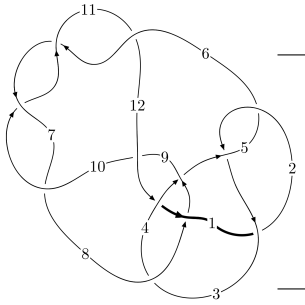
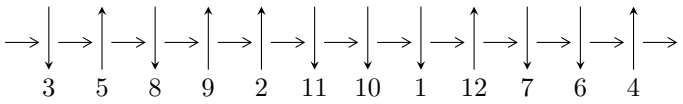
$12a_{0140}$ $(K12a_{0140})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

$$\underset{c_6}{6,11} \to \underset{c_{11}}{7} \to \underset{c_{12}}{4,12} \to \underset{c_{10}}{1} \to \underset{c_7}{10} \to \underset{c_3}{8} \longrightarrow \underset{c_1}{3} \longrightarrow \underset{c_5}{2} \longrightarrow \underset{c_9}{5} \longrightarrow 9 \longrightarrow\!\!\!\!\rightarrow c_2, c_4, c_8$$

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

$$I_1^u = \langle 1.49803 \times 10^{58} u^{89} + 5.92542 \times 10^{58} u^{88} + \cdots + 1.72660 \times 10^{59} b + 1.98078 \times 10^{59},$$
$$1.02947 \times 10^{59} u^{89} + 2.41879 \times 10^{58} u^{88} + \cdots + 1.72660 \times 10^{59} a + 1.67665 \times 10^{59},\ u^{90} + u^{89} + \cdots + 5u + 1 \rangle$$

* 1 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 90 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.

$\boldsymbol{I_1^u = \langle 1.50\times 10^{58}u^{89}+5.93\times 10^{58}u^{88}+\cdots+1.73\times 10^{59}b+1.98\times 10^{59},\ 1.03\times 10^{59}u^{89}+2.42\times 10^{58}u^{88}+\cdots+1.73\times 10^{59}a+1.68\times 10^{59},\ u^{90}+u^{89}+\cdots+5u+1\rangle}$

(i) Arc colorings

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

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

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

$$a_4 = \begin{pmatrix}-0.596241u^{89}-0.140090u^{88}+\cdots-10.1457u-0.971072\\-0.0867618u^{89}-0.343185u^{88}+\cdots-1.42481u-1.14721\end{pmatrix}$$

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

$$a_1 = \begin{pmatrix}0.506491u^{89}-0.464959u^{88}+\cdots-2.21593u+0.951695\\0.858763u^{89}+0.971450u^{88}+\cdots+4.50932u+1.36525\end{pmatrix}$$

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

$$a_8 = \begin{pmatrix}u^2+1\\u^4+2u^2\end{pmatrix}$$

$$a_3 = \begin{pmatrix}-0.922415u^{89}+0.486437u^{88}+\cdots-9.28974u-1.51851\\-0.101016u^{89}-0.289665u^{88}+\cdots-6.01833u-2.17824\end{pmatrix}$$

$$a_2 = \begin{pmatrix}0.598272u^{89}-0.135672u^{88}+\cdots-2.38042u-1.48653\\0.110717u^{89}+0.268130u^{88}+\cdots+6.26801u+1.12390\end{pmatrix}$$

$$a_5 = \begin{pmatrix}-0.653759u^{89}+0.807509u^{88}+\cdots-4.03678u+0.331898\\-0.100166u^{89}-0.244164u^{88}+\cdots-5.85636u-1.97404\end{pmatrix}$$

