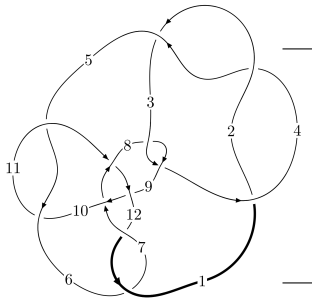
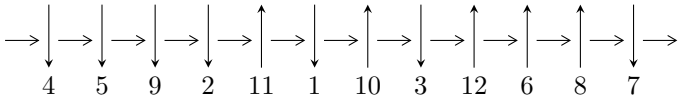
$12a_{0846}$ $(K12a_{0846})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -1.09278 \times 10^{260} u^{129} - 1.32449 \times 10^{261} u^{128} + \cdots + 3.80012 \times 10^{256} b + 2.54286 \times 10^{261},$$
$$5.57550 \times 10^{259} u^{129} + 8.45930 \times 10^{260} u^{128} + \cdots + 7.60023 \times 10^{256} a - 5.21843 \times 10^{261},$$
$$u^{130} + 14u^{129} + \cdots - 35u - 49 \rangle$$
$$I_2^u = \langle 5u^{19} + 12u^{18} + \cdots + b + 5,\ 3u^{19} + 11u^{18} + \cdots + a + 11u,\ u^{20} + 4u^{19} + \cdots - 5u + 1 \rangle$$
$$I_3^u = \langle 18445a^8 - 60477a^7 + 69483a^6 - 21043a^5 - 6071a^4 - 11267a^3 + 12888a^2 + 1627b - 373a - 4047,$$
$$7a^9 - 20a^8 + 16a^7 + 5a^6 - 7a^5 - 6a^4 + 4a^3 + 3a^2 - 2a - 1,\ u - 1 \rangle$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 159 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. $\boldsymbol{I_1^u = \langle -1.09 \times 10^{260} u^{129} - 1.32 \times 10^{261} u^{128} + \cdots + 3.80 \times 10^{256} b + 2.54 \times 10^{261},\ 5.58 \times 10^{259} u^{129} + 8.46 \times 10^{260} u^{128} + \cdots + 7.60 \times 10^{256} a - 5.22 \times 10^{261},\ u^{130} + 14 u^{129} + \cdots - 35u - 49 \rangle}$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -733.595u^{129} - 11130.3u^{128} + \cdots - 27344.6u + 68661.4 \\ 2875.66u^{129} + 34853.9u^{128} + \cdots - 23132.5u - 66915.3 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 2327.78u^{129} + 29108.4u^{128} + \cdots - 4815.65u - 75259.4 \\ 4875.30u^{129} + 60798.0u^{128} + \cdots - 13534.6u - 153050. \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -2547.52u^{129} - 31689.7u^{128} + \cdots + 8718.97u + 77790.6 \\ 4875.30u^{129} + 60798.0u^{128} + \cdots - 13534.6u - 153050. \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 2968.38u^{129} + 38020.6u^{128} + \cdots + 6385.70u - 116156. \\ 214.488u^{129} + 2233.99u^{128} + \cdots - 7504.88u + 3687.50 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -709.800u^{129} - 8902.49u^{128} + \cdots + 1399.03u + 23362.7 \\ 1166.71u^{129} + 14805.6u^{128} + \cdots + 1012.59u - 42841.9 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -3174.46u^{129} - 40879.9u^{128} + \cdots - 10269.3u + 129353. \\ 2950.79u^{129} + 36205.8u^{128} + \cdots - 16869.5u - 79058.2 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 681.193u^{129} + 8778.25u^{128} + \cdots + 3329.62u - 28655.4 \\ -2590.23u^{129} - 32855.2u^{128} + \cdots - 2287.68u + 95049.6 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -5605.17u^{129} - 69784.3u^{128} + \cdots + 15066.8u + 174873.$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_4	$u^{130} - 14u^{129} + \cdots + 35u - 49$
c_3, c_8	$u^{130} + u^{129} + \cdots - 60928u + 25088$
c_5, c_{10}	$u^{130} - 2u^{129} + \cdots - 4232u - 4232$
c_6, c_{12}	$u^{130} - 3u^{129} + \cdots + 4534u - 71$
c_7	$u^{130} + 10u^{129} + \cdots - 27u - 9$
c_9	$u^{130} + 18u^{129} + \cdots - 8409u + 1079$
c_{11}	$u^{130} + u^{129} + \cdots - 15153510u - 893777$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$y^{130} - 122y^{129} + \cdots - 5929y + 2401$
c_3, c_8	$y^{130} - 69y^{129} + \cdots - 11984437248y + 629407744$
c_5, c_{10}	$y^{130} + 86y^{129} + \cdots + 519774240y + 17909824$
c_6, c_{12}	$y^{130} + 81y^{129} + \cdots - 16239788y + 5041$
c_7	$y^{130} - 6y^{129} + \cdots + 2151y + 81$
