + 9.65 \times 10^5 b - 3.64 \times 10^6, 1.09 \times 10^7 u^{24} + 1.22 \times 10^7 u^{23} + \dots + 9.65 \times 10^5 a - 9.08 \times 10^6, 3u^{25} + 3u^{24} + \dots - 3u + 1 \rangle$$

(i) Arc colorings

$$\begin{aligned} a_5 &= \begin{pmatrix} 1 \\ 0 \end{pmatrix} \\ a_{12} &= \begin{pmatrix} 0 \\ u \end{pmatrix} \\ a_6 &= \begin{pmatrix} 1 \\ -u^2 \end{pmatrix} \\ a_9 &= \begin{pmatrix} -11.3227u^{24} - 12.6476u^{23} + \dots - 24.9129u + 9.40603 \\ -1.32489u^{24} + 1.33328u^{23} + \dots - 1.91670u + 3.77424 \end{pmatrix} \\ a_1 &= \begin{pmatrix} 0.704452u^{24} + 0.00409856u^{23} + \dots + 7.42560u - 3.81888 \\ -0.700354u^{24} - 0.804853u^{23} + \dots - 2.11443u - 0.234817 \end{pmatrix} \\ a_4 &= \begin{pmatrix} 1.90570u^{24} + 0.232011u^{23} + \dots + 3.36279u - 3.03538 \\ -1.56919u^{24} - 1.80857u^{23} + \dots - 1.19451u - 0.868684 \end{pmatrix} \\ a_2 &= \begin{pmatrix} -1.33728u^{24} - 3.30659u^{23} + \dots + 2.81981u - 4.40145 \\ -1.83443u^{24} - 0.976439u^{23} + \dots - 3.23603u + 0.156149 \end{pmatrix} \\ a_8 &= \begin{pmatrix} -12.6476u^{24} - 11.3143u^{23} + \dots - 26.8296u + 13.1803 \\ -1.32489u^{24} + 1.33328u^{23} + \dots - 1.91670u + 3.77424 \end{pmatrix} \\ a_3 &= \begin{pmatrix} -2.43776u^{24} - 3.00552u^{23} + \dots - 3.83884u - 2.32182 \\ -1.96931u^{24} - 0.702641u^{23} + \dots - 5.73873u + 0.445761 \end{pmatrix} \\ a_{11} &= \begin{pmatrix} -u \\ u^3 + u \end{pmatrix} \\ a_7 &= \begin{pmatrix} u^2 + 1 \\ -u^4 - 2u^2 \end{pmatrix} \\ a_{10} &= \begin{pmatrix} -5.83876u^{24} - 1.95916u^{23} + \dots - 19.7988u + 6.79115 \\ -0.687315u^{24} + 1.97683u^{23} + \dots - 2.76064u + 3.16448 \end{pmatrix} \end{aligned}$$

(ii) Obstruction class = 1

$$(iii) \text{ Cusp Shapes} = \frac{16337289}{965461}u^{24} + \frac{20341383}{965461}u^{23} + \dots + \frac{53054017}{965461}u - \frac{16958173}{965461}$$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
$c_1$	$3(3u^{25} - 24u^{24} + \dots + 8u - 1)$
$c_2, c_{10}$	$u^{25} + 6u^{23} + \dots + 3u - 3$
$c_3, c_9$	$u^{25} + u^{24} + \dots + 14u - 3$
$c_4$	$3(3u^{25} + 24u^{24} + \dots + 8u + 1)$
$c_5, c_6$	$3(3u^{25} + 3u^{24} + \dots - 3u + 1)$
$c_7$	$3(3u^{25} - 33u^{24} + \dots - 5u^2 + 1)$
$c_8, c_{12}$	$u^{25} - u^{24} + \dots + 18u + 9$
$c_{11}$	$3(3u^{25} - 3u^{24} + \dots - 3u - 1)$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
$c_1, c_4$	$9(9y^{25} + 144y^{24} + \dots - 44y - 1)$
$c_2, c_{10}$	$y^{25} + 12y^{24} + \dots - 9y - 9$
$c_3, c_9$	$y^{25} - 11y^{24} + \dots + 46y - 9$
$c_5, c_6, c_{11}$	$9(9y^{25} + 261y^{24} + \dots - 23y - 1)$
$c_7$	$9(9y^{25} - 27y^{24} + \dots + 10y - 1)$
$c_8, c_{12}$	$y^{25} - 7y^{24} + \dots + 756y - 81$

