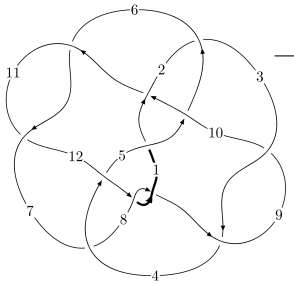
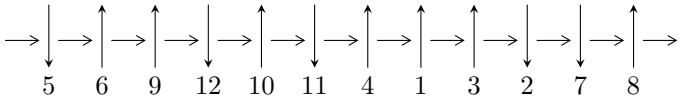
$12a_{1237}$ $(K12a_{1237})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 4.20584 \times 10^{667} u^{144} + 3.01908 \times 10^{667} u^{143} + \cdots + 8.60367 \times 10^{668} b - 7.21833 \times 10^{670},$$
$$- 2.18124 \times 10^{668} u^{144} + 1.52575 \times 10^{670} u^{143} + \cdots + 5.53216 \times 10^{671} a - 1.40274 \times 10^{673},$$
$$u^{145} - 43 u^{143} + \cdots + 14615 u + 1286 \rangle$$

$$I_2^u = \langle -8.26352 \times 10^{22} u^{32} - 1.84889 \times 10^{23} u^{31} + \cdots + 1.89990 \times 10^{22} b + 1.14959 \times 10^{24},$$
$$- 5.63314 \times 10^{23} u^{32} + 8.09901 \times 10^{22} u^{31} + \cdots + 1.32993 \times 10^{23} a - 2.25243 \times 10^{24},\ u^{33} + u^{32} + \cdots - 23 u +$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 178 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. $\boldsymbol{I_1^u = \langle 4.21 \times 10^{667} u^{144} + 3.02 \times 10^{667} u^{143} + \cdots + 8.60 \times 10^{668} b - 7.22 \times 10^{670},\ -2.18 \times 10^{668} u^{144} + 1.53 \times 10^{670} u^{143} + \cdots + 5.53 \times 10^{671} a - 1.40 \times 10^{673},\ u^{145} - 43 u^{143} + \cdots + 14615 u + 1286 \rangle}$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 0.000394283u^{144} - 0.0275797u^{143} + \cdots + 45.5077u + 25.3561 \\ -0.0488843u^{144} - 0.0350906u^{143} + \cdots + 1165.03u + 83.8983 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 0.116495u^{144} + 0.0671820u^{143} + \cdots - 1522.09u - 94.0097 \\ -0.134528u^{144} - 0.114336u^{143} + \cdots + 2699.27u + 205.762 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -0.109833u^{144} - 0.104519u^{143} + \cdots + 2368.10u + 190.837 \\ 0.650696u^{144} + 0.595136u^{143} + \cdots - 13544.2u - 1087.67 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -0.174719u^{144} - 0.200942u^{143} + \cdots + 581.947u + 54.6804 \\ 0.0514734u^{144} + 0.0874424u^{143} + \cdots + 1450.89u + 111.392 \end{pmatrix}$$

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

$$a_5 = \begin{pmatrix} 0.0662833u^{144} + 0.0400073u^{143} + \cdots - 932.777u - 55.2379 \\ -0.114773u^{144} - 0.102678u^{143} + \cdots + 2143.31u + 164.492 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.0456777u^{144} - 0.115858u^{143} + \cdots - 172.059u - 13.9622 \\ 0.166438u^{144} + 0.194786u^{143} + \cdots - 2125.71u - 181.588 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -0.179609u^{144} - 0.120283u^{143} + \cdots + 5384.61u + 423.462 \\ 0.188114u^{144} + 0.126517u^{143} + \cdots - 5191.59u - 407.693 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0.151645u^{144} + 0.242592u^{143} + \cdots - 1779.97u - 158.597 \\ -0.0296550u^{144} - 0.136351u^{143} + \cdots + 97.9273u + 35.0310 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 0.312516u^{144} - 1.83404u^{143} + \cdots + 32956.9u + 2890.88$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{145} - 6u^{144} + \cdots - 153422604074u + 82046221679$
c_2	$u^{145} - u^{144} + \cdots + 525670u + 55949$
c_3, c_9	$u^{145} - 5u^{144} + \cdots + 12394259u + 542527$
c_4	$u^{145} + 10u^{144} + \cdots - 32u - 1$
c_5	$u^{145} + 3u^{144} + \cdots - 49936u + 13568$
c_6, c_{11}	$u^{145} - u^{144} + \cdots - 134u + 1$
c_7	$u^{145} - 3u^{144} + \cdots + 1140u + 1117$
c_8, c_{12}	$u^{145} - 43u^{143} + \cdots + 14615u - 1286$
c_{10}	$u^{145} + u^{144} + \cdots - 27127u - 9606$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{145} - 84y^{144} + \cdots + 3.96 \times 10^{23}y - 6.73 \times 10^{21}$
