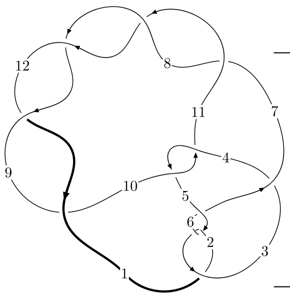
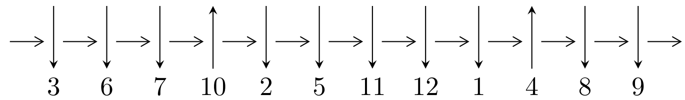
# $12a_{0236}$ ($K12a_{0236}$)




A knot diagram[1]

**Linearized knot diagam**




**Solving Sequence**

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

**Ideals for irreducible components[2] of $X_{\mathbf{par}}$**

$I_1^u = \langle 15u^{53} + 20u^{52} + \cdots + 2b - 8,\ 49u^{53} + 76u^{52} + \cdots + 4a - 12,\ u^{54} + 3u^{53} + \cdots + 3u - 1\rangle$
$I_2^u = \langle b,\ a^3 - a^2u + a^2 - 2au + 4a - 2u + 3,\ u^2 - u - 1\rangle$
$I_3^u = \langle b + 1,\ a,\ u + 1\rangle$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 61 representations.

[1]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`).

[2]All coefficients of polynomials are rational numbers. But the coefficients are sometimes approximated in decimal forms when there is not enough margin.

**I.** $I_1^u = \langle 15u^{53}+20u^{52}+\cdots+2b-8,\ 49u^{53}+76u^{52}+\cdots+4a-12,\ u^{54}+3u^{53}+\cdots+3u-1\rangle$

**(i) Arc colorings**

$$a_8 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -u \\ -u^3+u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u^2+1 \\ -u^4+2u^2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -\frac{49}{4}u^{53}-19u^{52}+\cdots-\frac{105}{4}u+3 \\ -\frac{15}{2}u^{53}-10u^{52}+\cdots-\frac{27}{2}u+4 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -\frac{7}{4}u^{53}-\frac{17}{4}u^{52}+\cdots-\frac{23}{4}u-\frac{9}{4} \\ 3u^{53}+\frac{19}{4}u^{52}+\cdots+7u-\frac{5}{4} \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u^3-2u \\ u^5-3u^3+u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} \frac{9}{4}u^{53}-\frac{327}{4}u^{51}+\cdots+\frac{9}{4}u-5 \\ \frac{19}{2}u^{53}+12u^{52}+\cdots+\frac{39}{2}u-5 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} \frac{1}{4}u^{53}+\frac{3}{4}u^{52}+\cdots+\frac{23}{4}u+\frac{5}{4} \\ -u^{16}+10u^{14}+\cdots-6u^3-4u^2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -\frac{1}{4}u^{52}-\frac{1}{2}u^{51}+\cdots-\frac{9}{2}u-\frac{1}{4} \\ \frac{1}{4}u^{53}+\frac{1}{2}u^{52}+\cdots+\frac{11}{2}u^2+\frac{5}{4}u \end{pmatrix}$$

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

**(iii) Cusp Shapes** $= -8u^{53}-6u^{52}+\cdots-19u+\frac{1}{2}$

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

| Crossings | u-Polynomials at each crossing |
|---|---|
| $c_1, c_6$ | $u^{54} + 18u^{53} + \cdots + 28u + 1$ |
| $c_2, c_5$ | $u^{54} + 2u^{53} + \cdots - 14u^2 + 1$ |
| $c_3$ | $u^{54} - 4u^{53} + \cdots - 2672u + 433$ |
| $c_4, c_{10}$ | $u^{54} + 2u^{53} + \cdots - 224u - 64$ |
| $c_7, c_8, c_9$<br>$c_{11}, c_{12}$ | $u^{54} + 3u^{53} + \cdots + 3u - 1$ |

