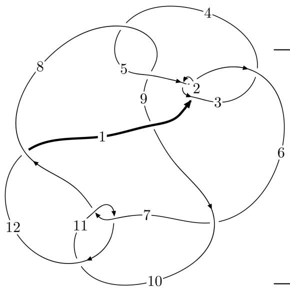
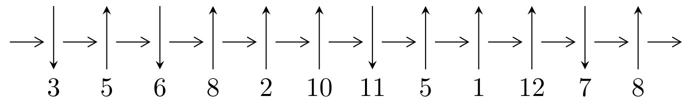
$12n_{0036}$ $(K12n_{0036})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 4u^{54} - 8u^{53} + \cdots + u^2 + 2b,\ -4u^{54} + 8u^{53} + \cdots + 2a + 7,\ u^{55} - 3u^{54} + \cdots - 3u + 1\rangle$$
$$I_2^u = \langle -u^2a + b,\ u^4 - u^2a + 2u^3 + a^2 - au + 3u^2 - a + 2u + 1,\ u^5 + u^4 + 2u^3 + u^2 + u + 1\rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 65 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. $\boldsymbol{I_1^u =}$
$\boldsymbol{\langle 4u^{54}-8u^{53}+\cdots+u^2+2b,\ -4u^{54}+8u^{53}+\cdots+2a+7,\ u^{55}-3u^{54}+\cdots-3u+1\rangle}$

(i) Arc colorings

$$a_7 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} 2u^{54} - 4u^{53} + \cdots + 4u - \frac{7}{2} \\ -2u^{54} + 4u^{53} + \cdots - u^3 - \frac{1}{2}u^2 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 2u^{53} - 4u^{52} + \cdots + \frac{1}{2}u^2 - \frac{3}{2} \\ -u^{53} + \frac{5}{2}u^{52} + \cdots - \frac{9}{2}u^2 + 2u \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -u \\ u \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^3 \\ u^5 + u^3 + u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -u^3 \\ u^3 + u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -u^6 - u^4 + 1 \\ u^6 + 2u^4 + u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} u^{54} - \frac{3}{2}u^{53} + \cdots + 3u - 2 \\ -u^{54} + \frac{3}{2}u^{53} + \cdots - 2u^2 + \frac{3}{2}u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} \frac{1}{2}u^{53} - u^{52} + \cdots + \frac{7}{2}u^3 + 1 \\ -\frac{1}{2}u^{53} + u^{52} + \cdots + 2u^3 + \frac{1}{2}u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u^{11} - 2u^9 - 2u^7 - u^3 \\ -u^{13} - 3u^{11} - 5u^9 - 4u^7 - 2u^5 + u^3 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 4u^{54} - \frac{33}{2}u^{53} + \cdots + 20u + \frac{1}{2}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{55} + 32u^{54} + \cdots - 18u - 1$
c_2, c_5	$u^{55} + 6u^{54} + \cdots - 6u - 1$
c_3	$u^{55} - 6u^{54} + \cdots - 18u - 1$
c_4, c_8	$u^{55} - u^{54} + \cdots + 1024u - 1024$
c_6, c_{12}	$u^{55} - 3u^{54} + \cdots + 379u - 73$
c_7, c_{11}	$u^{55} + 3u^{54} + \cdots - 3u - 1$
c_9	$u^{55} + 3u^{54} + \cdots + 3u - 1$
c_{10}	$u^{55} - 29u^{54} + \cdots - 3u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{55} - 12y^{54} + \cdots - 414y - 1$
c_2, c_5	$y^{55} + 32y^{54} + \cdots - 18y - 1$
c_3	$y^{55} - 56y^{54} + \cdots - 2y - 1$
c_4, c_8	$y^{55} + 55y^{54} + \cdots - 15728640y - 1048576$
c_6, c_{12}	$y^{55} - 35y^{54} + \cdots - 79739y - 5329$
