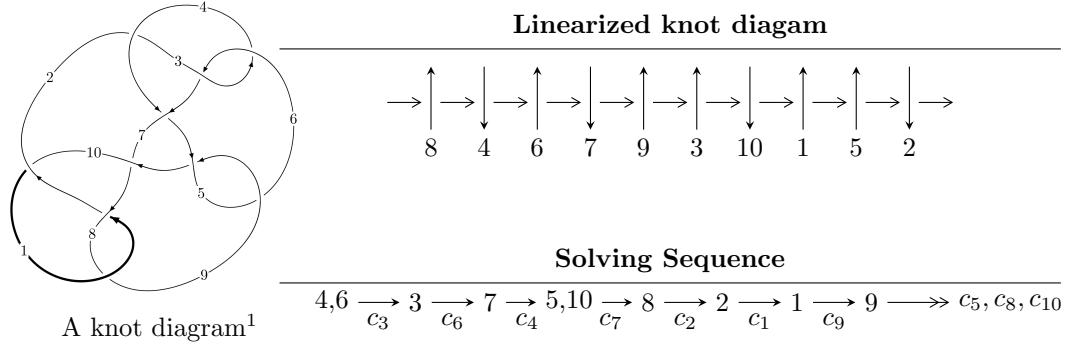


10<sub>60</sub> (K10a<sub>1</sub>)



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

$$\begin{aligned}
 I_1^u &= \langle u^{10} - u^9 + 3u^8 - 2u^7 + 3u^6 - 2u^5 - u^2 + b, \ u^{10} - u^9 + 4u^8 - 3u^7 + 6u^6 - 4u^5 + 3u^4 - 2u^3 - u^2 + a, \\
 &\quad u^{12} - u^{11} + 4u^{10} - 3u^9 + 7u^8 - 5u^7 + 6u^6 - 4u^5 + 2u^4 - 2u^3 + u^2 + 1 \rangle \\
 I_2^u &= \langle -u^{33} + u^{32} + \dots + b + 1, \ -u^{32} + 2u^{31} + \dots + a - 2, \ u^{34} - 2u^{33} + \dots - 3u + 1 \rangle \\
 I_3^u &= \langle b + u, \ a, \ u^2 + u + 1 \rangle \\
 I_4^u &= \langle b + 1, \ a, \ u^2 + u + 1 \rangle
 \end{aligned}$$

\* 4 irreducible components of  $\dim_{\mathbb{C}} = 0$ , with total 50 representations.

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<sup>1</sup>The image of knot diagram is generated by the software “**Draw programme**” developed by Andrew Bartholomew(<http://www.layer8.co.uk/math/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.

$$\text{I. } I_1^u = \langle u^{10} - u^9 + 3u^8 - 2u^7 + 3u^6 - 2u^5 - u^2 + b, u^{10} - u^9 + \dots - u^2 + a, u^{12} - u^{11} + \dots + u^2 + 1 \rangle$$

(i) **Arc colorings**

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

$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

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

$$a_5 = \begin{pmatrix} u^4 + u^2 + 1 \\ u^6 + 2u^4 + u^2 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -u^{10} + u^9 - 4u^8 + 3u^7 - 6u^6 + 4u^5 - 3u^4 + 2u^3 + u^2 \\ -u^{10} + u^9 - 3u^8 + 2u^7 - 3u^6 + 2u^5 + u^2 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} u^{11} - u^{10} + 3u^9 - 2u^8 + 3u^7 - 2u^6 - 2u^3 \\ -u^9 + u^8 - 3u^7 + 2u^6 - 3u^5 + 2u^4 - u^3 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u^2 + 1 \\ u^2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u^{10} + u^9 - 4u^8 + 3u^7 - 6u^6 + 4u^5 - 4u^4 + 2u^3 \\ -u^{10} + u^9 - 3u^8 + 2u^7 - 3u^6 + 2u^5 - u^4 + u^2 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u^9 - u^8 + 3u^7 - 2u^6 + 4u^5 - 2u^4 + 2u^3 \\ u^{11} - u^{10} + 4u^9 - 3u^8 + 6u^7 - 4u^6 + 4u^5 - 2u^4 \end{pmatrix}$$

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

(iii) **Cusp Shapes**

$$= 4u^{11} - 8u^{10} + 18u^9 - 26u^8 + 34u^7 - 40u^6 + 34u^5 - 24u^4 + 16u^3 - 4u^2 + 6u - 2$$