(vi) Complex Volumes and Cusp Shapes

Solutions to $I_3^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.139409 + 0.935691I$ $a = 0.84933 - 1.28204I$ $b = 1.08118 + 0.97344I$	$1.33306 - 5.44425I$	$-3.58587 + 7.46892I$
$u = -0.139409 - 0.935691I$ $a = 0.84933 + 1.28204I$ $b = 1.08118 - 0.97344I$	$1.33306 + 5.44425I$	$-3.58587 - 7.46892I$
$u = -1.29971$ $a = -0.393591$ $b = 0.511554$	$-2.82749$	$-24.4960$
$u = -0.065043 + 0.681628I$ $a = 0.849488 + 0.907455I$ $b = -0.673799 + 0.520011I$	$2.05503 + 4.77815I$	$-2.21061 - 7.54120I$
$u = -0.065043 - 0.681628I$ $a = 0.849488 - 0.907455I$ $b = -0.673799 - 0.520011I$	$2.05503 - 4.77815I$	$-2.21061 + 7.54120I$
$u = -0.527060 + 0.342003I$ $a = -0.45508 - 1.98170I$ $b = 0.917604 + 0.888839I$	$0.58769 - 6.44489I$	$-3.50337 + 5.24964I$
$u = -0.527060 - 0.342003I$ $a = -0.45508 + 1.98170I$ $b = 0.917604 - 0.888839I$	$0.58769 + 6.44489I$	$-3.50337 - 5.24964I$
$u = -0.07693 + 1.45578I$ $a = -0.140733 + 0.544149I$ $b = -0.781335 - 0.246736I$	$-6.47742 + 1.78174I$	$-8.59786 + 1.29099I$
$u = -0.07693 - 1.45578I$ $a = -0.140733 - 0.544149I$ $b = -0.781335 + 0.246736I$	$-6.47742 - 1.78174I$	$-8.59786 - 1.29099I$
$u = 0.333604 + 0.407699I$ $a = 1.52958 - 0.56643I$ $b = 0.741208 + 0.434646I$	$-2.22833 - 2.22988I$	$-8.23719 + 4.92806I$



Solutions to $I_3^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.333604 - 0.407699I$		
$a = 1.52958 + 0.56643I$	$-2.22833 + 2.22988I$	$-8.23719 - 4.92806I$
$b = 0.741208 - 0.434646I$		
$u = 0.355757 + 0.361090I$		
$a = -2.20095 + 0.15407I$	$-1.37213 + 5.75583I$	$-4.99345 - 3.86999I$
$b = -0.838634 - 0.739932I$		
$u = 0.355757 - 0.361090I$		
$a = -2.20095 - 0.15407I$	$-1.37213 - 5.75583I$	$-4.99345 + 3.86999I$
$b = -0.838634 + 0.739932I$		
$u = 0.10906 + 1.50963I$		
$a = -0.733282 + 0.691650I$	$-8.40480 - 0.76829I$	$-7.10287 + 0.I$
$b = -1.12411 - 1.03156I$		
$u = 0.10906 - 1.50963I$		
$a = -0.733282 - 0.691650I$	$-8.40480 + 0.76829I$	$-7.10287 + 0.I$
$b = -1.12411 + 1.03156I$		
$u = 0.09232 + 1.53624I$		
$a = 0.765943 - 0.674345I$	$-7.96724 + 7.26085I$	$-4.39305 - 3.18345I$
$b = 1.10667 + 1.11442I$		
$u = 0.09232 - 1.53624I$		
$a = 0.765943 + 0.674345I$	$-7.96724 - 7.26085I$	$-4.39305 + 3.18345I$
$b = 1.10667 - 1.11442I$		
$u = -0.11080 + 1.54481I$		
$a = -0.657300 + 0.877205I$	$-6.06586 - 8.44559I$	$-3.25508 + 4.03663I$
$b = -1.28228 - 1.11260I$		
$u = -0.11080 - 1.54481I$		
$a = -0.657300 - 0.877205I$	$-6.06586 + 8.44559I$	$-3.25508 - 4.03663I$
$b = -1.28228 + 1.11260I$		
$u = -0.11068 + 1.56442I$		
$a = -0.373565 + 0.755507I$	$-9.98771 - 3.11005I$	$-7.23130 + 1.80254I$
$b = -1.140590 - 0.668030I$		