$$a_9 = \begin{pmatrix}-u^5-2u^3+u\\u^5+3u^3+u\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -2.95959u^{89}-1.57308u^{88}+\cdots+33.0318u+12.1521$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{90}+37u^{89}+\cdots+9u+1$
c_2, c_5	$u^{90}+u^{89}+\cdots+9u+1$
c_3	$u^{90}-u^{89}+\cdots-21u+1$
c_4	$u^{90}+u^{89}+\cdots+53u+7$
c_6, c_7, c_{10} c_{11}	$u^{90}-u^{89}+\cdots-5u+1$
c_8	$u^{90}+5u^{89}+\cdots+u+1$
c_9	$u^{90}+21u^{89}+\cdots+30261u+4067$
c_{12}	$u^{90}+9u^{89}+\cdots+u+1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{90} + 33y^{89} + \cdots - 403y + 1$
c_2, c_5	$y^{90} + 37y^{89} + \cdots + 9y + 1$
c_3	$y^{90} + 101y^{89} + \cdots + 89y + 1$
c_4	$y^{90} + 93y^{89} + \cdots + 1237y + 49$
c_6, c_7, c_{10} c_{11}	$y^{90} + 101y^{89} + \cdots + 5y + 1$
c_8	$y^{90} + 9y^{89} + \cdots + 5y + 1$
c_9	$y^{90} + 13y^{89} + \cdots + 583522625y + 16540489$
c_{12}	$y^{90} + 5y^{89} + \cdots + 9y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.153386+0.949459I$ $a=\ \ 0.718759+0.923313I$ $b=\ \ 0.174097-0.184217I$	$4.37025-2.09737I$	0
$u=-0.153386-0.949459I$ $a=\ \ 0.718759-0.923313I$ $b=\ \ 0.174097+0.184217I$	$4.37025+2.09737I$	0
$u=\ \ 0.592585+0.748622I$ $a=\ \ 0.525999-0.073835I$ $b=-0.247712+0.718060I$	$-1.04239-5.87786I$	0
$u=\ \ 0.592585-0.748622I$ $a=\ \ 0.525999+0.073835I$ $b=-0.247712-0.718060I$	$-1.04239+5.87786I$	0
$u=-0.574662+0.686016I$ $a=\ \ 1.314030+0.037343I$ $b=-1.09112-1.69898I$	$-0.2793+14.4752I$	0
$u=-0.574662-0.686016I$ $a=\ \ 1.314030-0.037343I$ $b=-1.09112+1.69898I$	$-0.2793-14.4752I$	0
$u=-0.150469+1.111890I$ $a=-0.878713-0.860540I$ $b=\ \ 0.042720+0.283468I$	$2.83318-7.25186I$	0
$u=-0.150469-1.111890I$ $a=-0.878713+0.860540I$ $b=\ \ 0.042720-0.283468I$	$2.83318+7.25186I$	0
$u=\ \ 0.417484+0.766577I$ $a=-0.398067-0.023582I$ $b=\ \ 0.098415-0.679860I$	$0.01934-1.98738I$	0
$u=\ \ 0.417484-0.766577I$ $a=-0.398067+0.023582I$ $b=\ \ 0.098415+0.679860I$	$0.01934+1.98738I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.540546+0.681468I$ $a=-1.409290+0.010881I$ $b=\ \ 1.10186+1.70068I$	$1.74657+8.70254I$	0
$u=-0.540546-0.681468I$ $a=-1.409290-0.010881I$ $b=\ \ 1.10186-1.70068I$	$1.74657-8.70254I$	0
$u=\ \ 0.656158+0.547764I$ $a=\ \ 0.572560-0.062751I$ $b=-0.313753+0.727781I$	$-2.06605-0.65625I$	0
$u=\ \ 0.656158-0.547764I$ $a=\ \ 0.572560+0.062751I$ $b=-0.313753-0.727781I$	$-2.06605+0.65625I$	0
$u=\ \ 0.716623+0.371946I$ $a=-0.498659-0.100748I$ $b=\ \ 0.272381-0.633490I$	$-2.58726-3.92694I$	$-12.8588+9.2593I$
$u=\ \ 0.716623-0.371946I$ $a=-0.498659+0.100748I$ $b=\ \ 0.272381+0.633490I$	$-2.58726+3.92694I$	$-12.8588-9.2593I$
$u=-0.531750+0.597942I$ $a=\ \ 1.328430-0.323224I$ $b=-1.13869-1.67077I$	$-4.62635+6.13378I$	$0.-8.46328I$
$u=-0.531750-0.597942I$ $a=\ \ 1.328430+0.323224I$ $b=-1.13869+1.67077I$	$-4.62635-6.13378I$	$0.+8.46328I$
$u=-0.443199+0.608183I$ $a=-1.21211-1.52602I$ $b=-0.912945+0.867545I$	$0.35574+6.37386I$	$1.05559-12.60773I$
