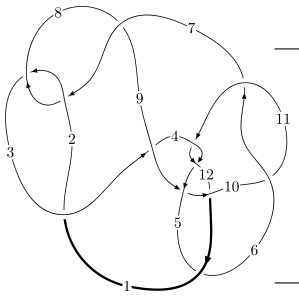
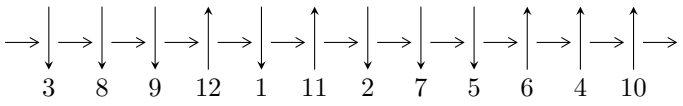
$12a_{0746}$ $(K12a_{0746})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u &= \langle 1872295u^{40} + 66648388u^{39} + \cdots + 16384b + 56849186816, \\
&\quad -1204339u^{40} - 38682066u^{39} + \cdots + 32768a + 33461256192, \\
&\quad u^{41} + 36u^{40} + \cdots + 753664u + 32768\rangle \\
I_2^u &= \langle -1.34031 \times 10^{114}a^{29}u^2 + 8.19598 \times 10^{113}a^{28}u^2 + \cdots - 1.54708 \times 10^{113}a + 1.81464 \times 10^{113}, \\
&\quad a^{29}u^2 - 3a^{28}u^2 + \cdots + 376065a - 197787,\ u^3 - u^2 + 1\rangle \\
I_3^u &= \langle 3u^{22} - 27u^{21} + \cdots + b + 8,\ 10u^{22} - 108u^{21} + \cdots + a + 11,\ u^{23} - 11u^{22} + \cdots + 6u^2 - 1\rangle
\end{aligned}$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 154 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. $I_1^u =$
$\langle \mathbf{1.87\times10^{6}u^{40}+6.66\times10^{7}u^{39}+\cdots+1.64\times10^{4}b+5.68\times10^{10}},\ \mathbf{-1.20\times10^{6}u^{40}-3.87\times10^{7}u^{39}+\cdots+3.28\times10^{4}a+3.35\times10^{10}},\ \mathbf{u^{41}+36u^{40}+\cdots+753664u+32768}\rangle$

(i) Arc colorings

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

$$a_{12} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_{5} = \begin{pmatrix} 36.7535u^{40} + 1180.48u^{39} + \cdots - 2.15671 \times 10^{7}u - 1.02116 \times 10^{6} \\ -114.276u^{40} - 4067.89u^{39} + \cdots - 7.75799 \times 10^{7}u - 3469799 \end{pmatrix}$$

$$a_{6} = \begin{pmatrix} -105.890u^{40} - 3697.76u^{39} + \cdots - 5.02880 \times 10^{7}u - 2.22550 \times 10^{6} \\ 188.678u^{40} + 6690.58u^{39} + \cdots + 1.11377 \times 10^{8}u + 4948929 \end{pmatrix}$$

$$a_{4} = \begin{pmatrix} 151.029u^{40} + 5248.38u^{39} + \cdots + 5.60128 \times 10^{7}u + 2.44864 \times 10^{6} \\ -114.276u^{40} - 4067.89u^{39} + \cdots - 7.75799 \times 10^{7}u - 3469799 \end{pmatrix}$$

$$a_{9} = \begin{pmatrix} -0.996094u^{40} - 34.8672u^{39} + \cdots - 720833u - 32767.5 \\ -\frac{1}{128}u^{39} - \frac{17}{64}u^{38} + \cdots - \frac{5631}{2}u - 128 \end{pmatrix}$$

$$a_{3} = \begin{pmatrix} -70.0146u^{40} - 2541.25u^{39} + \cdots - 6.41108 \times 10^{7}u - 2.91215 \times 10^{6} \\ -162.712u^{40} - 5404.01u^{39} + \cdots + 4.14685 \times 10^{6}u + 284302 \end{pmatrix}$$

$$a_{2} = \begin{pmatrix} -3.80273u^{40} - 133.703u^{39} + \cdots + 1.67651 \times 10^{6}u + 92160.5 \\ -7.14063u^{40} - 242.551u^{39} + \cdots - 524672.u - 18112 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -\frac{1}{256}u^{40} - \frac{17}{128}u^{39} + \cdots - 64u + \frac{1}{2} \\ \frac{1}{128}u^{40} + \frac{35}{128}u^{39} + \cdots + \frac{5889}{2}u + 128 \end{pmatrix}$$

$$a_{7} = \begin{pmatrix} 15.9481u^{40} + 686.796u^{39} + \cdots + 4.13601 \times 10^{7}u + 1877871 \\ 187.066u^{40} + 6323.84u^{39} + \cdots + 2.36552 \times 10^{7}u + 956542 \end{pmatrix}$$

