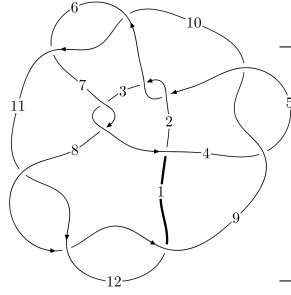
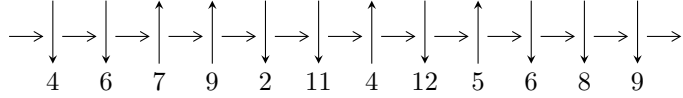


12n<sub>0748</sub> (K12n<sub>0748</sub>)



A knot diagram<sup>1</sup>

**Linearized knot diagram**



**Solving Sequence**

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

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

$$I_1^u = \langle 5.55332 \times 10^{75} u^{50} + 2.14999 \times 10^{75} u^{49} + \dots + 1.63199 \times 10^{76} b - 9.50449 \times 10^{76}, \\ - 1.00920 \times 10^{77} u^{50} - 6.14195 \times 10^{76} u^{49} + \dots + 4.89597 \times 10^{76} a + 2.60239 \times 10^{78}, u^{51} + u^{50} + \dots + 9u - \\ I_2^u = \langle u^{11} + 3u^{10} - 6u^9 - 5u^8 + 19u^7 - 14u^6 - 34u^5 + 34u^4 + 25u^3 - 24u^2 + 5b + u + 8, \\ - 19u^{11} + 3u^{10} + 89u^9 - 75u^8 - 136u^7 + 321u^6 + 41u^5 - 531u^4 + 80u^3 + 341u^2 + 5a - 64u - 47, \\ u^{12} - 5u^{10} + 3u^9 + 9u^8 - 16u^7 - 7u^6 + 31u^5 + 3u^4 - 24u^3 - 2u^2 + 5u + 1 \rangle$$

\* 2 irreducible components of  $\dim_{\mathbb{C}} = 0$ , with total 63 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.

I.

$$I_1^u = \langle 5.55 \times 10^{75} u^{50} + 2.15 \times 10^{75} u^{49} + \dots + 1.63 \times 10^{76} b - 9.50 \times 10^{76}, -1.01 \times 10^{77} u^{50} - 6.14 \times 10^{76} u^{49} + \dots + 4.90 \times 10^{76} a + 2.60 \times 10^{78}, u^{51} + u^{50} + \dots + 9u - 9 \rangle$$

(i) Arc colorings

$$\begin{aligned} a_4 &= \begin{pmatrix} 1 \\ 0 \end{pmatrix} \\ a_9 &= \begin{pmatrix} 0 \\ u \end{pmatrix} \\ a_2 &= \begin{pmatrix} 2.06129u^{50} + 1.25449u^{49} + \dots + 156.424u - 53.1538 \\ -0.340279u^{50} - 0.131740u^{49} + \dots - 5.95216u + 5.82387 \end{pmatrix} \\ a_5 &= \begin{pmatrix} 1 \\ -u^2 \end{pmatrix} \\ a_6 &= \begin{pmatrix} -3.63256u^{50} - 2.37017u^{49} + \dots - 340.652u + 80.1409 \\ -0.228512u^{50} - 0.176770u^{49} + \dots - 38.9007u + 9.50612 \end{pmatrix} \\ a_{10} &= \begin{pmatrix} u \\ -u^3 + u \end{pmatrix} \\ a_1 &= \begin{pmatrix} 1.72101u^{50} + 1.12275u^{49} + \dots + 150.472u - 47.3299 \\ -0.340279u^{50} - 0.131740u^{49} + \dots - 5.95216u + 5.82387 \end{pmatrix} \\ a_{12} &= \begin{pmatrix} 1.72101u^{50} + 1.12275u^{49} + \dots + 150.472u - 47.3299 \\ -0.570525u^{50} - 0.285333u^{49} + \dots - 26.8255u + 11.2082 \end{pmatrix} \\ a_8 &= \begin{pmatrix} 3.13695u^{50} + 1.91795u^{49} + \dots + 298.052u - 76.5104 \\ 0.639941u^{50} + 0.374469u^{49} + \dots + 59.0371u - 16.4493 \end{pmatrix} \\ a_7 &= \begin{pmatrix} 2.49701u^{50} + 1.54348u^{49} + \dots + 239.015u - 60.0611 \\ 0.639941u^{50} + 0.374469u^{49} + \dots + 59.0371u - 16.4493 \end{pmatrix} \\ a_3 &= \begin{pmatrix} -3.39441u^{50} - 1.99256u^{49} + \dots - 330.150u + 85.1843 \\ -1.49048u^{50} - 1.03131u^{49} + \dots - 138.506u + 38.2645 \end{pmatrix} \\ a_{11} &= \begin{pmatrix} -2.02479u^{50} - 1.32882u^{49} + \dots - 189.222u + 38.3733 \\ -1.71640u^{50} - 1.07355u^{49} + \dots - 148.388u + 42.1932 \end{pmatrix} \end{aligned}$$