c_7, c_{11}	$y^{55} + 29y^{54} + \cdots - 3y - 1$
c_9	$y^{55} + 65y^{54} + \cdots - 3y - 1$
c_{10}	$y^{55} - 3y^{54} + \cdots + 29y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.629268 + 0.778172I$ $a = -1.18547 + 2.27384I$ $b = 2.40744 - 0.92801I$	$-6.39910 + 2.43818I$	$1.82381 - 3.17764I$
$u = -0.629268 - 0.778172I$ $a = -1.18547 - 2.27384I$ $b = 2.40744 + 0.92801I$	$-6.39910 - 2.43818I$	$1.82381 + 3.17764I$
$u = -0.665364 + 0.741506I$ $a = 1.20117 - 2.12038I$ $b = -2.43399 + 0.82779I$	$-10.52100 - 2.56871I$	$-1.299980 + 0.183319I$
$u = -0.665364 - 0.741506I$ $a = 1.20117 + 2.12038I$ $b = -2.43399 - 0.82779I$	$-10.52100 + 2.56871I$	$-1.299980 - 0.183319I$
$u = 0.495253 + 0.911871I$ $a = 0.959744 - 0.326051I$ $b = -1.043700 + 0.351476I$	$-1.67813 - 2.05989I$	$0. + 3.35425I$
$u = 0.495253 - 0.911871I$ $a = 0.959744 + 0.326051I$ $b = -1.043700 - 0.351476I$	$-1.67813 + 2.05989I$	$0. - 3.35425I$
$u = -0.648513 + 0.820784I$ $a = 1.28463 - 2.31577I$ $b = -2.45034 + 0.98315I$	$-10.29050 + 7.60349I$	$0. - 6.23847I$
$u = -0.648513 - 0.820784I$ $a = 1.28463 + 2.31577I$ $b = -2.45034 - 0.98315I$	$-10.29050 - 7.60349I$	$0. + 6.23847I$
$u = 0.833853 + 0.223712I$ $a = 0.45368 - 1.70191I$ $b = 1.47926 + 0.68394I$	$-7.04904 + 9.41227I$	$0.67128 - 5.21491I$
$u = 0.833853 - 0.223712I$ $a = 0.45368 + 1.70191I$ $b = 1.47926 - 0.68394I$	$-7.04904 - 9.41227I$	$0.67128 + 5.21491I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.256410 + 0.818450I$ $a = -0.479621 - 0.389548I$ $b = 0.216555 + 0.452958I$	$0.489184 - 1.277770I$	$5.06679 + 5.28091I$
$u = 0.256410 - 0.818450I$ $a = -0.479621 + 0.389548I$ $b = 0.216555 - 0.452958I$	$0.489184 + 1.277770I$	$5.06679 - 5.28091I$
$u = 0.795256 + 0.293554I$ $a = 0.39342 - 1.83875I$ $b = 1.14407 + 0.90240I$	$-8.21623 - 0.41016I$	$-0.923933 + 0.833875I$
$u = 0.795256 - 0.293554I$ $a = 0.39342 + 1.83875I$ $b = 1.14407 - 0.90240I$	$-8.21623 + 0.41016I$	$-0.923933 - 0.833875I$
$u = -0.394472 + 1.087690I$ $a = -1.50889 + 0.99463I$ $b = 1.397460 + 0.027206I$	$1.89318 - 0.05192I$	0
$u = -0.394472 - 1.087690I$ $a = -1.50889 - 0.99463I$ $b = 1.397460 - 0.027206I$	$1.89318 + 0.05192I$	0
$u = 0.795981 + 0.235146I$ $a = -0.47257 + 1.79828I$ $b = -1.27580 - 0.65059I$	$-3.68870 + 4.09212I$	$3.08841 - 2.21678I$
$u = 0.795981 - 0.235146I$ $a = -0.47257 - 1.79828I$ $b = -1.27580 + 0.65059I$	$-3.68870 - 4.09212I$	$3.08841 + 2.21678I$
$u = 0.522439 + 0.613476I$ $a = -0.397063 + 1.308290I$ $b = 0.133932 - 0.914279I$	$-2.54336 - 2.12347I$	$-1.98097 + 3.91876I$
