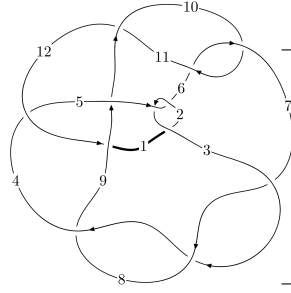
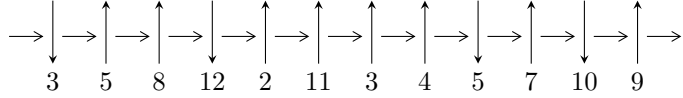


12n<sub>0348</sub> (K12n<sub>0348</sub>)



A knot diagram<sup>1</sup>

**Linearized knot diagram**



**Solving Sequence**

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

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

$$I_1^u = \langle 2.60524 \times 10^{82} u^{54} + 4.32163 \times 10^{82} u^{53} + \dots + 2.31107 \times 10^{83} b + 9.23794 \times 10^{83}, \\ - 5.24600 \times 10^{82} u^{54} - 1.43004 \times 10^{83} u^{53} + \dots + 2.31107 \times 10^{83} a + 3.49791 \times 10^{83}, \\ u^{55} + 3u^{54} + \dots - 12u - 11 \rangle$$

$$I_2^u = \langle u^{15} - u^{14} + \dots + b + 5, 10u^{15} - 26u^{14} + \dots + a - 13, u^{16} - 2u^{15} + \dots + 8u^2 + 1 \rangle$$

\* 2 irreducible components of  $\dim_{\mathbb{C}} = 0$ , with total 71 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.

$$\mathbf{I. } I_1^u = \langle 2.61 \times 10^{82} u^{54} + 4.32 \times 10^{82} u^{53} + \dots + 2.31 \times 10^{83} b + 9.24 \times 10^{83}, -5.25 \times 10^{82} u^{54} - 1.43 \times 10^{83} u^{53} + \dots + 2.31 \times 10^{83} a + 3.50 \times 10^{83}, u^{55} + 3u^{54} + \dots - 12u - 11 \rangle$$

(i) Arc colorings

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

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

$$a_5 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.226994u^{54} + 0.618778u^{53} + \dots - 10.4791u - 1.51354 \\ -0.112728u^{54} - 0.186996u^{53} + \dots - 4.08158u - 3.99725 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.114266u^{54} + 0.431782u^{53} + \dots - 14.5607u - 5.51080 \\ -0.112728u^{54} - 0.186996u^{53} + \dots - 4.08158u - 3.99725 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.107387u^{54} + 0.305810u^{53} + \dots - 8.15437u - 0.534709 \\ -0.0799915u^{54} - 0.0948860u^{53} + \dots - 5.42127u - 5.15595 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.908704u^{54} + 3.08911u^{53} + \dots - 23.8651u - 16.2385 \\ -0.447095u^{54} - 1.15334u^{53} + \dots + 7.94778u - 2.70823 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -0.172479u^{54} - 1.13662u^{53} + \dots + 24.4494u + 14.6350 \\ -0.0737233u^{54} - 0.0490777u^{53} + \dots + 2.74375u - 3.73277 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.0660274u^{54} - 0.351978u^{53} + \dots + 12.3782u + 11.5567 \\ -0.207205u^{54} - 0.434267u^{53} + \dots + 6.19685u - 2.97237 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0.0217548u^{54} - 0.00585046u^{53} + \dots - 3.61926u - 1.19908 \\ 0.340641u^{54} + 0.992765u^{53} + \dots - 11.1110u + 1.49013 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0.281862u^{54} + 1.12478u^{53} + \dots - 14.1050u - 9.98072 \\ -0.0168458u^{54} - 0.208276u^{53} + \dots + 6.42777u + 1.43253 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0.520294u^{54} + 1.83552u^{53} + \dots - 15.1557u - 6.44576 \\ -0.335273u^{54} - 1.03983u^{53} + \dots + 8.71346u - 0.0705450 \end{pmatrix}$$

