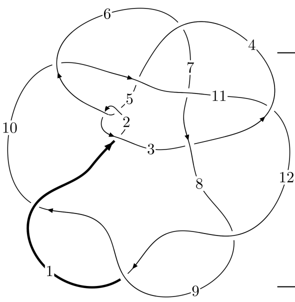
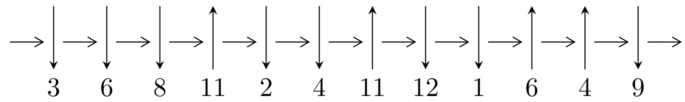
$12n_{0319}$ ($K12n_{0319}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & 2.38952 \times 10^{93} u^{31} - 2.15372 \times 10^{94} u^{30} + \cdots + 2.56436 \times 10^{95} b - 7.20111 \times 10^{95}, \\
& -8.99453 \times 10^{94} u^{31} + 7.55251 \times 10^{95} u^{30} + \cdots + 1.28218 \times 10^{96} a + 7.93300 \times 10^{96}, \\
& u^{32} - 8u^{31} + \cdots - 300u - 25 \rangle \\
I_2^u = \langle & -255u^{11} - 694u^{10} + \cdots + b - 720,\ -583u^{11} - 1385u^{10} + \cdots + a - 850, \\
& u^{12} + 3u^{11} - u^{10} - 7u^9 + 19u^8 + 99u^7 + 234u^6 + 343u^5 + 314u^4 + 179u^3 + 62u^2 + 12u + 1 \rangle
\end{aligned}$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 44 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. $\boldsymbol{I^u_1 = \langle 2.39 \times 10^{93} u^{31} - 2.15 \times 10^{94} u^{30} + \cdots + 2.56 \times 10^{95} b - 7.20 \times 10^{95},\ -8.99 \times 10^{94} u^{31} + 7.55 \times 10^{95} u^{30} + \cdots + 1.28 \times 10^{96} a + 7.93 \times 10^{96},\ u^{32} - 8u^{31} + \cdots - 300u - 25\rangle}$

(i) Arc colorings

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

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_{12} = \begin{pmatrix} 0.0701502u^{31} - 0.589036u^{30} + \cdots - 53.1722u - 6.18711 \\ -0.00931818u^{31} + 0.0839867u^{30} + \cdots + 19.4660u + 2.80815 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0.0701502u^{31} - 0.589036u^{30} + \cdots - 53.1722u - 6.18711 \\ 0.00428886u^{31} - 0.0294728u^{30} + \cdots + 12.8694u + 2.11228 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.139715u^{31} - 1.09759u^{30} + \cdots - 162.772u - 15.3667 \\ -0.0410233u^{31} + 0.326903u^{30} + \cdots + 50.9224u + 5.87488 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -0.114284u^{31} + 0.997908u^{30} + \cdots - 72.2217u - 7.58056 \\ 0.0357130u^{31} - 0.298486u^{30} + \cdots - 4.59855u + 0.151481 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 0.00605923u^{31} - 0.0127608u^{30} + \cdots - 57.1169u - 6.41631 \\ 0.00341044u^{31} - 0.0414358u^{30} + \cdots + 35.9729u + 4.57856 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.00946966u^{31} - 0.0541966u^{30} + \cdots - 21.1440u - 1.83775 \\ 0.00341044u^{31} - 0.0414358u^{30} + \cdots + 35.9729u + 4.57856 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.102606u^{31} - 0.898043u^{30} + \cdots + 90.8067u + 10.9018 \\ -0.0317497u^{31} + 0.264273u^{30} + \cdots + 7.01197u + 0.281882 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 0.0314017u^{31} - 0.300910u^{30} + \cdots + 57.4657u + 7.12226 \\ -0.00733120u^{31} + 0.0774930u^{30} + \cdots - 38.6716u - 4.73528 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.0658613u^{31} - 0.559563u^{30} + \cdots - 66.0416u - 8.29939 \\ 0.00428886u^{31} - 0.0294728u^{30} + \cdots + 12.8694u + 2.11228 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 0.253355u^{31} - 2.01113u^{30} + \cdots - 403.608u - 50.8053$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{32} + 27u^{31} + \cdots + 673u + 1$
