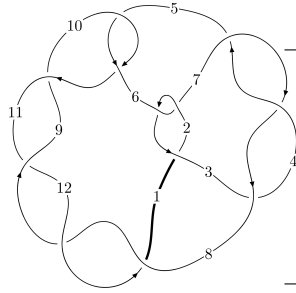
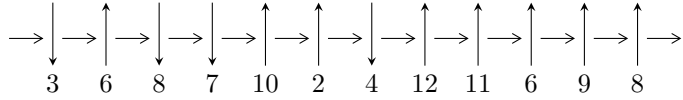


12n<sub>0334</sub> (K12n<sub>0334</sub>)



A knot diagram<sup>1</sup>

**Linearized knot diagram**



**Solving Sequence**

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

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

$$I_1^u = \langle -1.23152 \times 10^{16} u^{29} + 1.53695 \times 10^{16} u^{28} + \dots + 5.84790 \times 10^{16} b - 9.74776 \times 10^{15}, \\ - 4.32154 \times 10^{16} u^{29} + 2.87372 \times 10^{16} u^{28} + \dots + 1.16958 \times 10^{17} a - 5.09997 \times 10^{16}, u^{30} - u^{29} + \dots + 7u + \\ I_2^u = \langle 9a^3u + 23a^3 - a^2u + 11a^2 + 57au + 61b + 105a - 66u - 6, a^4 - a^3u + 2a^2u + 3a^2 - 5au - a + 2u - 3, \\ u^2 + 1 \rangle \\ I_3^u = \langle u^8 - u^7 + 2u^6 - 2u^5 + u^4 - u^3 + u^2 + b - u, u^7 + u^6 + 2u^5 + 2u^4 + u^3 + u^2 + a + u + 1, \\ u^9 + 3u^7 - u^6 + 3u^5 - 2u^4 + 3u^3 - u^2 + 2u - 1 \rangle$$

\* 3 irreducible components of  $\dim_{\mathbb{C}} = 0$ , with total 47 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.

$$I_1^u = \langle -1.23 \times 10^{16} u^{29} + 1.54 \times 10^{16} u^{28} + \dots + 5.85 \times 10^{16} b - 9.75 \times 10^{15}, -4.32 \times 10^{16} u^{29} + 2.87 \times 10^{16} u^{28} + \dots + 1.17 \times 10^{17} a - 5.10 \times 10^{16}, u^{30} - u^{29} + \dots + 7u + 2 \rangle$$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.369495u^{29} - 0.245705u^{28} + \dots + 14.2746u + 0.436051 \\ 0.210593u^{29} - 0.262820u^{28} + \dots + 3.53091u + 0.166688 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0.672620u^{29} - 0.609580u^{28} + \dots + 19.4110u + 0.850319 \\ 0.211783u^{29} - 0.281668u^{28} + \dots + 3.34990u + 0.288187 \end{pmatrix}$$

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

$$a_5 = \begin{pmatrix} -0.688243u^{29} + 0.596482u^{28} + \dots - 22.1445u - 4.75119 \\ -0.0998548u^{29} + 0.00973725u^{28} + \dots - 4.79516u - 0.887435 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -0.788098u^{29} + 0.606219u^{28} + \dots - 26.9397u - 5.63863 \\ -0.0998548u^{29} + 0.00973725u^{28} + \dots - 4.79516u - 0.887435 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.625597u^{29} - 0.813840u^{28} + \dots + 3.22541u - 3.26533 \\ 0.0901176u^{29} - 0.131952u^{28} + \dots + 0.188451u - 1.19971 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.772220u^{29} - 1.17415u^{28} + \dots - 1.69794u - 6.69657 \\ 0.193509u^{29} - 0.293937u^{28} + \dots - 0.448992u - 0.953828 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -1.07677u^{29} + 0.793142u^{28} + \dots - 38.8926u - 7.27684 \\ -0.188243u^{29} + 0.0964819u^{28} + \dots - 7.64451u - 1.25119 \end{pmatrix}$$

