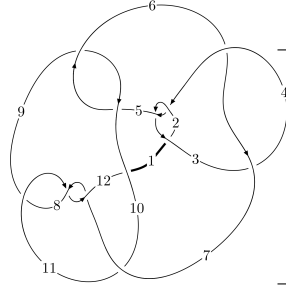
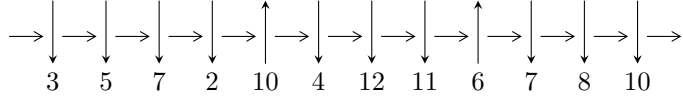


$12n_{0112}$  ( $K12n_{0112}$ )



A knot diagram<sup>1</sup>

**Linearized knot diagram**



**Solving Sequence**

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

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

$$I_1^u = \langle 1077612353882483u^{46} + 6277936033129932u^{45} + \dots + 3412880928878836b - 505154446936889, \\ - 1.84787 \times 10^{15}u^{46} - 8.27233 \times 10^{15}u^{45} + \dots + 3.41288 \times 10^{15}a - 4.21925 \times 10^{16}, \\ u^{47} + 4u^{46} + \dots + 19u + 1 \rangle$$

$$I_2^u = \langle b + u, u^2 + a - u + 3, u^3 - u^2 + 2u - 1 \rangle$$

$$I_3^u = \langle -2u^2a - au - u^2 + 5b - 3a - 3u + 1, a^2 + 2u^2 + a + 2, u^3 - u^2 + 2u - 1 \rangle$$

\* 3 irreducible components of  $\dim_{\mathbb{C}} = 0$ , with total 56 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.

$$\mathbf{I. } I_1^u = \langle 1.08 \times 10^{15} u^{46} + 6.28 \times 10^{15} u^{45} + \dots + 3.41 \times 10^{15} b - 5.05 \times 10^{14}, -1.85 \times 10^{15} u^{46} - 8.27 \times 10^{15} u^{45} + \dots + 3.41 \times 10^{15} a - 4.22 \times 10^{16}, u^{47} + 4u^{46} + \dots + 19u + 1 \rangle$$

**(i) Arc colorings**

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

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

$$a_4 = \begin{pmatrix} 0.541439u^{46} + 2.42386u^{45} + \dots + 24.5319u + 12.3627 \\ -0.315749u^{46} - 1.83948u^{45} + \dots - 7.06067u + 0.148014 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} 0.225691u^{46} + 0.584374u^{45} + \dots + 17.4712u + 12.5108 \\ -0.315749u^{46} - 1.83948u^{45} + \dots - 7.06067u + 0.148014 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.280491u^{46} - 1.05919u^{45} + \dots - 11.4369u - 5.46550 \\ -0.0627768u^{46} - 0.766991u^{45} + \dots + 0.136172u - 0.280491 \end{pmatrix}$$

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

$$a_{10} = \begin{pmatrix} u^3 + 2u \\ u^3 + u \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u^7 - 4u^5 - 4u^3 \\ -u^7 - 3u^5 - 2u^3 + u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -0.348010u^{46} - 0.729833u^{45} + \dots - 18.8545u - 5.94845 \\ -0.0657486u^{46} + 0.160517u^{45} + \dots - 0.310668u - 0.351986 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.421710u^{46} + 1.79404u^{45} + \dots + 25.1802u + 9.15766 \\ 0.0657486u^{46} - 0.160517u^{45} + \dots + 0.310668u + 0.351986 \end{pmatrix}$$