Solutions to $I_3^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.11068 - 1.56442I$		
$a = -0.373565 - 0.755507I$	$-9.98771 + 3.11005I$	$-7.23130 - 1.80254I$
$b = -1.140590 + 0.668030I$		
$u = 0.17655 + 1.58755I$		
$a = 0.358080 - 0.208144I$	$-7.17425 + 5.89770I$	$-4.52396 - 3.09477I$
$b = 0.393656 + 0.531720I$		
$u = 0.17655 - 1.58755I$		
$a = 0.358080 + 0.208144I$	$-7.17425 - 5.89770I$	$-4.52396 + 3.09477I$
$b = 0.393656 - 0.531720I$		
$u = 0.112488 + 0.335309I$		
$a = 1.90528 - 1.87984I$	$-2.23230 - 2.18556I$	$-9.78413 + 4.86470I$
$b = 0.844648 + 0.427399I$		
$u = 0.112488 - 0.335309I$		
$a = 1.90528 + 1.87984I$	$-2.23230 + 2.18556I$	$-9.78413 - 4.86470I$
$b = 0.844648 - 0.427399I$		

#### IV. u-Polynomials

Crossings	u-Polynomials at each crossing
$c_1$	$9(u^{11} + 3u^{10} + \dots + 2u + 1)^8(3u^{25} - 24u^{24} + \dots + 8u - 1)$ $\cdot (3u^{40} - 63u^{39} + \dots - 4480u + 256)$
$c_2, c_{10}$	$(u^{25} + 6u^{23} + \dots + 3u - 3)(u^{40} + 4u^{38} + \dots - 3u + 3)$ $\cdot (u^{88} + 3u^{87} + \dots + 313760u + 32689)$
$c_3, c_9$	$(u^{25} + u^{24} + \dots + 14u - 3)(u^{40} - 3u^{39} + \dots + 10u + 25)$ $\cdot (u^{88} + u^{87} + \dots + 7015212u + 14269049)$
$c_4$	$9(u^{11} + 3u^{10} + \dots + 2u + 1)^8(3u^{25} + 24u^{24} + \dots + 8u + 1)$ $\cdot (3u^{40} - 63u^{39} + \dots - 4480u + 256)$
$c_5, c_6$	$9(u^4 + u^3 + 3u^2 + 2u + 1)^{22}(3u^{25} + 3u^{24} + \dots - 3u + 1)$ $\cdot (3u^{40} - 66u^{39} + \dots - 43008u + 2048)$
$c_7$	$9(u^{11} + 5u^{10} + 12u^9 + 15u^8 + 8u^7 - 4u^6 - 8u^5 - 3u^4 + 3u^3 + 3u^2 - 1)^8$ $\cdot (3u^{25} - 33u^{24} + \dots - 5u^2 + 1)(3u^{40} - 90u^{39} + \dots - 96u + 16)$
$c_8, c_{12}$	$(u^{25} - u^{24} + \dots + 18u + 9)(u^{40} + u^{39} + \dots + 36u + 9)$ $\cdot (u^{88} - u^{87} + \dots - 584u + 83)$
$c_{11}$	$9(u^4 + u^3 + 3u^2 + 2u + 1)^{22}(3u^{25} - 3u^{24} + \dots - 3u - 1)$ $\cdot (3u^{40} - 66u^{39} + \dots - 43008u + 2048)$

## V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
$c_1, c_4$	$81(y^{11} + 7y^{10} + \dots - 6y - 1)^8(9y^{25} + 144y^{24} + \dots - 44y - 1)$ $\cdot (9y^{40} + 207y^{39} + \dots + 876544y + 65536)$
$c_2, c_{10}$	$(y^{25} + 12y^{24} + \dots - 9y - 9)(y^{40} + 8y^{39} + \dots - 63y + 9)$ $\cdot (y^{88} + 35y^{87} + \dots + 45878166472y + 1068570721)$
$c_3, c_9$	$(y^{25} - 11y^{24} + \dots + 46y - 9)(y^{40} - 19y^{39} + \dots - 1150y + 625)$ $\cdot (y^{88} - 41y^{87} + \dots - 6370049061361272y + 203605759364401)$
$c_5, c_6, c_{11}$	$81(y^4 + 5y^3 + \dots + 2y + 1)^{22}(9y^{25} + 261y^{24} + \dots - 23y - 1)$ $\cdot (9y^{40} + 306y^{39} + \dots + 2097152y + 4194304)$
$c_7$	$81(y^{11} - y^{10} + \dots + 6y - 1)^8(9y^{25} - 27y^{24} + \dots + 10y - 1)$ $\cdot (9y^{40} - 36y^{39} + \dots - 12928y + 256)$
$c_8, c_{12}$	$(y^{25} - 7y^{24} + \dots + 756y - 81)(y^{40} + y^{39} + \dots + 324y + 81)$ $\cdot (y^{88} - 21y^{87} + \dots - 714888y + 6889)$