(ii) Obstruction class = -1

(iii) Cusp Shapes

$$= \frac{667339003312773}{9746501057251736} u^{29} - \frac{1203194374045575}{2436625264312934} u^{28} + \dots + \frac{172887881292571847}{9746501057251736} u + \frac{53741926556471299}{4873250528625868}$$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
$c_1$	$u^{30} + 5u^{29} + \dots + 75u + 4$
$c_2, c_6$	$u^{30} - u^{29} + \dots + 7u + 2$
$c_3, c_4, c_7$	$u^{30} - u^{29} + \dots + 13u + 2$
$c_5, c_{10}$	$u^{30} - 2u^{29} + \dots - u + 2$
$c_8, c_9, c_{11}$ $c_{12}$	$u^{30} - 8u^{29} + \dots + 19u + 4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
$c_1$	$y^{30} + 49y^{29} + \dots - 2273y + 16$
$c_2, c_6$	$y^{30} + 5y^{29} + \dots + 75y + 4$
$c_3, c_4, c_7$	$y^{30} + 41y^{29} + \dots + 283y + 4$
$c_5, c_{10}$	$y^{30} - 8y^{29} + \dots + 19y + 4$
$c_8, c_9, c_{11}$ $c_{12}$	$y^{30} + 28y^{29} + \dots - 721y + 16$

(vi) Complex Volumes and Cusp Shapes

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.698998 + 0.613459I$ $a = 2.39480 + 0.61262I$ $b = -0.15133 - 1.76319I$	$2.77724 - 3.85593I$	$9.07460 + 7.10921I$
$u = -0.698998 - 0.613459I$ $a = 2.39480 - 0.61262I$ $b = -0.15133 + 1.76319I$	$2.77724 + 3.85593I$	$9.07460 - 7.10921I$
$u = 0.011422 + 1.077760I$ $a = 0.273728 + 1.371180I$ $b = 0.555566 - 0.741416I$	$-8.36072 + 3.13944I$	$-5.78917 - 2.58972I$
$u = 0.011422 - 1.077760I$ $a = 0.273728 - 1.371180I$ $b = 0.555566 + 0.741416I$	$-8.36072 - 3.13944I$	$-5.78917 + 2.58972I$
$u = 0.108984 + 0.894375I$ $a = 0.301960 - 0.991096I$ $b = -0.689592 + 0.428612I$	$-1.44382 + 1.63203I$	$-3.48932 - 5.49543I$
$u = 0.108984 - 0.894375I$ $a = 0.301960 + 0.991096I$ $b = -0.689592 - 0.428612I$	$-1.44382 - 1.63203I$	$-3.48932 + 5.49543I$
$u = 0.682002 + 0.922822I$ $a = 0.189288 + 0.408857I$ $b = 0.203062 - 0.735831I$	$-3.81485 + 2.30509I$	$0.49031 - 2.71546I$
$u = 0.682002 - 0.922822I$ $a = 0.189288 - 0.408857I$ $b = 0.203062 + 0.735831I$	$-3.81485 - 2.30509I$	$0.49031 + 2.71546I$
$u = -0.755396 + 0.903984I$ $a = -1.66217 - 1.20277I$ $b = -0.26664 + 1.80105I$	$-3.27475 - 8.23910I$	$1.93994 + 7.72708I$
$u = -0.755396 - 0.903984I$ $a = -1.66217 + 1.20277I$ $b = -0.26664 - 1.80105I$	$-3.27475 + 8.23910I$	$1.93994 - 7.72708I$

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.407081 + 0.637690I$ $a = -0.274690 - 0.288008I$ $b = 0.208144 + 0.378027I$	$0.05686 + 1.46890I$	$0.92942 - 4.73947I$
$u = 0.407081 - 0.637690I$ $a = -0.274690 + 0.288008I$ $b = 0.208144 - 0.378027I$	$0.05686 - 1.46890I$	$0.92942 + 4.73947I$
$u = -1.029980 + 0.698288I$ $a = -0.453579 - 0.409036I$ $b = -0.149512 - 0.441012I$	$4.59059 - 0.39183I$	$4.29290 + 1.76865I$
$u = -1.029980 - 0.698288I$ $a = -0.453579 + 0.409036I$ $b = -0.149512 + 0.441012I$	$4.59059 + 0.39183I$	$4.29290 - 1.76865I$
$u = 1.121490 + 0.688518I$ $a = -0.917790 - 0.402386I$ $b = 0.92316 - 2.47975I$	$5.57907 - 5.57951I$	$5.69966 + 3.23734I$
$u = 1.121490 - 0.688518I$ $a = -0.917790 + 0.402386I$ $b = 0.92316 + 2.47975I$	$5.57907 + 5.57951I$	$5.69966 - 3.23734I$
$u = -0.951194 + 0.966858I$ $a = 0.344441 + 0.102557I$ $b = 0.246527 + 0.139595I$	$7.98345 - 3.49396I$	$3.58725 + 2.25604I$
$u = -0.951194 - 0.966858I$ $a = 0.344441 - 0.102557I$ $b = 0.246527 - 0.139595I$	$7.98345 + 3.49396I$	$3.58725 - 2.25604I$
$u = 1.08159 + 0.91703I$ $a = 1.56601 - 0.06152I$ $b = -0.44838 + 3.31749I$	$11.86890 + 0.24298I$	$9.59323 + 0.78680I$
$u = 1.08159 - 0.91703I$ $a = 1.56601 + 0.06152I$ $b = -0.44838 - 3.31749I$	$11.86890 - 0.24298I$	$9.59323 - 0.78680I$