(ii) Obstruction class = -1

(iii) Cusp Shapes =  $-0.313768u^{54} - 0.790410u^{53} + \dots + 2.10169u - 8.23967$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
$c_1$	$u^{55} + 63u^{54} + \dots - 20918u - 169$
$c_2, c_5$	$u^{55} + u^{54} + \dots + 86u - 13$
$c_3, c_7, c_8$	$u^{55} + u^{54} + \dots + 22u^2 - 23$
$c_4$	$u^{55} + 3u^{54} + \dots - 12u - 11$
$c_6, c_{10}$	$u^{55} - 3u^{54} + \dots + 84u - 17$
$c_9$	$u^{55} - u^{54} + \dots - 325045u - 237989$
$c_{11}$	$u^{55} + 37u^{54} + \dots - 1784u - 289$
$c_{12}$	$u^{55} + 11u^{54} + \dots + 89882u + 16337$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
$c_1$	$y^{55} - 137y^{54} + \dots + 108847246y - 28561$
$c_2, c_5$	$y^{55} + 63y^{54} + \dots - 20918y - 169$
$c_3, c_7, c_8$	$y^{55} - 43y^{54} + \dots + 1012y - 529$
$c_4$	$y^{55} + 21y^{54} + \dots - 4740y - 121$
$c_6, c_{10}$	$y^{55} + 37y^{54} + \dots - 1784y - 289$
$c_9$	$y^{55} - 23y^{54} + \dots - 63034731065y - 56638764121$
$c_{11}$	$y^{55} - 27y^{54} + \dots - 78420y - 83521$
$c_{12}$	$y^{55} - 3y^{54} + \dots + 4960988170y - 266897569$

(vi) Complex Volumes and Cusp Shapes

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.815485 + 0.609992I$ $a = 0.716376 - 0.340161I$ $b = -1.240990 + 0.607346I$	$-3.46247 - 2.90307I$	$4.19084 + 1.32778I$
$u = -0.815485 - 0.609992I$ $a = 0.716376 + 0.340161I$ $b = -1.240990 - 0.607346I$	$-3.46247 + 2.90307I$	$4.19084 - 1.32778I$
$u = -0.766697 + 0.587191I$ $a = 0.121340 - 0.656968I$ $b = -0.288763 - 0.617191I$	$-3.36899 + 1.08421I$	$-1.34816 - 2.39352I$
$u = -0.766697 - 0.587191I$ $a = 0.121340 + 0.656968I$ $b = -0.288763 + 0.617191I$	$-3.36899 - 1.08421I$	$-1.34816 + 2.39352I$
$u = -0.342407 + 0.888408I$ $a = -0.352056 + 0.222676I$ $b = 0.093000 + 0.425608I$	$0.55048 + 1.48371I$	$4.97976 - 5.81830I$
$u = -0.342407 - 0.888408I$ $a = -0.352056 - 0.222676I$ $b = 0.093000 - 0.425608I$	$0.55048 - 1.48371I$	$4.97976 + 5.81830I$
$u = -0.181810 + 1.053110I$ $a = -0.138751 + 0.733731I$ $b = 0.759862 + 0.688944I$	$-3.21509 + 2.62066I$	$1.87813 - 3.80550I$
$u = -0.181810 - 1.053110I$ $a = -0.138751 - 0.733731I$ $b = 0.759862 - 0.688944I$	$-3.21509 - 2.62066I$	$1.87813 + 3.80550I$
$u = -0.722892 + 0.803711I$ $a = 2.14118 - 1.56678I$ $b = -1.38166 - 0.45730I$	$-7.22887 + 2.83374I$	$2.38389 - 3.49922I$
$u = -0.722892 - 0.803711I$ $a = 2.14118 + 1.56678I$ $b = -1.38166 + 0.45730I$	$-7.22887 - 2.83374I$	$2.38389 + 3.49922I$