c_9	$y^{130} - 26y^{129} + \cdots - 102045441y + 1164241$
c_{11}	$y^{130} + 13y^{129} + \cdots + 20581982318772y + 798837325729$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.328537 + 0.951554I$ $a = 1.274030 - 0.038467I$ $b = -1.19741 + 1.89741I$	$-0.4865 - 14.3089I$	0
$u = 0.328537 - 0.951554I$ $a = 1.274030 + 0.038467I$ $b = -1.19741 - 1.89741I$	$-0.4865 + 14.3089I$	0
$u = 0.925732 + 0.424462I$ $a = -0.347303 - 1.192700I$ $b = 0.225774 + 0.575562I$	$1.39635 + 3.23709I$	0
$u = 0.925732 - 0.424462I$ $a = -0.347303 + 1.192700I$ $b = 0.225774 - 0.575562I$	$1.39635 - 3.23709I$	0
$u = 0.858665 + 0.587059I$ $a = 1.116190 + 0.421322I$ $b = -0.18571 + 1.68368I$	$-5.66140 + 2.87702I$	0
$u = 0.858665 - 0.587059I$ $a = 1.116190 - 0.421322I$ $b = -0.18571 - 1.68368I$	$-5.66140 - 2.87702I$	0
$u = 1.074370 + 0.067387I$ $a = 2.71351 + 0.00240I$ $b = 0.93774 + 1.10701I$	$-0.42547 + 2.53758I$	0
$u = 1.074370 - 0.067387I$ $a = 2.71351 - 0.00240I$ $b = 0.93774 - 1.10701I$	$-0.42547 - 2.53758I$	0
$u = 1.017690 + 0.363111I$ $a = 0.750109 + 0.218017I$ $b = -0.612129 - 0.557038I$	$-4.78176 - 1.13220I$	0
$u = 1.017690 - 0.363111I$ $a = 0.750109 - 0.218017I$ $b = -0.612129 + 0.557038I$	$-4.78176 + 1.13220I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.326397 + 0.853815I$ $a = -0.843130 + 0.307087I$ $b = 0.13566 - 1.88854I$	$-4.00841 - 7.89339I$	0
$u = 0.326397 - 0.853815I$ $a = -0.843130 - 0.307087I$ $b = 0.13566 + 1.88854I$	$-4.00841 + 7.89339I$	0
$u = 0.547123 + 0.943513I$ $a = -0.894553 + 0.625707I$ $b = 0.10167 - 2.32803I$	$-1.42660 - 2.83814I$	0
$u = 0.547123 - 0.943513I$ $a = -0.894553 - 0.625707I$ $b = 0.10167 + 2.32803I$	$-1.42660 + 2.83814I$	0
$u = -0.378985 + 0.820019I$ $a = -1.070330 - 0.449410I$ $b = 0.28653 + 1.41351I$	$3.12587 - 4.37430I$	0
$u = -0.378985 - 0.820019I$ $a = -1.070330 + 0.449410I$ $b = 0.28653 - 1.41351I$	$3.12587 + 4.37430I$	0
$u = 0.613683 + 0.661203I$ $a = 1.223980 + 0.253281I$ $b = -0.026339 + 1.164490I$	$-2.89630 + 0.85409I$	0
$u = 0.613683 - 0.661203I$ $a = 1.223980 - 0.253281I$ $b = -0.026339 - 1.164490I$	$-2.89630 - 0.85409I$	0
$u = 0.456890 + 0.755947I$ $a = -0.566371 - 0.319790I$ $b = 0.30403 - 1.47097I$	$-2.38061 - 5.66774I$	0
$u = 0.456890 - 0.755947I$ $a = -0.566371 + 0.319790I$ $b = 0.30403 + 1.47097I$	$-2.38061 + 5.66774I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.310871 + 1.087400I$ $a = 1.53844 - 0.09507I$ $b = -2.17790 + 1.71738I$	$-0.99196 - 4.71706I$	0
$u = 0.310871 - 1.087400I$ $a = 1.53844 + 0.09507I$ $b = -2.17790 - 1.71738I$	$-0.99196 + 4.71706I$	0
$u = 0.281124 + 0.804317I$ $a = -0.815269 + 0.700780I$ $b = 0.302176 - 0.112938I$	$3.35673 - 7.72625I$	0
$u = 0.281124 - 0.804317I$ $a = -0.815269 - 0.700780I$ $b = 0.302176 + 0.112938I$	$3.35673 + 7.72625I$	0
$u = -1.163870 + 0.069350I$ $a = -0.404045 + 0.135763I$ $b = -0.768918 - 0.712141I$	$1.52846 + 7.35278I$	0
$u = -1.163870 - 0.069350I$ $a = -0.404045 - 0.135763I$ $b = -0.768918 + 0.712141I$	$1.52846 - 7.35278I$	0
$u = 0.820783$ $a = 1.05160$ $b = 0.0364198$	-1.15012	0
$u = 0.967020 + 0.706799I$ $a = -0.876124 + 0.280697I$ $b = -0.88322 - 1.97107I$	$-2.38605 + 8.61930I$	0
$u = 0.967020 - 0.706799I$ $a = -0.876124 - 0.280697I$ $b = -0.88322 + 1.97107I$	$-2.38605 - 8.61930I$	0
$u = 1.164850 + 0.314678I$ $a = 0.726113 - 0.266537I$ $b = 0.492041 - 0.078387I$	$-0.131132 - 1.178100I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.164850 - 0.314678I$ $a = 0.726113 + 0.266537I$ $b = 0.492041 + 0.078387I$	$-0.131132 + 1.178100I$	0