**(iv) u-Polynomials at the component**

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

**(v) Riley Polynomials at the component**

Crossings	Riley Polynomials at each crossing
$c_1, c_3, c_6$ $c_8$	$y^{12} + 7y^{11} + \cdots + 2y + 1$
$c_2, c_{10}$	$y^{12} - y^{11} + \cdots + 6y + 1$
$c_4, c_7$	$y^{12} - 9y^{11} + \cdots + 2y + 1$
$c_5, c_9$	$y^{12} + 5y^{11} + \cdots - 16y + 16$

(vi) Complex Volumes and Cusp Shapes

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.178968 + 0.877941I$		
$a = -1.176440 - 0.426280I$	$-1.87720 - 1.89052I$	$-4.24850 + 3.95054I$
$b = -0.702552 + 0.572575I$		
$u = -0.178968 - 0.877941I$		
$a = -1.176440 + 0.426280I$	$-1.87720 + 1.89052I$	$-4.24850 - 3.95054I$
$b = -0.702552 - 0.572575I$		
$u = 0.780097 + 0.281995I$		
$a = 1.73075 + 0.13511I$	$-0.78013 - 3.73206I$	$3.21966 + 2.51013I$
$b = 1.057890 + 0.528101I$		
$u = 0.780097 - 0.281995I$		
$a = 1.73075 - 0.13511I$	$-0.78013 + 3.73206I$	$3.21966 - 2.51013I$
$b = 1.057890 - 0.528101I$		
$u = -0.496677 + 1.117040I$		
$a = -0.55633 + 2.12256I$	$-2.98532 - 7.52709I$	$-1.88445 + 6.81034I$
$b = 2.35694 + 1.72461I$		
$u = -0.496677 - 1.117040I$		
$a = -0.55633 - 2.12256I$	$-2.98532 + 7.52709I$	$-1.88445 - 6.81034I$
$b = 2.35694 - 1.72461I$		
$u = 0.335900 + 1.207600I$		
$a = -0.736004 - 0.940791I$	$-9.48086 + 3.21477I$	$-6.88179 - 3.24710I$
$b = 1.36295 - 1.08335I$		
$u = 0.335900 - 1.207600I$		
$a = -0.736004 + 0.940791I$	$-9.48086 - 3.21477I$	$-6.88179 + 3.24710I$
$b = 1.36295 + 1.08335I$		
$u = 0.577185 + 1.164540I$		
$a = 0.15978 - 1.92327I$	$-5.9276 + 13.9800I$	$-2.44387 - 9.26853I$
$b = 2.60480 - 1.08526I$		
$u = 0.577185 - 1.164540I$		
$a = 0.15978 + 1.92327I$	$-5.9276 - 13.9800I$	$-2.44387 + 9.26853I$
$b = 2.60480 + 1.08526I$		

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.517537 + 0.434237I$		
$a = 1.57824 - 0.67661I$	$1.31194 - 0.92364I$	$6.23895 + 2.73595I$
$b = 0.319971 - 0.990159I$		
$u = -0.517537 - 0.434237I$		
$a = 1.57824 + 0.67661I$	$1.31194 + 0.92364I$	$6.23895 - 2.73595I$
$b = 0.319971 + 0.990159I$		

$$I_2^u = \langle -u^{33} + u^{32} + \dots + b + 1, -u^{32} + 2u^{31} + \dots + a - 2, u^{34} - 2u^{33} + \dots - 3u + 1 \rangle$$

(i) Arc colorings

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

$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

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

$$a_5 = \begin{pmatrix} u^4 + u^2 + 1 \\ u^6 + 2u^4 + u^2 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u^{32} - 2u^{31} + \dots - 3u + 2 \\ u^{33} - u^{32} + \dots + 2u - 1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} u^{12} + 3u^{10} + 5u^8 - 2u^7 + 4u^6 - 4u^5 + 2u^4 - 4u^3 + u^2 + 1 \\ -u^{33} + u^{32} + \dots + 3u^2 - u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u^2 + 1 \\ u^2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 3u^{32} - 3u^{31} + \dots - 6u + 4 \\ 2u^{33} + 14u^{31} + \dots + 2u^3 + u^2 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 2u^{32} - 2u^{31} + \dots - 3u + 2 \\ u^{33} + u^{32} + \dots + u^2 - u \end{pmatrix}$$