$u = 0.522439 - 0.613476I$ $a = -0.397063 - 1.308290I$ $b = 0.133932 + 0.914279I$	$-2.54336 + 2.12347I$	$-1.98097 - 3.91876I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.798934+0.043384I$ $a=\ 0.0979918+0.0882666I$ $b=-0.341667-0.572577I$	$1.82991-1.15915I$	$1.11016-1.39618I$
$u=-0.798934-0.043384I$ $a=\ 0.0979918-0.0882666I$ $b=-0.341667+0.572577I$	$1.82991+1.15915I$	$1.11016+1.39618I$
$u=\ 0.238525+1.182470I$ $a=\ 0.409365-0.546134I$ $b=-0.256958-0.560255I$	$-3.53580-3.51533I$	0
$u=\ 0.238525-1.182470I$ $a=\ 0.409365+0.546134I$ $b=-0.256958+0.560255I$	$-3.53580+3.51533I$	0
$u=\ 0.428974+1.129030I$ $a=-0.472967-0.859039I$ $b=\ 1.56190+1.45145I$	$4.01128-1.20704I$	0
$u=\ 0.428974-1.129030I$ $a=-0.472967+0.859039I$ $b=\ 1.56190-1.45145I$	$4.01128+1.20704I$	0
$u=\ 0.306193+1.184120I$ $a=-0.040681+0.327783I$ $b=\ 0.140846+0.893676I$	$0.680788+0.637411I$	0
$u=\ 0.306193-1.184120I$ $a=-0.040681-0.327783I$ $b=\ 0.140846-0.893676I$	$0.680788-0.637411I$	0
$u=\ 0.466924+1.132680I$ $a=\ 0.97235+1.11590I$ $b=-2.29775-1.19065I$	$3.73819-6.60281I$	0
$u=\ 0.466924-1.132680I$ $a=\ 0.97235-1.11590I$ $b=-2.29775+1.19065I$	$3.73819+6.60281I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.445970 + 1.141590I$ $a = 0.898688 - 0.908912I$ $b = -0.977538 + 0.234458I$	$4.49847 + 3.98279I$	0
$u = -0.445970 - 1.141590I$ $a = 0.898688 + 0.908912I$ $b = -0.977538 - 0.234458I$	$4.49847 - 3.98279I$	0
$u = -0.504119 + 1.119490I$ $a = -0.72422 + 1.48566I$ $b = 1.143880 - 0.723214I$	$1.05362 + 7.50380I$	0
$u = -0.504119 - 1.119490I$ $a = -0.72422 - 1.48566I$ $b = 1.143880 + 0.723214I$	$1.05362 - 7.50380I$	0
$u = -0.006646 + 0.753586I$ $a = -1.23924 - 0.91553I$ $b = 0.221110 + 1.001110I$	$0.94796 - 1.37354I$	$8.29726 + 4.59305I$
$u = -0.006646 - 0.753586I$ $a = -1.23924 + 0.91553I$ $b = 0.221110 - 1.001110I$	$0.94796 + 1.37354I$	$8.29726 - 4.59305I$
$u = 0.308957 + 1.222630I$ $a = -0.150304 - 0.576649I$ $b = 0.145017 - 0.812504I$	$-2.51298 + 5.72465I$	0
$u = 0.308957 - 1.222630I$ $a = -0.150304 + 0.576649I$ $b = 0.145017 + 0.812504I$	$-2.51298 - 5.72465I$	0
$u = 0.562093 + 1.144990I$ $a = -2.01573 - 0.76521I$ $b = 2.80550 - 0.09124I$	$-5.70109 - 4.64931I$	0
$u = 0.562093 - 1.144990I$ $a = -2.01573 + 0.76521I$ $b = 2.80550 + 0.09124I$	$-5.70109 + 4.64931I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.543221 + 1.166590I$ $a = 2.03351 + 1.01526I$ $b = -3.03630 - 0.03630I$	$-0.93977 - 9.06965I$	0
$u = 0.543221 - 1.166590I$ $a = 2.03351 - 1.01526I$ $b = -3.03630 + 0.03630I$	$-0.93977 + 9.06965I$	0
$u = -0.437917 + 1.210660I$ $a = 0.760392 + 0.093272I$ $b = -0.473659 - 0.350913I$	$5.51374 + 3.19066I$	0
$u = -0.437917 - 1.210660I$ $a = 0.760392 - 0.093272I$ $b = -0.473659 + 0.350913I$	$5.51374 - 3.19066I$	0