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.173002 + 0.887529I$ $a = 2.29349 + 0.99676I$ $b = -1.53634 + 0.17332I$	$7.27746 - 3.45379I$	$10.27416 + 1.32847I$
$u = 0.173002 - 0.887529I$ $a = 2.29349 - 0.99676I$ $b = -1.53634 - 0.17332I$	$7.27746 + 3.45379I$	$10.27416 - 1.32847I$
$u = 0.628360 + 0.597283I$ $a = 1.092470 - 0.206282I$ $b = -0.537582 - 0.337146I$	$-0.59371 - 3.25938I$	$2.97394 - 0.66796I$
$u = 0.628360 - 0.597283I$ $a = 1.092470 + 0.206282I$ $b = -0.537582 + 0.337146I$	$-0.59371 + 3.25938I$	$2.97394 + 0.66796I$
$u = -0.711127 + 0.948848I$ $a = -0.966349 + 0.247086I$ $b = 1.34857 - 0.64792I$	$-6.77729 + 2.66101I$	0
$u = -0.711127 - 0.948848I$ $a = -0.966349 - 0.247086I$ $b = 1.34857 + 0.64792I$	$-6.77729 - 2.66101I$	0
$u = 0.800334 + 0.884723I$ $a = 0.677563 - 0.092095I$ $b = -0.119062 + 1.076690I$	$-6.90102 - 2.99599I$	0
$u = 0.800334 - 0.884723I$ $a = 0.677563 + 0.092095I$ $b = -0.119062 - 1.076690I$	$-6.90102 + 2.99599I$	0
$u = -0.598983 + 1.067040I$ $a = 0.455882 - 0.093492I$ $b = 0.309654 - 0.497235I$	$-1.80177 + 4.16956I$	0
$u = -0.598983 - 1.067040I$ $a = 0.455882 + 0.093492I$ $b = 0.309654 + 0.497235I$	$-1.80177 - 4.16956I$	0

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.992759 + 0.740017I$ $a = -0.766608 - 0.114418I$ $b = 0.059829 - 0.980635I$	$-11.75940 + 2.31711I$	0
$u = 0.992759 - 0.740017I$ $a = -0.766608 + 0.114418I$ $b = 0.059829 + 0.980635I$	$-11.75940 - 2.31711I$	0
$u = 0.682830 + 0.316170I$ $a = 0.666716 - 0.682016I$ $b = -0.911518 - 0.401923I$	$-1.67294 + 2.77507I$	$2.05247 - 3.78121I$
$u = 0.682830 - 0.316170I$ $a = 0.666716 + 0.682016I$ $b = -0.911518 + 0.401923I$	$-1.67294 - 2.77507I$	$2.05247 + 3.78121I$
$u = -0.648251 + 1.072510I$ $a = -0.698611 + 0.921968I$ $b = 0.946204 + 0.085319I$	$1.85295 + 1.10015I$	0
$u = -0.648251 - 1.072510I$ $a = -0.698611 - 0.921968I$ $b = 0.946204 - 0.085319I$	$1.85295 - 1.10015I$	0
$u = 0.577460 + 1.116900I$ $a = -1.83686 - 1.43049I$ $b = 1.113190 - 0.366716I$	$0.58204 - 7.69168I$	0
$u = 0.577460 - 1.116900I$ $a = -1.83686 + 1.43049I$ $b = 1.113190 + 0.366716I$	$0.58204 + 7.69168I$	0
$u = 0.461578 + 1.175220I$ $a = 1.85272 + 0.82840I$ $b = -1.234160 + 0.257600I$	$4.47795 - 4.19285I$	0
$u = 0.461578 - 1.175220I$ $a = 1.85272 - 0.82840I$ $b = -1.234160 - 0.257600I$	$4.47795 + 4.19285I$	0

