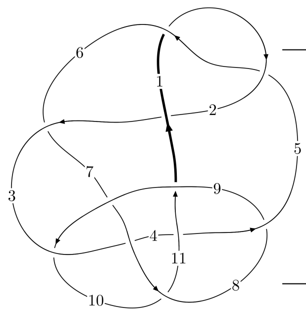
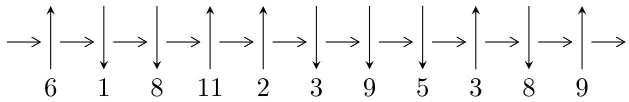
$11n_{85}$ $(K11n_{85})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -2u^{22} - 2u^{21} + \cdots + 4b - 2,\ 2u^{22} + u^{21} + \cdots + 4a - 2,\ u^{23} + 2u^{22} + \cdots + 4u + 2 \rangle$$
$$I_2^u = \langle b + 1,\ u^3 + 2u^2 + 2a + 4,\ u^4 + 2u^2 + 2 \rangle$$
$$I_3^u = \langle -a^2u + 2b + a - 2,\ a^3 + 2a^2u - au + 2a + 2,\ u^2 - u + 1 \rangle$$

$$I_1^v = \langle a,\ b - 1,\ v - 1 \rangle$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 34 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.

$$I_1^u = \langle -2u^{22}-2u^{21}+\cdots+4b-2,\ 2u^{22}+u^{21}+\cdots+4a-2,\ u^{23}+2u^{22}+\cdots+4u+2\rangle$$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u \\ u^3+u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u^3 \\ u^5+u^3+u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -\frac{1}{2}u^{22}-\frac{1}{4}u^{21}+\cdots-\frac{1}{2}u+\frac{1}{2} \\ \frac{1}{2}u^{22}+\frac{1}{2}u^{21}+\cdots+\frac{1}{2}u+\frac{1}{2} \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -\frac{1}{4}u^{18}-u^{16}+\cdots+\frac{1}{2}u+\frac{1}{2} \\ -\frac{1}{2}u^{13}-\frac{3}{2}u^{11}+\cdots-u^3-u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} \frac{1}{4}u^{21}+u^{19}+\cdots-\frac{1}{2}u^3+1 \\ \frac{1}{2}u^{22}+\frac{1}{2}u^{21}+\cdots+\frac{1}{2}u+\frac{1}{2} \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u^6-u^4+1 \\ u^8+2u^6+2u^4 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} \frac{1}{2}u^{22}+\frac{3}{4}u^{21}+\cdots-\frac{1}{2}u-\frac{1}{2} \\ \frac{1}{2}u^{22}+\frac{1}{2}u^{21}+\cdots+\frac{3}{2}u+\frac{1}{2} \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -\frac{1}{4}u^{21}-u^{19}+\cdots-\frac{3}{2}u^3-u \\ -\frac{1}{4}u^{21}-\frac{5}{4}u^{19}+\cdots+\frac{1}{2}u^2+\frac{1}{2}u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -\frac{1}{4}u^{21}-u^{19}+\cdots-\frac{3}{2}u^3-u \\ -\frac{1}{4}u^{21}-\frac{5}{4}u^{19}+\cdots+\frac{1}{2}u^2+\frac{1}{2}u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 2u^{22}+4u^{21}+10u^{20}+16u^{19}+24u^{18}+34u^{17}+30u^{16}+40u^{15}+16u^{14}+30u^{13}+32u^{11}+8u^{10}+46u^9+14u^8+42u^7-8u^6+2u^5-24u^4+2u^3+4u^2+10u$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5	$u^{23} + 2u^{22} + \cdots + 4u + 2$
c_2	$u^{23} + 10u^{22} + \cdots + 8u - 4$
c_3	$u^{23} + 27u^{21} + \cdots - 7u + 1$
c_4, c_9	$u^{23} - 2u^{22} + \cdots + 9u + 1$
c_6	$u^{23} - 2u^{22} + \cdots - 88u + 16$
c_7	$u^{23} + 2u^{22} + \cdots - 11u + 1$
c_8	$u^{23} + 2u^{22} + \cdots - 3u + 1$
c_{10}	$u^{23} - 5u^{22} + \cdots + 128u + 1706$
c_{11}	$u^{23} + 8u^{22} + \cdots + 1035u + 297$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5	$y^{23} + 10y^{22} + \cdots + 8y - 4$
c_2	$y^{23} + 6y^{22} + \cdots + 160y - 16$
c_3	$y^{23} + 54y^{22} + \cdots + 25y - 1$
c_4, c_9	$y^{23} - 34y^{22} + \cdots - 27y - 1$
c_6	$y^{23} + 2y^{22} + \cdots + 960y - 256$
c_7	$y^{23} + 46y^{22} + \cdots - 135y - 1$
c_8	$y^{23} - 2y^{22} + \cdots - 11y - 1$
