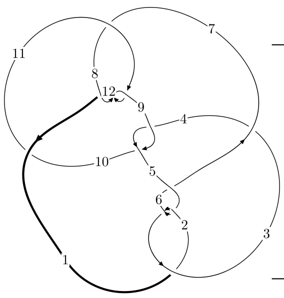
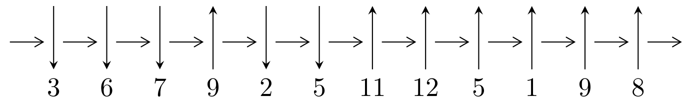
$12n_{0307}$ ($K12n_{0307}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -28u^{46} - 99u^{45} + \cdots + 4b + 28,\ -8u^{46} - 13u^{45} + \cdots + 4a + 9,\ u^{47} + 4u^{46} + \cdots + 3u - 1\rangle$$
$$I_2^u = \langle -u^2a + b + a,\ u^2a + a^2 - au + u^2 + a - u + 1,\ u^3 - u^2 + 1\rangle$$
$$I_3^u = \langle -u^2 + b + 1,\ a - 1,\ u^3 - u^2 + 1\rangle$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 56 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. $I_1^u = \langle -28u^{46} - 99u^{45} + \cdots + 4b + 28,\ -8u^{46} - 13u^{45} + \cdots + 4a + 9,\ u^{47} + 4u^{46} + \cdots + 3u - 1\rangle$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u^2 + 1 \\ u^2 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 2u^{46} + \frac{13}{4}u^{45} + \cdots - \frac{11}{2}u - \frac{9}{4} \\ 7u^{46} + \frac{99}{4}u^{45} + \cdots + \frac{113}{4}u - 7 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} \frac{1}{4}u^{45} + \frac{3}{4}u^{44} + \cdots + \frac{13}{4}u + 2 \\ -\frac{1}{4}u^{46} - u^{45} + \cdots - 2u + \frac{1}{4} \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^3 \\ u^5 - u^3 + u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} \frac{23}{4}u^{46} + \frac{39}{2}u^{45} + \cdots + \frac{41}{2}u - \frac{35}{4} \\ \frac{7}{2}u^{46} + 12u^{45} + \cdots + 15u - \frac{7}{2} \end{pmatrix}$$
$$a_9 = \begin{pmatrix} \frac{9}{4}u^{46} + \frac{15}{2}u^{45} + \cdots + \frac{11}{2}u - \frac{21}{4} \\ \frac{7}{2}u^{46} + 12u^{45} + \cdots + 15u - \frac{7}{2} \end{pmatrix}$$
$$a_4 = \begin{pmatrix} u^7 - 2u^5 + 2u^3 - 2u \\ -u^7 + u^5 - 2u^3 + u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -\frac{7}{4}u^{45} - \frac{19}{4}u^{44} + \cdots - \frac{31}{4}u + \frac{1}{2} \\ 3u^{46} + \frac{43}{4}u^{45} + \cdots + \frac{49}{4}u - 3 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{67}{4}u^{46} + \frac{101}{2}u^{45} + \cdots + \frac{225}{4}u - \frac{3}{2}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_6	$u^{47} + 18u^{46} + \cdots + 35u + 1$
c_2, c_5	$u^{47} + 4u^{46} + \cdots + 3u - 1$
c_3	$u^{47} - 4u^{46} + \cdots + 9u - 1$
c_4, c_9	$u^{47} - u^{46} + \cdots - 1024u - 512$
c_7	$u^{47} - 4u^{46} + \cdots - 4441u - 1153$
c_8, c_{11}, c_{12}	$u^{47} + 4u^{46} + \cdots - 5u - 1$
c_{10}	$u^{47} + 6u^{46} + \cdots - 31u - 3$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_6	$y^{47} + 26y^{46} + \cdots + 787y - 1$
c_2, c_5	$y^{47} - 18y^{46} + \cdots + 35y - 1$
c_3	$y^{47} - 58y^{46} + \cdots + 35y - 1$
c_4, c_9	$y^{47} + 49y^{46} + \cdots - 1703936y - 262144$
c_7	$y^{47} + 22y^{46} + \cdots - 27059341y - 1329409$
c_8, c_{11}, c_{12}	$y^{47} + 46y^{46} + \cdots - 5y - 1$
c_{10}	$y^{47} + 50y^{46} + \cdots + 475y - 9$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.542579 + 0.845522I$ $a = 0.52046 - 1.65523I$ $b = -0.81563 + 1.38652I$	$-2.89318 - 4.02038I$	$2.80109 + 3.23953I$