$u = 0.391027 + 0.684289I$ $a = 0.461372 + 0.327658I$ $b = -0.370357 - 0.824880I$	$-0.63869 - 3.79000I$	0
$u = 0.391027 - 0.684289I$ $a = 0.461372 - 0.327658I$ $b = -0.370357 + 0.824880I$	$-0.63869 + 3.79000I$	0
$u = 0.079052 + 0.768633I$ $a = 0.00874662 + 0.00398131I$ $b = 0.544900 - 0.096774I$	$3.19605 - 2.75030I$	0
$u = 0.079052 - 0.768633I$ $a = 0.00874662 - 0.00398131I$ $b = 0.544900 + 0.096774I$	$3.19605 + 2.75030I$	0
$u = 1.190180 + 0.318430I$ $a = 0.674856 - 0.624355I$ $b = 0.456322 - 0.062958I$	$-0.169062 - 1.292200I$	0
$u = 1.190180 - 0.318430I$ $a = 0.674856 + 0.624355I$ $b = 0.456322 + 0.062958I$	$-0.169062 + 1.292200I$	0
$u = -1.243070 + 0.082316I$ $a = -0.477105 + 0.673366I$ $b = -0.918203 - 0.239906I$	$1.95452 - 0.73217I$	0
$u = -1.243070 - 0.082316I$ $a = -0.477105 - 0.673366I$ $b = -0.918203 + 0.239906I$	$1.95452 + 0.73217I$	0
$u = 0.108093 + 0.744850I$ $a = -0.125117 + 0.426426I$ $b = 0.625444 - 0.004175I$	$3.14662 - 2.57828I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.108093 - 0.744850I$ $a = -0.125117 - 0.426426I$ $b = 0.625444 + 0.004175I$	$3.14662 + 2.57828I$	0
$u = 1.252820 + 0.043823I$ $a = 1.08094 + 2.93788I$ $b = 0.467723 + 0.557245I$	$-5.23503 - 0.36072I$	0
$u = 1.252820 - 0.043823I$ $a = 1.08094 - 2.93788I$ $b = 0.467723 - 0.557245I$	$-5.23503 + 0.36072I$	0
$u = 1.252870 + 0.067833I$ $a = 0.64482 - 4.73420I$ $b = 1.04580 - 1.78608I$	$-1.20363 - 3.45389I$	0
$u = 1.252870 - 0.067833I$ $a = 0.64482 + 4.73420I$ $b = 1.04580 + 1.78608I$	$-1.20363 + 3.45389I$	0
$u = -0.442581 + 0.598153I$ $a = 1.078450 - 0.503730I$ $b = -0.75287 - 1.55009I$	$2.56590 + 8.61563I$	0
$u = -0.442581 - 0.598153I$ $a = 1.078450 + 0.503730I$ $b = -0.75287 + 1.55009I$	$2.56590 - 8.61563I$	0
$u = 0.343983 + 0.636102I$ $a = 0.676314 + 0.731561I$ $b = 0.226933 + 0.763022I$	$-2.96488 - 2.11966I$	0
$u = 0.343983 - 0.636102I$ $a = 0.676314 - 0.731561I$ $b = 0.226933 - 0.763022I$	$-2.96488 + 2.11966I$	0
$u = -1.278240 + 0.076549I$ $a = 0.688761 - 0.362001I$ $b = 0.635930 - 0.936669I$	$-4.78653 - 1.59407I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.278240-0.076549I$ $a=\ 0.688761+0.362001I$ $b=\ 0.635930+0.936669I$	$-4.78653+1.59407I$	0
$u=\ 0.310436+0.645987I$ $a=-1.89400-0.01713I$ $b=\ 1.33565-1.76018I$	$1.16491-5.17903I$	0
$u=\ 0.310436-0.645987I$ $a=-1.89400+0.01713I$ $b=\ 1.33565+1.76018I$	$1.16491+5.17903I$	0
$u=\ 0.546564+0.459359I$ $a=\ 1.066240+0.221282I$ $b=-0.289619+0.130137I$	$-1.385150-0.269456I$	0
$u=\ 0.546564-0.459359I$ $a=\ 1.066240-0.221282I$ $b=-0.289619-0.130137I$	$-1.385150+0.269456I$	0
$u=\ 1.315590+0.071467I$ $a=-0.112675-0.790590I$ $b=-0.398404-0.494567I$	$-2.97910-1.77302I$	0
$u=\ 1.315590-0.071467I$ $a=-0.112675+0.790590I$ $b=-0.398404+0.494567I$	$-2.97910+1.77302I$	0
$u=\ 0.987474+0.878597I$ $a=\ 0.894909-0.344556I$ $b=\ 0.32266+2.47963I$	$-2.45297-3.70553I$	0
$u=\ 0.987474-0.878597I$ $a=\ 0.894909+0.344556I$ $b=\ 0.32266-2.47963I$	$-2.45297+3.70553I$	0
$u=\ 1.326740+0.196563I$ $a=-0.613407+0.123183I$ $b=\ 0.363905-0.317078I$	$0.47369-5.68832I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.326740 - 0.196563I$ $a = -0.613407 - 0.123183I$ $b = 0.363905 + 0.317078I$	$0.47369 + 5.68832I$	0
$u = -1.35728$ $a = 1.14882$ $b = 1.52745$	-2.56238	0
$u = -1.317810 + 0.326766I$ $a = 0.479988 + 0.466680I$ $b = 0.628510 + 0.171659I$	$-1.18088 + 6.70646I$	0