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

| Crossings | Riley Polynomials at each crossing |
|---|---|
| $c_1, c_6$ | $y^{54} + 38y^{53} + \cdots - 252y + 1$ |
| $c_2, c_5$ | $y^{54} - 18y^{53} + \cdots - 28y + 1$ |
| $c_3$ | $y^{54} - 22y^{53} + \cdots - 7170760y + 187489$ |
| $c_4, c_{10}$ | $y^{54} + 36y^{53} + \cdots - 1024y + 4096$ |
| $c_7, c_8, c_9$<br>$c_{11}, c_{12}$ | $y^{54} - 73y^{53} + \cdots - 33y + 1$ |

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

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = -0.996240 + 0.174836I$<br>$a = -0.046917 - 0.171089I$<br>$b = -1.041700 + 0.270047I$ | $-0.93612 + 5.33064I$ | 0 |
| $u = -0.996240 - 0.174836I$<br>$a = -0.046917 + 0.171089I$<br>$b = -1.041700 - 0.270047I$ | $-0.93612 - 5.33064I$ | 0 |
| $u = -0.921952 + 0.190975I$<br>$a = 0.120199 + 0.149841I$<br>$b = 0.923078 - 0.334826I$ | $-0.122335 + 0.095210I$ | $-8.00000 + 0.I$ |
| $u = -0.921952 - 0.190975I$<br>$a = 0.120199 - 0.149841I$<br>$b = 0.923078 + 0.334826I$ | $-0.122335 - 0.095210I$ | $-8.00000 + 0.I$ |
| $u = 1.064210 + 0.209793I$<br>$a = -0.63295 - 1.61348I$<br>$b = 0.282300 - 1.168280I$ | $-4.75278 - 2.80286I$ | 0 |
| $u = 1.064210 - 0.209793I$<br>$a = -0.63295 + 1.61348I$<br>$b = 0.282300 + 1.168280I$ | $-4.75278 + 2.80286I$ | 0 |
| $u = 1.030910 + 0.348284I$<br>$a = -0.95535 - 1.48256I$<br>$b = 0.541961 - 1.230030I$ | $-3.03671 - 5.51505I$ | 0 |
| $u = 1.030910 - 0.348284I$<br>$a = -0.95535 + 1.48256I$<br>$b = 0.541961 + 1.230030I$ | $-3.03671 + 5.51505I$ | 0 |
| $u = 1.050340 + 0.376575I$<br>$a = 0.96873 + 1.41375I$<br>$b = -0.57619 + 1.29485I$ | $-4.25463 - 11.21320I$ | 0 |
| $u = 1.050340 - 0.376575I$<br>$a = 0.96873 - 1.41375I$<br>$b = -0.57619 - 1.29485I$ | $-4.25463 + 11.21320I$ | 0 |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 0.851855 + 0.026742I$<br>$a = -0.20081 - 2.78618I$<br>$b = 0.052036 - 0.745442I$ | $1.33981 - 2.97841I$ | $-16.2532 + 3.7844I$ |
| $u = 0.851855 - 0.026742I$<br>$a = -0.20081 + 2.78618I$<br>$b = 0.052036 + 0.745442I$ | $1.33981 + 2.97841I$ | $-16.2532 - 3.7844I$ |
| $u = 1.113960 + 0.306274I$<br>$a = 0.77810 + 1.39695I$<br>$b = -0.384474 + 1.331420I$ | $-9.35844 - 4.90130I$ | 0 |
| $u = 1.113960 - 0.306274I$<br>$a = 0.77810 - 1.39695I$<br>$b = -0.384474 - 1.331420I$ | $-9.35844 + 4.90130I$ | 0 |
| $u = 1.175560 + 0.167588I$<br>$a = 0.43398 + 1.38174I$<br>$b = -0.143925 + 1.276040I$ | $-6.63511 + 1.61390I$ | 0 |