$u = -0.542579 - 0.845522I$ $a = 0.52046 + 1.65523I$ $b = -0.81563 - 1.38652I$	$-2.89318 + 4.02038I$	$2.80109 - 3.23953I$
$u = -0.849325 + 0.570079I$ $a = 0.646245 + 0.025782I$ $b = 0.284968 - 1.290140I$	$2.17863 + 2.27566I$	$3.19435 - 3.09284I$
$u = -0.849325 - 0.570079I$ $a = 0.646245 - 0.025782I$ $b = 0.284968 + 1.290140I$	$2.17863 - 2.27566I$	$3.19435 + 3.09284I$
$u = -0.406871 + 0.865991I$ $a = -0.021631 - 1.238880I$ $b = 0.731358 + 1.204980I$	$-9.98450 + 3.38049I$	$-1.32078 - 2.56603I$
$u = -0.406871 - 0.865991I$ $a = -0.021631 + 1.238880I$ $b = 0.731358 - 1.204980I$	$-9.98450 - 3.38049I$	$-1.32078 + 2.56603I$
$u = -0.750352 + 0.593025I$ $a = -1.020220 + 0.373354I$ $b = 0.367043 + 1.185280I$	$-1.34099 - 1.39615I$	$-0.069604 + 1.411136I$
$u = -0.750352 - 0.593025I$ $a = -1.020220 - 0.373354I$ $b = 0.367043 - 1.185280I$	$-1.34099 + 1.39615I$	$-0.069604 - 1.411136I$
$u = -0.559716 + 0.892329I$ $a = -0.45129 + 1.94560I$ $b = 1.07277 - 2.03235I$	$-9.05378 - 7.60668I$	$-0.58639 + 3.22129I$
$u = -0.559716 - 0.892329I$ $a = -0.45129 - 1.94560I$ $b = 1.07277 + 2.03235I$	$-9.05378 + 7.60668I$	$-0.58639 - 3.22129I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.035120 + 0.209994I$ $a = 0.882211 - 0.713191I$ $b = 0.774400 - 0.897748I$	$-6.95929 - 0.03774I$	$-5.96271 - 0.75839I$
$u = -1.035120 - 0.209994I$ $a = 0.882211 + 0.713191I$ $b = 0.774400 + 0.897748I$	$-6.95929 + 0.03774I$	$-5.96271 + 0.75839I$
$u = 0.766231 + 0.547591I$ $a = -1.65889 - 0.74494I$ $b = 1.179640 - 0.111554I$	$1.49256 - 0.66743I$	$4.54233 - 0.09202I$
$u = 0.766231 - 0.547591I$ $a = -1.65889 + 0.74494I$ $b = 1.179640 + 0.111554I$	$1.49256 + 0.66743I$	$4.54233 + 0.09202I$
$u = -0.472512 + 0.810458I$ $a = -0.352292 + 1.319250I$ $b = 0.091933 - 0.956029I$	$-3.35426 + 0.41641I$	$1.81917 - 2.68288I$
$u = -0.472512 - 0.810458I$ $a = -0.352292 - 1.319250I$ $b = 0.091933 + 0.956029I$	$-3.35426 - 0.41641I$	$1.81917 + 2.68288I$
$u = 0.916719 + 0.584389I$ $a = 1.43793 + 1.12449I$ $b = -1.185440 + 0.406825I$	$0.99495 - 3.89558I$	$2.00000 + 7.22930I$
$u = 0.916719 - 0.584389I$ $a = 1.43793 - 1.12449I$ $b = -1.185440 - 0.406825I$	$0.99495 + 3.89558I$	$2.00000 - 7.22930I$
$u = -0.919108 + 0.591025I$ $a = -0.158662 - 0.317671I$ $b = -0.820356 + 1.073340I$	$-1.86367 + 6.09961I$	$-1.78165 - 6.44137I$
$u = -0.919108 - 0.591025I$ $a = -0.158662 + 0.317671I$ $b = -0.820356 - 1.073340I$	$-1.86367 - 6.09961I$	$-1.78165 + 6.44137I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.807896 + 0.791990I$ $a = 1.46759 - 0.27866I$ $b = -1.13467 + 1.37041I$	$-0.27990 - 1.40024I$	$0. + 3.69287I$
$u = 0.807896 - 0.791990I$ $a = 1.46759 + 0.27866I$ $b = -1.13467 - 1.37041I$	$-0.27990 + 1.40024I$	$0. - 3.69287I$
$u = 1.005160 + 0.543180I$ $a = -1.74932 - 1.37109I$ $b = 1.071900 - 0.860916I$	$-5.01656 - 6.25958I$	$-2.44147 + 6.00005I$
