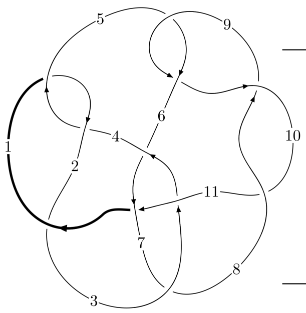
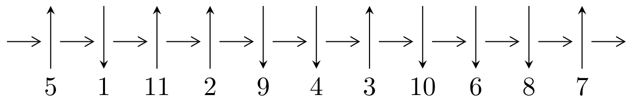
$11a_{52}$ ($K11a_{52}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -2.36254 \times 10^{45} u^{69} + 4.82278 \times 10^{45} u^{68} + \cdots + 1.20308 \times 10^{45} b + 1.54557 \times 10^{45},$$
$$- 8.19355 \times 10^{45} u^{69} + 1.66575 \times 10^{46} u^{68} + \cdots + 1.20308 \times 10^{45} a + 9.02950 \times 10^{45},\ u^{70} - 3u^{69} + \cdots + 2u -$$
$$I_2^u = \langle 3b - a - 1,\ a^2 - a + 7,\ u - 1 \rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 72 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.

$\boldsymbol{I^u_1 = \langle -2.36\times10^{45}u^{69}+4.82\times10^{45}u^{68}+\cdots+1.20\times10^{45}b+1.55\times10^{45},\ -8.19\times 10^{45}u^{69}+1.67\times10^{46}u^{68}+\cdots+1.20\times10^{45}a+9.03\times10^{45},\ u^{70}-3u^{69}+\cdots+2u+1\rangle}$

(i) Arc colorings

$$a_5 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_9 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_6 = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_2 = \begin{pmatrix}6.81046u^{69} - 13.8457u^{68} + \cdots - 19.7949u - 7.50529\\1.96374u^{69} - 4.00868u^{68} + \cdots - 1.36136u - 1.28468\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}-u\\-u^3+u\end{pmatrix}$$
$$a_1 = \begin{pmatrix}4.84672u^{69} - 9.83700u^{68} + \cdots - 18.4335u - 6.22062\\1.96374u^{69} - 4.00868u^{68} + \cdots - 1.36136u - 1.28468\end{pmatrix}$$
$$a_3 = \begin{pmatrix}-22.4801u^{69} + 51.8492u^{68} + \cdots + 114.630u + 32.1980\\0.955391u^{69} - 1.83843u^{68} + \cdots + 1.87417u + 0.890916\end{pmatrix}$$
$$a_4 = \begin{pmatrix}24.1027u^{69} - 55.6549u^{68} + \cdots - 122.558u - 34.6348\\-1.26457u^{69} + 2.55163u^{68} + \cdots - 0.684959u - 0.355838\end{pmatrix}$$
$$a_7 = \begin{pmatrix}15.0245u^{69} - 34.6120u^{68} + \cdots - 70.5010u - 21.5396\\-2.29156u^{69} + 4.76568u^{68} + \cdots + 9.69809u + 2.33641\end{pmatrix}$$
$$a_8 = \begin{pmatrix}u^3\\u^5-u^3+u\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-u^5-u\\-u^7+u^5-2u^3+u\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-u^5-u\\-u^7+u^5-2u^3+u\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -136.960u^{69} + 306.752u^{68} + \cdots + 605.662u + 186.864$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{70} + 2u^{69} + \cdots + 7u + 1$
c_2	$u^{70} + 26u^{69} + \cdots - 61u + 1$
c_3	$u^{70} + 7u^{69} + \cdots - 4u + 4$
c_5, c_9	$u^{70} + 3u^{69} + \cdots - 2u + 1$
c_6	$u^{70} - 4u^{69} + \cdots - 14859u + 4643$
c_7	$u^{70} - 2u^{69} + \cdots + 3989u + 641$
c_8, c_{10}	$u^{70} + 21u^{69} + \cdots + 8u + 1$