$$a_{8} = \begin{pmatrix} -4.98438u^{40} - 175.410u^{39} + \cdots - 3.13728 \times 10^{6}u - 140671 \\ -0.902344u^{40} - 29.0820u^{39} + \cdots - 594048u - 29568 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{338489}{4096}u^{40} + \frac{6389611}{2048}u^{39} + \cdots + 101047790u + 4578666$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_8	$u^{41} + 13u^{40} + \cdots + 160u + 64$
c_2, c_7	$u^{41} + 7u^{40} + \cdots - 56u - 8$
c_3	$u^{41} - 7u^{40} + \cdots - 90808u - 82952$
c_4, c_6, c_{10} c_{11}	$u^{41} - u^{40} + \cdots + u + 1$
c_5, c_9	$u^{41} - 3u^{39} + \cdots + 11u^2 - 1$
c_{12}	$u^{41} + 36u^{40} + \cdots + 753664u + 32768$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_8	$y^{41} + 27y^{40} + \cdots - 34304y - 4096$
c_2, c_7	$y^{41} - 13y^{40} + \cdots + 160y - 64$
c_3	$y^{41} - 9y^{40} + \cdots + 128877877536y - 6881034304$
c_4, c_6, c_{10} c_{11}	$y^{41} - 29y^{40} + \cdots - 11y - 1$
c_5, c_9	$y^{41} - 6y^{40} + \cdots + 22y - 1$
c_{12}	$y^{41} - 12y^{40} + \cdots + 4294967296y - 1073741824$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.494014+0.701063I$ $a=\ \ 0.409463+1.060830I$ $b=\ \ 0.312502+0.783120I$	$-2.26568+4.00425I$	0
$u=-0.494014-0.701063I$ $a=\ \ 0.409463-1.060830I$ $b=\ \ 0.312502-0.783120I$	$-2.26568-4.00425I$	0
$u=-0.679352+0.497133I$ $a=\ \ 0.52438+1.38712I$ $b=-0.003532+0.738483I$	$-1.28548-7.83101I$	0
$u=-0.679352-0.497133I$ $a=\ \ 0.52438-1.38712I$ $b=-0.003532-0.738483I$	$-1.28548+7.83101I$	0
$u=-0.595725+0.586119I$ $a=\ \ 0.465409+1.248190I$ $b=\ \ 0.131910+0.781629I$	$-5.73006-1.89264I$	0
$u=-0.595725-0.586119I$ $a=\ \ 0.465409-1.248190I$ $b=\ \ 0.131910-0.781629I$	$-5.73006+1.89264I$	0
$u=-0.638217+0.462865I$ $a=-0.46096-1.41417I$ $b=-0.024247-0.688483I$	$-0.16397-2.42178I$	0
$u=-0.638217-0.462865I$ $a=-0.46096+1.41417I$ $b=-0.024247+0.688483I$	$-0.16397+2.42178I$	0
$u=-0.381047+0.557336I$ $a=-0.196071-1.164500I$ $b=-0.261553-0.610371I$	$-1.177580-0.730802I$	0
$u=-0.381047-0.557336I$ $a=-0.196071+1.164500I$ $b=-0.261553+0.610371I$	$-1.177580+0.730802I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.220982+0.635974I$ $a=-0.066893-0.971313I$ $b=-0.383287-0.536330I$	$-1.196420-0.686597I$	0
$u=-0.220982-0.635974I$ $a=-0.066893+0.971313I$ $b=-0.383287+0.536330I$	$-1.196420+0.686597I$	0
$u=-0.535272+0.041843I$ $a=-0.03970-1.81222I$ $b=-0.004595-0.454090I$	$2.83170-2.66585I$	0
$u=-0.535272-0.041843I$ $a=-0.03970+1.81222I$ $b=-0.004595+0.454090I$	$2.83170+2.66585I$	0
$u=-0.03812+1.48635I$ $a=-0.193307-0.307958I$ $b=-0.856986-0.426230I$	$-1.58172+4.75393I$	0
$u=-0.03812-1.48635I$ $a=-0.193307+0.307958I$ $b=-0.856986+0.426230I$	$-1.58172-4.75393I$	0
$u=-1.29282+0.89016I$ $a=-0.120939-1.059210I$ $b=1.44499-0.60902I$	$7.5896-18.8889I$	0
$u=-1.29282-0.89016I$ $a=-0.120939+1.059210I$ $b=1.44499+0.60902I$	$7.5896+18.8889I$	0
$u=-1.31919+0.85653I$ $a=-0.190725-1.009320I$ $b=1.35678-0.58313I$	$1.73884-12.70420I$	0
$u=-1.31919-0.85653I$ $a=-0.190725+1.009320I$ $b=1.35678+0.58313I$	$1.73884+12.70420I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.30409+0.89542I$ $a=\ \ 0.112178+1.034570I$ $b=-1.44431+0.58076I$	$8.6919-12.9687I$	0
$u=-1.30409-0.89542I$ $a=\ \ 0.112178-1.034570I$ $b=-1.44431-0.58076I$	$8.6919+12.9687I$	0
$u=-1.39385+0.82232I$ $a=-0.249205-0.882711I$ $b=\ \ 1.265940-0.478660I$	$3.40814-5.76593I$	0
$u=-1.39385-0.82232I$ $a=-0.249205+0.882711I$ $b=\ \ 1.265940+0.478660I$	$3.40814+5.76593I$	0
$u=-1.36265+0.87524I$ $a=\ \ 0.161547+0.929339I$ $b=-1.35943+0.49662I$	$6.04010-9.92499I$	0
$u=-1.36265-0.87524I$ $a=\ \ 0.161547-0.929339I$ $b=-1.35943-0.49662I$	$6.04010+9.92499I$	0
$u=\ \ 0.91303+1.42279I$ $a=-0.038442+0.198861I$ $b=\ \ 0.788921+0.209788I$	$1.61353+1.37467I$	0
$u=\ \ 0.91303-1.42279I$ $a=-0.038442-0.198861I$ $b=\ \ 0.788921-0.209788I$	$1.61353-1.37467I$	0
$u=-1.46025+0.98895I$ $a=\ \ 0.034082+0.742902I$ $b=-1.40055+0.29202I$	$11.9449-8.5283I$	0
$u=-1.46025-0.98895I$ $a=\ \ 0.034082-0.742902I$ $b=-1.40055-0.29202I$	$11.9449+8.5283I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.74926+0.43149I$ $a=\ \ 0.535712+0.368017I$ $b=-0.999153+0.163720I$	$1.06152-7.56290I$	0
$u=-1.74926-0.43149I$ $a=\ \ 0.535712-0.368017I$ $b=-0.999153-0.163720I$	$1.06152+7.56290I$	0
$u=-1.50520+1.01021I$ $a=-0.033661-0.682040I$ $b=\ \ 1.376430-0.245763I$	$11.74060-2.35789I$	0
$u=-1.50520-1.01021I$ $a=-0.033661+0.682040I$ $b=\ \ 1.376430+0.245763I$	$11.74060+2.35789I$	0
$u=-1.85197$ $a=\ \ 0.605999$ $b=-0.956151$	-2.89727	0
$u=-0.51953+1.79430I$ $a=-0.311173-0.112547I$ $b=-1.071610-0.412248I$	$5.01069+10.47520I$	0
$u=-0.51953-1.79430I$ $a=-0.311173+0.112547I$ $b=-1.071610+0.412248I$	$5.01069-10.47520I$	0
$u=-0.48632+1.95335I$ $a=\ \ 0.259519+0.091738I$ $b=\ \ 1.059950+0.359083I$	$5.99467+4.35481I$	0
$u=-0.48632-1.95335I$ $a=\ \ 0.259519-0.091738I$ $b=\ \ 1.059950-0.359083I$	$5.99467-4.35481I$	0
$u=-2.01115+0.42725I$ $a=-0.404223-0.233635I$ $b=\ \ 1.049910-0.089496I$	$3.11118-2.16671I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-2.01115-0.42725I$		
$a=-0.404223+0.233635I$	$3.11118+2.16671I$	0
$b=\ \ 1.049910+0.089496I$		