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

**(ii) Obstruction class = -1**

**(iii) Cusp Shapes**

$$= -\frac{1830100709424405}{1706440464439418} u^{46} - \frac{8067984018653329}{1706440464439418} u^{45} + \dots - \frac{99643634186005859}{3412880928878836} u - \frac{34355223541311473}{3412880928878836}$$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
$c_1$	$u^{47} + 30u^{46} + \dots + 15u + 1$
$c_2, c_4$	$u^{47} - 4u^{46} + \dots - 7u - 1$
$c_3, c_6$	$u^{47} - 4u^{46} + \dots + 5u - 1$
$c_5, c_9$	$u^{47} - 3u^{46} + \dots - 1920u^2 + 512$
$c_7, c_8, c_{11}$	$u^{47} - 4u^{46} + \dots + 19u - 1$
$c_{10}$	$u^{47} + 4u^{46} + \dots + 847u - 49$
$c_{12}$	$u^{47} - 22u^{46} + \dots + 8436145u + 61891$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
$c_1$	$y^{47} - 22y^{46} + \dots + 563y - 1$
$c_2, c_4$	$y^{47} - 30y^{46} + \dots + 15y - 1$
$c_3, c_6$	$y^{47} + 6y^{46} + \dots + 15y - 1$
$c_5, c_9$	$y^{47} + 49y^{46} + \dots + 1966080y - 262144$
$c_7, c_8, c_{11}$	$y^{47} + 38y^{46} + \dots + 299y - 1$
$c_{10}$	$y^{47} - 50y^{46} + \dots + 706923y - 2401$
$c_{12}$	$y^{47} - 78y^{46} + \dots + 77502601952059y - 3830495881$

(vi) Complex Volumes and Cusp Shapes

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.990601$ $a = 0.833676$ $b = 0.664625$	-5.24020	-20.8000
$u = 0.786688 + 0.584594I$ $a = -0.577297 + 0.239191I$ $b = -0.688477 - 0.244449I$	-4.21325 - 2.69895I	-16.8130 + 7.1920I
$u = 0.786688 - 0.584594I$ $a = -0.577297 - 0.239191I$ $b = -0.688477 + 0.244449I$	-4.21325 + 2.69895I	-16.8130 - 7.1920I
$u = -0.937187 + 0.140092I$ $a = -1.77830 + 0.44317I$ $b = -1.08476 + 1.02775I$	-11.2714 + 9.6299I	-12.05023 - 5.56960I
$u = -0.937187 - 0.140092I$ $a = -1.77830 - 0.44317I$ $b = -1.08476 - 1.02775I$	-11.2714 - 9.6299I	-12.05023 + 5.56960I
$u = -0.909124 + 0.020827I$ $a = -1.61166 - 0.74978I$ $b = -1.07056 - 1.08227I$	-11.11700 + 1.76651I	-12.65951 - 0.89834I
$u = -0.909124 - 0.020827I$ $a = -1.61166 + 0.74978I$ $b = -1.07056 + 1.08227I$	-11.11700 - 1.76651I	-12.65951 + 0.89834I
$u = -0.884070 + 0.070567I$ $a = 1.80575 - 0.63524I$ $b = 1.10158 - 1.05658I$	-6.89137 + 3.99655I	-10.09960 - 2.77536I
$u = -0.884070 - 0.070567I$ $a = 1.80575 + 0.63524I$ $b = 1.10158 + 1.05658I$	-6.89137 - 3.99655I	-10.09960 + 2.77536I
$u = 0.066162 + 1.148650I$ $a = 0.853937 + 0.565919I$ $b = 0.908296 + 0.182917I$	1.43778 - 0.23607I	-8.00000 + 0.I

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.066162 - 1.148650I$ $a = 0.853937 - 0.565919I$ $b = 0.908296 - 0.182917I$	$1.43778 + 0.23607I$	$-8.00000 + 0.I$
$u = 0.193279 + 1.168140I$ $a = 0.93146 + 1.53635I$ $b = 0.201370 - 0.733758I$	$0.26621 - 2.20233I$	$-8.00000 + 0.I$
$u = 0.193279 - 1.168140I$ $a = 0.93146 - 1.53635I$ $b = 0.201370 + 0.733758I$	$0.26621 + 2.20233I$	$-8.00000 + 0.I$
$u = -0.165090 + 1.196660I$ $a = 1.36966 + 0.81390I$ $b = 0.37394 - 1.40206I$	$5.59945 + 4.78062I$	$-8.00000 + 0.I$
$u = -0.165090 - 1.196660I$ $a = 1.36966 - 0.81390I$ $b = 0.37394 + 1.40206I$	$5.59945 - 4.78062I$	$-8.00000 + 0.I$
$u = -0.083039 + 1.251340I$ $a = -1.050290 - 0.729908I$ $b = -0.032297 + 1.293670I$	$6.38366 - 1.10832I$	0
$u = -0.083039 - 1.251340I$ $a = -1.050290 + 0.729908I$ $b = -0.032297 - 1.293670I$	$6.38366 + 1.10832I$	0
$u = -0.528989 + 1.159830I$ $a = -0.276035 - 0.628526I$ $b = -1.099140 - 0.886724I$	$-8.15630 - 4.45150I$	0
$u = -0.528989 - 1.159830I$ $a = -0.276035 + 0.628526I$ $b = -1.099140 + 0.886724I$	$-8.15630 + 4.45150I$	0
$u = -0.431113 + 1.216070I$ $a = 0.183252 + 0.675767I$ $b = 1.17095 + 0.89948I$	$-3.36307 + 0.70782I$	0

