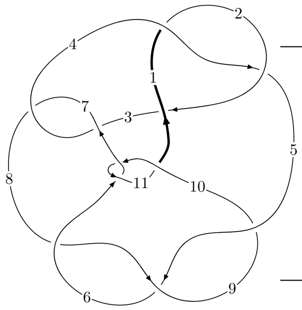
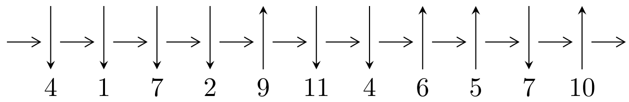
$11n_{68}$ ($K11n_{68}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u &= \langle 77815u^{25} - 80433u^{24} + \cdots + 101496b + 29131, \\
&\quad 2049367u^{25} + 17170719u^{24} + \cdots + 12687000a + 47575387,\ u^{26} - 2u^{25} + \cdots - 2u + 1\rangle \\
I_2^u &= \langle -u^3 + 2b + u + 1,\ -u^3 - 2u^2 + 2a - 3u - 1,\ u^4 + u^3 + u^2 + 1\rangle \\
I_3^u &= \langle u^8 - u^7 + 2u^6 - u^4 + u^3 - u^2 + b - u,\ u^7 + u^6 + 2u^5 + 4u^4 + 3u^3 + 3u^2 + a + 3u + 1, \\
&\quad u^9 + 3u^7 + 3u^6 + 3u^5 + 6u^4 + 3u^3 + 3u^2 + 2u - 1\rangle
\end{aligned}$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 39 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. $I^u_1 = \langle 77815u^{25} - 80433u^{24} + \cdots + 101496b + 29131,\ 2.05 \times 10^6 u^{25} + 1.72 \times 10^7 u^{24} + \cdots + 1.27 \times 10^7 a + 4.76 \times 10^7,\ u^{26} - 2u^{25} + \cdots - 2u + 1\rangle$