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.264238 + 0.685778I$ $a = 0.53501 - 4.66877I$ $b = -0.937038 + 0.123287I$	$-4.80330 - 0.56532I$	$4.34221 - 3.19087I$
$u = -0.264238 - 0.685778I$ $a = 0.53501 + 4.66877I$ $b = -0.937038 - 0.123287I$	$-4.80330 + 0.56532I$	$4.34221 + 3.19087I$
$u = -0.712473 + 1.066430I$ $a = -1.88688 + 1.00057I$ $b = 1.41881 + 0.51710I$	$-2.09404 + 8.67779I$	0
$u = -0.712473 - 1.066430I$ $a = -1.88688 - 1.00057I$ $b = 1.41881 - 0.51710I$	$-2.09404 - 8.67779I$	0
$u = -0.004077 + 0.715907I$ $a = -3.38106 - 1.04947I$ $b = 1.53871 + 0.03923I$	$6.53124 + 2.75926I$	$7.77095 - 4.45417I$
$u = -0.004077 - 0.715907I$ $a = -3.38106 + 1.04947I$ $b = 1.53871 - 0.03923I$	$6.53124 - 2.75926I$	$7.77095 + 4.45417I$
$u = 0.119783 + 0.703838I$ $a = -0.805794 + 0.305998I$ $b = 0.362409 + 0.453693I$	$1.003320 + 0.902305I$	$8.30926 - 5.19000I$
$u = 0.119783 - 0.703838I$ $a = -0.805794 - 0.305998I$ $b = 0.362409 - 0.453693I$	$1.003320 - 0.902305I$	$8.30926 + 5.19000I$
$u = 0.995644 + 0.888830I$ $a = -1.031330 - 0.818819I$ $b = 1.356040 - 0.197721I$	$1.77258 - 3.90284I$	0
$u = 0.995644 - 0.888830I$ $a = -1.031330 + 0.818819I$ $b = 1.356040 + 0.197721I$	$1.77258 + 3.90284I$	0



Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.126954 + 1.333810I$ $a = -1.95011 + 0.22052I$ $b = 1.128790 - 0.066319I$	$3.06772 - 0.82361I$	0
$u = 0.126954 - 1.333810I$ $a = -1.95011 - 0.22052I$ $b = 1.128790 + 0.066319I$	$3.06772 + 0.82361I$	0
$u = 0.813384 + 1.075410I$ $a = -0.501571 + 0.076047I$ $b = 0.070094 - 1.130120I$	$-10.66830 - 8.91439I$	0
$u = 0.813384 - 1.075410I$ $a = -0.501571 - 0.076047I$ $b = 0.070094 + 1.130120I$	$-10.66830 + 8.91439I$	0
$u = 0.650155$ $a = -0.555963$ $b = 0.901498$	1.30158	8.19850
$u = -1.222360 + 0.639856I$ $a = -0.680782 + 0.122900I$ $b = 1.288840 - 0.499125I$	$-7.94459 - 7.58411I$	0
$u = -1.222360 - 0.639856I$ $a = -0.680782 - 0.122900I$ $b = 1.288840 + 0.499125I$	$-7.94459 + 7.58411I$	0
$u = -1.035520 + 0.922159I$ $a = 0.550770 - 0.481659I$ $b = -0.990991 - 0.201391I$	$0.50650 + 5.61395I$	0
$u = -1.035520 - 0.922159I$ $a = 0.550770 + 0.481659I$ $b = -0.990991 + 0.201391I$	$0.50650 - 5.61395I$	0
$u = -0.82989 + 1.20266I$ $a = 1.60979 - 0.92855I$ $b = -1.40604 - 0.54304I$	$-6.0591 + 14.8324I$	0