$u=-0.443199-0.608183I$ $a=-1.21211+1.52602I$ $b=-0.912945-0.867545I$	$0.35574-6.37386I$	$1.05559+12.60773I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.387123 + 0.636739I$ $a = -0.193637 + 0.190795I$ $b = -0.006821 - 0.901193I$	$-0.01272 - 2.08828I$	$-2.58132 + 5.68138I$
$u = 0.387123 - 0.636739I$ $a = -0.193637 - 0.190795I$ $b = -0.006821 + 0.901193I$	$-0.01272 + 2.08828I$	$-2.58132 - 5.68138I$
$u = -0.375933 + 0.626578I$ $a = -2.06776 + 0.11377I$ $b = 1.01204 + 1.77494I$	$2.64454 + 3.98095I$	$7.57746 - 9.49711I$
$u = -0.375933 - 0.626578I$ $a = -2.06776 - 0.11377I$ $b = 1.01204 - 1.77494I$	$2.64454 - 3.98095I$	$7.57746 + 9.49711I$
$u = -0.669369 + 0.250763I$ $a = -1.249650 - 0.365953I$ $b = -0.458430 + 1.299980I$	$-1.56816 - 10.28520I$	$-3.97736 + 6.02657I$
$u = -0.669369 - 0.250763I$ $a = -1.249650 + 0.365953I$ $b = -0.458430 - 1.299980I$	$-1.56816 + 10.28520I$	$-3.97736 - 6.02657I$
$u = 0.703492 + 0.126133I$ $a = -0.222901 - 0.350127I$ $b = 0.112898 - 0.515008I$	$-2.86278 + 1.53210I$	$-14.6011 - 1.5393I$
$u = 0.703492 - 0.126133I$ $a = -0.222901 + 0.350127I$ $b = 0.112898 + 0.515008I$	$-2.86278 - 1.53210I$	$-14.6011 + 1.5393I$
$u = -0.317537 + 0.631586I$ $a = 0.69364 + 1.58671I$ $b = 0.928055 - 0.324587I$	$2.99128 + 0.66231I$	$9.52889 - 2.63944I$
$u = -0.317537 - 0.631586I$ $a = 0.69364 - 1.58671I$ $b = 0.928055 + 0.324587I$	$2.99128 - 0.66231I$	$9.52889 + 2.63944I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.165064 + 1.288320I$ $a = -1.113030 - 0.351119I$ $b = 0.563002 - 0.110438I$	$2.63709 - 7.22205I$	0
$u = 0.165064 - 1.288320I$ $a = -1.113030 + 0.351119I$ $b = 0.563002 + 0.110438I$	$2.63709 + 7.22205I$	0
$u = 0.418563 + 0.546343I$ $a = -2.50765 - 0.56009I$ $b = 1.94029 + 0.73720I$	$-0.24570 - 3.76742I$	$2.5969 - 21.3357I$
$u = 0.418563 - 0.546343I$ $a = -2.50765 + 0.56009I$ $b = 1.94029 - 0.73720I$	$-0.24570 + 3.76742I$	$2.5969 + 21.3357I$
$u = -0.569753 + 0.342177I$ $a = -1.57369 - 0.51879I$ $b = -0.457247 + 1.318270I$	$-5.37588 - 2.34777I$	$-8.46003 + 1.41530I$
$u = -0.569753 - 0.342177I$ $a = -1.57369 + 0.51879I$ $b = -0.457247 - 1.318270I$	$-5.37588 + 2.34777I$	$-8.46003 - 1.41530I$
$u = -0.622072 + 0.229860I$ $a = 1.333090 + 0.265168I$ $b = 0.458059 - 1.289570I$	$0.42234 - 4.75738I$	$-1.60038 + 2.22004I$
$u = -0.622072 - 0.229860I$ $a = 1.333090 - 0.265168I$ $b = 0.458059 + 1.289570I$	$0.42234 + 4.75738I$	$-1.60038 - 2.22004I$
$u = 0.351415 + 0.558810I$ $a = 2.39621 + 0.42195I$ $b = -1.69911 - 0.46842I$	$0.133011 + 0.337575I$	$-11.1760 - 9.1703I$
$u = 0.351415 - 0.558810I$ $a = 2.39621 - 0.42195I$ $b = -1.69911 + 0.46842I$	$0.133011 - 0.337575I$	$-11.1760 + 9.1703I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.220551+0.576106I$ $a=\ \ 2.35810+0.27719I$ $b=-0.74063-1.49851I$	$1.73042-2.10860I$	$6.00206+2.72036I$