(ii) Obstruction class = -1

(iii) Cusp Shapes =  $-3u^{33} + 8u^{32} - 27u^{31} + 61u^{30} - 117u^{29} + 247u^{28} - 346u^{27} + 669u^{26} - 778u^{25} + 1328u^{24} - 1416u^{23} + 2034u^{22} - 2108u^{21} + 2492u^{20} - 2552u^{19} + 2536u^{18} - 2457u^{17} + 2183u^{16} - 1857u^{15} + 1579u^{14} - 1103u^{13} + 889u^{12} - 533u^{11} + 364u^{10} - 219u^9 + 98u^8 - 68u^7 + 38u^6 - 24u^5 + 20u^4 - 6u^3 + 14u^2 - 7u + 7$

**(iv) u-Polynomials at the component**

Crossings	u-Polynomials at each crossing
$c_1, c_3, c_6$ $c_8$	$u^{34} + 2u^{33} + \cdots + 3u + 1$
$c_2, c_{10}$	$u^{34} + 16u^{33} + \cdots + u + 1$
$c_4, c_7$	$u^{34} - 2u^{33} + \cdots - 183u + 73$
$c_5, c_9$	$(u^{17} + 2u^{16} + \cdots - 5u - 2)^2$

**(v) Riley Polynomials at the component**

Crossings	Riley Polynomials at each crossing
$c_1, c_3, c_6$ $c_8$	$y^{34} + 16y^{33} + \cdots + y + 1$
$c_2, c_{10}$	$y^{34} + 4y^{33} + \cdots + 17y + 1$
$c_4, c_7$	$y^{34} - 8y^{33} + \cdots - 12903y + 5329$
$c_5, c_9$	$(y^{17} + 10y^{16} + \cdots - 23y - 4)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.723313 + 0.731528I$		
$a = 0.151866 + 0.654346I$	$-0.85292 - 6.04614I$	$-0.59802 + 7.72564I$
$b = 0.514055 - 0.693038I$		
$u = -0.723313 - 0.731528I$		
$a = 0.151866 - 0.654346I$	$-0.85292 + 6.04614I$	$-0.59802 - 7.72564I$
$b = 0.514055 + 0.693038I$		
$u = -0.624264 + 0.668207I$		
$a = 0.475559 - 0.697137I$	$1.18281 - 1.86595I$	$4.34837 + 4.33037I$
$b = -0.299501 - 0.231577I$		
$u = -0.624264 - 0.668207I$		
$a = 0.475559 + 0.697137I$	$1.18281 + 1.86595I$	$4.34837 - 4.33037I$
$b = -0.299501 + 0.231577I$		
$u = -0.575012 + 0.946029I$		
$a = 0.488103 - 0.422358I$	$0.36198 - 2.83643I$	$1.96538 + 0.68566I$
$b = 0.267905 - 0.921351I$		
$u = -0.575012 - 0.946029I$		
$a = 0.488103 + 0.422358I$	$0.36198 + 2.83643I$	$1.96538 - 0.68566I$
$b = 0.267905 + 0.921351I$		
$u = 0.839419 + 0.294756I$		
$a = -2.21863 - 0.02513I$	$-3.32961 - 8.73955I$	$0.19211 + 5.92158I$
$b = -1.75177 - 0.94314I$		
$u = 0.839419 - 0.294756I$		
$a = -2.21863 + 0.02513I$	$-3.32961 + 8.73955I$	$0.19211 - 5.92158I$
$b = -1.75177 + 0.94314I$		
$u = -0.678441 + 0.881986I$		
$a = -0.269083 - 0.051645I$	$-1.29776 + 0.72905I$	$-2.79971 - 1.68011I$
$b = -1.117340 - 0.103610I$		
$u = -0.678441 - 0.881986I$		
$a = -0.269083 + 0.051645I$	$-1.29776 - 0.72905I$	$-2.79971 + 1.68011I$
$b = -1.117340 + 0.103610I$		