II. $I_2^u = \langle -1.34\times 10^{114}a^{29}u^2 + 8.20\times 10^{113}a^{28}u^2 + \cdots - 1.55\times 10^{113}a + 1.81\times 10^{113},\ a^{29}u^2 - 3a^{28}u^2 + \cdots + 376065a - 197787,\ u^3 - u^2 + 1\rangle$

(i) Arc colorings

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

$$a_{12} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_{5} = \begin{pmatrix} a \\ 23.4794a^{29}u^2 - 14.3576a^{28}u^2 + \cdots + 2.71016a - 3.17887 \end{pmatrix}$$

$$a_{6} = \begin{pmatrix} -23.4794a^{29}u^2 + 14.3576a^{28}u^2 + \cdots - 1.71016a + 3.17887 \\ -27.3348a^{29}u^2 + 27.3560a^{28}u^2 + \cdots + 3.17365a - 5.12591 \end{pmatrix}$$

$$a_{4} = \begin{pmatrix} -23.4794a^{29}u^2 + 14.3576a^{28}u^2 + \cdots - 1.71016a + 3.17887 \\ 23.4794a^{29}u^2 - 14.3576a^{28}u^2 + \cdots + 2.71016a - 3.17887 \end{pmatrix}$$

$$a_{9} = \begin{pmatrix} a^2u \\ -3.17106a^{29}u^2 - 0.698057a^{28}u^2 + \cdots + 1.92192a + 1.25518 \end{pmatrix}$$

$$a_{3} = \begin{pmatrix} -31.9841a^{29}u^2 + 23.7739a^{28}u^2 + \cdots - 2.37529a + 3.16621 \\ -36.2658a^{29}u^2 + 53.0390a^{28}u^2 + \cdots - 1.06179a - 3.97206 \end{pmatrix}$$

$$a_{2} = \begin{pmatrix} 6.78809a^{29}u^2 + 9.35682a^{28}u^2 + \cdots + 1.47987a + 0.523084 \\ 94.6666a^{29}u^2 - 99.3068a^{28}u^2 + \cdots + 1.75209a + 1.13744 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 16.4889a^{29}u^2 - 11.1613a^{28}u^2 + \cdots + 0.398085a - 0.546245 \\ -25.9756a^{29}u^2 + 15.4354a^{28}u^2 + \cdots + 0.595930a + 0.830310 \end{pmatrix}$$

$$a_{7} = \begin{pmatrix} -39.5709a^{29}u^2 + 24.8065a^{28}u^2 + \cdots + 7.53533a - 1.91582 \\ -22.4865a^{29}u^2 + 33.8142a^{28}u^2 + \cdots - 14.1437a - 0.0624415 \end{pmatrix}$$