c_2, c_5	$u^{32} + u^{31} + \cdots - 23u + 1$
c_3	$u^{32} + 2u^{31} + \cdots - 42u - 19$
c_4, c_{11}	$u^{32} - u^{31} + \cdots + 10u - 1$
c_6	$u^{32} - 8u^{31} + \cdots - 300u - 25$
c_7	$u^{32} - 3u^{31} + \cdots + 1686u + 41$
c_8, c_9, c_{12}	$u^{32} + 3u^{31} + \cdots + 15u - 29$
c_{10}	$u^{32} + 3u^{31} + \cdots - 37856u - 9991$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{32} - 35y^{31} + \cdots - 466213y + 1$
c_2, c_5	$y^{32} - 27y^{31} + \cdots - 673y + 1$
c_3	$y^{32} - 6y^{31} + \cdots - 2866y + 361$
c_4, c_{11}	$y^{32} + 45y^{31} + \cdots - 158y + 1$
c_6	$y^{32} - 82y^{31} + \cdots + 6850y + 625$
c_7	$y^{32} + 61y^{31} + \cdots - 2599876y + 1681$
c_8, c_9, c_{12}	$y^{32} - 43y^{31} + \cdots - 24875y + 841$
c_{10}	$y^{32} + 69y^{31} + \cdots - 909927994y + 99820081$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.197289 + 0.790742I$ $a = -1.185250 + 0.678056I$ $b = 0.453864 - 0.396921I$	$-1.17179 - 1.02205I$	$-9.29559 - 0.44678I$
$u = -0.197289 - 0.790742I$ $a = -1.185250 - 0.678056I$ $b = 0.453864 + 0.396921I$	$-1.17179 + 1.02205I$	$-9.29559 + 0.44678I$
$u = -0.299086 + 1.150790I$ $a = 0.0080471 + 0.0961297I$ $b = 0.628217 + 0.060085I$	$2.11287 + 2.53091I$	$5.79491 - 0.47582I$
$u = -0.299086 - 1.150790I$ $a = 0.0080471 - 0.0961297I$ $b = 0.628217 - 0.060085I$	$2.11287 - 2.53091I$	$5.79491 + 0.47582I$
$u = 0.192167 + 0.775949I$ $a = 1.404300 - 0.081966I$ $b = 0.364013 - 1.054130I$	$-6.40829 + 3.07693I$	$-7.10952 - 3.47095I$
$u = 0.192167 - 0.775949I$ $a = 1.404300 + 0.081966I$ $b = 0.364013 + 1.054130I$	$-6.40829 - 3.07693I$	$-7.10952 + 3.47095I$
$u = -1.20877$ $a = -0.173934$ $b = -2.03957$	-6.85965	-17.0320
$u = -0.727605$ $a = 1.88288$ $b = -0.166504$	-7.46881	-13.7170
$u = -0.650840$ $a = -0.792502$ $b = -0.0256764$	-1.50430	-6.06880
$u = -0.303065 + 0.488280I$ $a = -1.67068 + 0.64751I$ $b = -1.052950 - 0.482581I$	$-1.17553 + 2.30017I$	$-10.81580 - 3.72452I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.303065-0.488280I$ $a=-1.67068-0.64751I$ $b=-1.052950+0.482581I$	$-1.17553-2.30017I$	$-10.81580+3.72452I$
$u=\ \ 0.350721$ $a=\ \ 1.62466$ $b=-0.817925$	-2.83439	1.03330
$u=-0.089144+0.338495I$ $a=-2.77884+3.13257I$ $b=-0.124470-1.064190I$	$-11.30980+7.23064I$	$-10.49848-5.56490I$