| $u = 1.175560 - 0.167588I$<br>$a = 0.43398 - 1.38174I$<br>$b = -0.143925 - 1.276040I$ | $-6.63511 - 1.61390I$ | 0 |
| $u = -0.519490 + 0.531321I$<br>$a = -0.713490 - 0.165731I$<br>$b = -0.208766 + 1.145180I$ | $-1.05139 - 3.92853I$ | $-12.01559 + 2.10078I$ |
| $u = -0.519490 - 0.531321I$<br>$a = -0.713490 + 0.165731I$<br>$b = -0.208766 - 1.145180I$ | $-1.05139 + 3.92853I$ | $-12.01559 - 2.10078I$ |
| $u = -0.723166$<br>$a = 0.147422$<br>$b = 0.462202$ | $-1.27288$ | $-6.75210$ |
| $u = -0.542660 + 0.430784I$<br>$a = 0.615074 + 0.066547I$<br>$b = 0.268273 - 0.941014I$ | $-0.103530 + 1.138840I$ | $-10.54250 - 3.54234I$ |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = -0.542660 - 0.430784I$<br>$a = 0.615074 - 0.066547I$<br>$b = 0.268273 + 0.941014I$ | $-0.103530 - 1.138840I$ | $-10.54250 + 3.54234I$ |
| $u = -0.364228 + 0.577449I$<br>$a = -0.934188 - 0.148020I$<br>$b = 0.138461 + 1.174430I$ | $-4.71225 + 1.89294I$ | $-15.7177 - 3.8918I$ |
| $u = -0.364228 - 0.577449I$<br>$a = -0.934188 + 0.148020I$<br>$b = 0.138461 - 1.174430I$ | $-4.71225 - 1.89294I$ | $-15.7177 + 3.8918I$ |
| $u = -0.250036 + 0.633419I$<br>$a = -1.104300 - 0.206805I$<br>$b = 0.417478 + 1.191560I$ | $-0.22294 + 7.78581I$ | $-9.62304 - 7.92359I$ |
| $u = -0.250036 - 0.633419I$<br>$a = -1.104300 + 0.206805I$<br>$b = 0.417478 - 1.191560I$ | $-0.22294 - 7.78581I$ | $-9.62304 + 7.92359I$ |
| $u = -0.225695 + 0.589084I$<br>$a = 1.140710 + 0.141782I$<br>$b = -0.419400 - 1.081010I$ | $0.86035 + 2.32908I$ | $-7.32309 - 3.24267I$ |
| $u = -0.225695 - 0.589084I$<br>$a = 1.140710 - 0.141782I$<br>$b = -0.419400 + 1.081010I$ | $0.86035 - 2.32908I$ | $-7.32309 + 3.24267I$ |
| $u = 1.55391 + 0.02757I$<br>$a = -0.098217 - 0.452334I$<br>$b = -0.140479 - 0.824642I$ | $-6.99883 - 2.48049I$ | $0$ |
| $u = 1.55391 - 0.02757I$<br>$a = -0.098217 + 0.452334I$<br>$b = -0.140479 + 0.824642I$ | $-6.99883 + 2.48049I$ | $0$ |
| $u = -0.281495 + 0.312842I$<br>$a = 0.916828 - 0.383169I$<br>$b = -0.123921 - 0.686515I$ | $-0.459739 + 0.937129I$ | $-7.88969 - 7.07124I$ |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = -0.281495 - 0.312842I$<br>$a = 0.916828 + 0.383169I$<br>$b = -0.123921 + 0.686515I$ | $-0.459739 - 0.937129I$ | $-7.88969 + 7.07124I$ |
| $u = 0.135244 + 0.362504I$<br>$a = 2.08092 + 0.05555I$<br>$b = -0.644171 - 0.344545I$ | $3.08884 + 1.84557I$ | $-1.95761 - 1.92890I$ |
| $u = 0.135244 - 0.362504I$<br>$a = 2.08092 - 0.05555I$<br>$b = -0.644171 + 0.344545I$ | $3.08884 - 1.84557I$ | $-1.95761 + 1.92890I$ |