$$a_{8} = \begin{pmatrix} 10.3333a^{29}u^2 - 21.1205a^{28}u^2 + \cdots + 6.37351a + 1.67760 \\ -75.5055a^{29}u^2 + 80.2424a^{28}u^2 + \cdots - 6.87074a - 2.17822 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 52.9371a^{29}u^2 - 16.2200a^{28}u^2 + \cdots - 9.05243a + 0.463477$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_8	$(u^{15}+5u^{14}+\cdots+12u^3+1)^6$
c_2, c_7	$(u^{15}-u^{14}+\cdots+2u-1)^6$
c_3	$(u^{15}+u^{14}+\cdots-4u-1)^6$
c_4, c_6, c_{10} c_{11}	$u^{90}+u^{89}+\cdots+119082u-20779$
c_5, c_9	$u^{90}+3u^{89}+\cdots+464u-43$
c_{12}	$(u^3-u^2+1)^{30}$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_8	$(y^{15} + 11y^{14} + \cdots - 84y^2 - 1)^6$
c_2, c_7	$(y^{15} - 5y^{14} + \cdots + 12y^3 - 1)^6$
c_3	$(y^{15} - y^{14} + \cdots + 16y - 1)^6$
c_4, c_6, c_{10} c_{11}	$y^{90} - 69y^{89} + \cdots - 21058454840y + 431766841$
c_5, c_9	$y^{90} + 23y^{89} + \cdots + 88800y + 1849$
c_{12}	$(y^3 - y^2 + 2y - 1)^{30}$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.877439 + 0.744862I$ $a = -0.198485 - 0.968997I$ $b = -0.694930 - 1.099660I$	$4.92757 - 1.26387I$	$3.53451 + 0.17150I$
$u = 0.877439 + 0.744862I$ $a = 0.371784 - 0.910068I$ $b = -0.912624 - 0.535628I$	$0.08992 + 4.90214I$	$-3.33798 - 5.65067I$
$u = 0.877439 + 0.744862I$ $a = 0.159762 + 0.960463I$ $b = 0.595959 + 1.123610I$	$5.44406 + 4.33335I$	$4.64158 - 5.71992I$
$u = 0.877439 + 0.744862I$ $a = -0.838607 - 0.592740I$ $b = -0.355737 + 0.306163I$	$5.44406 + 1.32289I$	$4.64158 - 0.23897I$
$u = 0.877439 + 0.744862I$ $a = 0.909407 - 0.268588I$ $b = -0.365280 - 0.653329I$	$2.93698 - 6.38968I$	$0.34485 + 4.41190I$
$u = 0.877439 + 0.744862I$ $a = 0.132786 - 0.935412I$ $b = -0.022537 - 1.398180I$	$2.93698 + 12.04590I$	$0.34485 - 10.37079I$
$u = 0.877439 + 0.744862I$ $a = -0.100613 + 0.931593I$ $b = 0.072834 + 1.359600I$	$3.89372 + 6.34664I$	$2.20327 - 5.56972I$
$u = 0.877439 + 0.744862I$ $a = -0.281606 - 0.878991I$ $b = -0.862552 - 0.726604I$	$0.48639 + 2.82812I$	$-2.07315 - 2.97945I$
$u = 0.877439 + 0.744862I$ $a = 0.858189 + 0.699478I$ $b = 0.467845 - 0.303279I$	$4.92757 + 6.92011I$	$3.53451 - 6.13039I$
$u = 0.877439 + 0.744862I$ $a = -0.860296 + 0.181110I$ $b = 0.318140 + 0.586816I$	$3.89372 - 0.69040I$	$2.20327 - 0.38918I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.877439 + 0.744862I$ $a = -0.371348 - 0.789042I$ $b = -1.183520 - 0.597870I$	$4.92757 + 6.92011I$	$3.53451 - 6.13039I$
$u = 0.877439 + 0.744862I$ $a = 0.572239 + 0.977295I$ $b = 0.746751 + 0.022825I$	$0.48639 + 2.82812I$	$-2.00000 - 2.97945I$
$u = 0.877439 + 0.744862I$ $a = 0.137577 - 0.832217I$ $b = 0.089498 - 1.235180I$	$-2.29749 + 6.43153I$	$-5.67348 - 7.45617I$
$u = 0.877439 + 0.744862I$ $a = 0.357793 + 0.741926I$ $b = 1.187160 + 0.517480I$	$5.44406 + 1.32289I$	$4.64158 - 0.23897I$
$u = 0.877439 + 0.744862I$ $a = -0.004665 + 0.807225I$ $b = 0.093049 + 1.047120I$	$1.55950 + 4.48897I$	$2.00066 - 6.94350I$
$u = 0.877439 + 0.744862I$ $a = 0.633092 - 0.463259I$ $b = -0.595731 - 0.536286I$	$-2.29749 - 0.77528I$	$-5.67348 + 1.49727I$
$u = 0.877439 + 0.744862I$ $a = -0.236441 + 1.237330I$ $b = 1.087060 + 0.511062I$	$0.089924 + 0.754105I$	$-3.33798 + 0.I$
$u = 0.877439 + 0.744862I$ $a = -0.045040 - 1.346060I$ $b = -1.144440 - 0.356431I$	$1.55950 + 4.48897I$	$0. - 6.94350I$
$u = 0.877439 + 0.744862I$ $a = 0.121715 - 0.636837I$ $b = 0.270487 - 0.931692I$	$0.089924 + 0.754105I$	$-3.33798 - 0.30823I$
$u = 0.877439 + 0.744862I$ $a = 0.53100 + 1.33570I$ $b = 1.084130 + 0.016709I$	$4.92757 - 1.26387I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.877439 + 0.744862I$ $a = -0.45129 - 1.37089I$ $b = -1.119650 - 0.076995I$	$5.44406 + 4.33335I$	0
$u = 0.877439 + 0.744862I$ $a = -0.012024 + 0.552750I$ $b = 0.920975 + 0.296695I$	$1.55950 + 1.16728I$	$2.00066 + 0.98460I$