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.83819 + 1.14876I$ $a = -0.494841 + 0.034426I$ $b = -0.393342 + 0.029742I$	$3.17963 - 6.45848I$	$2.96666 + 2.59326I$
$u = -0.83819 - 1.14876I$ $a = -0.494841 - 0.034426I$ $b = -0.393342 - 0.029742I$	$3.17963 + 6.45848I$	$2.96666 - 2.59326I$
$u = 0.98645 + 1.08169I$ $a = -1.63870 + 0.94953I$ $b = -0.62498 - 3.36593I$	$11.33410 + 7.25716I$	$8.55357 - 5.59796I$
$u = 0.98645 - 1.08169I$ $a = -1.63870 - 0.94953I$ $b = -0.62498 + 3.36593I$	$11.33410 - 7.25716I$	$8.55357 + 5.59796I$
$u = 0.85706 + 1.18834I$ $a = 1.22904 - 1.46577I$ $b = 1.13371 + 2.70027I$	$3.97939 + 12.74170I$	$4.00000 - 7.13590I$
$u = 0.85706 - 1.18834I$ $a = 1.22904 + 1.46577I$ $b = 1.13371 - 2.70027I$	$3.97939 - 12.74170I$	$4.00000 + 7.13590I$
$u = -0.441623 + 0.214148I$ $a = -2.94794 + 1.06535I$ $b = 0.615118 + 1.075540I$	$2.07762 + 1.07439I$	$9.76956 - 2.59156I$
$u = -0.441623 - 0.214148I$ $a = -2.94794 - 1.06535I$ $b = 0.615118 - 1.075540I$	$2.07762 - 1.07439I$	$9.76956 + 2.59156I$
$u = -0.040685 + 0.322181I$ $a = -1.65956 + 3.26961I$ $b = -0.661518 + 0.572597I$	$-5.27889 - 3.20038I$	$6.37013 + 2.60565I$
$u = -0.040685 - 0.322181I$ $a = -1.65956 - 3.26961I$ $b = -0.661518 - 0.572597I$	$-5.27889 + 3.20038I$	$6.37013 - 2.60565I$

**II.**

$$I_2^u = \langle 9a^3u - a^2u + \dots + 105a - 6, a^4 - a^3u + 2a^2u + 3a^2 - 5au - a + 2u - 3, u^2 + 1 \rangle$$

**(i) Arc colorings**

$$a_2 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 1 \\ -1 \end{pmatrix}$$

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

$$a_{10} = \begin{pmatrix} a \\ -0.147541a^3u + 0.0163934a^2u + \dots - 1.72131a + 0.0983607 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -0.147541a^3u + 0.0163934a^2u + \dots + 0.278689a + 0.0983607 \\ -a \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u \\ u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -0.360656a^3u + 0.262295a^2u + \dots + 0.459016a - 0.426230 \\ u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -0.360656a^3u + 0.262295a^2u + \dots + 0.459016a - 0.426230 \\ u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.0327869a^3u + 0.114754a^2u + \dots + 0.950820a - 0.311475 \\ -1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.0655738a^3u - 0.229508a^2u + \dots - 1.90164a + 2.62295 \\ 0.0819672a^3u + 0.213115a^2u + \dots - 0.377049a - 0.721311 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -0.0983607a^3u + 0.344262a^2u + \dots - 0.147541a + 0.0655738 \\ 0.360656a^3u - 0.262295a^2u + \dots - 0.459016a + 0.426230 \end{pmatrix}$$

**(ii) Obstruction class = 1**

**(iii) Cusp Shapes** =  $-\frac{4}{61}a^3u + \frac{44}{61}a^3 - \frac{108}{61}a^2u - \frac{32}{61}a^2 + \frac{56}{61}au + \frac{116}{61}a - \frac{296}{61}u + \frac{84}{61}$



