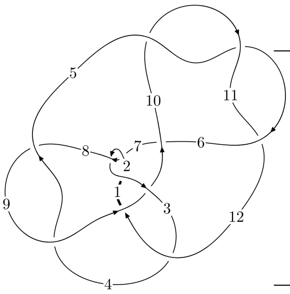
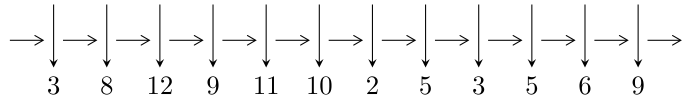
$12n_{0640}$ ($K12n_{0640}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 9.89972 \times 10^{17} u^{23} - 1.91877 \times 10^{15} u^{22} + \cdots + 4.06813 \times 10^{18} b - 2.49679 \times 10^{18},$$
$$8.63753 \times 10^{17} u^{23} - 1.70899 \times 10^{18} u^{22} + \cdots + 4.06813 \times 10^{18} a - 1.68305 \times 10^{19},\ u^{24} - 10u^{22} + \cdots + 6u +$$
$$I_2^u = \langle u^{11} - 7u^9 + 17u^7 + u^6 - 15u^5 - 3u^4 + 2u^2 + b + 3u,$$
$$u^9 - u^8 - 6u^7 + 6u^6 + 11u^5 - 11u^4 - 5u^3 + 6u^2 + a - 3u + 1,$$
$$u^{12} - 8u^{10} + 24u^8 + u^7 - 32u^6 - 4u^5 + 15u^4 + 5u^3 + 2u^2 - 2u - 1\rangle$$
$$I_3^u = \langle b,\ a - 1,\ u - 1\rangle$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 37 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. $\boldsymbol{I_1^u =}$
$\langle 9.90\times10^{17}u^{23}-1.92\times10^{15}u^{22}+\cdots+4.07\times10^{18}b-2.50\times10^{18},\ 8.64\times10^{17}u^{23}-1.71\times10^{18}u^{22}+\cdots+4.07\times10^{18}a-1.68\times10^{19},\ u^{24}-10u^{22}+\cdots+6u+1\rangle$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -u \\ -u^3+u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u^3-2u \\ -u^3+u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -0.212322u^{23}+0.420093u^{22}+\cdots+3.09567u+4.13716 \\ -0.243348u^{23}+0.000471658u^{22}+\cdots+1.81524u+0.613744 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -u^2+1 \\ -u^4+2u^2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -1.25860u^{23}+0.336558u^{22}+\cdots-22.2342u-4.64549 \\ -0.0840693u^{23}+0.188815u^{22}+\cdots-7.10991u-1.40341 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -0.483379u^{23}+0.505798u^{22}+\cdots-2.99675u+2.78091 \\ -0.208694u^{23}-0.00110386u^{22}+\cdots+1.55323u+0.479053 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -1.25860u^{23}+0.336558u^{22}+\cdots-22.2342u-4.64549 \\ -0.226293u^{23}+0.0998004u^{22}+\cdots-6.34916u-1.06686 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -1.51744u^{23}+0.547755u^{22}+\cdots-19.4211u-3.44143 \\ -0.320558u^{23}+0.0501945u^{22}+\cdots-5.21590u-0.630497 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 1.40524u^{23}-0.275084u^{22}+\cdots+14.6942u+2.32021 \\ 0.344813u^{23}-0.0300623u^{22}+\cdots-3.26431u-0.145094 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{188087886514781188843}{40681328247224511189}u^{23}+\frac{899618609945270896}{40681328247224511189}u^{22}+\cdots-\frac{136381012325864299426}{40681328247224511189}u-\frac{118763470922061227713}{40681328247224511189}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{24}+4u^{23}+\cdots+1789u+1$
c_2, c_7	$u^{24}+2u^{23}+\cdots+47u+1$
c_3	$u^{24}-3u^{23}+\cdots+14u+1$
c_4, c_8	$u^{24}+3u^{23}+\cdots+80u+19$
c_5, c_{10}, c_{11}	$u^{24}-10u^{22}+\cdots+6u+1$
c_6	$u^{24}+3u^{23}+\cdots+696u+37$
c_9	$u^{24}-u^{23}+\cdots+40u-8$
c_{12}	$u^{24}+2u^{23}+\cdots+5u-1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{24} + 44y^{23} + \cdots - 3160089y + 1$