$u = -1.317810 - 0.326766I$ $a = 0.479988 - 0.466680I$ $b = 0.628510 - 0.171659I$	$-1.18088 - 6.70646I$	0
$u = 0.366768 + 0.520839I$ $a = -2.23423 - 1.57920I$ $b = 0.801086 - 0.369711I$	$-3.37537 - 1.30670I$	0
$u = 0.366768 - 0.520839I$ $a = -2.23423 + 1.57920I$ $b = 0.801086 + 0.369711I$	$-3.37537 + 1.30670I$	0
$u = 0.406976 + 0.459261I$ $a = 0.631498 - 0.737431I$ $b = 0.67086 + 1.79575I$	$0.47179 + 1.76850I$	0
$u = 0.406976 - 0.459261I$ $a = 0.631498 + 0.737431I$ $b = 0.67086 - 1.79575I$	$0.47179 - 1.76850I$	0
$u = -1.377590 + 0.183136I$ $a = 1.034860 + 0.508253I$ $b = 1.76292 - 0.74576I$	$-3.08113 + 0.81431I$	0
$u = -1.377590 - 0.183136I$ $a = 1.034860 - 0.508253I$ $b = 1.76292 + 0.74576I$	$-3.08113 - 0.81431I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.361960+0.297233I$ $a=\ \ 0.612441-0.128457I$ $b=\ \ 0.825978-0.180047I$	$-1.53269+6.33362I$	0
$u=-1.361960-0.297233I$ $a=\ \ 0.612441+0.128457I$ $b=\ \ 0.825978+0.180047I$	$-1.53269-6.33362I$	0
$u=\ \ 1.395060+0.057125I$ $a=\ \ 0.21679-2.46918I$ $b=\ \ 0.109256-1.376090I$	$-4.71583-3.31857I$	0
$u=\ \ 1.395060-0.057125I$ $a=\ \ 0.21679+2.46918I$ $b=\ \ 0.109256+1.376090I$	$-4.71583+3.31857I$	0
$u=\ \ 1.395630+0.187546I$ $a=-1.21124-2.32835I$ $b=-0.04024-1.84969I$	$-6.87980-5.59995I$	0
$u=\ \ 1.395630-0.187546I$ $a=-1.21124+2.32835I$ $b=-0.04024+1.84969I$	$-6.87980+5.59995I$	0
$u=-0.130721+0.564242I$ $a=-0.81966-1.40814I$ $b=-0.174294+0.402763I$	$5.03065+2.91197I$	0
$u=-0.130721-0.564242I$ $a=-0.81966+1.40814I$ $b=-0.174294-0.402763I$	$5.03065-2.91197I$	0
$u=-0.476447+0.316086I$ $a=\ \ 0.493099-0.642060I$ $b=-0.731484-1.186380I$	$3.62319-0.56871I$	0
$u=-0.476447-0.316086I$ $a=\ \ 0.493099+0.642060I$ $b=-0.731484+1.186380I$	$3.62319+0.56871I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.43415+0.18496I$ $a=\ 1.53348-2.15932I$ $b=\ 0.47839-2.33301I$	$-5.39383+0.67456I$	0
$u=-1.43415-0.18496I$ $a=\ 1.53348+2.15932I$ $b=\ 0.47839+2.33301I$	$-5.39383-0.67456I$	0
$u=-1.44236+0.10379I$ $a=\ 0.263305-0.348512I$ $b=\ 1.089260-0.781730I$	$-5.37237-2.41269I$	0
$u=-1.44236-0.10379I$ $a=\ 0.263305+0.348512I$ $b=\ 1.089260+0.781730I$	$-5.37237+2.41269I$	0
$u=-1.42708+0.25184I$ $a=-0.34989+2.76349I$ $b=\ 1.61491+2.06056I$	$-4.41116+8.47604I$	0
$u=-1.42708-0.25184I$ $a=-0.34989-2.76349I$ $b=\ 1.61491-2.06056I$	$-4.41116-8.47604I$	0
$u=-1.43628+0.20856I$ $a=-0.22358+1.73503I$ $b=\ 1.196200+0.638607I$	$-9.16387+4.05703I$	0
$u=-1.43628-0.20856I$ $a=-0.22358-1.73503I$ $b=\ 1.196200-0.638607I$	$-9.16387-4.05703I$	0
$u=-1.44630+0.17990I$ $a=-0.165006-0.086158I$ $b=-0.853185+0.249209I$	$-7.57713+2.60992I$	0
$u=-1.44630-0.17990I$ $a=-0.165006+0.086158I$ $b=-0.853185-0.249209I$	$-7.57713-2.60992I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.44080+0.23751I$ $a=\ \ 0.97728-1.53055I$ $b=\ \ 0.233743-1.166650I$	$-8.72321+5.31358I$	0
$u=-1.44080-0.23751I$ $a=\ \ 0.97728+1.53055I$ $b=\ \ 0.233743+1.166650I$	$-8.72321-5.31358I$	0
$u=-1.43345+0.31707I$ $a=-0.146080-0.442910I$ $b=\ \ 0.451725-0.171945I$	$-2.13477+11.78310I$	0
$u=-1.43345-0.31707I$ $a=-0.146080+0.442910I$ $b=\ \ 0.451725+0.171945I$	$-2.13477-11.78310I$	0
$u=-1.45299+0.24669I$ $a=-0.670793+0.589860I$ $b=-0.83242+1.14754I$	$-6.57708+7.15153I$	0
$u=-1.45299-0.24669I$ $a=-0.670793-0.589860I$ $b=-0.83242-1.14754I$	$-6.57708-7.15153I$	0
$u=-0.220048+0.470245I$ $a=-1.45606+0.27415I$ $b=\ \ 0.132066+1.362320I$	$-1.67452+3.13091I$	$0.-4.61042I$