c_2	$y^{145} + 53y^{144} + \cdots + 51147539762y - 3130290601$
c_3, c_9	$y^{145} + 73y^{144} + \cdots + 4228767991095y - 294335545729$
c_4	$y^{145} - 74y^{144} + \cdots + 198y - 1$
c_5	$y^{145} + 37y^{144} + \cdots + 1166626560y - 184090624$
c_6, c_{11}	$y^{145} - 131y^{144} + \cdots + 18524y - 1$
c_7	$y^{145} + 21y^{144} + \cdots + 52277246y - 1247689$
c_8, c_{12}	$y^{145} - 86y^{144} + \cdots + 66531265y - 1653796$
c_{10}	$y^{145} - 91y^{144} + \cdots + 5892163597y - 92275236$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.898633+0.433440I$ $a=\ \ 2.04578-0.71402I$ $b=\ \ 0.022491+0.409068I$	$-9.14402-10.24780I$	0
$u=-0.898633-0.433440I$ $a=\ \ 2.04578+0.71402I$ $b=\ \ 0.022491-0.409068I$	$-9.14402+10.24780I$	0
$u=-0.073050+0.994240I$ $a=\ \ 0.095870+0.255895I$ $b=-0.482995+0.354364I$	$-0.43751-3.83986I$	0
$u=-0.073050-0.994240I$ $a=\ \ 0.095870-0.255895I$ $b=-0.482995-0.354364I$	$-0.43751+3.83986I$	0
$u=-0.914397+0.386602I$ $a=-2.78356+0.34868I$ $b=\ \ 2.04338-1.02761I$	$-7.57636-3.28778I$	0
$u=-0.914397-0.386602I$ $a=-2.78356-0.34868I$ $b=\ \ 2.04338+1.02761I$	$-7.57636+3.28778I$	0
$u=\ \ 0.937361+0.386454I$ $a=-2.15080-0.47024I$ $b=\ \ 0.744495+0.535402I$	$-3.86981+6.90906I$	0
$u=\ \ 0.937361-0.386454I$ $a=-2.15080+0.47024I$ $b=\ \ 0.744495-0.535402I$	$-3.86981-6.90906I$	0
$u=-0.475893+0.849331I$ $a=-0.377473+0.252302I$ $b=-0.316276+1.206530I$	$-8.42083-4.77169I$	0
$u=-0.475893-0.849331I$ $a=-0.377473-0.252302I$ $b=-0.316276-1.206530I$	$-8.42083+4.77169I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.836276 + 0.480474I$ $a = 1.76801 - 0.15769I$ $b = -0.951024 - 0.248799I$	$-3.17451 + 2.02375I$	0
$u = 0.836276 - 0.480474I$ $a = 1.76801 + 0.15769I$ $b = -0.951024 + 0.248799I$	$-3.17451 - 2.02375I$	0
$u = -0.963301$ $a = 1.25592$ $b = -0.349566$	1.75193	0
$u = 0.848320 + 0.414953I$ $a = -1.86905 - 0.89346I$ $b = -0.009494 + 0.545050I$	$-8.25194 + 1.66327I$	0
$u = 0.848320 - 0.414953I$ $a = -1.86905 + 0.89346I$ $b = -0.009494 - 0.545050I$	$-8.25194 - 1.66327I$	0
$u = -1.034370 + 0.211409I$ $a = -1.36610 - 0.57021I$ $b = 0.887823 - 0.812845I$	$2.98997 - 0.80961I$	0
$u = -1.034370 - 0.211409I$ $a = -1.36610 + 0.57021I$ $b = 0.887823 + 0.812845I$	$2.98997 + 0.80961I$	0
$u = -1.003690 + 0.338682I$ $a = 2.79524 - 0.57397I$ $b = -1.93910 + 1.12849I$	$-7.39281 - 3.03542I$	0
$u = -1.003690 - 0.338682I$ $a = 2.79524 + 0.57397I$ $b = -1.93910 - 1.12849I$	$-7.39281 + 3.03542I$	0
$u = 0.906664 + 0.227126I$ $a = -2.01583 + 2.24650I$ $b = 2.21764 - 2.30679I$	$-7.91749 + 8.92787I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.906664 - 0.227126I$ $a = -2.01583 - 2.24650I$ $b = 2.21764 + 2.30679I$	$-7.91749 - 8.92787I$	0
$u = -0.960213 + 0.462729I$ $a = -0.696597 - 0.501211I$ $b = 0.772732 - 0.563054I$	$1.32240 - 2.06915I$	0
$u = -0.960213 - 0.462729I$ $a = -0.696597 + 0.501211I$ $b = 0.772732 + 0.563054I$	$1.32240 + 2.06915I$	0
$u = 0.876368 + 0.322529I$ $a = 0.005716 - 0.379310I$ $b = -0.576803 + 0.637195I$	$-2.98776 + 1.27870I$	0
$u = 0.876368 - 0.322529I$ $a = 0.005716 + 0.379310I$ $b = -0.576803 - 0.637195I$	$-2.98776 - 1.27870I$	0
$u = 0.933708$ $a = 6.36337$ $b = -0.420025$	-5.10444	0
$u = -0.821912 + 0.689402I$ $a = -1.388660 + 0.031507I$ $b = -0.129311 - 0.440745I$	$-7.46361 - 0.84977I$	0
$u = -0.821912 - 0.689402I$ $a = -1.388660 - 0.031507I$ $b = -0.129311 + 0.440745I$	$-7.46361 + 0.84977I$	0
$u = -0.897131 + 0.205839I$ $a = -1.50037 + 0.65516I$ $b = 0.711261 + 0.549688I$	$-0.872138 - 0.966382I$	0