$u = 1.005160 - 0.543180I$ $a = -1.74932 + 1.37109I$ $b = 1.071900 + 0.860916I$	$-5.01656 + 6.25958I$	$-2.44147 - 6.00005I$
$u = 0.880391 + 0.769089I$ $a = -0.562518 + 0.643186I$ $b = -0.135747 - 0.962284I$	$3.63076 - 2.90147I$	$-4.60953 + 3.97403I$
$u = 0.880391 - 0.769089I$ $a = -0.562518 - 0.643186I$ $b = -0.135747 + 0.962284I$	$3.63076 + 2.90147I$	$-4.60953 - 3.97403I$
$u = 1.175580 + 0.026203I$ $a = 0.226154 - 0.429398I$ $b = 0.18576 - 1.60517I$	$-9.13930 - 2.39543I$	$-3.30646 + 2.93927I$
$u = 1.175580 - 0.026203I$ $a = 0.226154 + 0.429398I$ $b = 0.18576 + 1.60517I$	$-9.13930 + 2.39543I$	$-3.30646 - 2.93927I$
$u = -0.797096 + 0.147471I$ $a = -0.470761 + 0.404647I$ $b = -0.305079 + 0.399977I$	$-1.341120 + 0.348467I$	$-5.61848 - 0.75974I$
$u = -0.797096 - 0.147471I$ $a = -0.470761 - 0.404647I$ $b = -0.305079 - 0.399977I$	$-1.341120 - 0.348467I$	$-5.61848 + 0.75974I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \ \ 0.710745 + 0.353826I$ $a = \ \ 1.99025 + 0.84733I$ $b = -0.945738 - 0.231377I$	$-3.72397 + 2.21391I$	$0.64719 + 2.18592I$
$u = \ \ 0.710745 - 0.353826I$ $a = \ \ 1.99025 - 0.84733I$ $b = -0.945738 + 0.231377I$	$-3.72397 - 2.21391I$	$0.64719 - 2.18592I$
$u = \ \ 1.210150 + 0.061384I$ $a = -0.556915 + 0.710918I$ $b = -0.53977 + 1.79323I$	$-15.7778 - 5.9089I$	$-6.14260 + 0.I$
$u = \ \ 1.210150 - 0.061384I$ $a = -0.556915 - 0.710918I$ $b = -0.53977 - 1.79323I$	$-15.7778 + 5.9089I$	$-6.14260 + 0.I$
$u = \ \ 0.941818 + 0.771815I$ $a = \ \ 0.18006 - 1.54737I$ $b = \ \ 1.40667 + 1.15010I$	$-0.67750 - 4.47945I$	0
$u = \ \ 0.941818 - 0.771815I$ $a = \ \ 0.18006 + 1.54737I$ $b = \ \ 1.40667 - 1.15010I$	$-0.67750 + 4.47945I$	0
$u = -1.083300 + 0.641319I$ $a = \ \ 1.62476 + 0.25908I$ $b = -0.486943 - 1.100850I$	$-5.15574 + 5.00343I$	0
$u = -1.083300 - 0.641319I$ $a = \ \ 1.62476 - 0.25908I$ $b = -0.486943 + 1.100850I$	$-5.15574 - 5.00343I$	0
$u = -1.082000 + 0.677407I$ $a = -2.00058 + 0.02197I$ $b = \ \ 0.94583 + 1.66881I$	$-4.51999 + 9.69823I$	0
$u = -1.082000 - 0.677407I$ $a = -2.00058 - 0.02197I$ $b = \ \ 0.94583 - 1.66881I$	$-4.51999 - 9.69823I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.122540+0.615470I$ $a=-1.60372-0.82721I$ $b=-0.358676+1.009600I$	$-12.16410+2.06990I$	0
$u=-1.122540-0.615470I$ $a=-1.60372+0.82721I$ $b=-0.358676-1.009600I$	$-12.16410-2.06990I$	0
$u=-1.095820+0.699570I$ $a=\ \ 2.36060-0.03371I$ $b=-1.00797-2.27284I$	$-10.6948+13.4951I$	0
$u=-1.095820-0.699570I$ $a=\ \ 2.36060+0.03371I$ $b=-1.00797+2.27284I$	$-10.6948-13.4951I$	0
$u=\ \ 0.207923+0.417127I$ $a=\ \ 1.69044-0.06549I$ $b=-0.631998-0.720191I$	$-3.46548+2.21318I$	$2.85688-2.29805I$
$u=\ \ 0.207923-0.417127I$ $a=\ \ 1.69044+0.06549I$ $b=-0.631998+0.720191I$	$-3.46548-2.21318I$	$2.85688+2.29805I$
$u=\ \ 0.187442$ $a=-2.83979$ $b=\ \ 0.511458$	0.826035	12.4720