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.82989 - 1.20266I$ $a = 1.60979 + 0.92855I$ $b = -1.40604 + 0.54304I$	$-6.0591 - 14.8324I$	0
$u = 0.69303 + 1.48402I$ $a = 1.37520 + 0.37724I$ $b = -1.330370 + 0.097750I$	$3.52220 - 3.74412I$	0
$u = 0.69303 - 1.48402I$ $a = 1.37520 - 0.37724I$ $b = -1.330370 - 0.097750I$	$3.52220 + 3.74412I$	0
$u = -0.033996 + 0.282179I$ $a = -0.63193 - 1.74588I$ $b = -0.830222 - 0.601183I$	$-1.96989 + 2.37563I$	$-2.00410 - 0.86695I$
$u = -0.033996 - 0.282179I$ $a = -0.63193 + 1.74588I$ $b = -0.830222 + 0.601183I$	$-1.96989 - 2.37563I$	$-2.00410 + 0.86695I$

**II.**

$$I_2^u = \langle u^{15} - u^{14} + \dots + b + 5, 10u^{15} - 26u^{14} + \dots + a - 13, u^{16} - 2u^{15} + \dots + 8u^2 + 1 \rangle$$

**(i) Arc colorings**

$$\begin{aligned} a_4 &= \begin{pmatrix} 1 \\ 0 \end{pmatrix} \\ a_{12} &= \begin{pmatrix} 0 \\ u \end{pmatrix} \\ a_5 &= \begin{pmatrix} 1 \\ u^2 \end{pmatrix} \\ a_8 &= \begin{pmatrix} -10u^{15} + 26u^{14} + \dots - 32u + 13 \\ -u^{15} + u^{14} + \dots - 6u - 5 \end{pmatrix} \\ a_9 &= \begin{pmatrix} -11u^{15} + 27u^{14} + \dots - 38u + 8 \\ -u^{15} + u^{14} + \dots - 6u - 5 \end{pmatrix} \\ a_{10} &= \begin{pmatrix} -6u^{15} + 16u^{14} + \dots - 21u + 8 \\ -2u^{15} + 4u^{14} + \dots - 11u - 4 \end{pmatrix} \\ a_1 &= \begin{pmatrix} -26u^{15} + 57u^{14} + \dots - 103u + 12 \\ -u^{15} + u^{14} + \dots - 5u - 7 \end{pmatrix} \\ a_3 &= \begin{pmatrix} 6u^{15} - 13u^{14} + \dots + 31u - 6 \\ u^{15} - 2u^{14} + \dots + 2u + 1 \end{pmatrix} \\ a_2 &= \begin{pmatrix} 5u^{15} - 11u^{14} + \dots + 23u - 6 \\ u^{15} - 2u^{14} + \dots + 3u + 1 \end{pmatrix} \\ a_6 &= \begin{pmatrix} 6u^{15} - 7u^{14} + \dots + 20u + 24 \\ -u^{15} + 3u^{14} + \dots - 8u + 3 \end{pmatrix} \\ a_7 &= \begin{pmatrix} -2u^{15} - 8u^{13} + \dots - 10u - 10 \\ -3u^{15} + 6u^{14} + \dots + 2u - 1 \end{pmatrix} \\ a_{11} &= \begin{pmatrix} -13u^{15} + 30u^{14} + \dots - 46u + 14 \\ -2u^{15} + 5u^{14} + \dots - 11u - 4 \end{pmatrix} \end{aligned}$$

