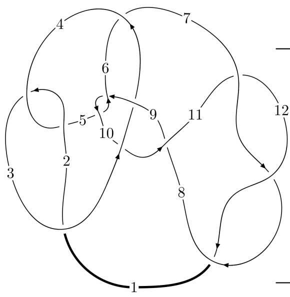
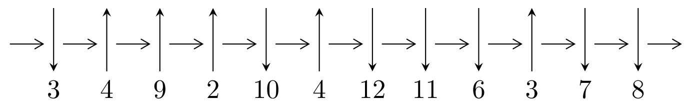
$12n_{0277}$ $(K12n_{0277})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned} I_1^u = \langle &-1.31866 \times 10^{31} u^{44} - 1.02208 \times 10^{31} u^{43} + \cdots + 1.69549 \times 10^{31} b + 1.38177 \times 10^{31}, \\ &5.31714 \times 10^{31} u^{44} + 5.34083 \times 10^{31} u^{43} + \cdots + 4.23874 \times 10^{31} a - 8.50686 \times 10^{31},\ u^{45} + u^{44} + \cdots - 3u + 5 \rangle \\ I_2^u = \langle &u^3 b^2 + 6b^2 u^2 - 2u^3 b + b^3 - b^2 u - 4u^3 - 3b^2 - 2bu - 6u^2 - 9b + 3u + 3,\ -u^2 + a,\ u^4 - u^2 + 1 \rangle \end{aligned}$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 57 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.

$\boldsymbol{I_1^u = \langle -1.32\times 10^{31}u^{44} - 1.02\times 10^{31}u^{43} + \cdots + 1.70\times 10^{31}b + 1.38\times 10^{31},\ 5.32\times 10^{31}u^{44} + 5.34\times 10^{31}u^{43} + \cdots + 4.24\times 10^{31}a - 8.51\times 10^{31},\ u^{45} + u^{44} + \cdots - 3u + 5\rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -1.25442u^{44} - 1.26001u^{43} + \cdots + 17.1020u + 2.00693 \\ 0.777745u^{44} + 0.602821u^{43} + \cdots - 13.4579u - 0.814966 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -0.857487u^{44} - 0.977954u^{43} + \cdots + 9.89939u + 1.21992 \\ 0.622066u^{44} + 0.528291u^{43} + \cdots - 11.1287u - 1.38935 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -0.251178u^{44} - 0.450479u^{43} + \cdots + 8.17819u + 4.56451 \\ -0.0401479u^{44} - 0.367454u^{43} + \cdots - 2.48738u + 6.40126 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -0.291326u^{44} - 0.817933u^{43} + \cdots + 5.69081u + 10.9658 \\ -0.0401479u^{44} - 0.367454u^{43} + \cdots - 2.48738u + 6.40126 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -u^2 + 1 \\ u^4 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^4 - u^2 + 1 \\ u^4 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} u^4 - u^2 + 1 \\ -u^6 - u^2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -0.701040u^{44} - 1.41736u^{43} + \cdots + 4.97925u + 12.1312 \\ -0.302362u^{44} - 0.273729u^{43} + \cdots + 1.07283u - 1.67880 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -1.08462u^{44} - 1.85577u^{43} + \cdots + 9.70163u + 13.7283 \\ 0.284549u^{44} + 0.197516u^{43} + \cdots - 7.73043u - 0.550539 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -0.476359u^{44} - 0.619053u^{43} + \cdots + 0.718999u + 7.19239$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{45} + 53u^{44} + \cdots + 16971u - 625$