$u=-0.220551-0.576106I$ $a=\ \ 2.35810-0.27719I$ $b=-0.74063+1.49851I$	$1.73042+2.10860I$	$6.00206-2.72036I$
$u=\ \ 0.407501+0.439459I$ $a=-1.91928-0.47694I$ $b=\ \ 1.40687+0.99133I$	$-0.571516+0.804092I$	$14.6443+7.0088I$
$u=\ \ 0.407501-0.439459I$ $a=-1.91928+0.47694I$ $b=\ \ 1.40687-0.99133I$	$-0.571516-0.804092I$	$14.6443-7.0088I$
$u=\ \ 0.05663+1.42405I$ $a=\ \ 1.58377+0.57387I$ $b=-0.963257-0.289901I$	$4.57161-2.79628I$	0
$u=\ \ 0.05663-1.42405I$ $a=\ \ 1.58377-0.57387I$ $b=-0.963257+0.289901I$	$4.57161+2.79628I$	0
$u=\ \ 0.471994+0.317933I$ $a=\ \ 0.952599+0.435782I$ $b=-0.484844+0.384289I$	$-0.989919-0.990182I$	$-5.04840+4.14744I$
$u=\ \ 0.471994-0.317933I$ $a=\ \ 0.952599-0.435782I$ $b=-0.484844-0.384289I$	$-0.989919+0.990182I$	$-5.04840-4.14744I$
$u=-0.09077+1.42884I$ $a=-1.29677-1.10983I$ $b=\ \ 0.450417+0.767926I$	$0.201142-0.116256I$	0
$u=-0.09077-1.42884I$ $a=-1.29677+1.10983I$ $b=\ \ 0.450417-0.767926I$	$0.201142+0.116256I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.405371+0.280603I$ $a=-0.199952-1.378270I$ $b=-0.959262-0.968605I$	$-0.56516-3.28407I$	$-3.30805+5.23829I$
$u=-0.405371-0.280603I$ $a=-0.199952+1.378270I$ $b=-0.959262+0.968605I$	$-0.56516+3.28407I$	$-3.30805-5.23829I$
$u=0.16937+1.52158I$ $a=1.51766-0.30903I$ $b=-1.130990+0.625814I$	$4.65622-3.58702I$	0
$u=0.16937-1.52158I$ $a=1.51766+0.30903I$ $b=-1.130990-0.625814I$	$4.65622+3.58702I$	0
$u=0.09271+1.53236I$ $a=-1.27280-2.03682I$ $b=1.17772+2.44286I$	$6.09255-0.84757I$	0
$u=0.09271-1.53236I$ $a=-1.27280+2.03682I$ $b=1.17772-2.44286I$	$6.09255+0.84757I$	0
$u=-0.05357+1.53456I$ $a=1.45113+0.11741I$ $b=-1.46172-1.07706I$	$5.68381-2.27432I$	0
$u=-0.05357-1.53456I$ $a=1.45113-0.11741I$ $b=-1.46172+1.07706I$	$5.68381+2.27432I$	0
$u=0.11432+1.56167I$ $a=-2.93352-1.95251I$ $b=2.65903+2.16225I$	$6.90903-5.66157I$	0
$u=0.11432-1.56167I$ $a=-2.93352+1.95251I$ $b=2.65903-2.16225I$	$6.90903+5.66157I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.09617 + 1.56590I$ $a = 3.12411 + 1.27896I$ $b = -2.77213 - 1.39716I$	$7.37300 - 1.26295I$	0
$u = 0.09617 - 1.56590I$ $a = 3.12411 - 1.27896I$ $b = -2.77213 + 1.39716I$	$7.37300 + 1.26295I$	0
$u = -0.15237 + 1.56573I$ $a = 2.50255 + 1.03565I$ $b = -1.82102 - 1.91169I$	$2.62908 + 8.61485I$	0
$u = -0.15237 - 1.56573I$ $a = 2.50255 - 1.03565I$ $b = -1.82102 + 1.91169I$	$2.62908 - 8.61485I$	0
$u = -0.07670 + 1.57131I$ $a = 2.36617 + 1.61202I$ $b = -1.31873 - 1.95306I$	$9.07886 - 0.93094I$	0
$u = -0.07670 - 1.57131I$ $a = 2.36617 - 1.61202I$ $b = -1.31873 + 1.95306I$	$9.07886 + 0.93094I$	0
$u = -0.12500 + 1.57476I$ $a = 0.06493 - 1.49401I$ $b = -0.906132 + 0.621652I$	$7.74476 + 8.43784I$	0
$u = -0.12500 - 1.57476I$ $a = 0.06493 + 1.49401I$ $b = -0.906132 - 0.621652I$	$7.74476 - 8.43784I$	0
$u = 0.10144 + 1.57704I$ $a = -0.66918 + 1.52360I$ $b = 0.49284 - 1.89219I$	$7.47987 - 3.80306I$	0