**(ii) Obstruction class = 1**

**(iii) Cusp Shapes** =  $-13u^{15} + 19u^{14} - 69u^{13} + 42u^{12} - 161u^{11} + 50u^{10} - 278u^9 - 24u^8 - 320u^7 - 121u^6 - 269u^5 - 156u^4 - 127u^3 - 89u^2 - 34u - 13$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
$c_1$	$u^{16} - 16u^{15} + \dots - 10u + 1$
$c_2$	$u^{16} + 8u^{14} + \dots - 2u + 1$
$c_3$	$u^{16} - 9u^{14} + \dots - 2u + 1$
$c_4$	$u^{16} - 2u^{15} + \dots + 8u^2 + 1$
$c_5$	$u^{16} + 8u^{14} + \dots + 2u + 1$
$c_6$	$u^{16} - 2u^{15} + \dots + 6u^2 + 1$
$c_7, c_8$	$u^{16} - 9u^{14} + \dots + 2u + 1$
$c_9$	$u^{16} + 5u^{14} + \dots - u + 1$
$c_{10}$	$u^{16} + 2u^{15} + \dots + 6u^2 + 1$
$c_{11}$	$u^{16} + 10u^{15} + \dots + 12u + 1$
$c_{12}$	$u^{16} + 4u^{15} + \dots - 4u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
$c_1$	$y^{16} - 28y^{15} + \dots + 14y + 1$
$c_2, c_5$	$y^{16} + 16y^{15} + \dots + 10y + 1$
$c_3, c_7, c_8$	$y^{16} - 18y^{15} + \dots - 8y + 1$
$c_4$	$y^{16} + 10y^{15} + \dots + 16y + 1$
$c_6, c_{10}$	$y^{16} + 10y^{15} + \dots + 12y + 1$
$c_9$	$y^{16} + 10y^{15} + \dots - 3y + 1$
$c_{11}$	$y^{16} + 2y^{15} + \dots + 116y^2 + 1$
$c_{12}$	$y^{16} - 18y^{15} + \dots - 18y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.350363 + 0.993044I$ $a = 2.25243 + 0.60422I$ $b = -1.57289 + 0.06836I$	$7.04961 - 4.51747I$	$8.24086 + 7.83910I$
$u = 0.350363 - 0.993044I$ $a = 2.25243 - 0.60422I$ $b = -1.57289 - 0.06836I$	$7.04961 + 4.51747I$	$8.24086 - 7.83910I$
$u = -0.456936 + 0.974335I$ $a = 0.404980 - 0.137063I$ $b = -0.206051 + 0.434618I$	$0.278731 + 0.366040I$	$1.63031 + 1.02999I$
$u = -0.456936 - 0.974335I$ $a = 0.404980 + 0.137063I$ $b = -0.206051 - 0.434618I$	$0.278731 - 0.366040I$	$1.63031 - 1.02999I$
$u = -0.662155 + 0.891568I$ $a = -0.504166 - 0.322965I$ $b = 0.445897 - 0.129011I$	$-0.48155 + 4.22871I$	$4.96713 - 5.93885I$
$u = -0.662155 - 0.891568I$ $a = -0.504166 + 0.322965I$ $b = 0.445897 + 0.129011I$	$-0.48155 - 4.22871I$	$4.96713 + 5.93885I$
$u = 0.298303 + 0.834732I$ $a = -2.78859 - 0.76333I$ $b = 1.53191 + 0.14525I$	$6.39960 + 1.79888I$	$5.99730 + 2.83305I$
$u = 0.298303 - 0.834732I$ $a = -2.78859 + 0.76333I$ $b = 1.53191 - 0.14525I$	$6.39960 - 1.79888I$	$5.99730 - 2.83305I$
$u = -0.151801 + 0.742615I$ $a = -0.396145 + 0.508651I$ $b = 0.802627 + 0.720454I$	$-1.41056 + 2.69993I$	$9.52017 - 6.18932I$
$u = -0.151801 - 0.742615I$ $a = -0.396145 - 0.508651I$ $b = 0.802627 - 0.720454I$	$-1.41056 - 2.69993I$	$9.52017 + 6.18932I$

