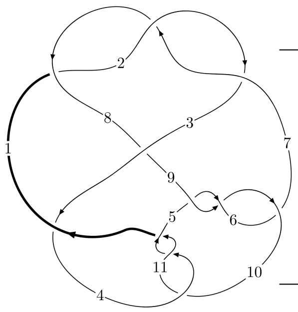
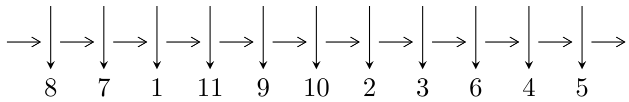
$11a_{340}$ ($K11a_{340}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -u^{16} + 2u^{15} + \cdots + b - 1,\ u^{17} - u^{16} + \cdots + 2a + 6u,\ u^{18} - 3u^{17} + \cdots - 4u + 2\rangle$$
$$I_2^u = \langle u^{12}a + u^{11}a + \cdots + b + a,\ u^{12} + u^{11} + \cdots + a^2 - a,$$
$$u^{14} + u^{13} + 7u^{12} + 6u^{11} + 18u^{10} + 13u^9 + 19u^8 + 10u^7 + 4u^6 - 2u^5 - 4u^4 - 4u^3 + u + 1\rangle$$
$$I_3^u = \langle b - 1,\ 2a + u,\ u^2 + 2\rangle$$

$$I_1^v = \langle a,\ b + 1,\ v + 1\rangle$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 49 representations.

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[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.

$$\boldsymbol{I_1^u = \langle -u^{16}+2u^{15}+\cdots+b-1,\ u^{17}-u^{16}+\cdots+2a+6u,\ u^{18}-3u^{17}+\cdots-4u+2\rangle}$$