$u = 0.877439 + 0.744862I$ $a = -0.10536 + 1.49620I$ $b = 1.237800 + 0.443667I$	$-2.29749 + 6.43153I$	0
$u = 0.877439 + 0.744862I$ $a = -0.388709 - 0.214363I$ $b = -1.194610 + 0.112491I$	$2.93698 - 6.38968I$	$0.34485 + 4.41190I$
$u = 0.877439 + 0.744862I$ $a = 0.349082 + 0.272090I$ $b = 1.170340 - 0.032932I$	$3.89372 - 0.69040I$	$2.20327 - 0.38918I$
$u = 0.877439 + 0.744862I$ $a = -0.03053 - 1.60206I$ $b = -1.305370 - 0.357996I$	$3.89372 + 6.34664I$	0
$u = 0.877439 + 0.744862I$ $a = -0.354568 - 0.154720I$ $b = 0.296292 + 0.020701I$	$1.55950 + 1.16728I$	$2.00066 + 0.98460I$
$u = 0.877439 + 0.744862I$ $a = -0.098435 + 0.363229I$ $b = -0.508129 + 0.572146I$	$0.08992 + 4.90214I$	$-3.33798 - 5.65067I$
$u = 0.877439 + 0.744862I$ $a = -0.01217 + 1.63528I$ $b = 1.326900 + 0.386050I$	$2.93698 + 12.04590I$	0
$u = 0.877439 + 0.744862I$ $a = -0.204433 - 0.044838I$ $b = -0.915203 + 0.211781I$	$-2.29749 - 0.77528I$	$-5.67348 + 1.49727I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.877439 - 0.744862I$ $a = -0.198485 + 0.968997I$ $b = -0.694930 + 1.099660I$	$4.92757 + 1.26387I$	$3.53451 - 0.17150I$
$u = 0.877439 - 0.744862I$ $a = 0.371784 + 0.910068I$ $b = -0.912624 + 0.535628I$	$0.08992 - 4.90214I$	$-3.33798 + 5.65067I$
$u = 0.877439 - 0.744862I$ $a = 0.159762 - 0.960463I$ $b = 0.595959 - 1.123610I$	$5.44406 - 4.33335I$	$4.64158 + 5.71992I$
$u = 0.877439 - 0.744862I$ $a = -0.838607 + 0.592740I$ $b = -0.355737 - 0.306163I$	$5.44406 - 1.32289I$	$4.64158 + 0.23897I$
$u = 0.877439 - 0.744862I$ $a = 0.909407 + 0.268588I$ $b = -0.365280 + 0.653329I$	$2.93698 + 6.38968I$	$0.34485 - 4.41190I$
$u = 0.877439 - 0.744862I$ $a = 0.132786 + 0.935412I$ $b = -0.022537 + 1.398180I$	$2.93698 - 12.04590I$	$0.34485 + 10.37079I$
$u = 0.877439 - 0.744862I$ $a = -0.100613 - 0.931593I$ $b = 0.072834 - 1.359600I$	$3.89372 - 6.34664I$	$2.20327 + 5.56972I$
$u = 0.877439 - 0.744862I$ $a = -0.281606 + 0.878991I$ $b = -0.862552 + 0.726604I$	$0.48639 - 2.82812I$	$-2.07315 + 2.97945I$
$u = 0.877439 - 0.744862I$ $a = 0.858189 - 0.699478I$ $b = 0.467845 + 0.303279I$	$4.92757 - 6.92011I$	$3.53451 + 6.13039I$
$u = 0.877439 - 0.744862I$ $a = -0.860296 - 0.181110I$ $b = 0.318140 - 0.586816I$	$3.89372 + 0.69040I$	$2.20327 + 0.38918I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.877439 - 0.744862I$ $a = -0.371348 + 0.789042I$ $b = -1.183520 + 0.597870I$	$4.92757 - 6.92011I$	$3.53451 + 6.13039I$
$u = 0.877439 - 0.744862I$ $a = 0.572239 - 0.977295I$ $b = 0.746751 - 0.022825I$	$0.48639 - 2.82812I$	$-2.00000 + 2.97945I$
$u = 0.877439 - 0.744862I$ $a = 0.137577 + 0.832217I$ $b = 0.089498 + 1.235180I$	$-2.29749 - 6.43153I$	$-5.67348 + 7.45617I$
$u = 0.877439 - 0.744862I$ $a = 0.357793 - 0.741926I$ $b = 1.187160 - 0.517480I$	$5.44406 - 1.32289I$	$4.64158 + 0.23897I$
$u = 0.877439 - 0.744862I$ $a = -0.004665 - 0.807225I$ $b = 0.093049 - 1.047120I$	$1.55950 - 4.48897I$	$2.00066 + 6.94350I$
$u = 0.877439 - 0.744862I$ $a = 0.633092 + 0.463259I$ $b = -0.595731 + 0.536286I$	$-2.29749 + 0.77528I$	$-5.67348 - 1.49727I$
$u = 0.877439 - 0.744862I$ $a = -0.236441 - 1.237330I$ $b = 1.087060 - 0.511062I$	$0.089924 - 0.754105I$	$-3.33798 + 0.I$
$u = 0.877439 - 0.744862I$ $a = -0.045040 + 1.346060I$ $b = -1.144440 + 0.356431I$	$1.55950 - 4.48897I$	$0. + 6.94350I$
$u = 0.877439 - 0.744862I$ $a = 0.121715 + 0.636837I$ $b = 0.270487 + 0.931692I$	$0.089924 - 0.754105I$	$-3.33798 + 0.30823I$
$u = 0.877439 - 0.744862I$ $a = 0.53100 - 1.33570I$ $b = 1.084130 - 0.016709I$	$4.92757 + 1.26387I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.877439 - 0.744862I$ $a = -0.45129 + 1.37089I$ $b = -1.119650 + 0.076995I$	$5.44406 - 4.33335I$	0
$u = 0.877439 - 0.744862I$ $a = -0.012024 - 0.552750I$ $b = 0.920975 - 0.296695I$	$1.55950 - 1.16728I$	$2.00066 - 0.98460I$