$u=-0.089144-0.338495I$ $a=-2.77884-3.13257I$ $b=-0.124470+1.064190I$	$-11.30980-7.23064I$	$-10.49848+5.56490I$
$u=-0.084309+0.271616I$ $a=-1.52532+1.43742I$ $b=-0.027514+0.487501I$	$-0.193873+1.035160I$	$-3.30197-6.61105I$
$u=-0.084309-0.271616I$ $a=-1.52532-1.43742I$ $b=-0.027514-0.487501I$	$-0.193873-1.035160I$	$-3.30197+6.61105I$
$u=-0.263547+0.101009I$ $a=-0.39229-3.09375I$ $b=-0.088766+1.320520I$	$-3.69901+3.15402I$	$-10.25267-6.17085I$
$u=-0.263547-0.101009I$ $a=-0.39229+3.09375I$ $b=-0.088766-1.320520I$	$-3.69901-3.15402I$	$-10.25267+6.17085I$
$u=-0.09080+2.11846I$ $a=\ \ 0.508788-0.094674I$ $b=\ \ 1.05942+1.08265I$	$-10.49350+1.26769I$	0
$u=-0.09080-2.11846I$ $a=\ \ 0.508788+0.094674I$ $b=\ \ 1.05942-1.08265I$	$-10.49350-1.26769I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 2.12482 + 0.01926I$ $a = 0.001205 + 0.868470I$ $b = -0.29154 - 1.72481I$	$-12.56270 - 0.83637I$	0
$u = 2.12482 - 0.01926I$ $a = 0.001205 - 0.868470I$ $b = -0.29154 + 1.72481I$	$-12.56270 + 0.83637I$	0
$u = -2.36872 + 0.16438I$ $a = 0.084723 - 0.669788I$ $b = -0.11322 + 2.10961I$	$-7.72510 - 2.29615I$	0
$u = -2.36872 - 0.16438I$ $a = 0.084723 + 0.669788I$ $b = -0.11322 - 2.10961I$	$-7.72510 + 2.29615I$	0
$u = 2.59941 + 0.20248I$ $a = -0.035870 - 0.679734I$ $b = 0.71473 + 2.13119I$	$18.4946 - 2.1635I$	0
$u = 2.59941 - 0.20248I$ $a = -0.035870 + 0.679734I$ $b = 0.71473 - 2.13119I$	$18.4946 + 2.1635I$	0
$u = -2.80747 + 0.15741I$ $a = 0.002410 - 0.627895I$ $b = 0.69377 + 2.39073I$	$-16.6434 + 4.8981I$	0
$u = -2.80747 - 0.15741I$ $a = 0.002410 + 0.627895I$ $b = 0.69377 - 2.39073I$	$-16.6434 - 4.8981I$	0
$u = 3.02521 + 0.40807I$ $a = 0.006648 + 0.594266I$ $b = 0.55522 - 2.49269I$	$17.8060 - 11.5990I$	0
$u = 3.02521 - 0.40807I$ $a = 0.006648 - 0.594266I$ $b = 0.55522 + 2.49269I$	$17.8060 + 11.5990I$	0

	Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u =$	$3.68008 + 0.58451I$		
$a =$	$0.101580 + 0.427871I$	$-11.97980 + 5.22512I$	0
$b =$	$0.25407 - 2.77344I$		
$u =$	$3.68008 - 0.58451I$		
$a =$	$0.101580 - 0.427871I$	$-11.97980 - 5.22512I$	0
$b =$	$0.25407 + 2.77344I$		

II. $\boldsymbol{I^u_2 = \langle -255u^{11} - 694u^{10} + \cdots + b - 720,\ -583u^{11} - 1385u^{10} + \cdots + a - 850,\ u^{12} + 3u^{11} + \cdots + 12u + 1\rangle}$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 583u^{11} + 1385u^{10} + \cdots + 9095u + 850 \\ 255u^{11} + 694u^{10} + \cdots + 6836u + 720 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 583u^{11} + 1385u^{10} + \cdots + 9095u + 850 \\ 465u^{11} + 1211u^{10} + \cdots + 10621u + 1084 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -12u^{11} - 34u^{10} + \cdots - 515u - 70 \\ -256u^{11} - 640u^{10} + \cdots - 5120u - 513 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 