$u = -0.472267 + 1.211330I$ $a = -0.320209 - 0.705624I$ $b = -0.049480 + 0.606670I$	$5.27082 + 5.76680I$	0
$u = -0.472267 - 1.211330I$ $a = -0.320209 + 0.705624I$ $b = -0.049480 - 0.606670I$	$5.27082 - 5.76680I$	0
$u = 0.550577 + 1.182870I$ $a = -2.18265 - 1.04941I$ $b = 3.13565 - 0.09179I$	$-4.1957 - 14.5134I$	0
$u = 0.550577 - 1.182870I$ $a = -2.18265 + 1.04941I$ $b = 3.13565 + 0.09179I$	$-4.1957 + 14.5134I$	0
$u = -0.627951 + 0.254073I$ $a = -0.152563 + 0.574638I$ $b = 1.207510 + 0.084242I$	$-1.41318 - 3.06748I$	$0.44741 + 4.00287I$
$u = -0.627951 - 0.254073I$ $a = -0.152563 - 0.574638I$ $b = 1.207510 - 0.084242I$	$-1.41318 + 3.06748I$	$0.44741 - 4.00287I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.245896 + 0.622986I$ $a = 1.09436 + 1.93010I$ $b = 0.66336 - 1.42809I$	$0.12059 + 2.86553I$	$2.35860 + 0.38000I$
$u = -0.245896 - 0.622986I$ $a = 1.09436 - 1.93010I$ $b = 0.66336 + 1.42809I$	$0.12059 - 2.86553I$	$2.35860 - 0.38000I$
$u = -0.626935$ $a = -0.0900412$ $b = -0.792661$	1.42624	7.14390
$u = 0.586127 + 0.078855I$ $a = -0.17208 + 2.32899I$ $b = -0.269979 - 0.036468I$	$0.91267 + 2.50494I$	$1.11924 - 3.76856I$
$u = 0.586127 - 0.078855I$ $a = -0.17208 - 2.32899I$ $b = -0.269979 + 0.036468I$	$0.91267 - 2.50494I$	$1.11924 + 3.76856I$

II. $\boldsymbol{I_2^u =}$
$$\langle -u^2a+b,\ u^4-u^2a+2u^3+a^2-au+3u^2-a+2u+1,\ u^5+u^4+2u^3+u^2+u+1\rangle$$

(i) Arc colorings

$$a_7 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} a \\ u^2a \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} a \\ u^2a \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^3 \\ -u^4-u^3-u^2-1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -u^3 \\ u^3+u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -u^3 \\ u^4+u^3+u^2+1 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u^3a \\ u^3a+au \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -u^3a-u^2-u-1 \\ u^3a-u^4-u^3+au-u^2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -5u^3a+u^4+6u^3-6au+7u^2-a+6u+7$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_3, c_5	$(u^2 - u + 1)^5$
c_2	$(u^2 + u + 1)^5$
c_4, c_8	u^{10}
c_6, c_9	$(u^5 - u^4 - 2u^3 + u^2 + u + 1)^2$
c_7	$(u^5 + u^4 + 2u^3 + u^2 + u + 1)^2$
c_{10}	$(u^5 + 3u^4 + 4u^3 + u^2 - u - 1)^2$
c_{11}	$(u^5 - u^4 + 2u^3 - u^2 + u - 1)^2$
c_{12}	$(u^5 + u^4 - 2u^3 - u^2 + u - 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_3 c_5	$(y^2+y+1)^5$
c_4, c_8	y^{10}
c_6, c_9, c_{12}	$(y^5-5y^4+8y^3-3y^2-y-1)^2$
c_7, c_{11}	$(y^5+3y^4+4y^3+y^2-y-1)^2$