c_2, c_4	$u^{45} - 11u^{44} + \cdots + 439u - 25$
c_3	$u^{45} + u^{44} + \cdots - 3u + 5$
c_5, c_9	$u^{45} + u^{44} + \cdots - 7u + 1$
c_6	$u^{45} + 5u^{44} + \cdots + 75641u - 14459$
c_7, c_{11}, c_{12}	$u^{45} + u^{44} + \cdots - 7u + 1$
c_8	$u^{45} - 3u^{44} + \cdots + 5891u - 783$
c_{10}	$u^{45} - 3u^{44} + \cdots + 1507645u + 1600703$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{45} - 115y^{44} + \cdots + 26596091y - 390625$
c_2, c_4	$y^{45} + 53y^{44} + \cdots + 16971y - 625$
c_3	$y^{45} - 11y^{44} + \cdots + 439y - 25$
c_5, c_9	$y^{45} + 11y^{44} + \cdots + 21y - 1$
c_6	$y^{45} + 39y^{44} + \cdots + 4268922987y - 209062681$
c_7, c_{11}, c_{12}	$y^{45} - 45y^{44} + \cdots + 9y - 1$
c_8	$y^{45} - 25y^{44} + \cdots + 15213445y - 613089$
c_{10}	$y^{45} + 51y^{44} + \cdots - 58950999031545y - 2562250094209$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.618448 + 0.778257I$ $a = 0.843482 - 1.073790I$ $b = 0.67091 + 1.41701I$	$-3.92090 - 3.01938I$	$-6.65827 + 3.07965I$
$u = -0.618448 - 0.778257I$ $a = 0.843482 + 1.073790I$ $b = 0.67091 - 1.41701I$	$-3.92090 + 3.01938I$	$-6.65827 - 3.07965I$
$u = -0.759629 + 0.693608I$ $a = 0.128652 + 0.688884I$ $b = 0.655655 - 0.423799I$	$-3.53574 - 5.66792I$	$-6.96528 + 6.84523I$
$u = -0.759629 - 0.693608I$ $a = 0.128652 - 0.688884I$ $b = 0.655655 + 0.423799I$	$-3.53574 + 5.66792I$	$-6.96528 - 6.84523I$
$u = 0.944274 + 0.424458I$ $a = 0.238661 + 0.516045I$ $b = 0.06927 - 1.44724I$	$1.42274 + 1.68081I$	$-1.366109 + 0.313836I$
$u = 0.944274 - 0.424458I$ $a = 0.238661 - 0.516045I$ $b = 0.06927 + 1.44724I$	$1.42274 - 1.68081I$	$-1.366109 - 0.313836I$
$u = -0.889096 + 0.544606I$ $a = -0.185199 + 0.005412I$ $b = 0.646513 + 0.958649I$	$-3.03850 + 0.83965I$	$-7.40372 + 0.18436I$
$u = -0.889096 - 0.544606I$ $a = -0.185199 - 0.005412I$ $b = 0.646513 - 0.958649I$	$-3.03850 - 0.83965I$	$-7.40372 - 0.18436I$
$u = -0.948668$ $a = 0.655960$ $b = -0.748646$	-2.56039	-4.14140
$u = 0.775946 + 0.528064I$ $a = 0.568356 + 1.013240I$ $b = 0.08102 - 1.65679I$	$1.51011 + 2.10810I$	$-4.11821 - 4.61603I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.775946 - 0.528064I$ $a = 0.568356 - 1.013240I$ $b = 0.08102 + 1.65679I$	$1.51011 - 2.10810I$	$-4.11821 + 4.61603I$
$u = 0.257571 + 0.891870I$ $a = 0.711919 - 0.919092I$ $b = 0.235209 - 0.154714I$	$-7.44321 - 2.20730I$	$-9.27201 + 1.65458I$
$u = 0.257571 - 0.891870I$ $a = 0.711919 + 0.919092I$ $b = 0.235209 + 0.154714I$	$-7.44321 + 2.20730I$	$-9.27201 - 1.65458I$