Solutions to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.441434 + 1.051180I$	$-1.29776 + 0.72905I$	$-2.79971 - 1.68011I$
$a = -0.086124 - 0.253169I$		
$b = -1.117340 - 0.103610I$		
$u = 0.441434 - 1.051180I$	$-1.29776 - 0.72905I$	$-2.79971 + 1.68011I$
$a = -0.086124 + 0.253169I$		
$b = -1.117340 + 0.103610I$		
$u = -0.484889 + 1.050780I$	$-0.47242 - 3.20284I$	$2.38038 + 3.25895I$
$a = 0.26211 - 1.43780I$		
$b = -1.36154 - 1.18102I$		
$u = -0.484889 - 1.050780I$	$-0.47242 + 3.20284I$	$2.38038 - 3.25895I$
$a = 0.26211 + 1.43780I$		
$b = -1.36154 + 1.18102I$		
$u = -0.387508 + 1.102150I$	$-3.76357$	$-3.71974 + 0.I$
$a = 0.68089 + 1.93658I$		
$b = 2.09444$		
$u = -0.387508 - 1.102150I$	$-3.76357$	$-3.71974 + 0.I$
$a = 0.68089 - 1.93658I$		
$b = 2.09444$		
$u = 0.805751 + 0.171048I$	$-5.23887 - 0.57053I$	$-2.63434 - 0.09683I$
$a = -1.33086 + 0.63651I$		
$b = -1.30277 + 0.63774I$		
$u = 0.805751 - 0.171048I$	$-5.23887 + 0.57053I$	$-2.63434 + 0.09683I$
$a = -1.33086 - 0.63651I$		
$b = -1.30277 - 0.63774I$		
$u = 0.492477 + 1.076420I$	$-0.85292 + 6.04614I$	$-0.59802 - 7.72564I$
$a = 0.071402 + 0.579407I$		
$b = 0.514055 + 0.693038I$		
$u = 0.492477 - 1.076420I$	$-0.85292 - 6.04614I$	$-0.59802 + 7.72564I$
$a = 0.071402 - 0.579407I$		
$b = 0.514055 - 0.693038I$		

Solutions to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.276836 + 1.167190I$	$-5.23887 - 0.57053I$	$-2.63434 - 0.09683I$
$a = 0.004108 + 1.012990I$		
$b = -1.30277 + 0.63774I$		
$u = 0.276836 - 1.167190I$		
$a = 0.004108 - 1.012990I$	$-5.23887 + 0.57053I$	$-2.63434 + 0.09683I$
$b = -1.30277 - 0.63774I$		
$u = 0.242359 + 1.211260I$		
$a = 0.12569 - 1.56340I$	$-8.21063 - 5.43973I$	$-5.49430 + 3.57628I$
$b = 1.50375 - 0.40483I$		
$u = 0.242359 - 1.211260I$		
$a = 0.12569 + 1.56340I$	$-8.21063 + 5.43973I$	$-5.49430 - 3.57628I$
$b = 1.50375 + 0.40483I$		
$u = 0.556877 + 1.148560I$		
$a = -0.15813 + 1.53835I$	$-3.32961 + 8.73955I$	$0.19211 - 5.92158I$
$b = -1.75177 + 0.94314I$		
$u = 0.556877 - 1.148560I$		
$a = -0.15813 - 1.53835I$	$-3.32961 - 8.73955I$	$0.19211 + 5.92158I$
$b = -1.75177 - 0.94314I$		
$u = 0.520828 + 1.178390I$		
$a = 0.76467 - 1.29488I$	$-8.21063 + 5.43973I$	$-5.49430 - 3.57628I$
$b = 1.50375 + 0.40483I$		
$u = 0.520828 - 1.178390I$		
$a = 0.76467 + 1.29488I$	$-8.21063 - 5.43973I$	$-5.49430 + 3.57628I$
$b = 1.50375 - 0.40483I$		
$u = 0.372098 + 0.537745I$		
$a = -0.782608 - 0.762639I$	$0.36198 + 2.83643I$	$1.96538 - 0.68566I$
$b = 0.267905 + 0.921351I$		
$u = 0.372098 - 0.537745I$		
$a = -0.782608 + 0.762639I$	$0.36198 - 2.83643I$	$1.96538 + 0.68566I$
$b = 0.267905 - 0.921351I$		