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.431113 - 1.216070I$ $a = 0.183252 - 0.675767I$ $b = 1.17095 - 0.89948I$	$-3.36307 - 0.70782I$	0
$u = 0.268673 + 1.267170I$ $a = -1.155430 + 0.312483I$ $b = -0.561623 - 0.268923I$	$2.34688 - 3.35469I$	0
$u = 0.268673 - 1.267170I$ $a = -1.155430 - 0.312483I$ $b = -0.561623 + 0.268923I$	$2.34688 + 3.35469I$	0
$u = 0.195960 + 1.323790I$ $a = -1.87522 - 1.08808I$ $b = -0.483549 + 0.192110I$	$1.76552 - 3.06033I$	0
$u = 0.195960 - 1.323790I$ $a = -1.87522 + 1.08808I$ $b = -0.483549 - 0.192110I$	$1.76552 + 3.06033I$	0
$u = 0.660594$ $a = -1.60556$ $b = -0.440165$	$-1.60120$	$-4.93400$
$u = -0.442721 + 1.267860I$ $a = -1.46962 - 0.89724I$ $b = -0.94426 + 1.16097I$	$-7.25263 + 3.05957I$	0
$u = -0.442721 - 1.267860I$ $a = -1.46962 + 0.89724I$ $b = -0.94426 - 1.16097I$	$-7.25263 - 3.05957I$	0
$u = 0.492547 + 1.264850I$ $a = 0.648333 - 0.236834I$ $b = 0.695100 + 0.386206I$	$-1.35004 - 5.25916I$	0
$u = 0.492547 - 1.264850I$ $a = 0.648333 + 0.236834I$ $b = 0.695100 - 0.386206I$	$-1.35004 + 5.25916I$	0

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.431930 + 1.300870I$ $a = -0.097552 - 0.602796I$ $b = -1.16017 - 0.97433I$	$-7.00155 + 6.55990I$	0
$u = -0.431930 - 1.300870I$ $a = -0.097552 + 0.602796I$ $b = -1.16017 + 0.97433I$	$-7.00155 - 6.55990I$	0
$u = 0.113592 + 1.383630I$ $a = -0.110146 - 0.914625I$ $b = 0.324059 + 0.771489I$	$4.86422 - 2.82003I$	0
$u = 0.113592 - 1.383630I$ $a = -0.110146 + 0.914625I$ $b = 0.324059 - 0.771489I$	$4.86422 + 2.82003I$	0
$u = -0.403708 + 1.330620I$ $a = 1.43895 + 0.94313I$ $b = 1.01510 - 1.16548I$	$-2.50308 + 8.61469I$	0
$u = -0.403708 - 1.330620I$ $a = 1.43895 - 0.94313I$ $b = 1.01510 + 1.16548I$	$-2.50308 - 8.61469I$	0
$u = -0.41853 + 1.38032I$ $a = -1.39448 - 0.94283I$ $b = -1.03069 + 1.11636I$	$-6.4847 + 14.4827I$	0
$u = -0.41853 - 1.38032I$ $a = -1.39448 + 0.94283I$ $b = -1.03069 - 1.11636I$	$-6.4847 - 14.4827I$	0
$u = 0.532405 + 0.124560I$ $a = -0.76238 - 2.70239I$ $b = -0.221659 + 0.420216I$	$-2.77991 - 0.46414I$	$-9.29269 - 10.51983I$
$u = 0.532405 - 0.124560I$ $a = -0.76238 + 2.70239I$ $b = -0.221659 - 0.420216I$	$-2.77991 + 0.46414I$	$-9.29269 + 10.51983I$



Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.380325 + 0.322466I$ $a = 0.088091 - 0.742546I$ $b = 0.519940 + 0.346223I$	$-0.572975 - 1.134450I$	$-6.55719 + 6.13916I$
$u = 0.380325 - 0.322466I$ $a = 0.088091 + 0.742546I$ $b = 0.519940 - 0.346223I$	$-0.572975 + 1.134450I$	$-6.55719 - 6.13916I$
$u = 0.20471 + 1.49097I$ $a = -0.255203 + 0.595995I$ $b = -0.547663 - 0.662712I$	$2.62514 - 6.12394I$	0
$u = 0.20471 - 1.49097I$ $a = -0.255203 - 0.595995I$ $b = -0.547663 + 0.662712I$	$2.62514 + 6.12394I$	0
$u = -0.394822 + 0.084126I$ $a = 0.10651 + 2.29856I$ $b = 0.240504 + 1.222520I$	$2.33626 - 2.65352I$	$2.71092 + 0.17214I$
$u = -0.394822 - 0.084126I$ $a = 0.10651 - 2.29856I$ $b = 0.240504 - 1.222520I$	$2.33626 + 2.65352I$	$2.71092 - 0.17214I$
$u = -0.0592454$ $a = 10.7472$ $b = 0.523564$	-1.19029	-8.22650

$$\text{II. } I_2^u = \langle b + u, u^2 + a - u + 3, u^3 - u^2 + 2u - 1 \rangle$$

(i) Arc colorings

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

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

$$a_4 = \begin{pmatrix} -u^2 + u - 3 \\ -u \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} -u^2 - 3 \\ -u \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} u \\ u^2 - u + 1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u^2 + 1 \\ u^2 - u + 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} -u^2 - u - 2 \\ -u^2 \end{pmatrix}$$

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

(ii) Obstruction class = 1

(iii) Cusp Shapes =  $-12u^2 + 11u - 24$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.215080 + 1.307140I$ $a = -1.122560 + 0.744862I$ $b = -0.215080 - 1.307140I$	$6.04826 - 5.65624I$	$-1.68581 + 7.63120I$
$u = 0.215080 - 1.307140I$ $a = -1.122560 - 0.744862I$ $b = -0.215080 + 1.307140I$	$6.04826 + 5.65624I$	$-1.68581 - 7.63120I$
$u = 0.569840$ $a = -2.75488$ $b = -0.569840$	$-2.22691$	$-21.6280$

III.

$$I_3^u = \langle -2u^2a - au - u^2 + 5b - 3a - 3u + 1, a^2 + 2u^2 + a + 2, u^3 - u^2 + 2u - 1 \rangle$$

(i) Arc colorings

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

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

$$a_4 = \begin{pmatrix} a \\ \frac{2}{5}u^2a + \frac{1}{5}u^2 + \dots + \frac{3}{5}a - \frac{1}{5} \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} \frac{2}{5}u^2a + \frac{1}{5}u^2 + \dots + \frac{8}{5}a - \frac{1}{5} \\ \frac{2}{5}u^2a + \frac{1}{5}u^2 + \dots + \frac{3}{5}a - \frac{1}{5} \end{pmatrix}$$

$$a_6 = \begin{pmatrix} \frac{1}{5}u^2a + \frac{8}{5}u^2 + \dots + \frac{4}{5}a + \frac{17}{5} \\ -\frac{1}{5}u^2a + \frac{2}{5}u^2 + \dots + \frac{1}{5}a + \frac{8}{5} \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} u \\ u^2 - u + 1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u^2 + 1 \\ u^2 - u + 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} \frac{1}{5}u^2a + \frac{8}{5}u^2 + \dots + \frac{4}{5}a + \frac{17}{5} \\ -\frac{1}{5}u^2a + \frac{2}{5}u^2 + \dots + \frac{1}{5}a + \frac{8}{5} \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 2u^2 + a - u + 3 \\ -\frac{1}{5}u^2a + \frac{2}{5}u^2 + \dots + \frac{1}{5}a + \frac{8}{5} \end{pmatrix}$$