$u = 0.702892 + 0.579313I$ $a = 0.237201 - 0.451530I$ $b = 0.500813 - 0.118824I$	$0.77346 + 2.06694I$	$-2.46311 - 4.64250I$
$u = 0.702892 - 0.579313I$ $a = 0.237201 + 0.451530I$ $b = 0.500813 + 0.118824I$	$0.77346 - 2.06694I$	$-2.46311 + 4.64250I$
$u = -1.056350 + 0.360065I$ $a = -0.229265 - 0.766380I$ $b = 0.63174 + 2.00415I$	$1.51977 - 4.35751I$	$0. + 8.87124I$
$u = -1.056350 - 0.360065I$ $a = -0.229265 + 0.766380I$ $b = 0.63174 - 2.00415I$	$1.51977 + 4.35751I$	$0. - 8.87124I$
$u = 0.857894 + 0.110360I$ $a = -0.177987 + 1.247320I$ $b = -0.56576 - 2.29673I$	$0.48114 + 3.04926I$	$2.28179 - 3.92639I$
$u = 0.857894 - 0.110360I$ $a = -0.177987 - 1.247320I$ $b = -0.56576 + 2.29673I$	$0.48114 - 3.04926I$	$2.28179 + 3.92639I$
$u = -1.036040 + 0.598318I$ $a = 0.757783 - 0.678172I$ $b = -0.25466 + 2.13165I$	$-2.51811 - 2.22489I$	$-4.30685 + 1.76102I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.036040 - 0.598318I$ $a = 0.757783 + 0.678172I$ $b = -0.25466 - 2.13165I$	$-2.51811 + 2.22489I$	$-4.30685 - 1.76102I$
$u = 1.158630 + 0.404439I$ $a = -0.410963 + 0.740323I$ $b = 1.15725 - 2.04071I$	$-4.29007 + 6.94511I$	$-4.75487 - 6.62606I$
$u = 1.158630 - 0.404439I$ $a = -0.410963 - 0.740323I$ $b = 1.15725 + 2.04071I$	$-4.29007 - 6.94511I$	$-4.75487 + 6.62606I$
$u = 0.837424 + 0.951363I$ $a = -1.128450 + 0.074712I$ $b = -0.064368 + 0.566620I$	$-7.63574 - 2.82737I$	$-3.82687 + 2.49371I$
$u = 0.837424 - 0.951363I$ $a = -1.128450 - 0.074712I$ $b = -0.064368 - 0.566620I$	$-7.63574 + 2.82737I$	$-3.82687 - 2.49371I$
$u = -0.801777 + 1.006980I$ $a = -1.201550 - 0.076316I$ $b = -0.276801 - 0.814787I$	$-14.1872 + 6.6052I$	$-6.86353 - 2.64020I$
$u = -0.801777 - 1.006980I$ $a = -1.201550 + 0.076316I$ $b = -0.276801 + 0.814787I$	$-14.1872 - 6.6052I$	$-6.86353 + 2.64020I$
$u = -0.903629 + 0.926208I$ $a = -1.064140 - 0.131199I$ $b = 0.289994 - 0.475837I$	$-7.87444 - 2.11161I$	$-4.26706 + 2.79875I$
$u = -0.903629 - 0.926208I$ $a = -1.064140 + 0.131199I$ $b = 0.289994 + 0.475837I$	$-7.87444 + 2.11161I$	$-4.26706 - 2.79875I$
$u = -0.972656 + 0.889052I$ $a = 0.051088 + 1.077000I$ $b = -0.66690 - 1.87327I$	$-7.64726 - 4.57879I$	$-3.97932 + 1.83960I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.972656 - 0.889052I$ $a = 0.051088 - 1.077000I$ $b = -0.66690 + 1.87327I$	$-7.64726 + 4.57879I$	$-3.97932 - 1.83960I$
$u = 1.023050 + 0.858993I$ $a = -0.002769 - 1.094260I$ $b = -0.66351 + 2.30984I$	$-7.03534 + 9.49120I$	$-2.00000 - 6.96236I$
$u = 1.023050 - 0.858993I$ $a = -0.002769 + 1.094260I$ $b = -0.66351 - 2.30984I$	$-7.03534 - 9.49120I$	$-2.00000 + 6.96236I$