$u = 0.877439 - 0.744862I$ $a = -0.10536 - 1.49620I$ $b = 1.237800 - 0.443667I$	$-2.29749 - 6.43153I$	0
$u = 0.877439 - 0.744862I$ $a = -0.388709 + 0.214363I$ $b = -1.194610 - 0.112491I$	$2.93698 + 6.38968I$	$0.34485 - 4.41190I$
$u = 0.877439 - 0.744862I$ $a = 0.349082 - 0.272090I$ $b = 1.170340 + 0.032932I$	$3.89372 + 0.69040I$	$2.20327 + 0.38918I$
$u = 0.877439 - 0.744862I$ $a = -0.03053 + 1.60206I$ $b = -1.305370 + 0.357996I$	$3.89372 - 6.34664I$	0
$u = 0.877439 - 0.744862I$ $a = -0.354568 + 0.154720I$ $b = 0.296292 - 0.020701I$	$1.55950 - 1.16728I$	$2.00066 - 0.98460I$
$u = 0.877439 - 0.744862I$ $a = -0.098435 - 0.363229I$ $b = -0.508129 - 0.572146I$	$0.08992 - 4.90214I$	$-3.33798 + 5.65067I$
$u = 0.877439 - 0.744862I$ $a = -0.01217 - 1.63528I$ $b = 1.326900 - 0.386050I$	$2.93698 - 12.04590I$	0
$u = 0.877439 - 0.744862I$ $a = -0.204433 + 0.044838I$ $b = -0.915203 - 0.211781I$	$-2.29749 + 0.77528I$	$-5.67348 - 1.49727I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.754878$ $a=-0.403780+1.129560I$ $b=\ \ 1.43132+0.52104I$	$5.69708+1.66084I$	$8.52993-3.96405I$
$u=-0.754878$ $a=-0.403780-1.129560I$ $b=\ \ 1.43132-0.52104I$	$5.69708-1.66084I$	$8.52993+3.96405I$
$u=-0.754878$ $a=-0.092959+1.224570I$ $b=\ \ 1.50634+0.79741I$	$8.03130+3.51852I$	$8.73253-2.59027I$
$u=-0.754878$ $a=-0.092959-1.224570I$ $b=\ \ 1.50634-0.79741I$	$8.03130-3.51852I$	$8.73253+2.59027I$
$u=-0.754878$ $a=\ \ 0.069471+1.279600I$ $b=-1.47299+0.85189I$	$7.07456-9.21780I$	$6.87411+7.39135I$
$u=-0.754878$ $a=\ \ 0.069471-1.279600I$ $b=-1.47299-0.85189I$	$7.07456+9.21780I$	$6.87411-7.39135I$
$u=-0.754878$ $a=-0.126876+0.612176I$ $b=\ \ 1.83118+0.39406I$	$9.58164+1.50523I$	$11.17084-2.74048I$
$u=-0.754878$ $a=-0.126876-0.612176I$ $b=\ \ 1.83118-0.39406I$	$9.58164-1.50523I$	$11.17084+2.74048I$
$u=-0.754878$ $a=\ \ 0.243400+1.354700I$ $b=-1.31484+0.72928I$	$1.84009-3.60340I$	$0.+4.47672I$
$u=-0.754878$ $a=\ \ 0.243400-1.354700I$ $b=-1.31484-0.72928I$	$1.84009+3.60340I$	$0.-4.47672I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.754878$ $a=\ \ 0.093933+0.494243I$ $b=-1.88877+0.32776I$	$9.06515+4.09199I$	$10.06378-3.15094I$
$u=-0.754878$ $a=\ \ 0.093933-0.494243I$ $b=-1.88877-0.32776I$	$9.06515-4.09199I$	$10.06378+3.15094I$
$u=-0.754878$ $a=\ \ 0.397055$ $b=-1.77764$	4.62398	4.45610
$u=-0.754878$ $a=\ \ 0.58388+1.51765I$ $b=-1.115040+0.460107I$	$4.22751+2.07402I$	0
$u=-0.754878$ $a=\ \ 0.58388-1.51765I$ $b=-1.115040-0.460107I$	$4.22751-2.07402I$	0
$u=-0.754878$ $a=-1.03635+1.75516I$ $b=\ \ 1.031310+0.145485I$	$4.22751+2.07402I$	0
$u=-0.754878$ $a=-1.03635-1.75516I$ $b=\ \ 1.031310-0.145485I$	$4.22751-2.07402I$	0
$u=-0.754878$ $a=-2.05514$ $b=\ \ 1.47083$	4.62398	0
$u=-0.754878$ $a=\ \ 1.59129+1.54290I$ $b=-1.211590-0.026531I$	$5.69708+1.66084I$	0
$u=-0.754878$ $a=\ \ 1.59129-1.54290I$ $b=-1.211590+0.026531I$	$5.69708-1.66084I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.754878$ $a=-1.55806+1.98871I$ $b=\ \ 1.071580-0.110620I$	$1.84009-3.60340I$	0
$u=-0.754878$ $a=-1.55806-1.98871I$ $b=\ \ 1.071580+0.110620I$	$1.84009+3.60340I$	0
$u=-0.754878$ $a=\ \ 2.33002+0.98414I$ $b=-1.42352-0.09868I$	$9.58164+1.50523I$	0
$u=-0.754878$ $a=\ \ 2.33002-0.98414I$ $b=-1.42352+0.09868I$	$9.58164-1.50523I$	0
$u=-0.754878$ $a=-2.43118+0.80728I$ $b=\ \ 1.45629-0.08693I$	$9.06515+4.09199I$	0
$u=-0.754878$ $a=-2.43118-0.80728I$ $b=\ \ 1.45629+0.08693I$	$9.06515-4.09199I$	0
$u=-0.754878$ $a=\ \ 1.92531+1.98075I$ $b=-1.167290-0.204310I$	$8.03130+3.51852I$	0
$u=-0.754878$ $a=\ \ 1.92531-1.98075I$ $b=-1.167290+0.204310I$	$8.03130-3.51852I$	0
$u=-0.754878$ $a=-1.89885+2.09446I$ $b=\ \ 1.134480-0.227567I$	$7.07456-9.21780I$	0
$u=-0.754878$ $a=-1.89885-2.09446I$ $b=\ \ 1.134480+0.227567I$	$7.07456+9.21780I$	0