c_{10}	$y^{23} + 41y^{22} + \cdots - 12287288y - 2910436$
c_{11}	$y^{23} - 26y^{22} + \cdots + 935793y - 88209$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.887093 + 0.448454I$ $a = 0.492271 + 1.285580I$ $b = -1.14839 - 1.01565I$	$11.55830 - 6.04378I$	$2.90457 + 2.40956I$
$u = 0.887093 - 0.448454I$ $a = 0.492271 - 1.285580I$ $b = -1.14839 + 1.01565I$	$11.55830 + 6.04378I$	$2.90457 - 2.40956I$
$u = -0.865908 + 0.562605I$ $a = 0.29789 + 1.55245I$ $b = -0.94225 - 1.16788I$	$12.26940 - 1.86843I$	$3.51927 + 2.09858I$
$u = -0.865908 - 0.562605I$ $a = 0.29789 - 1.55245I$ $b = -0.94225 + 1.16788I$	$12.26940 + 1.86843I$	$3.51927 - 2.09858I$
$u = -0.126252 + 0.927958I$ $a = 0.472434 + 0.373694I$ $b = 0.816023 - 0.401741I$	$-1.83455 + 1.28121I$	$-6.39377 - 3.70883I$
$u = -0.126252 - 0.927958I$ $a = 0.472434 - 0.373694I$ $b = 0.816023 + 0.401741I$	$-1.83455 - 1.28121I$	$-6.39377 + 3.70883I$
$u = -0.687410 + 0.551797I$ $a = 0.93433 - 1.33726I$ $b = -0.566101 + 0.784858I$	$2.63493 + 2.12803I$	$3.22069 - 2.55962I$
$u = -0.687410 - 0.551797I$ $a = 0.93433 + 1.33726I$ $b = -0.566101 - 0.784858I$	$2.63493 - 2.12803I$	$3.22069 + 2.55962I$
$u = -0.439313 + 1.087580I$ $a = -1.12704 + 1.03997I$ $b = -1.028740 - 0.075248I$	$-4.16811 - 3.61856I$	$-9.97032 + 4.29272I$
$u = -0.439313 - 1.087580I$ $a = -1.12704 - 1.03997I$ $b = -1.028740 + 0.075248I$	$-4.16811 + 3.61856I$	$-9.97032 - 4.29272I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.611535 + 1.029680I$ $a = 0.57884 - 1.78933I$ $b = 0.744103 + 0.840632I$	$1.22653 - 7.16348I$	$-0.15345 + 7.54828I$
$u = -0.611535 - 1.029680I$ $a = 0.57884 + 1.78933I$ $b = 0.744103 - 0.840632I$	$1.22653 + 7.16348I$	$-0.15345 - 7.54828I$
$u = 0.470162 + 1.125140I$ $a = -1.139790 - 0.221923I$ $b = -0.174623 + 0.267387I$	$-0.75408 + 3.78076I$	$1.64329 - 3.83078I$
$u = 0.470162 - 1.125140I$ $a = -1.139790 + 0.221923I$ $b = -0.174623 - 0.267387I$	$-0.75408 - 3.78076I$	$1.64329 + 3.83078I$
$u = 0.066964 + 1.228960I$ $a = 0.900031 + 0.128011I$ $b = 0.988654 + 0.944921I$	$5.54974 - 3.50228I$	$-1.93120 + 2.15966I$
$u = 0.066964 - 1.228960I$ $a = 0.900031 - 0.128011I$ $b = 0.988654 - 0.944921I$	$5.54974 + 3.50228I$	$-1.93120 - 2.15966I$
$u = -0.694097 + 1.072020I$ $a = -1.125380 + 0.108515I$ $b = 0.83601 - 1.20931I$	$10.72870 - 3.91001I$	$1.79235 + 2.50229I$
$u = -0.694097 - 1.072020I$ $a = -1.125380 - 0.108515I$ $b = 0.83601 + 1.20931I$	$10.72870 + 3.91001I$	$1.79235 - 2.50229I$
$u = 0.652491 + 1.132530I$ $a = 1.13140 + 1.85064I$ $b = 1.20493 - 0.95597I$	$9.4833 + 11.7267I$	$0.34491 - 6.55767I$
$u = 0.652491 - 1.132530I$ $a = 1.13140 - 1.85064I$ $b = 1.20493 + 0.95597I$	$9.4833 - 11.7267I$	$0.34491 + 6.55767I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.601530 + 0.285314I$ $a = 1.041030 - 0.706848I$ $b = -0.179556 + 0.418301I$	$1.74084 + 0.44680I$	$5.28361 - 1.38333I$
$u = 0.601530 - 0.285314I$ $a = 1.041030 + 0.706848I$ $b = -0.179556 - 0.418301I$	$1.74084 - 0.44680I$	$5.28361 + 1.38333I$
$u = -0.507450$ $a = 0.0879637$ $b = 0.899884$	-1.46388	-6.51990