c_{11}	$u^{70} + 7u^{69} + \cdots - 4u^2 + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{70} + 26y^{69} + \cdots - 61y + 1$
c_2	$y^{70} + 38y^{69} + \cdots - 1741y + 1$
c_3	$y^{70} - 15y^{69} + \cdots - 328y + 16$
c_5, c_9	$y^{70} - 21y^{69} + \cdots - 8y + 1$
c_6	$y^{70} - 46y^{69} + \cdots + 512636971y + 21557449$
c_7	$y^{70} - 90y^{69} + \cdots - 12237909y + 410881$
c_8, c_{10}	$y^{70} + 59y^{69} + \cdots + 128y + 1$
c_{11}	$y^{70} - 9y^{69} + \cdots - 8y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.995386 + 0.165662I$ $a = 0.18980 - 2.80256I$ $b = 0.036237 - 1.176330I$	$-5.59225 + 3.69663I$	0
$u = -0.995386 - 0.165662I$ $a = 0.18980 + 2.80256I$ $b = 0.036237 + 1.176330I$	$-5.59225 - 3.69663I$	0
$u = -0.828278 + 0.688700I$ $a = -1.33032 + 1.83011I$ $b = -0.248336 + 0.844356I$	$1.83973 + 0.97289I$	0
$u = -0.828278 - 0.688700I$ $a = -1.33032 - 1.83011I$ $b = -0.248336 - 0.844356I$	$1.83973 - 0.97289I$	0
$u = 0.996317 + 0.448702I$ $a = -1.53721 - 1.79701I$ $b = 0.225350 - 0.984742I$	$-3.99310 - 2.18696I$	0
$u = 0.996317 - 0.448702I$ $a = -1.53721 + 1.79701I$ $b = 0.225350 + 0.984742I$	$-3.99310 + 2.18696I$	0
$u = 0.770782 + 0.776651I$ $a = -0.580521 - 0.966304I$ $b = -0.174351 - 1.283410I$	$0.52470 + 2.76607I$	0
$u = 0.770782 - 0.776651I$ $a = -0.580521 + 0.966304I$ $b = -0.174351 + 1.283410I$	$0.52470 - 2.76607I$	0
$u = -1.045200 + 0.337747I$ $a = 0.817778 - 0.202767I$ $b = 0.776298 - 0.488443I$	$0.03545 + 5.59321I$	0
$u = -1.045200 - 0.337747I$ $a = 0.817778 + 0.202767I$ $b = 0.776298 + 0.488443I$	$0.03545 - 5.59321I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.851573 + 0.160925I$ $a = -0.655289 - 0.443715I$ $b = 0.172499 - 0.029720I$	$-1.46844 - 0.34695I$	$-5.88246 + 0.51749I$
$u = 0.851573 - 0.160925I$ $a = -0.655289 + 0.443715I$ $b = 0.172499 + 0.029720I$	$-1.46844 + 0.34695I$	$-5.88246 - 0.51749I$
$u = -0.928519 + 0.676403I$ $a = -0.04063 - 1.70730I$ $b = -0.093994 - 0.803000I$	$1.51661 + 4.29217I$	0
$u = -0.928519 - 0.676403I$ $a = -0.04063 + 1.70730I$ $b = -0.093994 + 0.803000I$	$1.51661 - 4.29217I$	0
$u = -0.007678 + 0.846407I$ $a = -0.637096 - 0.540258I$ $b = 0.661839 - 0.998275I$	$2.09416 - 7.06733I$	$3.10109 + 7.21627I$
$u = -0.007678 - 0.846407I$ $a = -0.637096 + 0.540258I$ $b = 0.661839 + 0.998275I$	$2.09416 + 7.06733I$	$3.10109 - 7.21627I$
$u = 0.842274 + 0.793739I$ $a = 0.0857954 - 0.1036380I$ $b = -0.815235 - 1.138530I$	$4.87181 + 1.93616I$	0
$u = 0.842274 - 0.793739I$ $a = 0.0857954 + 0.1036380I$ $b = -0.815235 + 1.138530I$	$4.87181 - 1.93616I$	0
$u = -0.865807 + 0.768796I$ $a = 1.77759 - 1.14999I$ $b = -0.583169 + 0.848078I$	$3.51311 + 0.58844I$	0