(ii) Obstruction class = -1

(iii) Cusp Shapes =  $23.5676u^{50} + 14.4075u^{49} + \dots + 1956.28u - 544.212$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
$c_1$	$u^{51} - 2u^{50} + \dots - 2798u - 211$
$c_2, c_5$	$u^{51} + 2u^{50} + \dots - 10u + 1$
$c_3, c_7$	$u^{51} - 2u^{50} + \dots - 110u - 11$
$c_4, c_9$	$u^{51} + u^{50} + \dots + 9u - 9$
$c_6, c_{10}$	$u^{51} - 2u^{50} + \dots - 17u + 1$
$c_8, c_{11}, c_{12}$	$u^{51} - 18u^{49} + \dots + 13u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
$c_1$	$y^{51} + 70y^{50} + \dots + 9533684y - 44521$
$c_2, c_5$	$y^{51} - 10y^{50} + \dots + 26y - 1$
$c_3, c_7$	$y^{51} - 40y^{50} + \dots + 12914y - 121$
$c_4, c_9$	$y^{51} - 51y^{50} + \dots + 6489y - 81$
$c_6, c_{10}$	$y^{51} - 8y^{50} + \dots + 181y - 1$
$c_8, c_{11}, c_{12}$	$y^{51} - 36y^{50} + \dots + 279y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.966312 + 0.028011I$ $a = -0.536822 - 0.279028I$ $b = 0.882354 - 0.296412I$	$3.13672 - 0.62690I$	0
$u = 0.966312 - 0.028011I$ $a = -0.536822 + 0.279028I$ $b = 0.882354 + 0.296412I$	$3.13672 + 0.62690I$	0
$u = -0.752807 + 0.539036I$ $a = -0.872796 + 0.719742I$ $b = 0.459364 - 0.125960I$	$2.93432 - 5.19831I$	$0. + 6.04454I$
$u = -0.752807 - 0.539036I$ $a = -0.872796 - 0.719742I$ $b = 0.459364 + 0.125960I$	$2.93432 + 5.19831I$	$0. - 6.04454I$
$u = 1.08285$ $a = -0.166192$ $b = -1.36678$	$-8.81786$	0
$u = -0.237795 + 0.803808I$ $a = 0.997700 + 0.304588I$ $b = -0.237661 + 0.548165I$	$-1.59127 + 1.64954I$	$-10.79264 - 4.97589I$
$u = -0.237795 - 0.803808I$ $a = 0.997700 - 0.304588I$ $b = -0.237661 - 0.548165I$	$-1.59127 - 1.64954I$	$-10.79264 + 4.97589I$
$u = -1.229440 + 0.096772I$ $a = -0.45337 + 1.83496I$ $b = 0.96203 - 1.87253I$	$3.25985 - 4.40630I$	0
$u = -1.229440 - 0.096772I$ $a = -0.45337 - 1.83496I$ $b = 0.96203 + 1.87253I$	$3.25985 + 4.40630I$	0
$u = -1.23712$ $a = 1.45818$ $b = -0.238614$	$-3.66174$	0