(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
$c_1$	$(u - 1)^8$
$c_2, c_3, c_4$ $c_6, c_7$	$(u^2 + 1)^4$
$c_5, c_{10}$	$u^8 - u^6 + 3u^4 - 2u^2 + 1$
$c_8, c_9$	$(u^4 + u^3 + 3u^2 + 2u + 1)^2$
$c_{11}, c_{12}$	$(u^4 - u^3 + 3u^2 - 2u + 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
$c_1$	$(y - 1)^8$
$c_2, c_3, c_4$ $c_6, c_7$	$(y + 1)^8$
$c_5, c_{10}$	$(y^4 - y^3 + 3y^2 - 2y + 1)^2$
$c_8, c_9, c_{11}$ $c_{12}$	$(y^4 + 5y^3 + 7y^2 + 2y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.000000I$ $a = 0.947956 + 0.221642I$ $b = -1.66830 - 0.57345I$	$0.21101 + 1.41510I$	$3.82674 - 4.90874I$
$u = 1.000000I$ $a = -0.221784 + 0.813580I$ $b = 1.133080 + 0.038228I$	$-6.79074 + 3.16396I$	$0.17326 - 2.56480I$
$u = 1.000000I$ $a = 0.14689 - 2.02011I$ $b = 0.57345 + 1.66830I$	$0.21101 - 1.41510I$	$3.82674 + 4.90874I$
$u = 1.000000I$ $a = -0.87306 + 1.98488I$ $b = -0.038228 - 1.133080I$	$-6.79074 - 3.16396I$	$0.17326 + 2.56480I$
$u = -1.000000I$ $a = 0.947956 - 0.221642I$ $b = -1.66830 + 0.57345I$	$0.21101 - 1.41510I$	$3.82674 + 4.90874I$
$u = -1.000000I$ $a = -0.221784 - 0.813580I$ $b = 1.133080 - 0.038228I$	$-6.79074 - 3.16396I$	$0.17326 + 2.56480I$
$u = -1.000000I$ $a = 0.14689 + 2.02011I$ $b = 0.57345 - 1.66830I$	$0.21101 + 1.41510I$	$3.82674 - 4.90874I$
$u = -1.000000I$ $a = -0.87306 - 1.98488I$ $b = -0.038228 + 1.133080I$	$-6.79074 + 3.16396I$	$0.17326 - 2.56480I$

$$\text{III. } I_3^u = \langle u^8 - u^7 + 2u^6 - 2u^5 + u^4 - u^3 + u^2 + b - u, u^7 + u^6 + 2u^5 + 2u^4 + u^3 + u^2 + a + u + 1, u^9 + 3u^7 - u^6 + 3u^5 - 2u^4 + 3u^3 - u^2 + 2u - 1 \rangle$$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -u^7 - u^6 - 2u^5 - 2u^4 - u^3 - u^2 - u - 1 \\ -u^8 + u^7 - 2u^6 + 2u^5 - u^4 + u^3 - u^2 + u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -u^7 - 2u^5 - 2u^3 - 2u \\ u^7 + u^5 + u \end{pmatrix}$$

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

$$a_5 = \begin{pmatrix} -u \\ u \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u^4 - u^2 - 1 \\ u^4 \end{pmatrix}$$

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

(ii) Obstruction class = -1

(iii) Cusp Shapes =  $4u^6 + 8u^4 - 4u^3 + 4u^2 - 4u + 10$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
$c_1$	$u^9 + 6u^8 + 15u^7 + 23u^6 + 27u^5 + 24u^4 + 15u^3 + 7u^2 + 2u - 1$
$c_2, c_3, c_4$ $c_6, c_7$	$u^9 + 3u^7 - u^6 + 3u^5 - 2u^4 + 3u^3 - u^2 + 2u - 1$
$c_5, c_{10}$	$(u^3 + u^2 - 1)^3$
$c_8, c_9, c_{11}$ $c_{12}$	$(u^3 - u^2 + 2u - 1)^3$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
$c_1$	$y^9 - 6y^8 + 3y^7 + 23y^6 - 5y^5 - 16y^4 + 43y^3 + 59y^2 + 18y - 1$
$c_2, c_3, c_4$ $c_6, c_7$	$y^9 + 6y^8 + 15y^7 + 23y^6 + 27y^5 + 24y^4 + 15y^3 + 7y^2 + 2y - 1$
$c_5, c_{10}$	$(y^3 - y^2 + 2y - 1)^3$
$c_8, c_9, c_{11}$ $c_{12}$	$(y^3 + 3y^2 + 2y - 1)^3$