c_2, c_7	$y^{24} - 4y^{23} + \cdots - 1789y + 1$
c_3	$y^{24} + 13y^{23} + \cdots - 214y + 1$
c_4, c_8	$y^{24} + 29y^{23} + \cdots - 5754y + 361$
c_5, c_{10}, c_{11}	$y^{24} - 20y^{23} + \cdots - 26y + 1$
c_6	$y^{24} + 47y^{23} + \cdots - 161850y + 1369$
c_9	$y^{24} + 23y^{23} + \cdots - 4064y + 64$
c_{12}	$y^{24} - 60y^{23} + \cdots - 93y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.797828 + 0.678753I$ $a = -1.02319 + 1.10302I$ $b = -0.55673 - 1.65487I$	$3.88067 - 2.62654I$	$-11.07995 + 2.70331I$
$u = 0.797828 - 0.678753I$ $a = -1.02319 - 1.10302I$ $b = -0.55673 + 1.65487I$	$3.88067 + 2.62654I$	$-11.07995 - 2.70331I$
$u = 1.05078$ $a = 0.906274$ $b = 0.133759$	-4.93398	-18.0800
$u = 1.21774$ $a = 1.31377$ $b = 1.26448$	-6.34892	-11.4760
$u = -1.117180 + 0.558107I$ $a = 0.264601 + 0.177693I$ $b = -0.642330 - 1.001630I$	$0.11807 + 2.01122I$	$-11.63298 - 1.47216I$
$u = -1.117180 - 0.558107I$ $a = 0.264601 - 0.177693I$ $b = -0.642330 + 1.001630I$	$0.11807 - 2.01122I$	$-11.63298 + 1.47216I$
$u = 1.282720 + 0.266061I$ $a = -0.417258 + 1.231710I$ $b = -0.313111 - 0.558407I$	$-2.36903 - 5.36546I$	$-17.8756 + 8.3270I$
$u = 1.282720 - 0.266061I$ $a = -0.417258 - 1.231710I$ $b = -0.313111 + 0.558407I$	$-2.36903 + 5.36546I$	$-17.8756 - 8.3270I$
$u = -0.123057 + 1.316600I$ $a = 0.002520 - 1.240400I$ $b = -0.32423 + 2.21788I$	$10.67480 + 4.86745I$	$-9.82219 - 2.45720I$
$u = -0.123057 - 1.316600I$ $a = 0.002520 + 1.240400I$ $b = -0.32423 - 2.21788I$	$10.67480 - 4.86745I$	$-9.82219 + 2.45720I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.315130+0.199500I$ $a=\ 0.931929+0.744429I$ $b=\ 0.399732-1.228200I$	$-2.04826+3.83523I$	$-16.1350-2.1387I$
$u=-1.315130-0.199500I$ $a=\ 0.931929-0.744429I$ $b=\ 0.399732+1.228200I$	$-2.04826-3.83523I$	$-16.1350+2.1387I$
$u=-0.410599+0.509120I$ $a=\ 0.56444+1.46880I$ $b=\ 0.821859+0.235411I$	$2.03875+2.53994I$	$-11.82047-4.16914I$
$u=-0.410599-0.509120I$ $a=\ 0.56444-1.46880I$ $b=\ 0.821859-0.235411I$	$2.03875-2.53994I$	$-11.82047+4.16914I$
$u=\ 1.49784$ $a=\ 0.0823949$ $b=-1.05480$	-11.6286	-23.4910
$u=\ 0.394751$ $a=\ 1.18127$ $b=\ 1.60965$	-7.19054	-5.70560
$u=-1.41645+0.78202I$ $a=-0.817155-0.477348I$ $b=-0.71160+2.00454I$	$6.79929+2.45061I$	$-11.06872-1.28046I$
$u=-1.41645-0.78202I$ $a=-0.817155+0.477348I$ $b=-0.71160-2.00454I$	$6.79929-2.45061I$	$-11.06872+1.28046I$
$u=\ 1.50198+0.60802I$ $a=\ 0.868783-0.609431I$ $b=\ 1.06909+1.77146I$	$5.60719-11.65040I$	$-12.86830+5.47222I$
$u=\ 1.50198-0.60802I$ $a=\ 0.868783+0.609431I$ $b=\ 1.06909-1.77146I$	$5.60719+11.65040I$	$-12.86830-5.47222I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.313467$ $a=-0.425309$ $b=-0.324845$	-0.515739	-19.2450
$u=-0.232568+0.185578I$ $a=\ 2.34163+3.73562I$ $b=\ 0.349022+0.617701I$	$2.00166+2.59049I$	$-13.9321-5.9466I$
$u=-0.232568-0.185578I$ $a=\ 2.34163-3.73562I$ $b=\ 0.349022-0.617701I$	$2.00166-2.59049I$	$-13.9321+5.9466I$
$u=-1.78276$ $a=-0.490994$ $b=-0.811626$	-16.2087	-2.53170