c_{10}	$(y^5-y^4+8y^3-3y^2+3y-1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.339110 + 0.822375I$ $a = -0.80632 + 1.36366I$ $b = -0.307991 - 1.215160I$	$0.32910 - 3.56046I$	$5.91654 + 9.74472I$
$u = 0.339110 + 0.822375I$ $a = 1.58413 + 0.01647I$ $b = -0.898363 + 0.874307I$	$0.329100 + 0.499304I$	$1.60756 + 0.92266I$
$u = 0.339110 - 0.822375I$ $a = -0.80632 - 1.36366I$ $b = -0.307991 + 1.215160I$	$0.32910 + 3.56046I$	$5.91654 - 9.74472I$
$u = 0.339110 - 0.822375I$ $a = 1.58413 - 0.01647I$ $b = -0.898363 - 0.874307I$	$0.329100 - 0.499304I$	$1.60756 - 0.92266I$
$u = -0.766826$ $a = 0.410598 + 0.711177I$ $b = 0.241441 + 0.418187I$	$2.40108 - 2.02988I$	$6.55976 + 4.16430I$
$u = -0.766826$ $a = 0.410598 - 0.711177I$ $b = 0.241441 - 0.418187I$	$2.40108 + 2.02988I$	$6.55976 - 4.16430I$
$u = -0.455697 + 1.200150I$ $a = -0.252108 + 0.649344I$ $b = 1.021040 - 0.524691I$	$5.87256 + 6.43072I$	$10.62344 - 8.02599I$
$u = -0.455697 + 1.200150I$ $a = -0.436295 - 0.543004I$ $b = -0.056121 + 1.146590I$	$5.87256 + 2.37095I$	$9.29269 + 1.50431I$
$u = -0.455697 - 1.200150I$ $a = -0.252108 - 0.649344I$ $b = 1.021040 + 0.524691I$	$5.87256 - 6.43072I$	$10.62344 + 8.02599I$
$u = -0.455697 - 1.200150I$ $a = -0.436295 + 0.543004I$ $b = -0.056121 - 1.146590I$	$5.87256 - 2.37095I$	$9.29269 - 1.50431I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^2 - u + 1)^5)(u^{55} + 32u^{54} + \cdots - 18u - 1)$
c_2	$((u^2 + u + 1)^5)(u^{55} + 6u^{54} + \cdots - 6u - 1)$
c_3	$((u^2 - u + 1)^5)(u^{55} - 6u^{54} + \cdots - 18u - 1)$
c_4, c_8	$u^{10}(u^{55} - u^{54} + \cdots + 1024u - 1024)$
c_5	$((u^2 - u + 1)^5)(u^{55} + 6u^{54} + \cdots - 6u - 1)$
c_6	$((u^5 - u^4 - 2u^3 + u^2 + u + 1)^2)(u^{55} - 3u^{54} + \cdots + 379u - 73)$
c_7	$((u^5 + u^4 + 2u^3 + u^2 + u + 1)^2)(u^{55} + 3u^{54} + \cdots - 3u - 1)$
c_9	$((u^5 - u^4 - 2u^3 + u^2 + u + 1)^2)(u^{55} + 3u^{54} + \cdots + 3u - 1)$
c_{10}	$((u^5 + 3u^4 + 4u^3 + u^2 - u - 1)^2)(u^{55} - 29u^{54} + \cdots - 3u + 1)$
c_{11}	$((u^5 - u^4 + 2u^3 - u^2 + u - 1)^2)(u^{55} + 3u^{54} + \cdots - 3u - 1)$
c_{12}	$((u^5 + u^4 - 2u^3 - u^2 + u - 1)^2)(u^{55} - 3u^{54} + \cdots + 379u - 73)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y^2+y+1)^5)(y^{55}-12y^{54}+\cdots-414y-1)$
c_2, c_5	$((y^2+y+1)^5)(y^{55}+32y^{54}+\cdots-18y-1)$
c_3	$((y^2+y+1)^5)(y^{55}-56y^{54}+\cdots-2y-1)$
c_4, c_8	$y^{10}(y^{55}+55y^{54}+\cdots-1.57286\times10^7y-1048576)$
c_6, c_{12}	$((y^5-5y^4+8y^3-3y^2-y-1)^2)(y^{55}-35y^{54}+\cdots-79739y-5329)$
c_7, c_{11}	$((y^5+3y^4+4y^3+y^2-y-1)^2)(y^{55}+29y^{54}+\cdots-3y-1)$
c_9	$((y^5-5y^4+8y^3-3y^2-y-1)^2)(y^{55}+65y^{54}+\cdots-3y-1)$
c_{10}	$((y^5-y^4+8y^3-3y^2+3y-1)^2)(y^{55}-3y^{54}+\cdots+29y-1)$