$u=-0.220048-0.470245I$ $a=-1.45606-0.27415I$ $b=\ \ 0.132066-1.362320I$	$-1.67452-3.13091I$	$0.+4.61042I$
$u=\ \ 0.169375+0.489161I$ $a=-2.69024-0.96416I$ $b=\ \ 1.33643+1.10743I$	$1.88655+1.65023I$	0
$u=\ \ 0.169375-0.489161I$ $a=-2.69024+0.96416I$ $b=\ \ 1.33643-1.10743I$	$1.88655-1.65023I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.46709 + 0.23777I$ $a = 0.37141 + 2.44450I$ $b = -1.06288 + 1.98251I$	$-3.56917 - 11.75340I$	0
$u = 1.46709 - 0.23777I$ $a = 0.37141 - 2.44450I$ $b = -1.06288 - 1.98251I$	$-3.56917 + 11.75340I$	0
$u = -1.45682 + 0.33683I$ $a = -1.25834 + 1.75821I$ $b = 0.29126 + 2.12439I$	$-9.7181 + 12.1998I$	0
$u = -1.45682 - 0.33683I$ $a = -1.25834 - 1.75821I$ $b = 0.29126 - 2.12439I$	$-9.7181 - 12.1998I$	0
$u = -1.49467 + 0.27154I$ $a = -0.60073 + 1.97944I$ $b = 0.42932 + 1.82551I$	$-8.70050 + 9.40227I$	0
$u = -1.49467 - 0.27154I$ $a = -0.60073 - 1.97944I$ $b = 0.42932 - 1.82551I$	$-8.70050 - 9.40227I$	0
$u = -1.47646 + 0.38036I$ $a = 0.69606 - 2.10476I$ $b = -1.44135 - 1.94162I$	$-6.2538 + 19.1081I$	0
$u = -1.47646 - 0.38036I$ $a = 0.69606 + 2.10476I$ $b = -1.44135 + 1.94162I$	$-6.2538 - 19.1081I$	0
$u = -1.48158 + 0.40940I$ $a = 0.33044 - 1.94155I$ $b = -2.04237 - 1.49424I$	$-6.71754 + 9.96409I$	0
$u = -1.48158 - 0.40940I$ $a = 0.33044 + 1.94155I$ $b = -2.04237 + 1.49424I$	$-6.71754 - 9.96409I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.52583+0.19237I$ $a=\ \ 0.48679-1.40099I$ $b=-0.634984-1.180570I$	$-9.92744+2.15814I$	0
$u=-1.52583-0.19237I$ $a=\ \ 0.48679+1.40099I$ $b=-0.634984+1.180570I$	$-9.92744-2.15814I$	0
$u=-1.55026+0.04901I$ $a=-0.28086-2.10795I$ $b=-0.88426-1.97881I$	$-13.95940-1.16927I$	0
$u=-1.55026-0.04901I$ $a=-0.28086+2.10795I$ $b=-0.88426+1.97881I$	$-13.95940+1.16927I$	0
$u=\ \ 0.435611+0.084902I$ $a=-2.50008+2.78780I$ $b=\ \ 0.626643-1.059520I$	$0.75859-3.24972I$	$-3.33882+7.37039I$
$u=\ \ 0.435611-0.084902I$ $a=-2.50008-2.78780I$ $b=\ \ 0.626643+1.059520I$	$0.75859+3.24972I$	$-3.33882-7.37039I$
$u=-1.53409+0.31891I$ $a=-0.77421+1.73372I$ $b=\ \ 0.64737+2.34212I$	$-8.13468+7.32693I$	0
$u=-1.53409-0.31891I$ $a=-0.77421-1.73372I$ $b=\ \ 0.64737-2.34212I$	$-8.13468-7.32693I$	0
$u=\ \ 1.49661+0.46709I$ $a=-0.04787+1.76466I$ $b=-2.70406+0.98122I$	$-4.64544-1.87466I$	0
$u=\ \ 1.49661-0.46709I$ $a=-0.04787-1.76466I$ $b=-2.70406-0.98122I$	$-4.64544+1.87466I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.59096 + 0.14068I$ $a = -0.54729 - 1.96960I$ $b = 0.13724 - 2.60910I$	$-4.06225 + 0.19731I$	0
$u = 1.59096 - 0.14068I$ $a = -0.54729 + 1.96960I$ $b = 0.13724 + 2.60910I$	$-4.06225 - 0.19731I$	0
$u = -0.073283 + 0.370574I$ $a = 2.38317 - 0.06342I$ $b = -0.043622 - 0.725438I$	$-1.62444 - 1.37557I$	$-2.92985 + 3.86022I$
$u = -0.073283 - 0.370574I$ $a = 2.38317 + 0.06342I$ $b = -0.043622 + 0.725438I$	$-1.62444 + 1.37557I$	$-2.92985 - 3.86022I$
$u = -1.64351 + 0.02769I$ $a = -0.24515 - 2.01215I$ $b = -0.46408 - 2.57352I$	$-12.25150 + 6.55987I$	0
$u = -1.64351 - 0.02769I$ $a = -0.24515 + 2.01215I$ $b = -0.46408 + 2.57352I$	$-12.25150 - 6.55987I$	0
$u = -0.097591 + 0.291894I$ $a = -0.039504 + 1.142780I$ $b = 0.411801 + 0.371975I$	$1.35306 + 0.46632I$	$5.92593 - 0.52773I$
$u = -0.097591 - 0.291894I$ $a = -0.039504 - 1.142780I$ $b = 0.411801 - 0.371975I$	$1.35306 - 0.46632I$	$5.92593 + 0.52773I$
$u = -0.194799 + 0.102366I$ $a = 0.35736 + 4.32856I$ $b = 0.522501 + 0.963381I$	$0.38694 + 2.59415I$	$0.37875 - 4.06475I$