$u = 0.954554 + 0.963302I$ $a = 0.111126 - 1.116440I$ $b = -1.04228 + 1.51734I$	$-14.8390 + 1.4214I$	$-7.29509 - 1.55685I$
$u = 0.954554 - 0.963302I$ $a = 0.111126 + 1.116440I$ $b = -1.04228 - 1.51734I$	$-14.8390 - 1.4214I$	$-7.29509 + 1.55685I$
$u = -0.268767 + 0.584540I$ $a = 0.816355 + 0.624887I$ $b = 0.153086 - 0.014362I$	$-1.033970 + 0.656542I$	$-7.43314 - 3.12832I$
$u = -0.268767 - 0.584540I$ $a = 0.816355 - 0.624887I$ $b = 0.153086 + 0.014362I$	$-1.033970 - 0.656542I$	$-7.43314 + 3.12832I$
$u = 0.972776 + 0.950767I$ $a = -1.063580 + 0.218802I$ $b = 0.643513 + 0.647443I$	$-14.7763 + 5.5885I$	$-7.26736 - 2.90698I$
$u = 0.972776 - 0.950767I$ $a = -1.063580 - 0.218802I$ $b = 0.643513 - 0.647443I$	$-14.7763 - 5.5885I$	$-7.26736 + 2.90698I$
$u = -1.069130 + 0.858613I$ $a = -0.028711 + 1.127660I$ $b = -0.86002 - 2.60268I$	$-13.3108 - 13.4287I$	$-5.61656 + 7.05289I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.069130-0.858613I$ $a=-0.028711-1.127660I$ $b=-0.86002+2.60268I$	$-13.3108+13.4287I$	$-5.61656-7.05289I$
$u=-0.618743+0.061116I$ $a=-0.16921-1.71012I$ $b=-1.01368+1.54051I$	$3.56768-0.22451I$	$5.93213-0.90945I$
$u=-0.618743-0.061116I$ $a=-0.16921+1.71012I$ $b=-1.01368-1.54051I$	$3.56768+0.22451I$	$5.93213+0.90945I$
$u=\ \ 0.483587+0.089423I$ $a=-0.73078-2.06551I$ $b=-1.45266+1.03026I$	$-1.00640+2.97190I$	$-0.65660-1.82986I$
$u=\ \ 0.483587-0.089423I$ $a=-0.73078+2.06551I$ $b=-1.45266-1.03026I$	$-1.00640-2.97190I$	$-0.65660+1.82986I$

II. $I_2^u = \langle u^3b^2 - 2u^3b + \cdots - 9b + 3,\ -u^2 + a,\ u^4 - u^2 + 1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -8u^3 - 4bu - 4u^2 + 4u + 4$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$(u^2 - u + 1)^6$
c_2	$(u^2 + u + 1)^6$
c_3	$(u^4 - u^2 + 1)^3$
c_5, c_9	$(u^2 + 1)^6$
c_6	$u^{12} - 6u^{11} + \cdots - 70u + 25$
c_7, c_{11}, c_{12}	$(u^6 - 3u^4 + 2u^2 + 1)^2$
c_8	$(u^6 + u^4 + 2u^2 + 1)^2$
c_{10}	$u^{12} - 2u^{11} + \cdots - 40u + 25$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y^2 + y + 1)^6$
c_3	$(y^2 - y + 1)^6$
c_5, c_9	$(y + 1)^{12}$
c_6	$y^{12} + 4y^{11} + \cdots - 850y + 625$
c_7, c_{11}, c_{12}	$(y^3 - 3y^2 + 2y + 1)^4$
c_8	$(y^3 + y^2 + 2y + 1)^4$
c_{10}	$y^{12} - 4y^{11} + \cdots + 850y + 625$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.866025 + 0.500000I$ $a = 0.500000 + 0.866025I$ $b = -0.65374 - 1.35461I$	$2.75839 + 2.02988I$	$5.01951 - 3.46410I$
$u = 0.866025 + 0.500000I$ $a = 0.500000 + 0.866025I$ $b = 1.13232 - 1.52570I$	$-1.37919 + 4.85801I$	$-1.50976 - 6.44355I$