(i) Arc colorings

$$a_3 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_7 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_2 = \begin{pmatrix}1\\-u^2\end{pmatrix}$$
$$a_8 = \begin{pmatrix}-u\\u^3+u\end{pmatrix}$$
$$a_9 = \begin{pmatrix}-u^3-2u\\u^3+u\end{pmatrix}$$
$$a_1 = \begin{pmatrix}u^2+1\\-u^4-2u^2\end{pmatrix}$$
$$a_4 = \begin{pmatrix}-u^6-3u^4-2u^2+1\\u^8+4u^6+4u^4\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}-\frac{1}{2}u^{17}+\frac{1}{2}u^{16}+\cdots+u^2-3u\\u^{16}-2u^{15}+\cdots-3u^2+1\end{pmatrix}$$
$$a_6 = \begin{pmatrix}\frac{1}{2}u^{17}-\frac{3}{2}u^{16}+\cdots+2u-2\\u^{14}-u^{13}+\cdots+u+1\end{pmatrix}$$
$$a_5 = \begin{pmatrix}\frac{3}{2}u^{17}-\frac{9}{2}u^{16}+\cdots+6u-6\\-u^{15}+3u^{14}+\cdots-12u^2+3\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-\frac{1}{2}u^{17}+\frac{1}{2}u^{16}+\cdots-u+1\\u^{17}-2u^{16}+\cdots+2u-1\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-\frac{1}{2}u^{17}+\frac{1}{2}u^{16}+\cdots-u+1\\u^{17}-2u^{16}+\cdots+2u-1\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 2u^{17}-6u^{16}+26u^{15}-50u^{14}+118u^{13}-156u^{12}+242u^{11}-212u^{10}+202u^9-66u^8-28u^7+128u^6-124u^5+98u^4-14u^3-16u^2+22u-12$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_7	$u^{18} - 3u^{17} + \cdots - 4u + 2$
c_3	$u^{18} - 3u^{17} + \cdots - 144u^2 + 16$
c_4, c_5, c_6 c_9, c_{10}, c_{11}	$u^{18} + u^{17} + \cdots - u - 1$
c_8	$u^{18} + 3u^{17} + \cdots + 24u + 34$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_7	$y^{18} + 17y^{17} + \cdots - 32y + 4$
c_3	$y^{18} + 5y^{17} + \cdots - 4608y + 256$
c_4, c_5, c_6 c_9, c_{10}, c_{11}	$y^{18} - 19y^{17} + \cdots - 13y + 1$
c_8	$y^{18} + 5y^{17} + \cdots - 4384y + 1156$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.536324 + 0.718976I$ $a = -0.69596 + 1.40617I$ $b = 0.807347 + 0.538462I$	$-6.73513 + 4.54783I$	$-15.8301 - 1.8142I$
$u = 0.536324 - 0.718976I$ $a = -0.69596 - 1.40617I$ $b = 0.807347 - 0.538462I$	$-6.73513 - 4.54783I$	$-15.8301 + 1.8142I$
$u = 0.775406 + 0.334408I$ $a = 1.67997 - 0.31282I$ $b = -2.01461 + 0.21828I$	$-8.01786 - 9.07750I$	$-17.1458 + 6.7523I$
$u = 0.775406 - 0.334408I$ $a = 1.67997 + 0.31282I$ $b = -2.01461 - 0.21828I$	$-8.01786 + 9.07750I$	$-17.1458 - 6.7523I$
$u = -0.809273$ $a = -1.82368$ $b = 2.15054$	-12.4435	-20.5970
$u = -0.363479 + 1.186890I$ $a = 0.413807 + 1.111040I$ $b = -1.61785 + 1.19506I$	$-8.78390 + 4.21996I$	$-16.6895 - 3.5646I$
$u = -0.363479 - 1.186890I$ $a = 0.413807 - 1.111040I$ $b = -1.61785 - 1.19506I$	$-8.78390 - 4.21996I$	$-16.6895 + 3.5646I$
$u = -0.042738 + 1.319350I$ $a = -0.240648 - 0.315054I$ $b = 0.458014 - 0.563844I$	$3.51645 + 1.27379I$	$-7.18490 - 5.17198I$
$u = -0.042738 - 1.319350I$ $a = -0.240648 + 0.315054I$ $b = 0.458014 + 0.563844I$	$3.51645 - 1.27379I$	$-7.18490 + 5.17198I$
$u = 0.550592 + 0.360230I$ $a = -0.671067 - 0.760810I$ $b = 0.463787 + 0.211202I$	$1.75017 - 1.69601I$	$-7.17935 + 4.88688I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.550592 - 0.360230I$ $a = -0.671067 + 0.760810I$ $b = 0.463787 - 0.211202I$	$1.75017 + 1.69601I$	$-7.17935 - 4.88688I$
$u = 0.21362 + 1.42778I$ $a = 0.548707 - 0.014230I$ $b = -1.26192 - 0.75164I$	$7.46429 - 4.53021I$	$-4.17935 + 4.22610I$
$u = 0.21362 - 1.42778I$ $a = 0.548707 + 0.014230I$ $b = -1.26192 + 0.75164I$	$7.46429 + 4.53021I$	$-4.17935 - 4.22610I$
$u = 0.30373 + 1.44463I$ $a = -0.438796 + 0.877410I$ $b = 2.64593 + 0.70371I$	$-2.32354 - 12.99620I$	$-12.9688 + 7.3705I$
$u = 0.30373 - 1.44463I$ $a = -0.438796 - 0.877410I$ $b = 2.64593 - 0.70371I$	$-2.32354 + 12.99620I$	$-12.9688 - 7.3705I$
$u = 0.10546 + 1.52636I$ $a = -0.085263 - 0.844947I$ $b = 0.103194 + 0.177421I$	$0.70132 + 2.48793I$	$-13.16040 - 3.49031I$
$u = 0.10546 - 1.52636I$ $a = -0.085263 + 0.844947I$ $b = 0.103194 - 0.177421I$	$0.70132 - 2.48793I$	$-13.16040 + 3.49031I$
$u = -0.348560$ $a = 0.802182$ $b = -0.318335$	-0.533570	-18.7260

II.