$u = -0.194799 - 0.102366I$ $a = 0.35736 - 4.32856I$ $b = 0.522501 - 0.963381I$	$0.38694 - 2.59415I$	$0.37875 + 4.06475I$

II. $I_2^u =$
$\langle 5u^{19}+12u^{18}+\cdots+b+5,\ 3u^{19}+11u^{18}+\cdots+a+11u,\ u^{20}+4u^{19}+\cdots-5u+1\rangle$

(i) Arc colorings

$$a_1 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_4 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_2 = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_5 = \begin{pmatrix}-u\\-u^3+u\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-3u^{19}-11u^{18}+\cdots-u^2-11u\\-5u^{19}-12u^{18}+\cdots+31u-5\end{pmatrix}$$
$$a_6 = \begin{pmatrix}9u^{19}+28u^{18}+\cdots+70u^2-9u\\6u^{19}+16u^{18}+\cdots-34u+7\end{pmatrix}$$
$$a_7 = \begin{pmatrix}3u^{19}+12u^{18}+\cdots+25u-7\\6u^{19}+16u^{18}+\cdots-34u+7\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}-5u^{19}-15u^{18}+\cdots-7u+1\\-5u^{19}-12u^{18}+\cdots+31u-6\end{pmatrix}$$
$$a_8 = \begin{pmatrix}-4u^{19}-10u^{18}+\cdots+21u-5\\-u^{19}-u^{18}+\cdots-10u^3+u\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}-2u^{19}-9u^{18}+\cdots-26u+4\\-9u^{19}-24u^{18}+\cdots+52u-9\end{pmatrix}$$
$$a_9 = \begin{pmatrix}2u^{19}+4u^{18}+\cdots-4u-1\\4u^{19}+12u^{18}+\cdots-21u+4\end{pmatrix}$$
$$a_3 = \begin{pmatrix}-u^2+1\\-u^4+2u^2\end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes
$= 23u^{19}+65u^{18}-128u^{17}-417u^{16}+349u^{15}+1036u^{14}-842u^{13}-1095u^{12}+1813u^{11}+107u^{10}-2150u^9+923u^8+698u^7-773u^6+630u^5-157u^4-294u^3+329u^2-131u+25$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2	$u^{20} + 4u^{19} + \cdots - 5u + 1$
c_3	$u^{20} - 6u^{18} + \cdots - 3u + 1$
c_4	$u^{20} - 4u^{19} + \cdots + 5u + 1$
c_5	$u^{20} + 10u^{18} + \cdots - 3u + 1$
c_6	$u^{20} + 3u^{19} + \cdots + 10u^2 + 1$
c_7	$u^{20} - 5u^{17} + \cdots + 3u + 1$
c_8	$u^{20} - 6u^{18} + \cdots + 3u + 1$
c_9	$u^{20} - 4u^{18} + \cdots + 5u + 1$
c_{10}	$u^{20} + 10u^{18} + \cdots + 3u + 1$
c_{11}	$u^{20} - 3u^{19} + \cdots + 5u^3 + 1$
c_{12}	$u^{20} - 3u^{19} + \cdots + 10u^2 + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$y^{20} - 20y^{19} + \cdots - y + 1$
c_3, c_8	$y^{20} - 12y^{19} + \cdots - 9y + 1$
c_5, c_{10}	$y^{20} + 20y^{19} + \cdots + 15y + 1$
c_6, c_{12}	$y^{20} + 15y^{19} + \cdots + 20y + 1$
c_7	$y^{20} + 6y^{18} + \cdots - 5y + 1$
c_9	$y^{20} - 8y^{19} + \cdots - 5y + 1$
c_{11}	$y^{20} - 5y^{19} + \cdots + 6y^2 + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.027230 + 0.081684I$ $a = -2.30351 - 3.13842I$ $b = 0.72152 - 1.23039I$	$-0.30091 - 3.00431I$	$3.31212 - 12.78342I$
$u = 1.027230 - 0.081684I$ $a = -2.30351 + 3.13842I$ $b = 0.72152 + 1.23039I$	$-0.30091 + 3.00431I$	$3.31212 + 12.78342I$
$u = 0.501873 + 0.929654I$ $a = -1.211620 + 0.118420I$ $b = 1.07976 - 2.08773I$	$-1.53784 - 4.32358I$	$-6.41394 + 6.31106I$
$u = 0.501873 - 0.929654I$ $a = -1.211620 - 0.118420I$ $b = 1.07976 + 2.08773I$	$-1.53784 + 4.32358I$	$-6.41394 - 6.31106I$
$u = -0.071739 + 0.688234I$ $a = 0.585949 + 0.746078I$ $b = 0.214773 - 0.950720I$	$2.73376 - 3.43447I$	$-1.29601 + 4.99499I$
$u = -0.071739 - 0.688234I$ $a = 0.585949 - 0.746078I$ $b = 0.214773 + 0.950720I$	$2.73376 + 3.43447I$	$-1.29601 - 4.99499I$
$u = -1.295880 + 0.302541I$ $a = 0.191219 + 0.525405I$ $b = 0.596979 + 0.576684I$	$-1.21585 + 7.07402I$	$-6.1302 - 16.7431I$
$u = -1.295880 - 0.302541I$ $a = 0.191219 - 0.525405I$ $b = 0.596979 - 0.576684I$	$-1.21585 - 7.07402I$	$-6.1302 + 16.7431I$