(i) Arc colorings

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

$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -0.161533u^{25} - 1.35341u^{24} + \cdots + 4.59237u - 3.74993 \\ -0.766680u^{25} + 0.792475u^{24} + \cdots - 0.209299u - 0.287016 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -4.34995u^{25} + 8.30824u^{24} + \cdots - 11.2562u + 4.44452 \\ 0.111927u^{25} + 1.17301u^{24} + \cdots - 2.00774u + 1.43931 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -4.23802u^{25} + 9.48125u^{24} + \cdots - 13.2639u + 5.88383 \\ 0.111927u^{25} + 1.17301u^{24} + \cdots - 2.00774u + 1.43931 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 0.236517u^{25} - 2.54906u^{24} + \cdots + 7.57449u - 5.71342 \\ -1.07634u^{25} + 1.55091u^{24} + \cdots - 1.40645u + 0.112537 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -2.44452u^{25} + 1.53910u^{24} + \cdots + 0.243519u - 3.36715 \\ -1.39686u^{25} + 1.36224u^{24} + \cdots - 1.66316u - 0.888073 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^3 \\ u^5 + u^3 + u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.889032u^{25} - 0.919202u^{24} + \cdots + 5.34807u - 4.99096 \\ -1.17523u^{25} + 0.972343u^{24} + \cdots + 0.156712u - 0.961125 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.889032u^{25} - 0.919202u^{24} + \cdots + 5.34807u - 4.99096 \\ -1.17523u^{25} + 0.972343u^{24} + \cdots + 0.156712u - 0.961125 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{48418177}{8458000}u^{25} + \frac{48940111}{8458000}u^{24} + \cdots - \frac{705789}{8458000}u - \frac{61013797}{8458000}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{26} - 2u^{25} + \cdots - 35u + 4$
c_2	$u^{26} + 10u^{25} + \cdots + 481u + 16$
c_3, c_7	$u^{26} - 2u^{25} + \cdots - 112u + 64$
c_5, c_8, c_9	$u^{26} + 2u^{25} + \cdots + 2u + 1$
c_6, c_{10}	$u^{26} + 2u^{25} + \cdots + 2u + 1$
c_{11}	$u^{26} - 14u^{25} + \cdots - 4u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{26} - 10y^{25} + \cdots - 481y + 16$
c_2	$y^{26} + 14y^{25} + \cdots - 80993y + 256$
c_3, c_7	$y^{26} + 18y^{25} + \cdots + 70400y + 4096$
c_5, c_8, c_9	$y^{26} + 22y^{25} + \cdots + 4y + 1$
c_6, c_{10}	$y^{26} + 14y^{25} + \cdots + 4y + 1$
c_{11}	$y^{26} - 2y^{25} + \cdots + 20y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.011190 + 0.136706I$ $a = 0.035883 + 0.146636I$ $b = -0.62158 + 1.42798I$	$-1.86313 + 7.71246I$	$-6.86228 - 5.25734I$
$u = 1.011190 - 0.136706I$ $a = 0.035883 - 0.146636I$ $b = -0.62158 - 1.42798I$	$-1.86313 - 7.71246I$	$-6.86228 + 5.25734I$
$u = -0.370532 + 0.998437I$ $a = 1.109240 - 0.521057I$ $b = 0.369770 - 0.293138I$	$-2.47557 + 4.95345I$	$-6.39722 - 7.47760I$
$u = -0.370532 - 0.998437I$ $a = 1.109240 + 0.521057I$ $b = 0.369770 + 0.293138I$	$-2.47557 - 4.95345I$	$-6.39722 + 7.47760I$
$u = 0.269068 + 1.038770I$ $a = -0.127266 - 0.719999I$ $b = -0.463650 + 0.532995I$	$1.31071 - 2.42285I$	$0.84038 + 4.76679I$
$u = 0.269068 - 1.038770I$ $a = -0.127266 + 0.719999I$ $b = -0.463650 - 0.532995I$	$1.31071 + 2.42285I$	$0.84038 - 4.76679I$
$u = -0.132101 + 0.846386I$ $a = -0.69055 + 2.07222I$ $b = 1.30633 - 0.71384I$	$-0.911584 + 0.890121I$	$0.87423 + 1.36491I$