429u^{11} + 1141u^{10} + \cdots + 10869u + 1129 \\ u^{11} + 10u^{10} + \cdots + 332u + 47 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -47u^{11} - 140u^{10} + \cdots - 1937u - 232 \\ -u^{11} - 3u^{10} + \cdots - 62u - 11 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -48u^{11} - 143u^{10} + \cdots - 1999u - 243 \\ -u^{11} - 3u^{10} + \cdots - 62u - 11 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 382u^{11} + 1008u^{10} + \cdots + 9202u + 932 \\ 48u^{11} + 135u^{10} + \cdots + 1679u + 197 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -195u^{11} - 538u^{10} + \cdots - 6031u - 673 \\ -10u^{11} - 29u^{10} + \cdots - 441u - 59 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 118u^{11} + 174u^{10} + \cdots - 1526u - 234 \\ 465u^{11} + 1211u^{10} + \cdots + 10621u + 1084 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -557u^{11} - 1504u^{10} + 1049u^9 + 3665u^8 - 11818u^7 - 51768u^6 - 113824u^5 - 153844u^4 - 122639u^3 - 56077u^2 - 13659u - 1383$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{12} - 8u^{11} + \cdots - 11u + 1$
c_2	$u^{12} - 4u^{10} + u^9 + 8u^8 - 3u^7 - 11u^6 + 4u^5 + 10u^4 - 4u^3 - 5u^2 + u + 1$
c_3	$u^{12} + u^{11} + 3u^{10} + 2u^9 + u^8 - u^7 - 2u^6 - 5u^5 + 2u^4 - 2u^3 + 2u^2 - 1$
c_4	$u^{12} + 8u^{10} + 23u^8 - u^7 + 26u^6 - 5u^5 + 5u^4 - 7u^3 - 6u^2 - 2u - 1$
c_5	$u^{12} - 4u^{10} - u^9 + 8u^8 + 3u^7 - 11u^6 - 4u^5 + 10u^4 + 4u^3 - 5u^2 - u + 1$
c_6	$u^{12} + 3u^{11} + \cdots + 12u + 1$
c_7	$u^{12} + 4u^{10} + \cdots - 8u + 1$
c_8, c_9	$u^{12} + 4u^{11} + \cdots - u + 1$
c_{10}	$u^{12} + 4u^{11} + \cdots - 2u + 1$
c_{11}	$u^{12} + 8u^{10} + 23u^8 + u^7 + 26u^6 + 5u^5 + 5u^4 + 7u^3 - 6u^2 + 2u - 1$
c_{12}	$u^{12} - 4u^{11} + \cdots + u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{12} - 12y^{10} + \cdots - 15y + 1$
c_2, c_5	$y^{12} - 8y^{11} + \cdots - 11y + 1$
c_3	$y^{12} + 5y^{11} + 7y^{10} + 7y^8 + 35y^7 + 16y^6 - 39y^5 - 26y^4 + 8y^3 - 4y + 1$
c_4, c_{11}	$y^{12} + 16y^{11} + \cdots + 8y + 1$
c_6	$y^{12} - 11y^{11} + \cdots - 20y + 1$
c_7	$y^{12} + 8y^{11} + \cdots - 22y + 1$
c_8, c_9, c_{12}	$y^{12} - 16y^{11} + \cdots + 23y + 1$
c_{10}	$y^{12} + 4y^{11} + \cdots - 20y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.614910$ $a=-0.756088$ $b=\ \ 0.764925$	-3.38826	-14.4840
$u=-0.215601+1.381410I$ $a=\ \ 0.288748-0.106147I$ $b=\ \ 0.283384+0.092414I$	$1.69154+2.70631I$	$-11.02847-6.50238I$
$u=-0.215601-1.381410I$ $a=\ \ 0.288748+0.106147I$ $b=\ \ 0.283384-0.092414I$	$1.69154-2.70631I$	$-11.02847+6.50238I$
$u=-0.484089+0.123501I$ $a=\ \ 0.24097-1.98728I$ $b=-0.879338+0.481043I$	$-0.12267-1.98013I$	$-3.12844+2.86006I$