Solutions to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.521356 + 0.372677I$		
$a = 0.897739 + 0.802529I$	$1.18281 - 1.86595I$	$4.34837 + 4.33037I$
$b = -0.299501 - 0.231577I$		
$u = 0.521356 - 0.372677I$		
$a = 0.897739 - 0.802529I$	$1.18281 + 1.86595I$	$4.34837 - 4.33037I$
$b = -0.299501 + 0.231577I$		
$u = -0.596010 + 0.210045I$		
$a = -2.57670 + 0.72377I$	$-0.47242 + 3.20284I$	$2.38038 - 3.25895I$
$b = -1.36154 + 1.18102I$		
$u = -0.596010 - 0.210045I$		
$a = -2.57670 - 0.72377I$	$-0.47242 - 3.20284I$	$2.38038 + 3.25895I$
$b = -1.36154 - 1.18102I$		

$$\text{III. } I_3^u = \langle b + u, a, u^2 + u + 1 \rangle$$

(i) **Arc colorings**

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

$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 1 \\ -u - 1 \end{pmatrix}$$

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

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

$$a_{10} = \begin{pmatrix} 0 \\ -u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} u \\ u + 2 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -u \\ -u - 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 1 \\ -2u \end{pmatrix}$$

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

(ii) **Obstruction class** = 1

(iii) **Cusp Shapes** =  $8u + 4$

**(iv) u-Polynomials at the component**

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

**(v) Riley Polynomials at the component**

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

**(vi) Complex Volumes and Cusp Shapes**

Solutions to $I_3^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.500000 + 0.866025I$		
$a = 0$	$-4.05977I$	$0. + 6.92820I$
$b = 0.500000 - 0.866025I$		
$u = -0.500000 - 0.866025I$		
$a = 0$	$4.05977I$	$0. - 6.92820I$
$b = 0.500000 + 0.866025I$		

$$\text{IV. } I_4^u = \langle b+1, a, u^2 + u + 1 \rangle$$

(i) Arc colorings

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

$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 1 \\ -u - 1 \end{pmatrix}$$

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

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

$$a_{10} = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} -u \\ -u - 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u - 1 \\ -2 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$

(ii) Obstruction class = 1

(iii) Cusp Shapes = 3

**(iv) u-Polynomials at the component**

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

**(v) Riley Polynomials at the component**

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

**(vi) Complex Volumes and Cusp Shapes**

Solutions to $I_4^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.500000 + 0.866025I$		
$a = 0$	0	3.00000
$b = -1.00000$		
$u = -0.500000 - 0.866025I$		
$a = 0$	0	3.00000
$b = -1.00000$		

## V. u-Polynomials

Crossings	u-Polynomials at each crossing
$c_1, c_6$	$(u^2 - u + 1)^2$ $\cdot (u^{12} + u^{11} + 4u^{10} + 3u^9 + 7u^8 + 5u^7 + 6u^6 + 4u^5 + 2u^4 + 2u^3 + u^2 + 1)$ $\cdot (u^{34} + 2u^{33} + \cdots + 3u + 1)$
$c_2, c_{10}$	$((u^2 - u + 1)^2)(u^{12} + 7u^{11} + \cdots + 2u + 1)(u^{34} + 16u^{33} + \cdots + u + 1)$
$c_3, c_8$	$(u^2 + u + 1)^2$ $\cdot (u^{12} + u^{11} + 4u^{10} + 3u^9 + 7u^8 + 5u^7 + 6u^6 + 4u^5 + 2u^4 + 2u^3 + u^2 + 1)$ $\cdot (u^{34} + 2u^{33} + \cdots + 3u + 1)$
$c_4, c_7$	$((u^2 - u + 1)^2)(u^{12} - u^{11} + \cdots + 2u + 1)(u^{34} - 2u^{33} + \cdots - 183u + 73)$
$c_5, c_9$	$u^4(u^{12} - 5u^{11} + \cdots - 12u + 4)(u^{17} + 2u^{16} + \cdots - 5u - 2)^2$

## VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
$c_1, c_3, c_6$ $c_8$	$((y^2 + y + 1)^2)(y^{12} + 7y^{11} + \dots + 2y + 1)(y^{34} + 16y^{33} + \dots + y + 1)$
$c_2, c_{10}$	$((y^2 + y + 1)^2)(y^{12} - y^{11} + \dots + 6y + 1)(y^{34} + 4y^{33} + \dots + 17y + 1)$
$c_4, c_7$	$((y^2 + y + 1)^2)(y^{12} - 9y^{11} + \dots + 2y + 1)$ $\cdot (y^{34} - 8y^{33} + \dots - 12903y + 5329)$
$c_5, c_9$	$y^4(y^{12} + 5y^{11} + \dots - 16y + 16)(y^{17} + 10y^{16} + \dots - 23y - 4)^2$