II. $I^u_2 = \langle b+1,\ u^3+2u^2+2a+4,\ u^4+2u^2+2\rangle$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

$$a_6 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u \\ u^3+u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -u^3 \\ -u^3-u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -\frac{1}{2}u^3-u^2-2 \\ -1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} \frac{1}{2}u^3-u^2-2 \\ u^3+u-1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -\frac{1}{2}u^3-u^2-3 \\ -1 \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} -\frac{3}{2}u^3-u^2-u-3 \\ -1 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} \frac{3}{2}u^3+u^2+u+4 \\ 1 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} \frac{3}{2}u^3+u^2+u+4 \\ 1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

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

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5	$(y^2+2y+2)^2$
c_2	$(y^2+4)^2$
c_3, c_{11}	$y^4-8y^3+18y^2+8y+1$
c_4, c_7, c_8 c_9	$(y-1)^4$
c_6, c_{10}	$(y^2-2y+2)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \quad 0.455090 + 1.098680I$ $a = -0.223113 - 0.678203I$ $b = -1.00000$	$-2.46740 + 3.66386I$	$-4.00000 - 4.00000I$
$u = \quad 0.455090 - 1.098680I$ $a = -0.223113 + 0.678203I$ $b = -1.00000$	$-2.46740 - 3.66386I$	$-4.00000 + 4.00000I$
$u = -0.455090 + 1.098680I$ $a = -1.77689 + 1.32180I$ $b = -1.00000$	$-2.46740 - 3.66386I$	$-4.00000 + 4.00000I$
$u = -0.455090 - 1.098680I$ $a = -1.77689 - 1.32180I$ $b = -1.00000$	$-2.46740 + 3.66386I$	$-4.00000 - 4.00000I$

III. $I_3^u = \langle -a^2u + 2b + a - 2,\ a^3 + 2a^2u - au + 2a + 2,\ u^2 - u + 1\rangle$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ -u+1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u \\ u-1 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} a \\ \frac{1}{2}a^2u - \frac{1}{2}a + 1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} \frac{1}{2}a^2u + \frac{1}{2}a + 1 \\ \frac{1}{2}a^2u - \frac{1}{2}a + 1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} \frac{1}{2}a^2u + \frac{1}{2}a + 1 \\ \frac{1}{2}a^2u - \frac{1}{2}a + 1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u \\ -u+1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -\frac{1}{2}a^2u - \frac{1}{2}a - 1 \\ -\frac{1}{2}a^2u + \frac{1}{2}a - 1 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -\frac{1}{2}a^2u - \frac{1}{2}a + 1 \\ \frac{1}{2}a^2u - \frac{1}{2}a^2 + \frac{1}{2}au - a + u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -\frac{1}{2}a^2u - \frac{1}{2}a + 1 \\ \frac{1}{2}a^2u - \frac{1}{2}a^2 + \frac{1}{2}au - a + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u + 2$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_5 c_6	$(y^2 + y + 1)^3$
c_3, c_4, c_8 c_9	$y^6 - 4y^5 + 6y^4 - 3y^3 - y^2 + y + 1$
c_7, c_{11}	$y^6 - 4y^5 + 10y^4 - 11y^3 + 19y^2 - 3y + 1$
c_{10}	y^6