$u = 0.10144 - 1.57704I$ $a = -0.66918 - 1.52360I$ $b = 0.49284 + 1.89219I$	$7.47987 + 3.80306I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.09384+1.58164I$ $a=-0.702815+1.007970I$ $b=\ \ 1.244420+0.005868I$	$10.52950+2.19494I$	0
$u=-0.09384-1.58164I$ $a=-0.702815-1.007970I$ $b=\ \ 1.244420-0.005868I$	$10.52950-2.19494I$	0
$u=-0.10790+1.58110I$ $a=-2.64329-1.41564I$ $b=\ \ 1.66442+2.10196I$	$10.15180+5.76027I$	0
$u=-0.10790-1.58110I$ $a=-2.64329+1.41564I$ $b=\ \ 1.66442-2.10196I$	$10.15180-5.76027I$	0
$u=-0.16145+1.59638I$ $a=-2.42197-1.17248I$ $b=\ \ 1.75629+1.92985I$	$9.4286+11.3153I$	0
$u=-0.16145-1.59638I$ $a=-2.42197+1.17248I$ $b=\ \ 1.75629-1.92985I$	$9.4286-11.3153I$	0
$u=-0.17437+1.59798I$ $a=\ \ 2.37867+1.16311I$ $b=-1.74876-1.91913I$	$7.4050+17.2703I$	0
$u=-0.17437-1.59798I$ $a=\ \ 2.37867-1.16311I$ $b=-1.74876+1.91913I$	$7.4050-17.2703I$	0
$u=\ \ 0.14486+1.61314I$ $a=-0.922533+0.684068I$ $b=\ \ 0.625007-1.078630I$	$8.05248-4.24619I$	0
$u=\ \ 0.14486-1.61314I$ $a=-0.922533-0.684068I$ $b=\ \ 0.625007+1.078630I$	$8.05248+4.24619I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.18353 + 1.61376I$ $a = 1.027430 - 0.490906I$ $b = -0.695784 + 0.881112I$	$6.89750 - 8.82487I$	0
$u = 0.18353 - 1.61376I$ $a = 1.027430 + 0.490906I$ $b = -0.695784 - 0.881112I$	$6.89750 + 8.82487I$	0
$u = 0.227195 + 0.284908I$ $a = 1.90995 - 0.81708I$ $b = -0.954823 - 0.478011I$	$-0.50806 - 2.64460I$	$2.81091 + 6.46234I$
$u = 0.227195 - 0.284908I$ $a = 1.90995 + 0.81708I$ $b = -0.954823 + 0.478011I$	$-0.50806 + 2.64460I$	$2.81091 - 6.46234I$
$u = -0.02421 + 1.64276I$ $a = -0.0903645 + 0.0173208I$ $b = 0.439641 + 0.634212I$	$13.23290 - 1.53819I$	0
$u = -0.02421 - 1.64276I$ $a = -0.0903645 - 0.0173208I$ $b = 0.439641 - 0.634212I$	$13.23290 + 1.53819I$	0
$u = -0.339095 + 0.048393I$ $a = 1.85470 - 0.96460I$ $b = 0.425963 - 0.989713I$	$1.24876 - 1.48001I$	$1.04199 + 3.33888I$
$u = -0.339095 - 0.048393I$ $a = 1.85470 + 0.96460I$ $b = 0.425963 + 0.989713I$	$1.24876 + 1.48001I$	$1.04199 - 3.33888I$
$u = -0.00034 + 1.65939I$ $a = -0.0768283 + 0.1112280I$ $b = -0.262523 - 0.705756I$	$12.22560 - 7.06179I$	0
$u = -0.00034 - 1.65939I$ $a = -0.0768283 - 0.1112280I$ $b = -0.262523 + 0.705756I$	$12.22560 + 7.06179I$	0

II. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$u^{90}+37u^{89}+\cdots+9u+1$
c_2, c_5	$u^{90}+u^{89}+\cdots+9u+1$
c_3	$u^{90}-u^{89}+\cdots-21u+1$
c_4	$u^{90}+u^{89}+\cdots+53u+7$
c_6, c_7, c_{10} c_{11}	$u^{90}-u^{89}+\cdots-5u+1$
c_8	$u^{90}+5u^{89}+\cdots+u+1$
c_9	$u^{90}+21u^{89}+\cdots+30261u+4067$
c_{12}	$u^{90}+9u^{89}+\cdots+u+1$

III. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$y^{90}+33y^{89}+\cdots-403y+1$
c_2, c_5	$y^{90}+37y^{89}+\cdots+9y+1$
c_3	$y^{90}+101y^{89}+\cdots+89y+1$
c_4	$y^{90}+93y^{89}+\cdots+1237y+49$
c_6, c_7, c_{10} c_{11}	$y^{90}+101y^{89}+\cdots+5y+1$
c_8	$y^{90}+9y^{89}+\cdots+5y+1$
c_9	$y^{90}+13y^{89}+\cdots+583522625y+16540489$
c_{12}	$y^{90}+5y^{89}+\cdots+9y+1$