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

(ii) Obstruction class = 1

(iii) Cusp Shapes =  $-\frac{17}{5}u^2a + \frac{24}{5}au - \frac{21}{5}u^2 - \frac{28}{5}a + \frac{2}{5}u - \frac{74}{5}$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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



(vi) Complex Volumes and Cusp Shapes

Solutions to $I_3^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.215080 + 1.307140I$ $a = 0.824718 - 0.424452I$ $b = -0.215080 + 1.307140I$	6.04826	$-4.98605 + 1.29886I$
$u = 0.215080 + 1.307140I$ $a = -1.82472 + 0.42445I$ $b = -0.569840$	$1.91067 - 2.82812I$	$-11.5625 - 9.3388I$
$u = 0.215080 - 1.307140I$ $a = 0.824718 + 0.424452I$ $b = -0.215080 - 1.307140I$	6.04826	$-4.98605 - 1.29886I$
$u = 0.215080 - 1.307140I$ $a = -1.82472 - 0.42445I$ $b = -0.569840$	$1.91067 + 2.82812I$	$-11.5625 + 9.3388I$
$u = 0.569840$ $a = -0.50000 + 1.54901I$ $b = -0.215080 + 1.307140I$	$1.91067 + 2.82812I$	$-13.9515 - 6.1477I$
$u = 0.569840$ $a = -0.50000 - 1.54901I$ $b = -0.215080 - 1.307140I$	$1.91067 - 2.82812I$	$-13.9515 + 6.1477I$

#### IV. u-Polynomials

Crossings	u-Polynomials at each crossing
$c_1$	$((u^3 - u^2 + 2u - 1)^3)(u^{47} + 30u^{46} + \dots + 15u + 1)$
$c_2$	$((u^3 + u^2 - 1)^3)(u^{47} - 4u^{46} + \dots - 7u - 1)$
$c_3$	$((u^3 - u^2 + 2u - 1)^3)(u^{47} - 4u^{46} + \dots + 5u - 1)$
$c_4$	$((u^3 - u^2 + 1)^3)(u^{47} - 4u^{46} + \dots - 7u - 1)$
$c_5, c_9$	$u^9(u^{47} - 3u^{46} + \dots - 1920u^2 + 512)$
$c_6$	$((u^3 + u^2 + 2u + 1)^3)(u^{47} - 4u^{46} + \dots + 5u - 1)$
$c_7, c_8$	$((u^3 - u^2 + 2u - 1)^3)(u^{47} - 4u^{46} + \dots + 19u - 1)$
$c_{10}$	$((u^3 - u^2 + 1)^3)(u^{47} + 4u^{46} + \dots + 847u - 49)$
$c_{11}$	$((u^3 + u^2 + 2u + 1)^3)(u^{47} - 4u^{46} + \dots + 19u - 1)$
$c_{12}$	$((u^3 - u^2 + 1)^3)(u^{47} - 22u^{46} + \dots + 8436145u + 61891)$

### V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
$c_1$	$((y^3 + 3y^2 + 2y - 1)^3)(y^{47} - 22y^{46} + \dots + 563y - 1)$
$c_2, c_4$	$((y^3 - y^2 + 2y - 1)^3)(y^{47} - 30y^{46} + \dots + 15y - 1)$
$c_3, c_6$	$((y^3 + 3y^2 + 2y - 1)^3)(y^{47} + 6y^{46} + \dots + 15y - 1)$
$c_5, c_9$	$y^9(y^{47} + 49y^{46} + \dots + 1966080y - 262144)$
$c_7, c_8, c_{11}$	$((y^3 + 3y^2 + 2y - 1)^3)(y^{47} + 38y^{46} + \dots + 299y - 1)$
$c_{10}$	$((y^3 - y^2 + 2y - 1)^3)(y^{47} - 50y^{46} + \dots + 706923y - 2401)$
$c_{12}$	$(y^3 - y^2 + 2y - 1)^3$ $\cdot (y^{47} - 78y^{46} + \dots + 77502601952059y - 3830495881)$