$u = -0.865807 - 0.768796I$ $a = 1.77759 + 1.14999I$ $b = -0.583169 - 0.848078I$	$3.51311 - 0.58844I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.117840 + 0.306611I$ $a = -0.58017 + 2.41556I$ $b = 0.642942 + 1.069940I$	$-1.65551 + 10.94810I$	0
$u = -1.117840 - 0.306611I$ $a = -0.58017 - 2.41556I$ $b = 0.642942 - 1.069940I$	$-1.65551 - 10.94810I$	0
$u = -0.812863 + 0.213562I$ $a = 0.34965 - 3.03059I$ $b = -0.583671 - 1.124250I$	$-1.06806 + 4.56339I$	$-2.77563 - 10.69902I$
$u = -0.812863 - 0.213562I$ $a = 0.34965 + 3.03059I$ $b = -0.583671 + 1.124250I$	$-1.06806 - 4.56339I$	$-2.77563 + 10.69902I$
$u = -0.710673 + 0.928532I$ $a = -0.541662 - 0.437409I$ $b = 0.689342 - 0.894211I$	$6.57916 - 2.04356I$	0
$u = -0.710673 - 0.928532I$ $a = -0.541662 + 0.437409I$ $b = 0.689342 + 0.894211I$	$6.57916 + 2.04356I$	0
$u = 0.743525 + 0.906502I$ $a = -0.569223 + 0.509822I$ $b = 0.725223 + 1.096770I$	$6.51009 + 10.55950I$	0
$u = 0.743525 - 0.906502I$ $a = -0.569223 - 0.509822I$ $b = 0.725223 - 1.096770I$	$6.51009 - 10.55950I$	0
$u = -0.897032 + 0.760443I$ $a = 3.28347 - 0.31284I$ $b = -0.578878 - 0.878433I$	$3.41570 + 5.19038I$	0
$u = -0.897032 - 0.760443I$ $a = 3.28347 + 0.31284I$ $b = -0.578878 + 0.878433I$	$3.41570 - 5.19038I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.773851 + 0.887444I$ $a = -0.618601 - 0.280980I$ $b = 0.933958 - 0.585997I$	$8.09011 + 4.47407I$	0
$u = 0.773851 - 0.887444I$ $a = -0.618601 + 0.280980I$ $b = 0.933958 + 0.585997I$	$8.09011 - 4.47407I$	0
$u = -0.885450 + 0.784206I$ $a = -0.362536 - 0.180613I$ $b = -0.356108 - 0.054613I$	$3.87537 + 2.94930I$	0
$u = -0.885450 - 0.784206I$ $a = -0.362536 + 0.180613I$ $b = -0.356108 + 0.054613I$	$3.87537 - 2.94930I$	0
$u = 0.876344 + 0.799248I$ $a = -0.044434 + 0.720824I$ $b = -1.085200 - 0.452446I$	$6.80863 - 1.13129I$	0
$u = 0.876344 - 0.799248I$ $a = -0.044434 - 0.720824I$ $b = -1.085200 + 0.452446I$	$6.80863 + 1.13129I$	0
$u = 1.183560 + 0.155574I$ $a = -0.19004 - 1.75074I$ $b = 0.546606 - 0.763209I$	$-1.30105 - 1.37775I$	0
$u = 1.183560 - 0.155574I$ $a = -0.19004 + 1.75074I$ $b = 0.546606 + 0.763209I$	$-1.30105 + 1.37775I$	0
$u = 0.899558 + 0.792619I$ $a = 0.612904 + 0.759345I$ $b = -1.082270 + 0.519895I$	$6.73681 - 4.83956I$	0
$u = 0.899558 - 0.792619I$ $a = 0.612904 - 0.759345I$ $b = -1.082270 - 0.519895I$	$6.73681 + 4.83956I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.924273 + 0.773355I$ $a = 1.55359 + 1.40982I$ $b = -0.78729 + 1.17932I$	$4.61940 - 7.83060I$	0
$u = 0.924273 - 0.773355I$ $a = 1.55359 - 1.40982I$ $b = -0.78729 - 1.17932I$	$4.61940 + 7.83060I$	0
$u = -0.108732 + 0.784297I$ $a = -0.658484 + 0.376100I$ $b = 0.720698 + 0.648573I$	$3.13610 - 1.75909I$	$5.49516 + 1.80706I$