$u = -0.897131 - 0.205839I$ $a = -1.50037 - 0.65516I$ $b = 0.711261 - 0.549688I$	$-0.872138 + 0.966382I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.839571+0.329804I$ $a=\ \ 2.38943-0.64658I$ $b=-1.085090+0.532412I$	$-3.69986+2.87607I$	0
$u=-0.839571-0.329804I$ $a=\ \ 2.38943+0.64658I$ $b=-1.085090-0.532412I$	$-3.69986-2.87607I$	0
$u=\ \ 1.015250+0.435576I$ $a=\ \ 1.080660-0.190779I$ $b=-0.990627+0.459760I$	$-2.96446+2.83003I$	0
$u=\ \ 1.015250-0.435576I$ $a=\ \ 1.080660+0.190779I$ $b=-0.990627-0.459760I$	$-2.96446-2.83003I$	0
$u=-0.331846+1.056180I$ $a=-0.227682+0.465537I$ $b=-0.685480-1.094000I$	$-10.73840+4.63721I$	0
$u=-0.331846-1.056180I$ $a=-0.227682-0.465537I$ $b=-0.685480+1.094000I$	$-10.73840-4.63721I$	0
$u=-0.848352+0.263430I$ $a=\ \ 0.698771+1.023240I$ $b=-0.78796-1.77851I$	$-3.78660-5.60011I$	0
$u=-0.848352-0.263430I$ $a=\ \ 0.698771-1.023240I$ $b=-0.78796+1.77851I$	$-3.78660+5.60011I$	0
$u=\ \ 0.491158+0.735989I$ $a=\ \ 0.367473-0.319825I$ $b=-0.021538+0.914830I$	$-3.89250+2.59486I$	0
$u=\ \ 0.491158-0.735989I$ $a=\ \ 0.367473+0.319825I$ $b=-0.021538-0.914830I$	$-3.89250-2.59486I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.836435 + 0.245410I$ $a = -3.46495 - 0.12438I$ $b = 2.42765 + 0.29999I$	$-8.09693 - 6.69957I$	0
$u = 0.836435 - 0.245410I$ $a = -3.46495 + 0.12438I$ $b = 2.42765 - 0.29999I$	$-8.09693 + 6.69957I$	0
$u = -0.144921 + 1.122370I$ $a = -0.004153 - 0.339743I$ $b = 0.613411 + 1.178640I$	$-11.26920 + 4.43339I$	0
$u = -0.144921 - 1.122370I$ $a = -0.004153 + 0.339743I$ $b = 0.613411 - 1.178640I$	$-11.26920 - 4.43339I$	0
$u = 0.868225$ $a = 5.44804$ $b = 0.110422$	-5.23111	0
$u = -1.115650 + 0.205892I$ $a = 1.59095 - 0.40657I$ $b = -1.10848 + 1.45346I$	$0.51133 - 5.86067I$	0
$u = -1.115650 - 0.205892I$ $a = 1.59095 + 0.40657I$ $b = -1.10848 - 1.45346I$	$0.51133 + 5.86067I$	0
$u = -0.863460$ $a = -3.98667$ $b = 0.266556$	-0.389672	0
$u = 0.384602 + 0.771833I$ $a = -0.524388 + 0.192221I$ $b = -0.624082 + 0.685763I$	$-5.27893 - 2.49198I$	0
$u = 0.384602 - 0.771833I$ $a = -0.524388 - 0.192221I$ $b = -0.624082 - 0.685763I$	$-5.27893 + 2.49198I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.117890+0.257186I$ $a=\ \ 1.182530+0.496514I$ $b=-0.433470+0.529528I$	$1.64618-0.93659I$	0
$u=-1.117890-0.257186I$ $a=\ \ 1.182530-0.496514I$ $b=-0.433470-0.529528I$	$1.64618+0.93659I$	0
$u=\ \ 1.138700+0.178079I$ $a=-1.46336-0.00916I$ $b=\ \ 1.117940+0.749491I$	$4.54964+2.34980I$	0
$u=\ \ 1.138700-0.178079I$ $a=-1.46336+0.00916I$ $b=\ \ 1.117940-0.749491I$	$4.54964-2.34980I$	0
$u=-1.113680+0.307956I$ $a=-0.475025-1.248050I$ $b=\ \ 0.72223+1.32017I$	$-2.67518-5.53153I$	0
$u=-1.113680-0.307956I$ $a=-0.475025+1.248050I$ $b=\ \ 0.72223-1.32017I$	$-2.67518+5.53153I$	0
$u=\ \ 1.039010+0.517552I$ $a=\ \ 1.307890-0.431307I$ $b=-0.877573-1.049230I$	$-3.36739+7.26851I$	0
$u=\ \ 1.039010-0.517552I$ $a=\ \ 1.307890+0.431307I$ $b=-0.877573+1.049230I$	$-3.36739-7.26851I$	0
$u=\ \ 0.782201+0.292217I$ $a=\ \ 0.185923-0.605067I$ $b=-0.151287-1.391030I$	$-8.61903+1.53554I$	0
$u=\ \ 0.782201-0.292217I$ $a=\ \ 0.185923+0.605067I$ $b=-0.151287+1.391030I$	$-8.61903-1.53554I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.062853 + 0.830271I$ $a = -0.277114 + 0.555346I$ $b = 0.869667 + 0.872090I$	$-6.08621 + 8.40067I$	0
$u = 0.062853 - 0.830271I$ $a = -0.277114 - 0.555346I$ $b = 0.869667 - 0.872090I$	$-6.08621 - 8.40067I$	0
$u = 1.120600 + 0.358973I$ $a = -1.71531 + 0.77940I$ $b = 0.733277 + 0.838598I$	$-2.41047 + 1.27904I$	0
$u = 1.120600 - 0.358973I$ $a = -1.71531 - 0.77940I$ $b = 0.733277 - 0.838598I$	$-2.41047 - 1.27904I$	0