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.500000 + 0.866025I$ $a = 0.412728 + 1.011420I$ $b = 0.218964 - 0.666188I$	$2.02988I$	$0. - 3.46410I$
$u = 0.500000 + 0.866025I$ $a = -0.562490 - 0.528127I$ $b = 1.033350 + 0.428825I$	$2.02988I$	$0. - 3.46410I$
$u = 0.500000 + 0.866025I$ $a = -0.85024 - 2.21534I$ $b = -1.252310 + 0.237364I$	$2.02988I$	$0. - 3.46410I$
$u = 0.500000 - 0.866025I$ $a = 0.412728 - 1.011420I$ $b = 0.218964 + 0.666188I$	$-2.02988I$	$0. + 3.46410I$
$u = 0.500000 - 0.866025I$ $a = -0.562490 + 0.528127I$ $b = 1.033350 - 0.428825I$	$-2.02988I$	$0. + 3.46410I$
$u = 0.500000 - 0.866025I$ $a = -0.85024 + 2.21534I$ $b = -1.252310 - 0.237364I$	$-2.02988I$	$0. + 3.46410I$

IV. $I_1^v = \langle a,\ b-1,\ v-1\rangle$

(i) Arc colorings

$a_2 = \begin{pmatrix}1\\0\end{pmatrix}$

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

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

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

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

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

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

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

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

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

$a_4 = \begin{pmatrix}2\\1\end{pmatrix}$

$a_4 = \begin{pmatrix}2\\1\end{pmatrix}$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 0$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

	Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v =$	1.00000		
$a =$	0	0	0
$b =$	1.00000		

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_5	$u(u^2-u+1)^3(u^4+2u^2+2)(u^{23}+2u^{22}+\cdots+4u+2)$
c_2	$u(u^2+u+1)^3(u^2+2u+2)^2(u^{23}+10u^{22}+\cdots+8u-4)$
c_3	$(u-1)(u^4+4u^3+4u^2+1)(u^6-2u^4-u^3+u^2+u+1)$ $\cdot\,(u^{23}+27u^{21}+\cdots-7u+1)$
c_4	$(u-1)(u+1)^4(u^6-2u^4+\cdots+u+1)(u^{23}-2u^{22}+\cdots+9u+1)$
c_6	$u(u^2+u+1)^3(u^4-2u^2+2)(u^{23}-2u^{22}+\cdots-88u+16)$
c_7	$((u-1)^5)(u^6+4u^5+\cdots-u+1)(u^{23}+2u^{22}+\cdots-11u+1)$
c_8	$((u-1)^4)(u+1)(u^6-2u^4+\cdots+u+1)(u^{23}+2u^{22}+\cdots-3u+1)$
c_9	$((u-1)^4)(u+1)(u^6-2u^4+\cdots+u+1)(u^{23}-2u^{22}+\cdots+9u+1)$
c_{10}	$u^7(u^4-2u^2+2)(u^{23}-5u^{22}+\cdots+128u+1706)$
c_{11}	$(u-1)(u^4-4u^3+4u^2+1)(u^6-4u^5+6u^4-3u^3-u^2+u+1)$ $\cdot\,(u^{23}+8u^{22}+\cdots+1035u+297)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_5	$y(y^2+y+1)^3(y^2+2y+2)^2(y^{23}+10y^{22}+\cdots+8y-4)$
c_2	$y(y^2+4)^2(y^2+y+1)^3(y^{23}+6y^{22}+\cdots+160y-16)$
c_3	$(y-1)(y^4-8y^3+\cdots+8y+1)(y^6-4y^5+\cdots+y+1)$ $\cdot(y^{23}+54y^{22}+\cdots+25y-1)$
c_4, c_9	$(y-1)^5(y^6-4y^5+6y^4-3y^3-y^2+y+1)$ $\cdot(y^{23}-34y^{22}+\cdots-27y-1)$
c_6	$y(y^2-2y+2)^2(y^2+y+1)^3(y^{23}+2y^{22}+\cdots+960y-256)$
c_7	$(y-1)^5(y^6-4y^5+10y^4-11y^3+19y^2-3y+1)$ $\cdot(y^{23}+46y^{22}+\cdots-135y-1)$
c_8	$((y-1)^5)(y^6-4y^5+\cdots+y+1)(y^{23}-2y^{22}+\cdots-11y-1)$
c_{10}	$y^7(y^2-2y+2)^2(y^{23}+41y^{22}+\cdots-1.22873\times10^7y-2910436)$
c_{11}	$(y-1)(y^4-8y^3+18y^2+8y+1)$ $\cdot(y^6-4y^5+10y^4-11y^3+19y^2-3y+1)$ $\cdot(y^{23}-26y^{22}+\cdots+935793y-88209)$