III. $I_3^u =$
$\langle 3u^{22}-27u^{21}+\cdots+b+8,\ 10u^{22}-108u^{21}+\cdots+a+11,\ u^{23}-11u^{22}+\cdots+6u^2-1\rangle$

(i) Arc colorings

$$a_{10} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -10u^{22} + 108u^{21} + \cdots - 3u - 11 \\ -3u^{22} + 27u^{21} + \cdots - u - 8 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -8u^{22} + 85u^{21} + \cdots + 8u - 1 \\ 4u^{22} - 43u^{21} + \cdots - 3u - 7 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -7u^{22} + 81u^{21} + \cdots - 2u - 3 \\ -3u^{22} + 27u^{21} + \cdots - u - 8 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} u^{20} - 10u^{19} + \cdots + 2u - 6 \\ -u^{22} + 11u^{21} + \cdots + 8u^2 - 5u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -10u^{22} + 106u^{21} + \cdots + 19u - 23 \\ -9u^{22} + 89u^{21} + \cdots - 10u + 1 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 5u^{22} - 64u^{21} + \cdots + 36u - 36 \\ -13u^{22} + 141u^{21} + \cdots - 25u + 9 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} u^{22} - 12u^{21} + \cdots + 14u - 6 \\ -u^{22} + 11u^{21} + \cdots - 6u + 1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u^{22} + 3u^{21} + \cdots - 15u + 8 \\ -u^{22} + 15u^{21} + \cdots - 25u^2 + 6u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -15u^{22} + 167u^{21} + \cdots - 42u + 18 \\ 4u^{22} - 46u^{21} + \cdots + 17u - 12 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -7u^{22} + 81u^{21} - 410u^{20} + 1170u^{19} - 1958u^{18} + 1526u^{17} + 1040u^{16} - 4555u^{15} + 6002u^{14} - 3400u^{13} - 1645u^{12} + 5003u^{11} - 4170u^{10} + 749u^9 + 1750u^8 - 1724u^7 + 369u^6 + 495u^5 - 422u^4 + 37u^3 + 87u^2 - 33u - 14$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{23} - 8u^{22} + \cdots + 10u - 1$
c_2	$u^{23} - 4u^{21} + \cdots - 5u^2 + 1$
c_3	$u^{23} - 4u^{21} + \cdots - 2u + 1$
c_4, c_{10}	$u^{23} + u^{22} + \cdots - u - 1$
c_5, c_9	$u^{23} + 2u^{21} + \cdots - 2u^3 + 1$
c_6, c_{11}	$u^{23} - u^{22} + \cdots - u + 1$
c_7	$u^{23} - 4u^{21} + \cdots + 5u^2 - 1$
c_8	$u^{23} + 8u^{22} + \cdots + 10u + 1$
c_{12}	$u^{23} - 11u^{22} + \cdots + 6u^2 - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_8	$y^{23} + 16y^{22} + \cdots + 6y - 1$
c_2, c_7	$y^{23} - 8y^{22} + \cdots + 10y - 1$
c_3	$y^{23} - 8y^{22} + \cdots + 14y - 1$
c_4, c_6, c_{10} c_{11}	$y^{23} - 23y^{22} + \cdots + 19y - 1$
c_5, c_9	$y^{23} + 4y^{22} + \cdots + 2y^2 - 1$
c_{12}	$y^{23} - 11y^{22} + \cdots + 12y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.555835 + 0.810467I$ $a = 0.849298 + 0.647053I$ $b = 0.826105 + 0.507900I$	$-0.12521 + 4.12503I$	$-4.08197 - 7.95735I$
$u = 0.555835 - 0.810467I$ $a = 0.849298 - 0.647053I$ $b = 0.826105 - 0.507900I$	$-0.12521 - 4.12503I$	$-4.08197 + 7.95735I$
$u = 0.786171 + 0.561866I$ $a = -0.436369 - 1.285730I$ $b = -0.624578 - 0.481706I$	$3.19343 + 4.34636I$	$0.49903 - 6.72980I$
$u = 0.786171 - 0.561866I$ $a = -0.436369 + 1.285730I$ $b = -0.624578 + 0.481706I$	$3.19343 - 4.34636I$	$0.49903 + 6.72980I$
$u = 0.120384 + 1.045060I$ $a = -0.780496 + 0.140247I$ $b = -1.046350 - 0.451258I$	$6.20855 + 3.41376I$	$4.45181 - 1.64497I$
$u = 0.120384 - 1.045060I$ $a = -0.780496 - 0.140247I$ $b = -1.046350 + 0.451258I$	$6.20855 - 3.41376I$	$4.45181 + 1.64497I$
$u = 0.169009 + 0.901271I$ $a = 1.023990 - 0.096921I$ $b = 1.033420 + 0.518597I$	$5.34046 + 9.23426I$	$2.20279 - 7.27152I$
$u = 0.169009 - 0.901271I$ $a = 1.023990 + 0.096921I$ $b = 1.033420 - 0.518597I$	$5.34046 - 9.23426I$	$2.20279 + 7.27152I$
$u = 0.702175 + 0.572443I$ $a = 0.66719 + 1.28026I$ $b = 0.654499 + 0.532828I$	$2.76459 - 0.64228I$	$-1.28641 - 1.06865I$
$u = 0.702175 - 0.572443I$ $a = 0.66719 - 1.28026I$ $b = 0.654499 - 0.532828I$	$2.76459 + 0.64228I$	$-1.28641 + 1.06865I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.879890$ $a=\ \ 0.883672$ $b=-1.46168$	5.65000	9.56220
$u=\ \ 1.098620+0.729899I$ $a=-0.020822-0.768926I$ $b=-0.680777-0.308139I$	$1.84637+2.11057I$	$4.08819-2.37531I$
$u=\ \ 1.098620-0.729899I$ $a=-0.020822+0.768926I$ $b=-0.680777+0.308139I$	$1.84637-2.11057I$	$4.08819+2.37531I$
$u=-0.586856+0.194737I$ $a=\ \ 1.39378+0.83860I$ $b=-1.60010-0.15916I$	$8.74207+1.13330I$	$0.99092+1.78318I$
$u=-0.586856-0.194737I$ $a=\ \ 1.39378-0.83860I$ $b=-1.60010+0.15916I$	$8.74207-1.13330I$	$0.99092-1.78318I$
$u=-0.591496$ $a=-1.74248$ $b=\ \ 1.64031$	4.02295	-11.4490
$u=-0.550238+0.150886I$ $a=-1.67417-0.80866I$ $b=\ \ 1.64624+0.14078I$	$8.24346-4.36576I$	$-1.19442+6.94819I$
$u=-0.550238-0.150886I$ $a=-1.67417+0.80866I$ $b=\ \ 1.64624-0.14078I$	$8.24346+4.36576I$	$-1.19442-6.94819I$
$u=\ \ 1.42729+0.41125I$ $a=-0.497723+0.516534I$ $b=\ \ 0.613329+0.151958I$	$0.13693+6.97577I$	$-4.04353-6.37741I$
$u=\ \ 1.42729-0.41125I$ $a=-0.497723-0.516534I$ $b=\ \ 0.613329-0.151958I$	$0.13693-6.97577I$	$-4.04353+6.37741I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.72002$ $a = -0.522429$ $b = 0.647002$	-3.77845	-13.2960
$u = 1.65329 + 0.81351I$ $a = 0.165937 - 0.354502I$ $b = -0.734604 - 0.163087I$	$1.82545 + 1.89698I$	$0. - 8.77753I$
$u = 1.65329 - 0.81351I$ $a = 0.165937 + 0.354502I$ $b = -0.734604 + 0.163087I$	$1.82545 - 1.89698I$	$0. + 8.77753I$