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

(i) Arc colorings

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

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

$$a_7 = \begin{pmatrix} -u^2 + 1 \\ u^2 \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} au - u^2 - a + u \\ -au + u^2 - u \end{pmatrix}$$

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

$$a_{10} = \begin{pmatrix} u^2a - au \\ 0 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u^2a - au \\ 0 \end{pmatrix}$$

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

$$a_{12} = \begin{pmatrix} -u^2a + au - u^2 + 2u - 2 \\ u^2a - a \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= u^2a - 7au + a + 3u + 5$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.877439 + 0.744862I$		
$a = 0.162359 - 0.986732I$	$-5.65624I$	$2.97732 + 6.46189I$
$b = 1.16236 + 0.98673I$		
$u = 0.877439 + 0.744862I$		
$a = -0.500000 + 0.424452I$	$4.13758 - 2.82812I$	$11.75410 + 2.09676I$
$b = -0.162359 - 0.986732I$		
$u = 0.877439 - 0.744862I$		
$a = 0.162359 + 0.986732I$	$5.65624I$	$2.97732 - 6.46189I$
$b = 1.16236 - 0.98673I$		
$u = 0.877439 - 0.744862I$		
$a = -0.500000 - 0.424452I$	$4.13758 + 2.82812I$	$11.75410 - 2.09676I$
$b = -0.162359 + 0.986732I$		
$u = -0.754878$		
$a = -1.16236 + 0.98673I$	$-4.13758 - 2.82812I$	$-5.23142 + 6.76304I$
$b = 0.500000 - 0.424452I$		
$u = -0.754878$		
$a = -1.16236 - 0.98673I$	$-4.13758 + 2.82812I$	$-5.23142 - 6.76304I$
$b = 0.500000 + 0.424452I$		

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -u^2 + u + 1$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.877439 + 0.744862I$ $a = 1.00000$ $b = -0.78492 + 1.30714I$	0	$1.66236 - 0.56228I$
$u = 0.877439 - 0.744862I$ $a = 1.00000$ $b = -0.78492 - 1.30714I$	0	$1.66236 + 0.56228I$
$u = -0.754878$ $a = 1.00000$ $b = -0.430160$	0	-0.324720

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^3-u^2+2u-1)^3)(u^{47}+18u^{46}+\cdots+35u+1)$
c_2	$((u^3+u^2-1)^3)(u^{47}+4u^{46}+\cdots+3u-1)$
c_3	$((u^3-u^2+2u-1)^3)(u^{47}-4u^{46}+\cdots+9u-1)$
c_4, c_9	$u^9(u^{47}-u^{46}+\cdots-1024u-512)$
c_5	$((u^3-u^2+1)^3)(u^{47}+4u^{46}+\cdots+3u-1)$
c_6	$((u^3+u^2+2u+1)^3)(u^{47}+18u^{46}+\cdots+35u+1)$
c_7	$((u^3-u^2+1)^3)(u^{47}-4u^{46}+\cdots-4441u-1153)$
c_8	$((u^3+u^2+2u+1)^3)(u^{47}+4u^{46}+\cdots-5u-1)$
c_{10}	$((u^3-u^2+1)^3)(u^{47}+6u^{46}+\cdots-31u-3)$
c_{11}, c_{12}	$((u^3-u^2+2u-1)^3)(u^{47}+4u^{46}+\cdots-5u-1)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_6	$((y^3+3y^2+2y-1)^3)(y^{47}+26y^{46}+\cdots+787y-1)$
c_2, c_5	$((y^3-y^2+2y-1)^3)(y^{47}-18y^{46}+\cdots+35y-1)$
c_3	$((y^3+3y^2+2y-1)^3)(y^{47}-58y^{46}+\cdots+35y-1)$
c_4, c_9	$y^9(y^{47}+49y^{46}+\cdots-1703936y-262144)$
c_7	$((y^3-y^2+2y-1)^3)(y^{47}+22y^{46}+\cdots-2.70593\times 10^7 y-1329409)$
c_8, c_{11}, c_{12}	$((y^3+3y^2+2y-1)^3)(y^{47}+46y^{46}+\cdots-5y-1)$
c_{10}	$((y^3-y^2+2y-1)^3)(y^{47}+50y^{46}+\cdots+475y-9)$