$u = -0.108732 - 0.784297I$ $a = -0.658484 - 0.376100I$ $b = 0.720698 - 0.648573I$	$3.13610 + 1.75909I$	$5.49516 - 1.80706I$
$u = 0.788707 + 0.062767I$ $a = 2.20666 + 6.58986I$ $b = -0.481951 + 0.889150I$	$-1.27782 - 2.20300I$	$28.2888 - 15.0727I$
$u = 0.788707 - 0.062767I$ $a = 2.20666 - 6.58986I$ $b = -0.481951 - 0.889150I$	$-1.27782 + 2.20300I$	$28.2888 + 15.0727I$
$u = -0.779588 + 0.927411I$ $a = -0.779208 + 0.452650I$ $b = 0.697500 + 0.803718I$	$6.85272 + 3.28181I$	0
$u = -0.779588 - 0.927411I$ $a = -0.779208 - 0.452650I$ $b = 0.697500 - 0.803718I$	$6.85272 - 3.28181I$	0
$u = 1.181350 + 0.278165I$ $a = 0.60168 + 1.40057I$ $b = 0.581386 + 0.947779I$	$-1.93471 + 3.15779I$	0
$u = 1.181350 - 0.278165I$ $a = 0.60168 - 1.40057I$ $b = 0.581386 - 0.947779I$	$-1.93471 - 3.15779I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.965304 + 0.740829I$ $a = 1.15589 + 1.48686I$ $b = -0.116249 + 1.319010I$	$-0.06465 - 8.51032I$	0
$u = 0.965304 - 0.740829I$ $a = 1.15589 - 1.48686I$ $b = -0.116249 - 1.319010I$	$-0.06465 + 8.51032I$	0
$u = 1.005940 + 0.794706I$ $a = 0.301599 - 0.708101I$ $b = 0.954425 + 0.553357I$	$7.36308 - 10.70740I$	0
$u = 1.005940 - 0.794706I$ $a = 0.301599 + 0.708101I$ $b = 0.954425 - 0.553357I$	$7.36308 + 10.70740I$	0
$u = 1.029420 + 0.788695I$ $a = -1.61908 - 1.68690I$ $b = 0.719263 - 1.118330I$	$5.6142 - 16.8243I$	0
$u = 1.029420 - 0.788695I$ $a = -1.61908 + 1.68690I$ $b = 0.719263 + 1.118330I$	$5.6142 + 16.8243I$	0
$u = -1.016160 + 0.823146I$ $a = 0.181100 + 0.185446I$ $b = 0.685303 - 0.740870I$	$6.10986 + 3.15378I$	0
$u = -1.016160 - 0.823146I$ $a = 0.181100 - 0.185446I$ $b = 0.685303 + 0.740870I$	$6.10986 - 3.15378I$	0
$u = -1.055400 + 0.789410I$ $a = -1.34149 + 1.48669I$ $b = 0.664262 + 0.939808I$	$5.50755 + 8.37088I$	0
$u = -1.055400 - 0.789410I$ $a = -1.34149 - 1.48669I$ $b = 0.664262 - 0.939808I$	$5.50755 - 8.37088I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.654651 + 0.128429I$ $a = -2.57121 + 1.64254I$ $b = -0.425524 - 0.842724I$	$-1.06799 + 1.58770I$	$1.27174 - 9.61226I$
$u = 0.654651 - 0.128429I$ $a = -2.57121 - 1.64254I$ $b = -0.425524 + 0.842724I$	$-1.06799 - 1.58770I$	$1.27174 + 9.61226I$
$u = -0.608095 + 0.260027I$ $a = -0.243882 - 1.135630I$ $b = -0.760996 - 0.715752I$	$1.05262 + 2.72622I$	$4.23016 - 8.33460I$
$u = -0.608095 - 0.260027I$ $a = -0.243882 + 1.135630I$ $b = -0.760996 + 0.715752I$	$1.05262 - 2.72622I$	$4.23016 + 8.33460I$
$u = 0.255521 + 0.549099I$ $a = -0.808489 + 0.387160I$ $b = -0.006007 + 0.938840I$	$-1.97330 - 1.67417I$	$-2.89034 + 3.89687I$
$u = 0.255521 - 0.549099I$ $a = -0.808489 - 0.387160I$ $b = -0.006007 - 0.938840I$	$-1.97330 + 1.67417I$	$-2.89034 - 3.89687I$