$u = -0.645790 + 0.476309I$ $a = 0.466016 - 0.865417I$ $b = 0.072640 - 1.236160I$	$-9.88006 + 6.43655I$	0
$u = -0.645790 - 0.476309I$ $a = 0.466016 + 0.865417I$ $b = 0.072640 + 1.236160I$	$-9.88006 - 6.43655I$	0
$u = 0.774380 + 0.053858I$ $a = 2.95434 + 0.15321I$ $b = -1.258710 + 0.574099I$	$-4.72280 - 0.62776I$	0
$u = 0.774380 - 0.053858I$ $a = 2.95434 - 0.15321I$ $b = -1.258710 - 0.574099I$	$-4.72280 + 0.62776I$	0
$u = 0.158103 + 1.213980I$ $a = 0.081824 + 0.301611I$ $b = 0.624654 - 1.104520I$	$-12.3347 - 13.4249I$	0
$u = 0.158103 - 1.213980I$ $a = 0.081824 - 0.301611I$ $b = 0.624654 + 1.104520I$	$-12.3347 + 13.4249I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.237180 + 0.077493I$ $a = 0.846736 - 0.280248I$ $b = -0.698183 - 0.515999I$	$3.31935 - 4.02427I$	0
$u = 1.237180 - 0.077493I$ $a = 0.846736 + 0.280248I$ $b = -0.698183 + 0.515999I$	$3.31935 + 4.02427I$	0
$u = -1.175410 + 0.450966I$ $a = 1.152680 + 0.175544I$ $b = -0.708836 + 1.198700I$	$-2.44550 - 5.88329I$	0
$u = -1.175410 - 0.450966I$ $a = 1.152680 - 0.175544I$ $b = -0.708836 - 1.198700I$	$-2.44550 + 5.88329I$	0
$u = 1.204180 + 0.420425I$ $a = -1.49791 - 0.20124I$ $b = 1.11052 + 1.10939I$	$3.24137 + 5.64934I$	0
$u = 1.204180 - 0.420425I$ $a = -1.49791 + 0.20124I$ $b = 1.11052 - 1.10939I$	$3.24137 - 5.64934I$	0
$u = 1.223000 + 0.368504I$ $a = -0.570052 - 0.298849I$ $b = 0.358043 + 1.108290I$	$1.98338 + 4.93352I$	0
$u = 1.223000 - 0.368504I$ $a = -0.570052 + 0.298849I$ $b = 0.358043 - 1.108290I$	$1.98338 - 4.93352I$	0
$u = 1.285900 + 0.021169I$ $a = -0.188657 - 0.967948I$ $b = -0.154303 + 0.244970I$	$-4.00952 - 1.21936I$	0
$u = 1.285900 - 0.021169I$ $a = -0.188657 + 0.967948I$ $b = -0.154303 - 0.244970I$	$-4.00952 + 1.21936I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.607686 + 0.374263I$ $a = -0.256818 + 0.126683I$ $b = 0.378365 - 1.347710I$	$-4.85534 - 3.53482I$	0
$u = 0.607686 - 0.374263I$ $a = -0.256818 - 0.126683I$ $b = 0.378365 + 1.347710I$	$-4.85534 + 3.53482I$	0
$u = 0.006194 + 1.296310I$ $a = -0.194923 - 0.134528I$ $b = -0.405453 + 1.086060I$	$-10.03280 - 3.13108I$	0
$u = 0.006194 - 1.296310I$ $a = -0.194923 + 0.134528I$ $b = -0.405453 - 1.086060I$	$-10.03280 + 3.13108I$	0
$u = -1.29995$ $a = 0.998521$ $b = -1.05683$	0.925547	0
$u = 1.185940 + 0.534791I$ $a = 0.997722 - 0.001953I$ $b = -0.933561 + 0.035527I$	$-2.95837 + 2.92828I$	0
$u = 1.185940 - 0.534791I$ $a = 0.997722 + 0.001953I$ $b = -0.933561 - 0.035527I$	$-2.95837 - 2.92828I$	0
$u = -1.250980 + 0.457236I$ $a = -1.62475 - 0.23683I$ $b = 0.98700 - 1.03739I$	$-2.20657 - 12.99010I$	0
$u = -1.250980 - 0.457236I$ $a = -1.62475 + 0.23683I$ $b = 0.98700 + 1.03739I$	$-2.20657 + 12.99010I$	0
$u = 1.180260 + 0.645438I$ $a = -0.095049 + 0.660989I$ $b = 0.419081 - 0.686751I$	$-2.94867 - 3.33911I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.180260 - 0.645438I$ $a = -0.095049 - 0.660989I$ $b = 0.419081 + 0.686751I$	$-2.94867 + 3.33911I$	0
$u = -1.288430 + 0.393723I$ $a = 1.145800 + 0.062438I$ $b = -0.916583 + 0.507128I$	$4.10046 - 1.25400I$	0
$u = -1.288430 - 0.393723I$ $a = 1.145800 - 0.062438I$ $b = -0.916583 - 0.507128I$	$4.10046 + 1.25400I$	0
$u = -1.302400 + 0.377450I$ $a = -1.38469 + 0.64761I$ $b = 1.16529 - 1.16618I$	$1.30978 - 6.31424I$	0
$u = -1.302400 - 0.377450I$ $a = -1.38469 - 0.64761I$ $b = 1.16529 + 1.16618I$	$1.30978 + 6.31424I$	0
$u = 1.270290 + 0.475410I$ $a = 1.144090 - 0.252910I$ $b = -0.870719 - 0.767104I$	$3.61384 + 8.84204I$	0
$u = 1.270290 - 0.475410I$ $a = 1.144090 + 0.252910I$ $b = -0.870719 + 0.767104I$	$3.61384 - 8.84204I$	0