II.

$$\boldsymbol{I_2^u = \langle u^{11} - 7u^9 + \cdots + b + 3u,\ u^9 - u^8 + \cdots + a + 1,\ u^{12} - 8u^{10} + \cdots - 2u - 1\rangle}$$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u^3 - 2u \\ -u^3 + u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u^9 + u^8 + 6u^7 - 6u^6 - 11u^5 + 11u^4 + 5u^3 - 6u^2 + 3u - 1 \\ -u^{11} + 7u^9 - 17u^7 - u^6 + 15u^5 + 3u^4 - 2u^2 - 3u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -u^{11} + u^{10} + \cdots + u + 3 \\ u^{10} - 6u^8 + 11u^6 + u^5 - 4u^4 - 2u^3 - 5u^2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} u^{11} - 8u^9 + u^8 + 24u^7 - 5u^6 - 31u^5 + 8u^4 + 12u^3 - 3u^2 + 4u - 2 \\ -u^{11} + 7u^9 - 17u^7 - u^6 + 15u^5 + 3u^4 - 2u^2 - 2u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u^{11} + u^{10} + \cdots + u + 3 \\ -u^6 + 4u^4 - 4u^2 - u - 1 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -u^9 + u^8 + 6u^7 - 6u^6 - 11u^5 + 11u^4 + 5u^3 - 5u^2 + 3u - 3 \\ u^{10} - 7u^8 + 17u^6 + u^5 - 16u^4 - 3u^3 + 2u^2 + 2u + 2 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^{11} - 8u^9 + u^8 + 24u^7 - 5u^6 - 32u^5 + 8u^4 + 16u^3 - 3u^2 - 3 \\ u^{11} + 2u^{10} + \cdots + 7u + 3 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes
$= -6u^{11} + 4u^{10} + 43u^9 - 25u^8 - 108u^7 + 42u^6 + 108u^5 + u^4 - 21u^3 - 40u^2 - 14u - 8$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{12} - 12u^{11} + \cdots - 15u + 1$
c_2	$u^{12} - 6u^{10} + u^9 + 15u^8 - 3u^7 - 21u^6 + 4u^5 + 17u^4 - 4u^3 - 7u^2 + u + 1$
c_3	$u^{12} + 3u^{11} + u^{10} - 5u^9 - 8u^8 - 5u^7 + 2u^6 + 5u^5 + 5u^4 + 3u^3 - 1$
c_4	$u^{12} + u^{11} - u^{10} - 3u^8 - 2u^7 - u^6 + u^5 + 3u^4 + u^3 + 2u^2 - 1$
c_5	$u^{12} - 8u^{10} + 24u^8 - u^7 - 32u^6 + 4u^5 + 15u^4 - 5u^3 + 2u^2 + 2u - 1$
c_6	$u^{12} - 8u^{10} + \cdots + 2u - 1$