| $u = 0.208405 + 0.314817I$<br>$a = -2.34049 - 0.17879I$<br>$b = 0.644426 + 0.215596I$ | $2.77868 - 3.61490I$ | $-2.24333 + 5.08342I$ |
| $u = 0.208405 - 0.314817I$<br>$a = -2.34049 + 0.17879I$<br>$b = 0.644426 - 0.215596I$ | $2.77868 + 3.61490I$ | $-2.24333 - 5.08342I$ |
| $u = 1.63895$<br>$a = -0.245628$<br>$b = -0.507248$ | $-9.62995$ | $0$ |
| $u = -1.69921 + 0.00586I$<br>$a = 0.06322 - 2.33836I$<br>$b = -0.045647 - 1.071130I$ | $-7.84998 + 3.09710I$ | $0$ |
| $u = -1.69921 - 0.00586I$<br>$a = 0.06322 + 2.33836I$<br>$b = -0.045647 + 1.071130I$ | $-7.84998 - 3.09710I$ | $0$ |
| $u = 1.70201 + 0.03703I$<br>$a = -0.494003 - 0.097988I$<br>$b = -1.107300 - 0.281751I$ | $-9.45410 - 0.92395I$ | $0$ |
| $u = 1.70201 - 0.03703I$<br>$a = -0.494003 + 0.097988I$<br>$b = -1.107300 + 0.281751I$ | $-9.45410 + 0.92395I$ | $0$ |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 1.72317 + 0.04214I$<br>$a = 0.547011 + 0.098121I$<br>$b = 1.263400 + 0.305417I$ | $-10.67310 - 6.19112I$ | 0 |
| $u = 1.72317 - 0.04214I$<br>$a = 0.547011 - 0.098121I$<br>$b = 1.263400 - 0.305417I$ | $-10.67310 + 6.19112I$ | 0 |
| $u = 1.72764$<br>$a = 0.546125$<br>$b = 1.28414$ | $-14.7580$ | 0 |
| $u = -1.72994 + 0.09259I$<br>$a = 0.38653 - 1.80892I$<br>$b = -0.64312 - 1.34017I$ | $-12.8350 + 7.3215I$ | 0 |
| $u = -1.72994 - 0.09259I$<br>$a = 0.38653 + 1.80892I$<br>$b = -0.64312 + 1.34017I$ | $-12.8350 - 7.3215I$ | 0 |
| $u = -1.73510 + 0.10150I$<br>$a = -0.37724 + 1.76762I$<br>$b = 0.69739 + 1.37855I$ | $-14.1294 + 13.1902I$ | 0 |
| $u = -1.73510 - 0.10150I$<br>$a = -0.37724 - 1.76762I$<br>$b = 0.69739 - 1.37855I$ | $-14.1294 - 13.1902I$ | 0 |
| $u = -1.73884 + 0.05594I$<br>$a = 0.26375 - 1.92837I$<br>$b = -0.39367 - 1.37924I$ | $-14.8035 + 3.9179I$ | 0 |
| $u = -1.73884 - 0.05594I$<br>$a = 0.26375 + 1.92837I$<br>$b = -0.39367 + 1.37924I$ | $-14.8035 - 3.9179I$ | 0 |
| $u = -1.75253 + 0.07823I$<br>$a = -0.27989 + 1.81978I$<br>$b = 0.53764 + 1.48090I$ | $-19.6252 + 6.5170I$ | 0 |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = -1.75253 - 0.07823I$<br>$a = -0.27989 - 1.81978I$<br>$b = 0.53764 - 1.48090I$ | $-19.6252 - 6.5170I$ | 0 |
| $u = -1.75789 + 0.04187I$<br>$a = -0.16460 + 1.90001I$<br>$b = 0.29057 + 1.50492I$ | $-17.1812 - 0.7272I$ | 0 |
| $u = -1.75789 - 0.04187I$<br>$a = -0.16460 - 1.90001I$<br>$b = 0.29057 - 1.50492I$ | $-17.1812 + 0.7272I$ | 0 |
| $u = 0.168072$<br>$a = -3.39312$<br>$b = 0.392381$ | $-1.32970$ | $-6.13160$ |