$u = -0.013019 + 0.638822I$ $a = 0.456205 - 0.130262I$ $b = 0.395363 - 0.697509I$	$-0.26999 - 1.63427I$	$0. + 5.25975I$
$u = -0.013019 - 0.638822I$ $a = 0.456205 + 0.130262I$ $b = 0.395363 + 0.697509I$	$-0.26999 + 1.63427I$	$0. - 5.25975I$
$u = 1.324790 + 0.345426I$ $a = 1.48774 + 1.13838I$ $b = -1.18572 - 1.94164I$	$-2.93740 + 8.61628I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.324790 - 0.345426I$ $a = 1.48774 - 1.13838I$ $b = -1.18572 + 1.94164I$	$-2.93740 - 8.61628I$	0
$u = -1.226150 + 0.625099I$ $a = 1.60290 - 0.18141I$ $b = -1.23535 + 1.29765I$	$-7.89645 - 10.62710I$	0
$u = -1.226150 - 0.625099I$ $a = 1.60290 + 0.18141I$ $b = -1.23535 - 1.29765I$	$-7.89645 + 10.62710I$	0
$u = -0.117272 + 0.603896I$ $a = -0.90517 - 1.13829I$ $b = -0.538411 - 0.718761I$	$-5.49473 + 1.74369I$	$-5.85606 - 4.80060I$
$u = -0.117272 - 0.603896I$ $a = -0.90517 + 1.13829I$ $b = -0.538411 + 0.718761I$	$-5.49473 - 1.74369I$	$-5.85606 + 4.80060I$
$u = 0.113489 + 1.387080I$ $a = 0.092029 - 0.253063I$ $b = -0.091131 + 0.767086I$	$-5.82799 - 0.68385I$	0
$u = 0.113489 - 1.387080I$ $a = 0.092029 + 0.253063I$ $b = -0.091131 - 0.767086I$	$-5.82799 + 0.68385I$	0
$u = -1.246240 + 0.646134I$ $a = -0.334713 - 0.260613I$ $b = 0.509481 - 0.280336I$	$1.97387 - 3.04466I$	0
$u = -1.246240 - 0.646134I$ $a = -0.334713 + 0.260613I$ $b = 0.509481 + 0.280336I$	$1.97387 + 3.04466I$	0
$u = 1.154430 + 0.807051I$ $a = -1.084390 + 0.241121I$ $b = 1.129930 + 0.604981I$	$-1.76551 + 2.91986I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.154430 - 0.807051I$ $a = -1.084390 - 0.241121I$ $b = 1.129930 - 0.604981I$	$-1.76551 - 2.91986I$	0
$u = -0.057357 + 0.586543I$ $a = -0.77673 - 1.35333I$ $b = 1.000910 - 0.724742I$	$-5.62610 + 2.08118I$	$-5.84811 - 3.37812I$
$u = -0.057357 - 0.586543I$ $a = -0.77673 + 1.35333I$ $b = 1.000910 + 0.724742I$	$-5.62610 - 2.08118I$	$-5.84811 + 3.37812I$
$u = -1.29883 + 0.59802I$ $a = -1.68501 + 0.26859I$ $b = 1.18761 - 1.25695I$	$-7.67746 - 10.47000I$	0
$u = -1.29883 - 0.59802I$ $a = -1.68501 - 0.26859I$ $b = 1.18761 + 1.25695I$	$-7.67746 + 10.47000I$	0
$u = 1.28284 + 0.67452I$ $a = 1.252440 + 0.041811I$ $b = -0.910566 - 0.810359I$	$-2.42139 + 7.59080I$	0
$u = 1.28284 - 0.67452I$ $a = 1.252440 - 0.041811I$ $b = -0.910566 + 0.810359I$	$-2.42139 - 7.59080I$	0
$u = -0.506710 + 0.172553I$ $a = -0.21425 + 2.51407I$ $b = -0.50236 - 2.06517I$	$-8.92961 + 0.23426I$	$-9.16694 + 3.14387I$
$u = -0.506710 - 0.172553I$ $a = -0.21425 - 2.51407I$ $b = -0.50236 + 2.06517I$	$-8.92961 - 0.23426I$	$-9.16694 - 3.14387I$
$u = -0.403234 + 0.350283I$ $a = 0.53928 - 2.21759I$ $b = 0.40326 + 1.75560I$	$-8.80263 - 0.13299I$	$-8.04077 + 0.88602I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.403234-0.350283I$ $a=\ \ 0.53928+2.21759I$ $b=\ \ 0.40326-1.75560I$	$-8.80263+0.13299I$	$-8.04077-0.88602I$
$u=\ \ 1.32675+0.63625I$ $a=-1.53051-0.23758I$ $b=\ \ 1.15204+1.31248I$	$-8.6793+19.8625I$	0
$u=\ \ 1.32675-0.63625I$ $a=-1.53051+0.23758I$ $b=\ \ 1.15204-1.31248I$	$-8.6793-19.8625I$	0
$u=-1.29731+0.71010I$ $a=\ \ 1.278090+0.023946I$ $b=-1.15402+0.88275I$	$-1.81745-13.82520I$	0
$u=-1.29731-0.71010I$ $a=\ \ 1.278090-0.023946I$ $b=-1.15402-0.88275I$	$-1.81745+13.82520I$	0
$u=\ \ 0.056774+0.498235I$ $a=\ \ 1.05776-1.07957I$ $b=-0.236580-0.572621I$	$-1.41654-1.54812I$	$-3.80548-0.14559I$
$u=\ \ 0.056774-0.498235I$ $a=\ \ 1.05776+1.07957I$ $b=-0.236580+0.572621I$	$-1.41654+1.54812I$	$-3.80548+0.14559I$
$u=-1.37810+0.69770I$ $a=-0.973448+0.212761I$ $b=\ \ 0.814170-0.929985I$	$-1.54230-6.50583I$	0
$u=-1.37810-0.69770I$ $a=-0.973448-0.212761I$ $b=\ \ 0.814170+0.929985I$	$-1.54230+6.50583I$	0