$u=-0.484089-0.123501I$ $a=\ \ 0.24097+1.98728I$ $b=-0.879338-0.481043I$	$-0.12267+1.98013I$	$-3.12844-2.86006I$
$u=-0.445198+0.198592I$ $a=-1.35255+2.90526I$ $b=\ \ 0.766353-0.473864I$	$-5.28947-3.09904I$	$-8.62038+2.82123I$
$u=-0.445198-0.198592I$ $a=-1.35255-2.90526I$ $b=\ \ 0.766353+0.473864I$	$-5.28947+3.09904I$	$-8.62038-2.82123I$
$u=-0.438663$ $a=\ \ 1.76179$ $b=\ \ 1.21224$	-6.05655	-5.50250
$u=-2.04805+0.64643I$ $a=-0.276703+0.652409I$ $b=-0.25152-2.07706I$	$-9.00537-2.27031I$	$-12.11846+2.13201I$
$u=-2.04805-0.64643I$ $a=-0.276703-0.652409I$ $b=-0.25152+2.07706I$	$-9.00537+2.27031I$	$-12.11846-2.13201I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \quad 2.21973 + 1.41604I$ $a = -0.403311 - 0.470237I$ $b = -0.90746 + 1.60507I$	$-12.16040 + 3.87633I$	$-12.61114 - 1.47831I$
$u = \quad 2.21973 - 1.41604I$ $a = -0.403311 + 0.470237I$ $b = -0.90746 - 1.60507I$	$-12.16040 - 3.87633I$	$-12.61114 + 1.47831I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^{12}-8u^{11}+\cdots-11u+1)(u^{32}+27u^{31}+\cdots+673u+1)$
c_2	$(u^{12}-4u^{10}+u^9+8u^8-3u^7-11u^6+4u^5+10u^4-4u^3-5u^2+u+1)$ $\cdot(u^{32}+u^{31}+\cdots-23u+1)$
c_3	$(u^{12}+u^{11}+3u^{10}+2u^9+u^8-u^7-2u^6-5u^5+2u^4-2u^3+2u^2-1)$ $\cdot(u^{32}+2u^{31}+\cdots-42u-19)$
c_4	$(u^{12}+8u^{10}+23u^8-u^7+26u^6-5u^5+5u^4-7u^3-6u^2-2u-1)$ $\cdot(u^{32}-u^{31}+\cdots+10u-1)$
c_5	$(u^{12}-4u^{10}-u^9+8u^8+3u^7-11u^6-4u^5+10u^4+4u^3-5u^2-u+1)$ $\cdot(u^{32}+u^{31}+\cdots-23u+1)$
c_6	$(u^{12}+3u^{11}+\cdots+12u+1)(u^{32}-8u^{31}+\cdots-300u-25)$
c_7	$(u^{12}+4u^{10}+\cdots-8u+1)(u^{32}-3u^{31}+\cdots+1686u+41)$
c_8, c_9	$(u^{12}+4u^{11}+\cdots-u+1)(u^{32}+3u^{31}+\cdots+15u-29)$
c_{10}	$(u^{12}+4u^{11}+\cdots-2u+1)(u^{32}+3u^{31}+\cdots-37856u-9991)$
c_{11}	$(u^{12}+8u^{10}+23u^8+u^7+26u^6+5u^5+5u^4+7u^3-6u^2+2u-1)$ $\cdot(u^{32}-u^{31}+\cdots+10u-1)$
c_{12}	$(u^{12}-4u^{11}+\cdots+u+1)(u^{32}+3u^{31}+\cdots+15u-29)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y^{12} - 12y^{10} + \cdots - 15y + 1)(y^{32} - 35y^{31} + \cdots - 466213y + 1)$
c_2, c_5	$(y^{12} - 8y^{11} + \cdots - 11y + 1)(y^{32} - 27y^{31} + \cdots - 673y + 1)$
c_3	$(y^{12} + 5y^{11} + 7y^{10} + 7y^8 + 35y^7 + 16y^6 - 39y^5 - 26y^4 + 8y^3 - 4y + 1)$ $\cdot (y^{32} - 6y^{31} + \cdots - 2866y + 361)$
c_4, c_{11}	$(y^{12} + 16y^{11} + \cdots + 8y + 1)(y^{32} + 45y^{31} + \cdots - 158y + 1)$
c_6	$(y^{12} - 11y^{11} + \cdots - 20y + 1)(y^{32} - 82y^{31} + \cdots + 6850y + 625)$
c_7	$(y^{12} + 8y^{11} + \cdots - 22y + 1)(y^{32} + 61y^{31} + \cdots - 2599876y + 1681)$
c_8, c_9, c_{12}	$(y^{12} - 16y^{11} + \cdots + 23y + 1)(y^{32} - 43y^{31} + \cdots - 24875y + 841)$
c_{10}	$(y^{12} + 4y^{11} + \cdots - 20y + 1)$ $\cdot (y^{32} + 69y^{31} + \cdots - 909927994y + 99820081)$