$u = 0.549802 + 0.356787I$ $a = 0.35379 + 1.94005I$ $b = 0.343585 + 0.431490I$	$-3.72172 - 0.64910I$	$-8.97978 - 3.00915I$
$u = 0.549802 - 0.356787I$ $a = 0.35379 - 1.94005I$ $b = 0.343585 - 0.431490I$	$-3.72172 + 0.64910I$	$-8.97978 + 3.00915I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.366330+0.095115I$ $a=\ 1.164800-0.430480I$ $b=\ 1.33275-1.03209I$	$-3.84276-1.04802I$	$-4.21027+1.93550I$
$u=-1.366330-0.095115I$ $a=\ 1.164800+0.430480I$ $b=\ 1.33275+1.03209I$	$-3.84276+1.04802I$	$-4.21027-1.93550I$
$u=\ 1.44756+0.28033I$ $a=-0.08490-2.03707I$ $b=\ 1.62005-1.28338I$	$-4.47222-1.54255I$	$-4.86257-3.43959I$
$u=\ 1.44756-0.28033I$ $a=-0.08490+2.03707I$ $b=\ 1.62005+1.28338I$	$-4.47222+1.54255I$	$-4.86257+3.43959I$
$u=-1.49847+0.16427I$ $a=\ 0.55236-1.52265I$ $b=-0.358673-1.026630I$	$-10.40230+2.81932I$	$-12.19450-3.27289I$
$u=-1.49847-0.16427I$ $a=\ 0.55236+1.52265I$ $b=-0.358673+1.026630I$	$-10.40230-2.81932I$	$-12.19450+3.27289I$
$u=-1.50968+0.30012I$ $a=-0.53456+2.05169I$ $b=\ 0.99430+2.10528I$	$-8.01378+8.58732I$	$-5.27072-5.92160I$
$u=-1.50968-0.30012I$ $a=-0.53456-2.05169I$ $b=\ 0.99430-2.10528I$	$-8.01378-8.58732I$	$-5.27072+5.92160I$
$u=\ 0.215636+0.242909I$ $a=-3.21354-1.93336I$ $b=\ 0.95496+1.28199I$	$1.16478+2.39395I$	$1.54588-3.97709I$
$u=\ 0.215636-0.242909I$ $a=-3.21354+1.93336I$ $b=\ 0.95496-1.28199I$	$1.16478-2.39395I$	$1.54588+3.97709I$

III.

$\boldsymbol{I_3^u = \langle 18445a^8 + 1627b + \cdots - 373a - 4047,\ 7a^9 - 20a^8 + \cdots - 2a - 1,\ u - 1\rangle}$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

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

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

$$a_{11} = \begin{pmatrix} a \\ -11.3368a^8 + 37.1709a^7 + \cdots + 0.229256a + 2.48740 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 4.77996a^8 - 16.7935a^7 + \cdots - 0.751690a - 2.61955 \\ 16.1168a^8 - 53.9644a^7 + \cdots + 0.0190535a - 5.10695 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -11.3368a^8 + 37.1709a^7 + \cdots - 0.770744a + 2.48740 \\ 16.1168a^8 - 53.9644a^7 + \cdots + 0.0190535a - 5.10695 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 3.42041a^8 - 10.2717a^7 + \cdots + 0.268593a - 0.185003 \\ -19.2532a^8 + 64.0701a^7 + \cdots - 1.27289a + 5.78980 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0 \\ 4.47019a^8 - 14.0670a^7 + \cdots - 1.94960a - 0.799017 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} a \\ 11.8359a^8 - 40.0080a^7 + \cdots - 2.02151a - 2.97603 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0 \\ 4.47019a^8 - 14.0670a^7 + \cdots - 1.94960a - 0.799017 \end{pmatrix}$$

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes

$$= -\frac{29652}{1627}a^8 + \frac{116724}{1627}a^7 - \frac{144460}{1627}a^6 + \frac{30924}{1627}a^5 + \frac{45947}{1627}a^4 + \frac{20832}{1627}a^3 - \frac{45328}{1627}a^2 - \frac{8640}{1627}a + \frac{14276}{1627}$$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2	$(u-1)^9$
c_3, c_8	u^9
c_4	$(u+1)^9$
c_5	$u^9 - u^8 + 2u^7 - u^6 + 3u^5 - u^4 + 2u^3 + u + 1$
c_6	$u^9 - 3u^8 + 8u^7 - 13u^6 + 17u^5 - 17u^4 + 12u^3 - 6u^2 + u + 1$
c_7	$u^9 + 5u^8 + 12u^7 + 15u^6 + 9u^5 - u^4 - 4u^3 - 2u^2 + u + 1$
c_9	$u^9 - u^8 - 2u^7 + 3u^6 + u^5 - 3u^4 + 2u^3 - u + 1$
c_{10}	$u^9 + u^8 + 2u^7 + u^6 + 3u^5 + u^4 + 2u^3 + u - 1$
c_{11}	$u^9 + u^8 - 2u^7 - 3u^6 + u^5 + 3u^4 + 2u^3 - u - 1$