$u=\ \ 1.38713+0.68390I$ $a=\ \ 1.161990+0.260414I$ $b=-0.86430-1.33623I$	$-5.82548+10.01670I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.38713 - 0.68390I$ $a = 1.161990 - 0.260414I$ $b = -0.86430 + 1.33623I$	$-5.82548 - 10.01670I$	0
$u = 1.16376 + 1.03937I$ $a = -0.633877 + 0.373111I$ $b = 0.936357 + 0.080902I$	$-2.42551 + 4.70764I$	0
$u = 1.16376 - 1.03937I$ $a = -0.633877 - 0.373111I$ $b = 0.936357 - 0.080902I$	$-2.42551 - 4.70764I$	0
$u = -0.46315 + 1.50664I$ $a = 0.096500 + 0.334106I$ $b = -0.474727 - 0.495902I$	$-4.81508 + 6.58039I$	0
$u = -0.46315 - 1.50664I$ $a = 0.096500 - 0.334106I$ $b = -0.474727 + 0.495902I$	$-4.81508 - 6.58039I$	0
$u = -1.45498 + 0.78984I$ $a = -0.598174 + 0.231653I$ $b = 0.129837 - 0.483813I$	$-5.65492 - 4.02160I$	0
$u = -1.45498 - 0.78984I$ $a = -0.598174 - 0.231653I$ $b = 0.129837 + 0.483813I$	$-5.65492 + 4.02160I$	0
$u = -0.324817 + 0.104466I$ $a = -1.25369 + 3.03046I$ $b = -0.474369 - 0.739669I$	$-1.86965 + 4.31631I$	$0.27220 - 10.11653I$
$u = -0.324817 - 0.104466I$ $a = -1.25369 - 3.03046I$ $b = -0.474369 + 0.739669I$	$-1.86965 - 4.31631I$	$0.27220 + 10.11653I$
$u = -0.174868 + 0.202967I$ $a = 1.66823 - 0.85991I$ $b = 0.561314 - 0.142823I$	$1.016650 - 0.880506I$	$6.93705 + 2.76149I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.174868-0.202967I$ $a=\ \ 1.66823+0.85991I$ $b=\ \ 0.561314+0.142823I$	$1.016650+0.880506I$	$6.93705-2.76149I$
$u=\ \ 1.63558+0.70218I$ $a=\ \ 0.394380+0.421054I$ $b=-0.200593-0.557267I$	$-5.76799+1.86737I$	0
$u=\ \ 1.63558-0.70218I$ $a=\ \ 0.394380-0.421054I$ $b=-0.200593+0.557267I$	$-5.76799-1.86737I$	0
$u=-1.97578+0.74683I$ $a=\ \ 0.200250-0.298376I$ $b=-0.010089+0.325948I$	$-6.36164+6.43248I$	0
$u=-1.97578-0.74683I$ $a=\ \ 0.200250+0.298376I$ $b=-0.010089-0.325948I$	$-6.36164-6.43248I$	0

II.

$\boldsymbol{I_2^u = \langle -8.26\times 10^{22}u^{32} - 1.85\times 10^{23}u^{31} + \cdots + 1.90\times 10^{22}b + 1.15\times 10^{24},\ -5.63\times 10^{23}u^{32} + 8.10\times 10^{22}u^{31} + \cdots + 1.33\times 10^{23}a - 2.25\times 10^{24},\ u^{33} + u^{32} + \cdots - 23u + 7\rangle}$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 4.23567u^{32} - 0.608981u^{31} + \cdots - 136.033u + 16.9365 \\ 4.34946u^{32} + 9.73152u^{31} + \cdots + 129.261u - 60.5083 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -2.59606u^{32} - 8.51689u^{31} + \cdots - 124.217u + 43.5321 \\ 7.71573u^{32} + 13.2448u^{31} + \cdots + 106.190u - 68.0415 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -4.22372u^{32} - 10.1651u^{31} + \cdots - 168.943u + 67.0929 \\ -7.67922u^{32} - 5.28030u^{31} + \cdots + 189.987u - 50.9999 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 6.14716u^{32} + 10.3540u^{31} + \cdots + 157.440u - 62.0963 \\ -6.31206u^{32} - 11.4819u^{31} + \cdots - 200.613u + 88.5436 \end{pmatrix}$$

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

$$a_5 = \begin{pmatrix} 0.0379203u^{32} - 3.89155u^{31} + \cdots - 88.2976u + 20.6983 \\ 8.54721u^{32} + 13.0141u^{31} + \cdots + 81.5250u - 64.2701 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 5.36743u^{32} + 9.10918u^{31} + \cdots + 43.2467u - 49.3129 \\ -5.18141u^{32} - 10.3485u^{31} + \cdots - 83.2955u + 46.5137 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -12.4019u^{32} - 19.3748u^{31} + \cdots - 107.650u + 101.766 \\ 9.38712u^{32} + 13.0652u^{31} + \cdots + 21.5330u - 51.2101 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0.945761u^{32} - 3.85597u^{31} + \cdots - 228.236u + 66.1110 \\ -5.04118u^{32} - 3.55639u^{31} + \cdots + 135.430u - 31.7847 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -\frac{25919179678575145365844 01}{18998968333652458589737}u^{32} + \frac{70296484464584836656998 4}{18998968333652458589737}u^{31} + \cdots + \frac{12739184175393408651586 1149}{18998968333652458589737}u - \frac{31357834078709952637703678}{18998968333652458589737}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{33}+7u^{32}+\cdots+342u-43$