(vi) Complex Volumes and Cusp Shapes

Solutions to $I_3^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.656619 + 0.765660I$ $a = 0.657957 + 0.314065I$ $b = -0.66369 - 1.45514I$	$-3.02413 + 2.82812I$	$2.49024 - 2.97945I$
$u = -0.656619 - 0.765660I$ $a = 0.657957 - 0.314065I$ $b = -0.66369 + 1.45514I$	$-3.02413 - 2.82812I$	$2.49024 + 2.97945I$
$u = 0.701160 + 0.628458I$ $a = 1.48015 - 0.54026I$ $b = -0.258224 + 0.507366I$	$-3.02413 + 2.82812I$	$2.49024 - 2.97945I$
$u = 0.701160 - 0.628458I$ $a = 1.48015 + 0.54026I$ $b = -0.258224 - 0.507366I$	$-3.02413 - 2.82812I$	$2.49024 + 2.97945I$
$u = -0.233800 + 1.078880I$ $a = -1.01500 - 1.42921I$ $b = 1.15982 + 2.09752I$	1.11345	$9.01951 + 0.I$
$u = -0.233800 - 1.078880I$ $a = -1.01500 + 1.42921I$ $b = 1.15982 - 2.09752I$	1.11345	$9.01951 + 0.I$
$u = -0.044542 + 1.394120I$ $a = -0.15103 + 1.46064I$ $b = -0.40281 - 2.07233I$	$-3.02413 - 2.82812I$	$2.49024 + 2.97945I$
$u = -0.044542 - 1.394120I$ $a = -0.15103 - 1.46064I$ $b = -0.40281 + 2.07233I$	$-3.02413 + 2.82812I$	$2.49024 - 2.97945I$
$u = 0.467600$ $a = -1.94416$ $b = 0.329789$	1.11345	9.01950

#### IV. u-Polynomials

Crossings	u-Polynomials at each crossing
$c_1$	$((u-1)^8)(u^9 + 6u^8 + \dots + 2u - 1)$ $\cdot (u^{30} + 5u^{29} + \dots + 75u + 4)$
$c_2, c_6$	$(u^2 + 1)^4(u^9 + 3u^7 - u^6 + 3u^5 - 2u^4 + 3u^3 - u^2 + 2u - 1)$ $\cdot (u^{30} - u^{29} + \dots + 7u + 2)$
$c_3, c_4, c_7$	$(u^2 + 1)^4(u^9 + 3u^7 - u^6 + 3u^5 - 2u^4 + 3u^3 - u^2 + 2u - 1)$ $\cdot (u^{30} - u^{29} + \dots + 13u + 2)$
$c_5, c_{10}$	$((u^3 + u^2 - 1)^3)(u^8 - u^6 + 3u^4 - 2u^2 + 1)(u^{30} - 2u^{29} + \dots - u + 2)$
$c_8, c_9$	$(u^3 - u^2 + 2u - 1)^3(u^4 + u^3 + 3u^2 + 2u + 1)^2$ $\cdot (u^{30} - 8u^{29} + \dots + 19u + 4)$
$c_{11}, c_{12}$	$(u^3 - u^2 + 2u - 1)^3(u^4 - u^3 + 3u^2 - 2u + 1)^2$ $\cdot (u^{30} - 8u^{29} + \dots + 19u + 4)$



### V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
$c_1$	$((y-1)^8)(y^9 - 6y^8 + \dots + 18y - 1)$ $\cdot (y^{30} + 49y^{29} + \dots - 2273y + 16)$
$c_2, c_6$	$((y+1)^8)(y^9 + 6y^8 + \dots + 2y - 1)$ $\cdot (y^{30} + 5y^{29} + \dots + 75y + 4)$
$c_3, c_4, c_7$	$((y+1)^8)(y^9 + 6y^8 + \dots + 2y - 1)$ $\cdot (y^{30} + 41y^{29} + \dots + 283y + 4)$
$c_5, c_{10}$	$(y^3 - y^2 + 2y - 1)^3(y^4 - y^3 + 3y^2 - 2y + 1)^2$ $\cdot (y^{30} - 8y^{29} + \dots + 19y + 4)$
$c_8, c_9, c_{11}$ $c_{12}$	$(y^3 + 3y^2 + 2y - 1)^3(y^4 + 5y^3 + 7y^2 + 2y + 1)^2$ $\cdot (y^{30} + 28y^{29} + \dots - 721y + 16)$