c_{12}	$u^9 + 3u^8 + 8u^7 + 13u^6 + 17u^5 + 17u^4 + 12u^3 + 6u^2 + u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y-1)^9$
c_3, c_8	y^9
c_5, c_{10}	$y^9+3y^8+8y^7+13y^6+17y^5+17y^4+12y^3+6y^2+y-1$
c_6, c_{12}	$y^9+7y^8+20y^7+25y^6+5y^5-15y^4+22y^2+13y-1$
c_7	$y^9-y^8+12y^7-7y^6+37y^5+y^4-10y^2+5y-1$
c_9, c_{11}	$y^9-5y^8+12y^7-15y^6+9y^5+y^4-4y^3+2y^2+y-1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.00000$ $a = 0.650520 + 0.534295I$ $b = 0.140343 + 0.966856I$	$-3.42837 + 2.09337I$	$-6.52230 - 4.24226I$
$u = 1.00000$ $a = 0.650520 - 0.534295I$ $b = 0.140343 - 0.966856I$	$-3.42837 - 2.09337I$	$-6.52230 + 4.24226I$
$u = 1.00000$ $a = 1.17358$ $b = 0.512358$	-0.446489	3.16660
$u = 1.00000$ $a = 1.104930 + 0.619057I$ $b = 0.628449 + 0.875112I$	$-1.02799 + 2.45442I$	$-8.21790 - 4.39771I$
$u = 1.00000$ $a = 1.104930 - 0.619057I$ $b = 0.628449 - 0.875112I$	$-1.02799 - 2.45442I$	$-8.21790 + 4.39771I$
$u = 1.00000$ $a = -0.443756 + 0.532821I$ $b = -0.796005 - 0.733148I$	$2.72642 - 1.33617I$	$0.84367 + 3.27176I$
$u = 1.00000$ $a = -0.443756 - 0.532821I$ $b = -0.796005 + 0.733148I$	$2.72642 + 1.33617I$	$0.84367 - 3.27176I$
$u = 1.00000$ $a = -0.469909 + 0.043588I$ $b = -0.728966 + 0.986295I$	$1.95319 - 7.08493I$	$3.61934 + 1.74309I$
$u = 1.00000$ $a = -0.469909 - 0.043588I$ $b = -0.728966 - 0.986295I$	$1.95319 + 7.08493I$	$3.61934 - 1.74309I$

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_2	$((u-1)^9)(u^{20}+4u^{19}+\cdots-5u+1)(u^{130}-14u^{129}+\cdots+35u-49)$
c_3	$u^9(u^{20}-6u^{18}+\cdots-3u+1)(u^{130}+u^{129}+\cdots-60928u+25088)$
c_4	$((u+1)^9)(u^{20}-4u^{19}+\cdots+5u+1)(u^{130}-14u^{129}+\cdots+35u-49)$
c_5	$(u^9-u^8+\cdots+u+1)(u^{20}+10u^{18}+\cdots-3u+1)$ $\cdot(u^{130}-2u^{129}+\cdots-4232u-4232)$
c_6	$(u^9-3u^8+8u^7-13u^6+17u^5-17u^4+12u^3-6u^2+u+1)$ $\cdot(u^{20}+3u^{19}+\cdots+10u^2+1)(u^{130}-3u^{129}+\cdots+4534u-71)$
c_7	$(u^9+5u^8+12u^7+15u^6+9u^5-u^4-4u^3-2u^2+u+1)$ $\cdot(u^{20}-5u^{17}+\cdots+3u+1)(u^{130}+10u^{129}+\cdots-27u-9)$
c_8	$u^9(u^{20}-6u^{18}+\cdots+3u+1)(u^{130}+u^{129}+\cdots-60928u+25088)$
c_9	$(u^9-u^8+\cdots-u+1)(u^{20}-4u^{18}+\cdots+5u+1)$ $\cdot(u^{130}+18u^{129}+\cdots-8409u+1079)$
c_{10}	$(u^9+u^8+\cdots+u-1)(u^{20}+10u^{18}+\cdots+3u+1)$ $\cdot(u^{130}-2u^{129}+\cdots-4232u-4232)$
c_{11}	$(u^9+u^8+\cdots-u-1)(u^{20}-3u^{19}+\cdots+5u^3+1)$ $\cdot(u^{130}+u^{129}+\cdots-15153510u-893777)$
c_{12}	$(u^9+3u^8+8u^7+13u^6+17u^5+17u^4+12u^3+6u^2+u-1)$ $\cdot(u^{20}-3u^{19}+\cdots+10u^2+1)(u^{130}-3u^{129}+\cdots+4534u-71)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$((y-1)^9)(y^{20}-20y^{19}+\cdots-y+1)$ $\cdot(y^{130}-122y^{129}+\cdots-5929y+2401)$
c_3, c_8	$y^9(y^{20}-12y^{19}+\cdots-9y+1)$ $\cdot(y^{130}-69y^{129}+\cdots-11984437248y+629407744)$
c_5, c_{10}	$(y^9+3y^8+8y^7+13y^6+17y^5+17y^4+12y^3+6y^2+y-1)$ $\cdot(y^{20}+20y^{19}+\cdots+15y+1)$ $\cdot(y^{130}+86y^{129}+\cdots+519774240y+17909824)$
c_6, c_{12}	$(y^9+7y^8+20y^7+25y^6+5y^5-15y^4+22y^2+13y-1)$ $\cdot(y^{20}+15y^{19}+\cdots+20y+1)$ $\cdot(y^{130}+81y^{129}+\cdots-16239788y+5041)$
c_7	$(y^9-y^8+12y^7-7y^6+37y^5+y^4-10y^2+5y-1)$ $\cdot(y^{20}+6y^{18}+\cdots-5y+1)(y^{130}-6y^{129}+\cdots+2151y+81)$
c_9	$(y^9-5y^8+12y^7-15y^6+9y^5+y^4-4y^3+2y^2+y-1)$ $\cdot(y^{20}-8y^{19}+\cdots-5y+1)$ $\cdot(y^{130}-26y^{129}+\cdots-102045441y+1164241)$
c_{11}	$(y^9-5y^8+12y^7-15y^6+9y^5+y^4-4y^3+2y^2+y-1)$ $\cdot(y^{20}-5y^{19}+\cdots+6y^2+1)$ $\cdot(y^{130}+13y^{129}+\cdots+20581982318772y+798837325729)$