$\boldsymbol{I_2^u = \langle u^{12}a + u^{11}a + \cdots + b + a,\ u^{12} + u^{11} + \cdots + a^2 - a,\ u^{14} + u^{13} + \cdots + u + 1\rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u^3 - 2u \\ u^3 + u \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^2 + 1 \\ -u^4 - 2u^2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u^6 - 3u^4 - 2u^2 + 1 \\ u^8 + 4u^6 + 4u^4 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} a \\ -u^{12}a - u^{11}a + \cdots - au - a \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -u^{13} - u^{12} + \cdots + au + 2u^2 \\ u^{12}a + u^{13} + \cdots - 2u^3 - u^2 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -u^{13} - u^{12} + \cdots + au + 2u^2 \\ u^{12}a + u^{13} + \cdots + u^2a - u^2 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} u^{10} + 5u^8 + \cdots + a + 1 \\ -u^{12}a - u^{11}a + \cdots - a + u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} u^{10} + 5u^8 + \cdots + a + 1 \\ -u^{12}a - u^{11}a + \cdots - a + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= 4u^{12} + 4u^{11} + 24u^{10} + 20u^9 + 52u^8 + 32u^7 + 44u^6 + 8u^5 + 4u^4 - 16u^3 - 8u^2 - 4u - 10$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_7	$(u^{14} + u^{13} + \cdots + u + 1)^2$
c_3	$(u^{14} - 3u^{13} + \cdots - 7u + 3)^2$
c_4, c_5, c_6 c_9, c_{10}, c_{11}	$u^{28} + u^{27} + \cdots - 4u + 3$
c_8	$(u^{14} - u^{13} + \cdots + 3u + 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_7	$(y^{14}+13y^{13}+\cdots-y+1)^2$
c_3	$(y^{14}+5y^{13}+\cdots+23y+9)^2$
c_4, c_5, c_6 c_9, c_{10}, c_{11}	$y^{28}-21y^{27}+\cdots+32y+9$
c_8	$(y^{14}+y^{13}+\cdots-y+1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.135360 + 1.128160I$ $a = -0.171103 + 1.160650I$ $b = 0.93567 + 2.14908I$	$-1.84948 - 2.19128I$	$-13.23919 + 3.85718I$
$u = 0.135360 + 1.128160I$ $a = 0.584560 - 0.465439I$ $b = -0.888411 - 0.124832I$	$-1.84948 - 2.19128I$	$-13.23919 + 3.85718I$
$u = 0.135360 - 1.128160I$ $a = -0.171103 - 1.160650I$ $b = 0.93567 - 2.14908I$	$-1.84948 + 2.19128I$	$-13.23919 - 3.85718I$
$u = 0.135360 - 1.128160I$ $a = 0.584560 + 0.465439I$ $b = -0.888411 + 0.124832I$	$-1.84948 + 2.19128I$	$-13.23919 - 3.85718I$
$u = -0.681829 + 0.299736I$ $a = 0.743891 - 0.831039I$ $b = -0.514590 + 0.182971I$	$-2.72606 + 5.07185I$	$-13.6715 - 6.3313I$
$u = -0.681829 + 0.299736I$ $a = -1.77480 - 0.38840I$ $b = 2.07865 + 0.29445I$	$-2.72606 + 5.07185I$	$-13.6715 - 6.3313I$
$u = -0.681829 - 0.299736I$ $a = 0.743891 + 0.831039I$ $b = -0.514590 - 0.182971I$	$-2.72606 - 5.07185I$	$-13.6715 + 6.3313I$
$u = -0.681829 - 0.299736I$ $a = -1.77480 + 0.38840I$ $b = 2.07865 - 0.29445I$	$-2.72606 - 5.07185I$	$-13.6715 + 6.3313I$
$u = -0.373222 + 0.543854I$ $a = 0.528563 - 0.787767I$ $b = -0.451286 + 0.309528I$	$-1.59516 - 1.40484I$	$-10.49073 + 0.52948I$
$u = -0.373222 + 0.543854I$ $a = 0.79795 + 1.69739I$ $b = -0.503932 + 0.498617I$	$-1.59516 - 1.40484I$	$-10.49073 + 0.52948I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.373222 - 0.543854I$ $a = 0.528563 + 0.787767I$ $b = -0.451286 - 0.309528I$	$-1.59516 + 1.40484I$	$-10.49073 - 0.52948I$
$u = -0.373222 - 0.543854I$ $a = 0.79795 - 1.69739I$ $b = -0.503932 - 0.498617I$	$-1.59516 + 1.40484I$	$-10.49073 - 0.52948I$
$u = 0.600586 + 0.155632I$ $a = -1.18251 + 1.06646I$ $b = 0.532477 + 0.072927I$	$-4.65252 - 0.62859I$	$-18.3165 + 1.4225I$
$u = 0.600586 + 0.155632I$ $a = 2.04796 - 0.31700I$ $b = -2.31445 + 0.26373I$	$-4.65252 - 0.62859I$	$-18.3165 + 1.4225I$
$u = 0.600586 - 0.155632I$ $a = -1.18251 - 1.06646I$ $b = 0.532477 - 0.072927I$	$-4.65252 + 0.62859I$	$-18.3165 - 1.4225I$
$u = 0.600586 - 0.155632I$ $a = 2.04796 + 0.31700I$ $b = -2.31445 - 0.26373I$	$-4.65252 + 0.62859I$	$-18.3165 - 1.4225I$
$u = 0.228017 + 1.369790I$ $a = -0.332944 + 0.904226I$ $b = 2.89859 + 1.41256I$	$0.22261 - 3.62879I$	$-12.33383 + 2.63226I$
$u = 0.228017 + 1.369790I$ $a = -0.237127 - 0.803442I$ $b = 0.288686 + 0.146900I$	$0.22261 - 3.62879I$	$-12.33383 + 2.63226I$
$u = 0.228017 - 1.369790I$ $a = -0.332944 - 0.904226I$ $b = 2.89859 - 1.41256I$	$0.22261 + 3.62879I$	$-12.33383 - 2.63226I$
$u = 0.228017 - 1.369790I$ $a = -0.237127 + 0.803442I$ $b = 0.288686 - 0.146900I$	$0.22261 + 3.62879I$	$-12.33383 - 2.63226I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.14277 + 1.43183I$ $a = 0.150261 - 0.788188I$ $b = -0.187283 + 0.114420I$	$4.53640 + 0.47055I$	$-6.67171 + 0.18349I$
$u = -0.14277 + 1.43183I$ $a = -0.428432 + 0.007713I$ $b = 1.12407 - 0.96410I$	$4.53640 + 0.47055I$	$-6.67171 + 0.18349I$
$u = -0.14277 - 1.43183I$ $a = 0.150261 + 0.788188I$ $b = -0.187283 - 0.114420I$	$4.53640 - 0.47055I$	$-6.67171 - 0.18349I$
$u = -0.14277 - 1.43183I$ $a = -0.428432 - 0.007713I$ $b = 1.12407 + 0.96410I$	$4.53640 - 0.47055I$	$-6.67171 - 0.18349I$
$u = -0.26614 + 1.42034I$ $a = 0.395255 + 0.876622I$ $b = -2.82299 + 0.90423I$	$2.77434 + 8.53123I$	$-9.27652 - 6.18031I$
$u = -0.26614 + 1.42034I$ $a = -0.621525 - 0.029773I$ $b = 1.32479 - 0.63685I$	$2.77434 + 8.53123I$	$-9.27652 - 6.18031I$
$u = -0.26614 - 1.42034I$ $a = 0.395255 - 0.876622I$ $b = -2.82299 - 0.90423I$	$2.77434 - 8.53123I$	$-9.27652 + 6.18031I$
$u = -0.26614 - 1.42034I$ $a = -0.621525 + 0.029773I$ $b = 1.32479 + 0.63685I$	$2.77434 - 8.53123I$	$-9.27652 + 6.18031I$