c_2	$u^{33}+8u^{31}+\cdots-14u-1$
c_3	$u^{33}-6u^{32}+\cdots+7u+1$
c_4	$u^{33}+11u^{32}+\cdots+4u+1$
c_5	$u^{33}+6u^{31}+\cdots-6u+1$
c_6	$u^{33}-14u^{31}+\cdots-20u-1$
c_7	$u^{33}+4u^{31}+\cdots+4u-1$
c_8	$u^{33}+u^{32}+\cdots-23u+7$
c_9	$u^{33}+6u^{32}+\cdots+7u-1$
c_{10}	$u^{33}+6u^{32}+\cdots-2u-1$
c_{11}	$u^{33}-14u^{31}+\cdots-20u+1$
c_{12}	$u^{33}-u^{32}+\cdots-23u-7$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{33} - 17y^{32} + \cdots + 22794y - 1849$
c_2	$y^{33} + 16y^{32} + \cdots + 50y - 1$
c_3, c_9	$y^{33} - 24y^{32} + \cdots - 41y - 1$
c_4	$y^{33} - 67y^{32} + \cdots + 14y - 1$
c_5	$y^{33} + 12y^{32} + \cdots + 30y - 1$
c_6, c_{11}	$y^{33} - 28y^{32} + \cdots + 164y - 1$
c_7	$y^{33} + 8y^{32} + \cdots + 26y - 1$
c_8, c_{12}	$y^{33} - 23y^{32} + \cdots + 1047y - 49$
c_{10}	$y^{33} - 64y^{32} + \cdots - 20y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \ 0.946805$ $a = -8.17582$ $b = \ 0.315702$	-5.07674	255.360
$u = -0.693516 + 0.810811I$ $a = \ 0.055720 + 0.407901I$ $b = -0.341944 - 0.962300I$	$-5.03614 - 2.51169I$	$-8.24495 + 3.62297I$
$u = -0.693516 - 0.810811I$ $a = \ 0.055720 - 0.407901I$ $b = -0.341944 + 0.962300I$	$-5.03614 + 2.51169I$	$-8.24495 - 3.62297I$
$u = -0.062985 + 1.098490I$ $a = -0.271665 + 0.224776I$ $b = -0.479375 - 1.138730I$	$-9.41807 + 3.35371I$	$-3.59871 - 3.28110I$
$u = -0.062985 - 1.098490I$ $a = -0.271665 - 0.224776I$ $b = -0.479375 + 1.138730I$	$-9.41807 - 3.35371I$	$-3.59871 + 3.28110I$
$u = -1.051880 + 0.341102I$ $a = -1.125080 - 0.657444I$ $b = \ 0.707446 - 0.599907I$	$2.14379 - 1.41755I$	$3.83956 + 2.89345I$
$u = -1.051880 - 0.341102I$ $a = -1.125080 + 0.657444I$ $b = \ 0.707446 + 0.599907I$	$2.14379 + 1.41755I$	$3.83956 - 2.89345I$
$u = -0.815239 + 0.351684I$ $a = \ 2.64100 + 0.17245I$ $b = -1.45435 + 0.58310I$	$-5.15167 - 1.81235I$	$-4.63148 + 4.56344I$
$u = -0.815239 - 0.351684I$ $a = \ 2.64100 - 0.17245I$ $b = -1.45435 - 0.58310I$	$-5.15167 + 1.81235I$	$-4.63148 - 4.56344I$
$u = -0.859334 + 0.144842I$ $a = -2.89540 - 0.99986I$ $b = \ 1.95474 + 1.41751I$	$-7.96378 - 8.31349I$	$-3.08890 + 2.01042I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.859334-0.144842I$ $a=-2.89540+0.99986I$ $b=\ \ 1.95474-1.41751I$	$-7.96378+8.31349I$	$-3.08890-2.01042I$
$u=-0.853820$ $a=\ \ 3.82341$ $b=-0.253346$	-0.401967	-279.060
$u=\ \ 0.593439+0.595037I$ $a=-0.670807-0.854987I$ $b=-0.252821+0.674843I$	$-1.95494-3.38129I$	$-0.07191+4.04804I$
$u=\ \ 0.593439-0.595037I$ $a=-0.670807+0.854987I$ $b=-0.252821-0.674843I$	$-1.95494+3.38129I$	$-0.07191-4.04804I$
$u=\ \ 1.143230+0.326512I$ $a=\ \ 1.125410+0.477868I$ $b=-0.84512-1.54860I$	$-0.01318+6.55703I$	$0.55002-9.90375I$
$u=\ \ 1.143230-0.326512I$ $a=\ \ 1.125410-0.477868I$ $b=-0.84512+1.54860I$	$-0.01318-6.55703I$	$0.55002+9.90375I$
$u=\ \ 0.718914+0.036769I$ $a=\ \ 1.274430+0.261478I$ $b=-0.58794-1.70231I$	$-8.19744+0.73324I$	$-1.375841+0.050905I$
$u=\ \ 0.718914-0.036769I$ $a=\ \ 1.274430-0.261478I$ $b=-0.58794+1.70231I$	$-8.19744-0.73324I$	$-1.375841-0.050905I$
$u=-1.163360+0.575700I$ $a=-0.311531-0.182246I$ $b=\ \ 0.505945-0.427915I$	$1.73496-3.02609I$	$-9.36302+4.88460I$