$u = 0.866025 + 0.500000I$ $a = 0.500000 + 0.866025I$ $b = 0.38745 - 2.81584I$	$-1.37919 - 0.79824I$	$-1.50976 - 0.48465I$
$u = 0.866025 - 0.500000I$ $a = 0.500000 - 0.866025I$ $b = -0.65374 + 1.35461I$	$2.75839 - 2.02988I$	$5.01951 + 3.46410I$
$u = 0.866025 - 0.500000I$ $a = 0.500000 - 0.866025I$ $b = 1.13232 + 1.52570I$	$-1.37919 - 4.85801I$	$-1.50976 + 6.44355I$
$u = 0.866025 - 0.500000I$ $a = 0.500000 - 0.866025I$ $b = 0.38745 + 2.81584I$	$-1.37919 + 0.79824I$	$-1.50976 + 0.48465I$
$u = -0.866025 + 0.500000I$ $a = 0.500000 - 0.866025I$ $b = -0.387453 + 0.648262I$	$-1.37919 + 0.79824I$	$-1.50976 + 0.48465I$
$u = -0.866025 + 0.500000I$ $a = 0.500000 - 0.866025I$ $b = 0.65374 + 2.10949I$	$2.75839 - 2.02988I$	$5.01951 + 3.46410I$
$u = -0.866025 + 0.500000I$ $a = 0.500000 - 0.866025I$ $b = -1.13232 + 1.93840I$	$-1.37919 - 4.85801I$	$-1.50976 + 6.44355I$
$u = -0.866025 - 0.500000I$ $a = 0.500000 + 0.866025I$ $b = -0.387453 - 0.648262I$	$-1.37919 - 0.79824I$	$-1.50976 - 0.48465I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.866025 - 0.500000I$ $a = \ \ 0.500000 + 0.866025I$ $b = \ \ 0.65374 - 2.10949I$	$2.75839 + 2.02988I$	$5.01951 - 3.46410I$
$u = -0.866025 - 0.500000I$ $a = \ \ 0.500000 + 0.866025I$ $b = -1.13232 - 1.93840I$	$-1.37919 + 4.85801I$	$-1.50976 - 6.44355I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^2-u+1)^6)(u^{45}+53u^{44}+\cdots+16971u-625)$
c_2	$((u^2+u+1)^6)(u^{45}-11u^{44}+\cdots+439u-25)$
c_3	$((u^4-u^2+1)^3)(u^{45}+u^{44}+\cdots-3u+5)$
c_4	$((u^2-u+1)^6)(u^{45}-11u^{44}+\cdots+439u-25)$
c_5, c_9	$((u^2+1)^6)(u^{45}+u^{44}+\cdots-7u+1)$
c_6	$(u^{12}-6u^{11}+\cdots-70u+25)(u^{45}+5u^{44}+\cdots+75641u-14459)$
c_7, c_{11}, c_{12}	$((u^6-3u^4+2u^2+1)^2)(u^{45}+u^{44}+\cdots-7u+1)$
c_8	$((u^6+u^4+2u^2+1)^2)(u^{45}-3u^{44}+\cdots+5891u-783)$
c_{10}	$(u^{12}-2u^{11}+\cdots-40u+25)$ $\cdot(u^{45}-3u^{44}+\cdots+1507645u+1600703)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y^2+y+1)^6)(y^{45}-115y^{44}+\cdots+2.65961\times 10^7 y-390625)$
c_2, c_4	$((y^2+y+1)^6)(y^{45}+53y^{44}+\cdots+16971y-625)$
c_3	$((y^2-y+1)^6)(y^{45}-11y^{44}+\cdots+439y-25)$
c_5, c_9	$((y+1)^{12})(y^{45}+11y^{44}+\cdots+21y-1)$
c_6	$(y^{12}+4y^{11}+\cdots-850y+625)$ $\cdot(y^{45}+39y^{44}+\cdots+4268922987y-209062681)$
c_7, c_{11}, c_{12}	$((y^3-3y^2+2y+1)^4)(y^{45}-45y^{44}+\cdots+9y-1)$
c_8	$((y^3+y^2+2y+1)^4)(y^{45}-25y^{44}+\cdots+1.52134\times 10^7 y-613089)$
c_{10}	$(y^{12}-4y^{11}+\cdots+850y+625)$ $\cdot(y^{45}+51y^{44}+\cdots-58950999031545y-2562250094209)$