**II. $I_2^u = \langle b,\ a^3 - a^2u + a^2 - 2au + 4a - 2u + 3,\ u^2 - u - 1\rangle$**

**(i) Arc colorings**

$$a_8 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 1 \\ u+1 \end{pmatrix}$$

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

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

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

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

$$a_3 = \begin{pmatrix} -au \\ -au-a \end{pmatrix}$$

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

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

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

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

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

**(iii) Cusp Shapes** $= -10a^2u - 9a^2 + 6au + a - 3u - 21$

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

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

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

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

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

| Solutions to $I_2^u$ | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = -0.618034$<br>$a = -0.922021$<br>$b = 0$ | $-2.10041$ | $-19.0460$ |
| $u = -0.618034$<br>$a = -0.34801 + 2.11500I$<br>$b = 0$ | $2.03717 + 2.82812I$ | $-5.93195 - 1.57712I$ |
| $u = -0.618034$<br>$a = -0.34801 - 2.11500I$<br>$b = 0$ | $2.03717 - 2.82812I$ | $-5.93195 + 1.57712I$ |
| $u = 1.61803$<br>$a = 0.132927 + 0.807858I$<br>$b = 0$ | $-5.85852 - 2.82812I$ | $-8.44207 + 3.24268I$ |
| $u = 1.61803$<br>$a = 0.132927 - 0.807858I$<br>$b = 0$ | $-5.85852 + 2.82812I$ | $-8.44207 - 3.24268I$ |
| $u = 1.61803$<br>$a = 0.352181$<br>$b = 0$ | $-9.99610$ | $-25.2060$ |

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

**(i) Arc colorings**

$$a_8 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -1 \\ -1 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -1 \\ -2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -1 \\ -2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -1 \\ -1 \end{pmatrix}$$

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

**(iii) Cusp Shapes** $= -18$

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

| Crossings | u-Polynomials at each crossing |
|---|---|
| $c_1, c_2, c_3$<br>$c_5, c_6, c_7$<br>$c_8, c_9, c_{11}$<br>$c_{12}$ | $u+1$ |
| $c_4, c_{10}$ | $u-1$ |

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

| Crossings | Riley Polynomials at each crossing |
|---|---|
| $c_1, c_2, c_3$<br>$c_4, c_5, c_6$<br>$c_7, c_8, c_9$<br>$c_{10}, c_{11}, c_{12}$ | $y - 1$ |

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

| Solutions to $I^u_3$ | $\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = -1.00000$<br>$a = \quad 0$<br>$b = -1.00000$ | $-4.93480$ | $-18.0000$ |

## IV. u-Polynomials

| Crossings | u-Polynomials at each crossing |
|---|---|
| $c_1$ | $(u+1)(u^3-u^2+2u-1)^2(u^{54}+18u^{53}+\cdots+28u+1)$ |
| $c_2$ | $(u+1)(u^3+u^2-1)^2(u^{54}+2u^{53}+\cdots-14u^2+1)$ |
| $c_3$ | $(u+1)(u^3-u^2+2u-1)^2(u^{54}-4u^{53}+\cdots-2672u+433)$ |
| $c_4, c_{10}$ | $u^6(u-1)(u^{54}+2u^{53}+\cdots-224u-64)$ |
| $c_5$ | $(u+1)(u^3-u^2+1)^2(u^{54}+2u^{53}+\cdots-14u^2+1)$ |
| $c_6$ | $(u+1)(u^3+u^2+2u+1)^2(u^{54}+18u^{53}+\cdots+28u+1)$ |
| $c_7, c_8, c_9$ | $(u+1)(u^2+u-1)^3(u^{54}+3u^{53}+\cdots+3u-1)$ |
| $c_{11}, c_{12}$ | $(u+1)(u^2-u-1)^3(u^{54}+3u^{53}+\cdots+3u-1)$ |

**V. Riley Polynomials**

| Crossings | Riley Polynomials at each crossing |
|---|---|
| $c_1, c_6$ | $(y-1)(y^3+3y^2+2y-1)^2(y^{54}+38y^{53}+\cdots-252y+1)$ |
| $c_2, c_5$ | $(y-1)(y^3-y^2+2y-1)^2(y^{54}-18y^{53}+\cdots-28y+1)$ |
| $c_3$ | $(y-1)(y^3+3y^2+2y-1)^2(y^{54}-22y^{53}+\cdots-7170760y+187489)$ |
| $c_4, c_{10}$ | $y^6(y-1)(y^{54}+36y^{53}+\cdots-1024y+4096)$ |
| $c_7, c_8, c_9$ $c_{11}, c_{12}$ | $(y-1)(y^2-3y+1)^3(y^{54}-73y^{53}+\cdots-33y+1)$ |