$u=-1.163360-0.575700I$ $a=-0.311531+0.182246I$ $b=\ \ 0.505945+0.427915I$	$1.73496+3.02609I$	$-9.36302-4.88460I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.522326 + 0.408282I$ $a = 1.24876 - 1.37885I$ $b = -0.523967 + 0.983874I$	$-4.36558 + 4.86150I$	$-3.13374 - 4.77236I$
$u = 0.522326 - 0.408282I$ $a = 1.24876 + 1.37885I$ $b = -0.523967 - 0.983874I$	$-4.36558 - 4.86150I$	$-3.13374 + 4.77236I$
$u = 1.245390 + 0.557689I$ $a = -0.736046 - 0.577027I$ $b = 0.275016 + 0.448065I$	$-5.37755 + 1.52394I$	0
$u = 1.245390 - 0.557689I$ $a = -0.736046 + 0.577027I$ $b = 0.275016 - 0.448065I$	$-5.37755 - 1.52394I$	0
$u = 1.315730 + 0.408171I$ $a = -1.231240 - 0.655992I$ $b = 0.89145 + 1.26068I$	$0.73487 + 6.60167I$	0
$u = 1.315730 - 0.408171I$ $a = -1.231240 + 0.655992I$ $b = 0.89145 - 1.26068I$	$0.73487 - 6.60167I$	0
$u = -1.32155 + 0.64647I$ $a = 1.324680 - 0.229236I$ $b = -0.97301 + 1.29761I$	$-5.56808 - 9.61229I$	0
$u = -1.32155 - 0.64647I$ $a = 1.324680 + 0.229236I$ $b = -0.97301 - 1.29761I$	$-5.56808 + 9.61229I$	0
$u = 0.427200$ $a = -3.80557$ $b = -0.514697$	-5.67457	-8.21000
$u = 1.23852 + 0.97311I$ $a = -0.724844 + 0.238834I$ $b = 0.869214 + 0.282172I$	$-2.39110 + 4.14031I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.23852 - 0.97311I$ $a = -0.724844 - 0.238834I$ $b = 0.869214 - 0.282172I$	$-2.39110 - 4.14031I$	0
$u = -1.56979 + 0.54746I$ $a = -0.410107 + 0.377566I$ $b = 0.480893 - 0.260672I$	$-6.10695 + 6.28977I$	0
$u = -1.56979 - 0.54746I$ $a = -0.410107 - 0.377566I$ $b = 0.480893 + 0.260672I$	$-6.10695 - 6.28977I$	0

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^{33}+7u^{32}+\cdots+342u-43)$ $\cdot(u^{145}-6u^{144}+\cdots-153422604074u+82046221679)$
c_2	$(u^{33}+8u^{31}+\cdots-14u-1)(u^{145}-u^{144}+\cdots+525670u+55949)$
c_3	$(u^{33}-6u^{32}+\cdots+7u+1)(u^{145}-5u^{144}+\cdots+1.23943\times10^{7}u+542527)$
c_4	$(u^{33}+11u^{32}+\cdots+4u+1)(u^{145}+10u^{144}+\cdots-32u-1)$
c_5	$(u^{33}+6u^{31}+\cdots-6u+1)(u^{145}+3u^{144}+\cdots-49936u+13568)$
c_6	$(u^{33}-14u^{31}+\cdots-20u-1)(u^{145}-u^{144}+\cdots-134u+1)$
c_7	$(u^{33}+4u^{31}+\cdots+4u-1)(u^{145}-3u^{144}+\cdots+1140u+1117)$
c_8	$(u^{33}+u^{32}+\cdots-23u+7)(u^{145}-43u^{143}+\cdots+14615u-1286)$
c_9	$(u^{33}+6u^{32}+\cdots+7u-1)(u^{145}-5u^{144}+\cdots+1.23943\times10^{7}u+542527)$
c_{10}	$(u^{33}+6u^{32}+\cdots-2u-1)(u^{145}+u^{144}+\cdots-27127u-9606)$
c_{11}	$(u^{33}-14u^{31}+\cdots-20u+1)(u^{145}-u^{144}+\cdots-134u+1)$
c_{12}	$(u^{33}-u^{32}+\cdots-23u-7)(u^{145}-43u^{143}+\cdots+14615u-1286)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y^{33} - 17y^{32} + \cdots + 22794y - 1849)$ $\cdot (y^{145} - 84y^{144} + \cdots + 3.96 \times 10^{23}y - 6.73 \times 10^{21})$
c_2	$(y^{33} + 16y^{32} + \cdots + 50y - 1)$ $\cdot (y^{145} + 53y^{144} + \cdots + 51147539762y - 3130290601)$
c_3, c_9	$(y^{33} - 24y^{32} + \cdots - 41y - 1)$ $\cdot (y^{145} + 73y^{144} + \cdots + 4228767991095y - 294335545729)$
c_4	$(y^{33} - 67y^{32} + \cdots + 14y - 1)(y^{145} - 74y^{144} + \cdots + 198y - 1)$
c_5	$(y^{33} + 12y^{32} + \cdots + 30y - 1)$ $\cdot (y^{145} + 37y^{144} + \cdots + 1166626560y - 184090624)$
c_6, c_{11}	$(y^{33} - 28y^{32} + \cdots + 164y - 1)(y^{145} - 131y^{144} + \cdots + 18524y - 1)$
c_7	$(y^{33} + 8y^{32} + \cdots + 26y - 1)$ $\cdot (y^{145} + 21y^{144} + \cdots + 52277246y - 1247689)$
c_8, c_{12}	$(y^{33} - 23y^{32} + \cdots + 1047y - 49)$ $\cdot (y^{145} - 86y^{144} + \cdots + 66531265y - 1653796)$
c_{10}	$(y^{33} - 64y^{32} + \cdots - 20y - 1)$ $\cdot (y^{145} - 91y^{144} + \cdots + 5892163597y - 92275236)$