Solutions to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.00049 + 1.08266I$		
$a = -1.056910 - 0.800884I$	$2.43732 - 5.15744I$	$6.97467 + 7.14862I$
$b = 1.264430 - 0.093351I$		
$u = 1.00049 - 1.08266I$		
$a = -1.056910 + 0.800884I$	$2.43732 + 5.15744I$	$6.97467 - 7.14862I$
$b = 1.264430 + 0.093351I$		
$u = -0.065045 + 0.511799I$		
$a = 0.23309 - 5.26621I$	$-4.96869 + 1.33549I$	$1.55153 - 5.45385I$
$b = -0.984688 - 0.343350I$		
$u = -0.065045 - 0.511799I$		
$a = 0.23309 + 5.26621I$	$-4.96869 - 1.33549I$	$1.55153 + 5.45385I$
$b = -0.984688 + 0.343350I$		
$u = 0.68678 + 1.39506I$		
$a = 1.35532 + 0.47861I$	$3.85501 - 2.73104I$	$9.11804 - 0.26783I$
$b = -1.281240 + 0.198078I$		
$u = 0.68678 - 1.39506I$		
$a = 1.35532 - 0.47861I$	$3.85501 + 2.73104I$	$9.11804 + 0.26783I$
$b = -1.281240 - 0.198078I$		

### III. u-Polynomials

Crossings	u-Polynomials at each crossing
$c_1$	$(u^{16} - 16u^{15} + \dots - 10u + 1)(u^{55} + 63u^{54} + \dots - 20918u - 169)$
$c_2$	$(u^{16} + 8u^{14} + \dots - 2u + 1)(u^{55} + u^{54} + \dots + 86u - 13)$
$c_3$	$(u^{16} - 9u^{14} + \dots - 2u + 1)(u^{55} + u^{54} + \dots + 22u^2 - 23)$
$c_4$	$(u^{16} - 2u^{15} + \dots + 8u^2 + 1)(u^{55} + 3u^{54} + \dots - 12u - 11)$
$c_5$	$(u^{16} + 8u^{14} + \dots + 2u + 1)(u^{55} + u^{54} + \dots + 86u - 13)$
$c_6$	$(u^{16} - 2u^{15} + \dots + 6u^2 + 1)(u^{55} - 3u^{54} + \dots + 84u - 17)$
$c_7, c_8$	$(u^{16} - 9u^{14} + \dots + 2u + 1)(u^{55} + u^{54} + \dots + 22u^2 - 23)$
$c_9$	$(u^{16} + 5u^{14} + \dots - u + 1)(u^{55} - u^{54} + \dots - 325045u - 237989)$
$c_{10}$	$(u^{16} + 2u^{15} + \dots + 6u^2 + 1)(u^{55} - 3u^{54} + \dots + 84u - 17)$
$c_{11}$	$(u^{16} + 10u^{15} + \dots + 12u + 1)(u^{55} + 37u^{54} + \dots - 1784u - 289)$
$c_{12}$	$(u^{16} + 4u^{15} + \dots - 4u + 1)(u^{55} + 11u^{54} + \dots + 89882u + 16337)$



#### IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
$c_1$	$(y^{16} - 28y^{15} + \dots + 14y + 1)$ $\cdot (y^{55} - 137y^{54} + \dots + 108847246y - 28561)$
$c_2, c_5$	$(y^{16} + 16y^{15} + \dots + 10y + 1)(y^{55} + 63y^{54} + \dots - 20918y - 169)$
$c_3, c_7, c_8$	$(y^{16} - 18y^{15} + \dots - 8y + 1)(y^{55} - 43y^{54} + \dots + 1012y - 529)$
$c_4$	$(y^{16} + 10y^{15} + \dots + 16y + 1)(y^{55} + 21y^{54} + \dots - 4740y - 121)$
$c_6, c_{10}$	$(y^{16} + 10y^{15} + \dots + 12y + 1)(y^{55} + 37y^{54} + \dots - 1784y - 289)$
$c_9$	$(y^{16} + 10y^{15} + \dots - 3y + 1)$ $\cdot (y^{55} - 23y^{54} + \dots - 63034731065y - 56638764121)$
$c_{11}$	$(y^{16} + 2y^{15} + \dots + 116y^2 + 1)(y^{55} - 27y^{54} + \dots - 78420y - 83521)$
$c_{12}$	$(y^{16} - 18y^{15} + \dots - 18y + 1)$ $\cdot (y^{55} - 3y^{54} + \dots + 4960988170y - 266897569)$