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.205562 + 0.732617I$ $a = 0.314612 - 0.527449I$ $b = -0.548118 - 0.948146I$	$-3.85278 - 3.00372I$	$-11.66965 + 6.00585I$
$u = -0.205562 - 0.732617I$ $a = 0.314612 + 0.527449I$ $b = -0.548118 + 0.948146I$	$-3.85278 + 3.00372I$	$-11.66965 - 6.00585I$
$u = 0.572928 + 1.104770I$ $a = -0.206310 - 0.298977I$ $b = 0.320739 - 0.725671I$	$-0.44013 + 9.46101I$	0
$u = 0.572928 - 1.104770I$ $a = -0.206310 + 0.298977I$ $b = 0.320739 + 0.725671I$	$-0.44013 - 9.46101I$	0
$u = -1.223810 + 0.312977I$ $a = -0.32338 + 1.52316I$ $b = -0.38353 - 2.16692I$	$1.53528 - 5.83376I$	0
$u = -1.223810 - 0.312977I$ $a = -0.32338 - 1.52316I$ $b = -0.38353 + 2.16692I$	$1.53528 + 5.83376I$	0
$u = 1.304010 + 0.126559I$ $a = -0.351078 - 0.800505I$ $b = 0.73472 + 1.28447I$	$3.37052 + 0.99994I$	0
$u = 1.304010 - 0.126559I$ $a = -0.351078 + 0.800505I$ $b = 0.73472 - 1.28447I$	$3.37052 - 0.99994I$	0
$u = -1.289750 + 0.452317I$ $a = 0.550918 - 0.357255I$ $b = 0.193129 + 0.814567I$	$-1.04630 - 1.13129I$	0
$u = -1.289750 - 0.452317I$ $a = 0.550918 + 0.357255I$ $b = 0.193129 - 0.814567I$	$-1.04630 + 1.13129I$	0

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.131606 + 0.597948I$ $a = 0.755619 + 0.012297I$ $b = -0.236259 + 0.347071I$	$-0.317906 + 1.195420I$	$-3.90544 - 5.43225I$
$u = 0.131606 - 0.597948I$ $a = 0.755619 - 0.012297I$ $b = -0.236259 - 0.347071I$	$-0.317906 - 1.195420I$	$-3.90544 + 5.43225I$
$u = 1.385030 + 0.283021I$ $a = 0.04231 - 1.92490I$ $b = -0.77123 + 2.30254I$	$1.21275 + 6.65866I$	0
$u = 1.385030 - 0.283021I$ $a = 0.04231 + 1.92490I$ $b = -0.77123 - 2.30254I$	$1.21275 - 6.65866I$	0
$u = -1.46412 + 0.01784I$ $a = -0.244361 - 1.204180I$ $b = -0.79728 + 1.66527I$	$5.76286 - 1.13846I$	0
$u = -1.46412 - 0.01784I$ $a = -0.244361 + 1.204180I$ $b = -0.79728 - 1.66527I$	$5.76286 + 1.13846I$	0
$u = 0.514876$ $a = 3.02685$ $b = 0.317888$	$-10.7307$	10.2750
$u = 1.48372 + 0.08688I$ $a = 0.167132 - 1.009410I$ $b = 0.37784 + 1.38305I$	$4.37936 + 0.98278I$	0
$u = 1.48372 - 0.08688I$ $a = 0.167132 + 1.009410I$ $b = 0.37784 - 1.38305I$	$4.37936 - 0.98278I$	0
$u = 1.49336 + 0.11013I$ $a = -0.41151 - 1.40552I$ $b = -0.51248 + 1.86936I$	$7.35814 + 6.04698I$	0