c_7	$u^{12} - 6u^{10} - u^9 + 15u^8 + 3u^7 - 21u^6 - 4u^5 + 17u^4 + 4u^3 - 7u^2 - u + 1$
c_8	$u^{12} - u^{11} - u^{10} - 3u^8 + 2u^7 - u^6 - u^5 + 3u^4 - u^3 + 2u^2 - 1$
c_9	$u^{12} - 2u^{10} - u^9 - 3u^8 - u^7 + u^6 + 2u^5 + 3u^4 + u^2 - u - 1$
c_{10}, c_{11}	$u^{12} - 8u^{10} + 24u^8 + u^7 - 32u^6 - 4u^5 + 15u^4 + 5u^3 + 2u^2 - 2u - 1$
c_{12}	$u^{12} - 4u^{11} + \cdots + 7u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{12} - 12y^{11} + \cdots - 43y + 1$
c_2, c_7	$y^{12} - 12y^{11} + \cdots - 15y + 1$
c_3	$y^{12} - 7y^{11} + \cdots - 10y^2 + 1$
c_4, c_8	$y^{12} - 3y^{11} + \cdots - 4y + 1$
c_5, c_{10}, c_{11}	$y^{12} - 16y^{11} + \cdots - 8y + 1$
c_6	$y^{12} - 16y^{11} + \cdots - 20y + 1$
c_9	$y^{12} - 4y^{11} + \cdots - 3y + 1$
c_{12}	$y^{12} - 24y^{11} + \cdots + 17y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.17998$ $a = 0.800947$ $b = 1.82750$	-9.65747	-15.7210
$u = -1.23606$ $a = -1.56622$ $b = -1.10566$	-6.93408	-26.3380
$u = -1.324120 + 0.237549I$ $a = 0.849347 + 0.965329I$ $b = 0.107633 - 0.994842I$	$-1.41781 + 4.88882I$	$-10.78753 - 6.22489I$
$u = -1.324120 - 0.237549I$ $a = 0.849347 - 0.965329I$ $b = 0.107633 + 0.994842I$	$-1.41781 - 4.88882I$	$-10.78753 + 6.22489I$
$u = 0.579754$ $a = 0.128754$ $b = -1.45303$	-7.57612	-27.2480
$u = -0.136756 + 0.512426I$ $a = 1.53089 + 2.63864I$ $b = 0.199486 - 0.931452I$	$2.56609 - 2.20336I$	$-4.12994 + 0.41603I$
$u = -0.136756 - 0.512426I$ $a = 1.53089 - 2.63864I$ $b = 0.199486 + 0.931452I$	$2.56609 + 2.20336I$	$-4.12994 - 0.41603I$
$u = 1.46831 + 0.31043I$ $a = -0.963926 + 0.306069I$ $b = -0.527150 - 0.827184I$	$-2.88723 - 0.94663I$	$-11.62610 + 0.41133I$
$u = 1.46831 - 0.31043I$ $a = -0.963926 - 0.306069I$ $b = -0.527150 + 0.827184I$	$-2.88723 + 0.94663I$	$-11.62610 - 0.41133I$
$u = 1.58481$ $a = 0.328758$ $b = -0.536398$	-11.0733	-8.22380