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^{15}+5u^{14}+\cdots+12u^3+1)^6)(u^{23}-8u^{22}+\cdots+10u-1)$ $\cdot(u^{41}+13u^{40}+\cdots+160u+64)$
c_2	$((u^{15}-u^{14}+\cdots+2u-1)^6)(u^{23}-4u^{21}+\cdots-5u^2+1)$ $\cdot(u^{41}+7u^{40}+\cdots-56u-8)$
c_3	$((u^{15}+u^{14}+\cdots-4u-1)^6)(u^{23}-4u^{21}+\cdots-2u+1)$ $\cdot(u^{41}-7u^{40}+\cdots-90808u-82952)$
c_4, c_{10}	$(u^{23}+u^{22}+\cdots-u-1)(u^{41}-u^{40}+\cdots+u+1)$ $\cdot(u^{90}+u^{89}+\cdots+119082u-20779)$
c_5, c_9	$(u^{23}+2u^{21}+\cdots-2u^3+1)(u^{41}-3u^{39}+\cdots+11u^2-1)$ $\cdot(u^{90}+3u^{89}+\cdots+464u-43)$
c_6, c_{11}	$(u^{23}-u^{22}+\cdots-u+1)(u^{41}-u^{40}+\cdots+u+1)$ $\cdot(u^{90}+u^{89}+\cdots+119082u-20779)$
c_7	$((u^{15}-u^{14}+\cdots+2u-1)^6)(u^{23}-4u^{21}+\cdots+5u^2-1)$ $\cdot(u^{41}+7u^{40}+\cdots-56u-8)$
c_8	$((u^{15}+5u^{14}+\cdots+12u^3+1)^6)(u^{23}+8u^{22}+\cdots+10u+1)$ $\cdot(u^{41}+13u^{40}+\cdots+160u+64)$
c_{12}	$((u^3-u^2+1)^{30})(u^{23}-11u^{22}+\cdots+6u^2-1)$ $\cdot(u^{41}+36u^{40}+\cdots+753664u+32768)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_8	$((y^{15}+11y^{14}+\cdots-84y^2-1)^6)(y^{23}+16y^{22}+\cdots+6y-1)$ $\cdot(y^{41}+27y^{40}+\cdots-34304y-4096)$
c_2, c_7	$((y^{15}-5y^{14}+\cdots+12y^3-1)^6)(y^{23}-8y^{22}+\cdots+10y-1)$ $\cdot(y^{41}-13y^{40}+\cdots+160y-64)$
c_3	$((y^{15}-y^{14}+\cdots+16y-1)^6)(y^{23}-8y^{22}+\cdots+14y-1)$ $\cdot(y^{41}-9y^{40}+\cdots+128877877536y-6881034304)$
c_4, c_6, c_{10} c_{11}	$(y^{23}-23y^{22}+\cdots+19y-1)(y^{41}-29y^{40}+\cdots-11y-1)$ $\cdot(y^{90}-69y^{89}+\cdots-21058454840y+431766841)$
c_5, c_9	$(y^{23}+4y^{22}+\cdots+2y^2-1)(y^{41}-6y^{40}+\cdots+22y-1)$ $\cdot(y^{90}+23y^{89}+\cdots+88800y+1849)$
c_{12}	$((y^3-y^2+2y-1)^{30})(y^{23}-11y^{22}+\cdots+12y-1)$ $\cdot(y^{41}-12y^{40}+\cdots+4294967296y-1073741824)$