$u = -0.132101 - 0.846386I$ $a = -0.69055 - 2.07222I$ $b = 1.30633 + 0.71384I$	$-0.911584 - 0.890121I$	$0.87423 - 1.36491I$
$u = 0.330433 + 0.724477I$ $a = -0.95370 + 2.08665I$ $b = -1.142600 + 0.109328I$	$-5.04252 - 1.61304I$	$-10.18355 + 3.58696I$
$u = 0.330433 - 0.724477I$ $a = -0.95370 - 2.08665I$ $b = -1.142600 - 0.109328I$	$-5.04252 + 1.61304I$	$-10.18355 - 3.58696I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.774839 + 0.143637I$ $a = 0.175331 - 0.241236I$ $b = 0.487210 + 1.045470I$	$0.05851 - 2.13854I$	$-4.58802 + 1.91237I$
$u = 0.774839 - 0.143637I$ $a = 0.175331 + 0.241236I$ $b = 0.487210 - 1.045470I$	$0.05851 + 2.13854I$	$-4.58802 - 1.91237I$
$u = 0.419572 + 0.612728I$ $a = -0.290716 - 0.333902I$ $b = 0.237389 + 0.425546I$	$-0.10620 - 1.46904I$	$-0.77851 + 4.66825I$
$u = 0.419572 - 0.612728I$ $a = -0.290716 + 0.333902I$ $b = 0.237389 - 0.425546I$	$-0.10620 + 1.46904I$	$-0.77851 - 4.66825I$
$u = -0.914066 + 0.917616I$ $a = 0.250251 + 0.130322I$ $b = 0.155646 + 0.140338I$	$-7.98517 + 3.33888I$	$1.72089 - 5.46783I$
$u = -0.914066 - 0.917616I$ $a = 0.250251 - 0.130322I$ $b = 0.155646 - 0.140338I$	$-7.98517 - 3.33888I$	$1.72089 + 5.46783I$
$u = 0.402493 + 1.239940I$ $a = 0.37826 - 1.94903I$ $b = 0.80677 + 1.32805I$	$4.09462 - 6.26991I$	$-1.96309 + 5.01662I$
$u = 0.402493 - 1.239940I$ $a = 0.37826 + 1.94903I$ $b = 0.80677 - 1.32805I$	$4.09462 + 6.26991I$	$-1.96309 - 5.01662I$
$u = -0.387462 + 1.292200I$ $a = -0.67996 - 1.61333I$ $b = -0.42179 + 1.55871I$	$7.58035 + 1.64459I$	$1.58550 - 0.59315I$
$u = -0.387462 - 1.292200I$ $a = -0.67996 + 1.61333I$ $b = -0.42179 - 1.55871I$	$7.58035 - 1.64459I$	$1.58550 + 0.59315I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.553190 + 1.252930I$ $a = 0.89905 + 1.50339I$ $b = 0.43042 - 1.66549I$	$6.35723 + 8.21738I$	$-0.54202 - 5.78684I$
$u = -0.553190 - 1.252930I$ $a = 0.89905 - 1.50339I$ $b = 0.43042 + 1.66549I$	$6.35723 - 8.21738I$	$-0.54202 + 5.78684I$
$u = 0.560294 + 1.283400I$ $a = -0.58734 + 1.77218I$ $b = -0.96323 - 1.71069I$	$1.68898 - 13.33640I$	$-4.27120 + 7.69267I$
$u = 0.560294 - 1.283400I$ $a = -0.58734 - 1.77218I$ $b = -0.96323 + 1.71069I$	$1.68898 + 13.33640I$	$-4.27120 - 7.69267I$
$u = -0.410537 + 0.270705I$ $a = 0.73153 + 2.35210I$ $b = -0.430697 + 0.672525I$	$-4.35117 - 1.59149I$	$-10.56012 + 0.81365I$
$u = -0.410537 - 0.270705I$ $a = 0.73153 - 2.35210I$ $b = -0.430697 - 0.672525I$	$-4.35117 + 1.59149I$	$-10.56012 - 0.81365I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= \frac{1}{4}u^3 + \frac{7}{2}u^2 + \frac{23}{4}u - \frac{37}{4}$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y-1)^4$
c_3, c_7	y^4
c_5, c_8, c_9 c_{11}	$y^4 + 5y^3 + 7y^2 + 2y + 1$
c_6, c_{10}	$y^4 + y^3 + 3y^2 + 2y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.351808 + 0.720342I$ $a = 0.38053 + 1.53420I$ $b = -0.927958 - 0.413327I$	$-1.43393 - 1.41510I$	$-8.73606 + 5.88934I$
$u = 0.351808 - 0.720342I$ $a = 0.38053 - 1.53420I$ $b = -0.927958 + 0.413327I$	$-1.43393 + 1.41510I$	$-8.73606 - 5.88934I$
$u = -0.851808 + 0.911292I$ $a = -0.130534 + 0.427872I$ $b = 0.677958 + 0.157780I$	$-8.43568 + 3.16396I$	$-14.13894 + 0.11292I$
$u = -0.851808 - 0.911292I$ $a = -0.130534 - 0.427872I$ $b = 0.677958 - 0.157780I$	$-8.43568 - 3.16396I$	$-14.13894 - 0.11292I$