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

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 1 \\ 2 \end{pmatrix}$$

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

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

$$a_1 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

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

$$a_{10} = \begin{pmatrix} -\frac{1}{2}u \\ 1 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -\frac{1}{2}u \\ u+1 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -\frac{1}{2}u \\ 1 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -\frac{1}{2}u-1 \\ 1 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -\frac{1}{2}u-1 \\ 1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u		$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u =$	$1.414210I$	1.64493	-12.0000
$a =$	$-0.707107I$		
$b =$	1.00000		
$u =$	$-1.414210I$	1.64493	-12.0000
$a =$	$0.707107I$		
$b =$	1.00000		

IV. $\boldsymbol{I_1^v = \langle a,\ b+1,\ v+1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = -1.00000$ $a = 0$ $b = -1.00000$	-3.28987	-12.0000

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_2, c_7	$u(u^2+2)(u^{14}+u^{13}+\cdots+u+1)^2(u^{18}-3u^{17}+\cdots-4u+2)$
c_3	$u^3(u^{14}-3u^{13}+\cdots-7u+3)^2(u^{18}-3u^{17}+\cdots-144u^2+16)$
c_4, c_9	$((u-1)^2)(u+1)(u^{18}+u^{17}+\cdots-u-1)(u^{28}+u^{27}+\cdots-4u+3)$
c_5, c_6, c_{10} c_{11}	$(u-1)(u+1)^2(u^{18}+u^{17}+\cdots-u-1)(u^{28}+u^{27}+\cdots-4u+3)$
c_8	$u(u^2+2)(u^{14}-u^{13}+\cdots+3u+1)^2(u^{18}+3u^{17}+\cdots+24u+34)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_7	$y(y+2)^2(y^{14}+13y^{13}+\cdots-y+1)^2(y^{18}+17y^{17}+\cdots-32y+4)$
c_3	$y^3(y^{14}+5y^{13}+\cdots+23y+9)^2(y^{18}+5y^{17}+\cdots-4608y+256)$
c_4, c_5, c_6 c_9, c_{10}, c_{11}	$((y-1)^3)(y^{18}-19y^{17}+\cdots-13y+1)(y^{28}-21y^{27}+\cdots+32y+9)$
c_8	$y(y+2)^2(y^{14}+y^{13}+\cdots-y+1)^2$ $\cdot\,(y^{18}+5y^{17}+\cdots-4384y+1156)$