$u = -0.427977 + 0.312404I$ $a = -1.221700 - 0.326639I$ $b = -0.627763 + 0.219249I$	$1.45022 - 0.18071I$	$7.16773 - 1.07123I$
$u = -0.427977 - 0.312404I$ $a = -1.221700 + 0.326639I$ $b = -0.627763 - 0.219249I$	$1.45022 + 0.18071I$	$7.16773 + 1.07123I$
$u = -0.152266 + 0.264102I$ $a = -1.186220 + 0.013858I$ $b = -0.626147 + 0.914671I$	$0.59157 - 2.55234I$	$2.38321 + 1.51119I$
$u = -0.152266 - 0.264102I$ $a = -1.186220 - 0.013858I$ $b = -0.626147 - 0.914671I$	$0.59157 + 2.55234I$	$2.38321 - 1.51119I$

II. $I_2^u = \langle 3b - a - 1,\ a^2 - a + 7,\ u - 1 \rangle$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} a \\ \frac{1}{3}a + \frac{1}{3} \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} \frac{2}{3}a - \frac{1}{3} \\ \frac{1}{3}a + \frac{1}{3} \end{pmatrix}$$
$$a_3 = \begin{pmatrix} \frac{2}{3}a - \frac{4}{3} \\ \frac{1}{3}a - \frac{2}{3} \end{pmatrix}$$
$$a_4 = \begin{pmatrix} \frac{2}{3}a - \frac{4}{3} \\ \frac{1}{3}a - \frac{2}{3} \end{pmatrix}$$
$$a_7 = \begin{pmatrix} \frac{2}{3}a + \frac{5}{3} \\ \frac{1}{3}a + \frac{4}{3} \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -2 \\ -1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -2 \\ -1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -\frac{4}{3}a - \frac{7}{3}$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

	Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u =$	1.00000		
$a =$	$0.50000 + 2.59808I$	$-1.64493 + 2.02988I$	$-3.00000 - 3.46410I$
$b =$	$0.500000 + 0.866025I$		
$u =$	1.00000		
$a =$	$0.50000 - 2.59808I$	$-1.64493 - 2.02988I$	$-3.00000 + 3.46410I$
$b =$	$0.500000 - 0.866025I$		

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^2+u+1)(u^{70}+2u^{69}+\cdots+7u+1)$
c_2	$(u^2+u+1)(u^{70}+26u^{69}+\cdots-61u+1)$
c_3	$u^2(u^{70}+7u^{69}+\cdots-4u+4)$
c_4	$(u^2-u+1)(u^{70}+2u^{69}+\cdots+7u+1)$
c_5	$((u-1)^2)(u^{70}+3u^{69}+\cdots-2u+1)$
c_6	$(u^2-u+1)(u^{70}-4u^{69}+\cdots-14859u+4643)$
c_7	$(u^2-u+1)(u^{70}-2u^{69}+\cdots+3989u+641)$
c_8	$((u-1)^2)(u^{70}+21u^{69}+\cdots+8u+1)$
c_9	$((u+1)^2)(u^{70}+3u^{69}+\cdots-2u+1)$
c_{10}	$((u+1)^2)(u^{70}+21u^{69}+\cdots+8u+1)$
c_{11}	$((u+1)^2)(u^{70}+7u^{69}+\cdots-4u^2+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4	$(y^2+y+1)(y^{70}+26y^{69}+\cdots-61y+1)$
c_2	$(y^2+y+1)(y^{70}+38y^{69}+\cdots-1741y+1)$
c_3	$y^2(y^{70}-15y^{69}+\cdots-328y+16)$
c_5, c_9	$((y-1)^2)(y^{70}-21y^{69}+\cdots-8y+1)$
c_6	$(y^2+y+1)(y^{70}-46y^{69}+\cdots+5.12637\times10^8y+2.15574\times10^7)$
c_7	$(y^2+y+1)(y^{70}-90y^{69}+\cdots-1.22379\times10^7y+410881)$
c_8, c_{10}	$((y-1)^2)(y^{70}+59y^{69}+\cdots+128y+1)$
c_{11}	$((y-1)^2)(y^{70}-9y^{69}+\cdots-8y+1)$