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.371528$ $a = -2.93289$ $b = \quad 0.802551$	-4.02071	-7.78700
$u = -1.75183$ $a = \quad 0.408041$ $b = \quad 0.905098$	-16.4780	-32.5950

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

(i) Arc colorings

$$a_5 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$

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

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

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

$$a_{12} = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} 1 \\ -1 \end{pmatrix}$$

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

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -18$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_3, c_{12}	$u+1$
c_2, c_4, c_5 c_7, c_8, c_{10} c_{11}	$u-1$
c_6, c_9	u

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_3 c_4, c_5, c_7 c_8, c_{10}, c_{11} c_{12}	$y-1$
c_6, c_9	y

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u		$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u =$	1.00000		
$a =$	1.00000	-4.93480	-18.0000
$b =$	0		

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u+1)(u^{12}-12u^{11}+\cdots-15u+1)(u^{24}+4u^{23}+\cdots+1789u+1)$
c_2	$(u-1)$ $\cdot(u^{12}-6u^{10}+u^9+15u^8-3u^7-21u^6+4u^5+17u^4-4u^3-7u^2+u+1)$ $\cdot(u^{24}+2u^{23}+\cdots+47u+1)$
c_3	$(u+1)(u^{12}+3u^{11}+\cdots+3u^3-1)$ $\cdot(u^{24}-3u^{23}+\cdots+14u+1)$
c_4	$(u-1)(u^{12}+u^{11}-u^{10}-3u^8-2u^7-u^6+u^5+3u^4+u^3+2u^2-1)$ $\cdot(u^{24}+3u^{23}+\cdots+80u+19)$
c_5	$(u-1)(u^{12}-8u^{10}+\cdots+2u-1)$ $\cdot(u^{24}-10u^{22}+\cdots+6u+1)$
c_6	$u(u^{12}-8u^{10}+\cdots+2u-1)(u^{24}+3u^{23}+\cdots+696u+37)$
c_7	$(u-1)$ $\cdot(u^{12}-6u^{10}-u^9+15u^8+3u^7-21u^6-4u^5+17u^4+4u^3-7u^2-u+1)$ $\cdot(u^{24}+2u^{23}+\cdots+47u+1)$
c_8	$(u-1)(u^{12}-u^{11}-u^{10}-3u^8+2u^7-u^6-u^5+3u^4-u^3+2u^2-1)$ $\cdot(u^{24}+3u^{23}+\cdots+80u+19)$
c_9	$u(u^{12}-2u^{10}-u^9-3u^8-u^7+u^6+2u^5+3u^4+u^2-u-1)$ $\cdot(u^{24}-u^{23}+\cdots+40u-8)$
c_{10}, c_{11}	$(u-1)(u^{12}-8u^{10}+\cdots-2u-1)$ $\cdot(u^{24}-10u^{22}+\cdots+6u+1)$
c_{12}	$(u+1)(u^{12}-4u^{11}+\cdots+7u+1)(u^{24}+2u^{23}+\cdots+5u-1)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y-1)(y^{12}-12y^{11}+\cdots-43y+1)(y^{24}+44y^{23}+\cdots-3160089y+1)$
c_2, c_7	$(y-1)(y^{12}-12y^{11}+\cdots-15y+1)(y^{24}-4y^{23}+\cdots-1789y+1)$
c_3	$(y-1)(y^{12}-7y^{11}+\cdots-10y^2+1)(y^{24}+13y^{23}+\cdots-214y+1)$
c_4, c_8	$(y-1)(y^{12}-3y^{11}+\cdots-4y+1)(y^{24}+29y^{23}+\cdots-5754y+361)$
c_5, c_{10}, c_{11}	$(y-1)(y^{12}-16y^{11}+\cdots-8y+1)(y^{24}-20y^{23}+\cdots-26y+1)$
c_6	$y(y^{12}-16y^{11}+\cdots-20y+1)(y^{24}+47y^{23}+\cdots-161850y+1369)$
c_9	$y(y^{12}-4y^{11}+\cdots-3y+1)(y^{24}+23y^{23}+\cdots-4064y+64)$
c_{12}	$(y-1)(y^{12}-24y^{11}+\cdots+17y+1)(y^{24}-60y^{23}+\cdots-93y+1)$