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.49336 - 0.11013I$ $a = -0.41151 + 1.40552I$ $b = -0.51248 - 1.86936I$	$7.35814 - 6.04698I$	0
$u = -0.491947$ $a = 1.66651$ $b = -0.0705730$	-1.36137	-6.25410
$u = -0.399561 + 0.244629I$ $a = -2.11272 - 0.74059I$ $b = 0.615884 - 1.246730I$	$1.00696 - 4.56920I$	$-3.90257 + 5.25320I$
$u = -0.399561 - 0.244629I$ $a = -2.11272 + 0.74059I$ $b = 0.615884 + 1.246730I$	$1.00696 + 4.56920I$	$-3.90257 - 5.25320I$
$u = -1.50785 + 0.38384I$ $a = -0.017099 + 1.147920I$ $b = -0.35140 - 1.57334I$	$4.58888 - 5.41893I$	0
$u = -1.50785 - 0.38384I$ $a = -0.017099 - 1.147920I$ $b = -0.35140 + 1.57334I$	$4.58888 + 5.41893I$	0
$u = 1.57518 + 0.19913I$ $a = -0.200647 + 1.350350I$ $b = 0.06483 - 2.13765I$	$10.54910 + 8.09027I$	0
$u = 1.57518 - 0.19913I$ $a = -0.200647 - 1.350350I$ $b = 0.06483 + 2.13765I$	$10.54910 - 8.09027I$	0
$u = -0.407564$ $a = 1.19912$ $b = -1.34717$	-2.57791	9.00240
$u = -1.61819 + 0.08048I$ $a = -0.265175 - 1.291110I$ $b = 0.19764 + 2.01735I$	$11.95830 - 0.22760I$	0



Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.61819 - 0.08048I$ $a = -0.265175 + 1.291110I$ $b = 0.19764 - 2.01735I$	$11.95830 + 0.22760I$	0
$u = -1.58168 + 0.38198I$ $a = -0.17902 - 1.40951I$ $b = 0.91256 + 2.00149I$	$6.4507 - 14.7902I$	0
$u = -1.58168 - 0.38198I$ $a = -0.17902 + 1.40951I$ $b = 0.91256 - 2.00149I$	$6.4507 + 14.7902I$	0
$u = -0.364492$ $a = -2.15420$ $b = -1.45022$	$-6.63015$	$-21.7480$
$u = 1.63613 + 0.31897I$ $a = -0.126349 + 1.180690I$ $b = 0.85837 - 1.71259I$	$7.91149 + 6.61409I$	0
$u = 1.63613 - 0.31897I$ $a = -0.126349 - 1.180690I$ $b = 0.85837 + 1.71259I$	$7.91149 - 6.61409I$	0
$u = 0.169849 + 0.057002I$ $a = -7.63550 - 0.35036I$ $b = 0.860446 - 0.474071I$	$0.100763 + 0.877365I$	$-4.31516 - 3.77329I$
$u = 0.169849 - 0.057002I$ $a = -7.63550 + 0.35036I$ $b = 0.860446 + 0.474071I$	$0.100763 - 0.877365I$	$-4.31516 + 3.77329I$
$u = 1.87867$ $a = 0.431311$ $b = -0.853122$	$1.07210$	0
$u = -0.19520 + 1.90391I$ $a = 0.0437236 + 0.0504691I$ $b = -0.097631 + 0.463019I$	$-0.098440 - 0.706098I$	0

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.19520 - 1.90391I$		
$a = 0.0437236 - 0.0504691I$	$-0.098440 + 0.706098I$	0
$b = -0.097631 - 0.463019I$		

$$\text{II. } I_2^u = \langle u^{11} + 3u^{10} + \dots + 5b + 8, -19u^{11} + 3u^{10} + \dots + 5a - 47, u^{12} - 5u^{10} + \dots + 5u + 1 \rangle$$

(i) Arc colorings

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

$$a_9 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} \frac{19}{5}u^{11} - \frac{3}{5}u^{10} + \dots + \frac{64}{5}u + \frac{47}{5} \\ -\frac{1}{5}u^{11} - \frac{3}{5}u^{10} + \dots - \frac{1}{5}u - \frac{8}{5} \end{pmatrix}$$

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

$$a_6 = \begin{pmatrix} -\frac{12}{5}u^{11} + \frac{9}{5}u^{10} + \dots - \frac{97}{5}u - \frac{51}{5} \\ -\frac{2}{5}u^{11} - \frac{6}{5}u^{10} + \dots + \frac{33}{5}u + \frac{14}{5} \end{pmatrix}$$

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

$$a_1 = \begin{pmatrix} \frac{18}{5}u^{11} - \frac{6}{5}u^{10} + \dots + \frac{63}{5}u + \frac{39}{5} \\ -\frac{1}{5}u^{11} - \frac{3}{5}u^{10} + \dots - \frac{1}{5}u - \frac{8}{5} \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} \frac{18}{5}u^{11} - \frac{6}{5}u^{10} + \dots + \frac{63}{5}u + \frac{39}{5} \\ -\frac{8}{5}u^{11} + \frac{1}{5}u^{10} + \dots - \frac{13}{5}u - \frac{14}{5} \end{pmatrix}$$

$$a_8 = \begin{pmatrix} \frac{11}{5}u^{11} - \frac{2}{5}u^{10} + \dots + \frac{101}{5}u + \frac{33}{5} \\ -\frac{2}{5}u^{11} - \frac{6}{5}u^{10} + \dots + \frac{33}{5}u + \frac{3}{5} \end{pmatrix}$$

$$a_7 = \begin{pmatrix} \frac{13}{5}u^{11} + \frac{4}{5}u^{10} + \dots + \frac{68}{5}u + \frac{24}{5} \\ -\frac{2}{5}u^{11} - \frac{6}{5}u^{10} + \dots + \frac{33}{5}u + \frac{9}{5} \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -\frac{17}{5}u^{11} - \frac{6}{5}u^{10} + \dots + \frac{18}{5}u - \frac{1}{5} \\ \frac{3}{5}u^{11} + \frac{4}{5}u^{10} + \dots - \frac{7}{5}u - \frac{1}{5} \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -\frac{22}{5}u^{11} + \frac{9}{5}u^{10} + \dots - \frac{97}{5}u - \frac{31}{5} \\ -\frac{3}{5}u^{11} + \frac{1}{5}u^{10} + \dots - \frac{13}{5}u - \frac{14}{5} \end{pmatrix}$$

(ii) Obstruction class = 1

(iii) Cusp Shapes

$$= -\frac{1}{5}u^{11} - \frac{33}{5}u^{10} - \frac{9}{5}u^9 + 27u^8 - \frac{74}{5}u^7 - \frac{216}{5}u^6 + \frac{439}{5}u^5 + \frac{176}{5}u^4 - 135u^3 - \frac{71}{5}u^2 + \frac{294}{5}u - \frac{43}{5}$$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
$c_1$	$u^{12} - u^{11} + \dots + 6u - 1$
$c_2$	$u^{12} + 3u^{11} + \dots + 2u - 1$
$c_3$	$u^{12} - u^{11} + \dots + 15u^2 - 1$
$c_4$	$u^{12} - 5u^{10} + \dots + 5u + 1$
$c_5$	$u^{12} - 3u^{11} + \dots - 2u - 1$
$c_6$	$u^{12} - u^{11} + \dots + u - 1$
$c_7$	$u^{12} + u^{11} + \dots + 15u^2 - 1$
$c_8$	$u^{12} + u^{11} + \dots - 5u + 1$
$c_9$	$u^{12} - 5u^{10} + \dots - 5u + 1$
$c_{10}$	$u^{12} + u^{11} + \dots - u - 1$
$c_{11}, c_{12}$	$u^{12} - u^{11} + \dots + 5u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
$c_1$	$y^{12} + 7y^{11} + \dots - 4y + 1$
$c_2, c_5$	$y^{12} - 13y^{11} + \dots - 6y + 1$
$c_3, c_7$	$y^{12} - 11y^{11} + \dots - 30y + 1$
$c_4, c_9$	$y^{12} - 10y^{11} + \dots - 29y + 1$
$c_6, c_{10}$	$y^{12} - 7y^{11} + \dots - 13y + 1$
$c_8, c_{11}, c_{12}$	$y^{12} - 15y^{11} + \dots - 27y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.21822$ $a = 1.79757$ $b = -0.601851$	-4.03710	-18.0780
$u = -1.27309$ $a = 0.277397$ $b = 1.16135$	-7.88309	-1.62320
$u = -1.268290 + 0.330427I$ $a = -0.58188 + 1.78206I$ $b = -0.09657 - 2.27913I$	$2.50992 - 6.48574I$	$-1.33595 + 8.54705I$
$u = -1.268290 - 0.330427I$ $a = -0.58188 - 1.78206I$ $b = -0.09657 + 2.27913I$	$2.50992 + 6.48574I$	$-1.33595 - 8.54705I$
$u = 1.320490 + 0.182645I$ $a = -0.416916 - 1.142720I$ $b = 1.12535 + 1.50126I$	$3.03542 + 2.75700I$	$-4.31533 - 2.69611I$
$u = 1.320490 - 0.182645I$ $a = -0.416916 + 1.142720I$ $b = 1.12535 - 1.50126I$	$3.03542 - 2.75700I$	$-4.31533 + 2.69611I$
$u = 0.638711$ $a = -0.671197$ $b = -1.41524$	-6.24905	0.243470
$u = -1.48898$ $a = 0.537683$ $b = -0.370407$	1.74863	-2.66980
$u = 0.72640 + 1.30991I$ $a = -0.191140 + 0.258916I$ $b = 0.005412 + 0.445100I$	$-0.304228 + 0.769223I$	$-12.9708 + 6.3200I$
$u = 0.72640 - 1.30991I$ $a = -0.191140 - 0.258916I$ $b = 0.005412 - 0.445100I$	$-0.304228 - 0.769223I$	$-12.9708 - 6.3200I$

Solutions to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.411452$ $a = -3.50522$ $b = -0.610386$	-10.9545	-25.9780
$u = -0.240615$ $a = 2.94363$ $b = -1.23188$	-2.84629	-21.6500

### III. u-Polynomials

Crossings	u-Polynomials at each crossing
$c_1$	$(u^{12} - u^{11} + \dots + 6u - 1)(u^{51} - 2u^{50} + \dots - 2798u - 211)$
$c_2$	$(u^{12} + 3u^{11} + \dots + 2u - 1)(u^{51} + 2u^{50} + \dots - 10u + 1)$
$c_3$	$(u^{12} - u^{11} + \dots + 15u^2 - 1)(u^{51} - 2u^{50} + \dots - 110u - 11)$
$c_4$	$(u^{12} - 5u^{10} + \dots + 5u + 1)(u^{51} + u^{50} + \dots + 9u - 9)$
$c_5$	$(u^{12} - 3u^{11} + \dots - 2u - 1)(u^{51} + 2u^{50} + \dots - 10u + 1)$
$c_6$	$(u^{12} - u^{11} + \dots + u - 1)(u^{51} - 2u^{50} + \dots - 17u + 1)$
$c_7$	$(u^{12} + u^{11} + \dots + 15u^2 - 1)(u^{51} - 2u^{50} + \dots - 110u - 11)$
$c_8$	$(u^{12} + u^{11} + \dots - 5u + 1)(u^{51} - 18u^{49} + \dots + 13u - 1)$
$c_9$	$(u^{12} - 5u^{10} + \dots - 5u + 1)(u^{51} + u^{50} + \dots + 9u - 9)$
$c_{10}$	$(u^{12} + u^{11} + \dots - u - 1)(u^{51} - 2u^{50} + \dots - 17u + 1)$
$c_{11}, c_{12}$	$(u^{12} - u^{11} + \dots + 5u + 1)(u^{51} - 18u^{49} + \dots + 13u - 1)$



#### IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
$c_1$	$(y^{12} + 7y^{11} + \dots - 4y + 1)(y^{51} + 70y^{50} + \dots + 9533684y - 44521)$
$c_2, c_5$	$(y^{12} - 13y^{11} + \dots - 6y + 1)(y^{51} - 10y^{50} + \dots + 26y - 1)$
$c_3, c_7$	$(y^{12} - 11y^{11} + \dots - 30y + 1)(y^{51} - 40y^{50} + \dots + 12914y - 121)$
$c_4, c_9$	$(y^{12} - 10y^{11} + \dots - 29y + 1)(y^{51} - 51y^{50} + \dots + 6489y - 81)$
$c_6, c_{10}$	$(y^{12} - 7y^{11} + \dots - 13y + 1)(y^{51} - 8y^{50} + \dots + 181y - 1)$
$c_8, c_{11}, c_{12}$	$(y^{12} - 15y^{11} + \dots - 27y + 1)(y^{51} - 36y^{50} + \dots + 279y - 1)$