III. $\boldsymbol{I_3^u = \langle u^8 - u^7 + 2u^6 - u^4 + u^3 - u^2 + b - u,\ u^7 + u^6 + 2u^5 + 4u^4 + 3u^3 + 3u^2 + a + 3u + 1,\ u^9 + 3u^7 + \cdots + 2u - 1\rangle}$

(i) Arc colorings

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

$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u^7 - u^6 - 2u^5 - 4u^4 - 3u^3 - 3u^2 - 3u - 1 \\ -u^8 + u^7 - 2u^6 + u^4 - u^3 + u^2 + u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

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

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

$$a_3 = \begin{pmatrix} -u^7 - 2u^6 - 2u^5 - 6u^4 - 4u^3 - 4u^2 - 4u \\ -2u^8 + u^7 - 4u^6 - u^5 - 2u^3 + 2u^2 + u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^3 \\ u^5 + u^3 + u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -u^4 - u^2 - 2u - 1 \\ u^4 + 2u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -u^4 - u^2 - 2u - 1 \\ u^4 + 2u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^6 - 8u^4 - 8u^3 - 4u^2 - 8u - 6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$(y^3 - y^2 + 2y - 1)^3$
c_2, c_3, c_7	$(y^3 + 3y^2 + 2y - 1)^3$
c_5, c_6, c_8 c_9, c_{10}	$y^9 + 6y^8 + 15y^7 + 15y^6 - 5y^5 - 24y^4 - 9y^3 + 15y^2 + 10y - 1$
c_{11}	$y^9 - 6y^8 + \cdots + 130y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.149100 + 1.032810I$ $a = -1.49322 - 1.81245I$ $b = 1.57125 + 2.35293I$	-1.11345	$-9.01951 + 0.I$
$u = -0.149100 - 1.032810I$ $a = -1.49322 + 1.81245I$ $b = 1.57125 - 2.35293I$	-1.11345	$-9.01951 + 0.I$
$u = -0.929255 + 0.157692I$ $a = -0.1261290 + 0.0333681I$ $b = 0.119081 + 1.372090I$	$3.02413 - 2.82812I$	$-2.49024 + 2.97945I$
$u = -0.929255 - 0.157692I$ $a = -0.1261290 - 0.0333681I$ $b = 0.119081 - 1.372090I$	$3.02413 + 2.82812I$	$-2.49024 - 2.97945I$
$u = 0.550542 + 1.200360I$ $a = -1.08414 + 1.00782I$ $b = 0.116542 - 1.272430I$	$3.02413 - 2.82812I$	$-2.49024 + 2.97945I$
$u = 0.550542 - 1.200360I$ $a = -1.08414 - 1.00782I$ $b = 0.116542 + 1.272430I$	$3.02413 + 2.82812I$	$-2.49024 - 2.97945I$
$u = 0.378713 + 1.358050I$ $a = 0.84258 - 1.19340I$ $b = 0.00950 + 1.58939I$	$3.02413 + 2.82812I$	$-2.49024 - 2.97945I$
$u = 0.378713 - 1.358050I$ $a = 0.84258 + 1.19340I$ $b = 0.00950 - 1.58939I$	$3.02413 - 2.82812I$	$-2.49024 + 2.97945I$
$u = 0.298201$ $a = -2.27818$ $b = 0.367256$	-1.11345	-9.01950

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^4)(u^3-u^2+1)^3(u^{26}-2u^{25}+\cdots-35u+4)$
c_2	$((u+1)^4)(u^3+u^2+2u+1)^3(u^{26}+10u^{25}+\cdots+481u+16)$
c_3, c_7	$u^4(u^3+u^2+2u+1)^3(u^{26}-2u^{25}+\cdots-112u+64)$
c_4	$((u+1)^4)(u^3-u^2+1)^3(u^{26}-2u^{25}+\cdots-35u+4)$
c_5	$(u^4+u^3+3u^2+2u+1)$ $\cdot(u^9+3u^7-3u^6+3u^5-6u^4+3u^3-3u^2+2u+1)$ $\cdot(u^{26}+2u^{25}+\cdots+2u+1)$
c_6	$(u^4+u^3+u^2+1)(u^9+3u^7-3u^6+3u^5-6u^4+3u^3-3u^2+2u+1)$ $\cdot(u^{26}+2u^{25}+\cdots+2u+1)$
c_8, c_9	$(u^4-u^3+3u^2-2u+1)$ $\cdot(u^9+3u^7-3u^6+3u^5-6u^4+3u^3-3u^2+2u+1)$ $\cdot(u^{26}+2u^{25}+\cdots+2u+1)$
c_{10}	$(u^4-u^3+u^2+1)(u^9+3u^7-3u^6+3u^5-6u^4+3u^3-3u^2+2u+1)$ $\cdot(u^{26}+2u^{25}+\cdots+2u+1)$
c_{11}	$(u^4-u^3+3u^2-2u+1)$ $\cdot(u^9-6u^8+15u^7-15u^6-5u^5+24u^4-9u^3-15u^2+10u+1)$ $\cdot(u^{26}-14u^{25}+\cdots-4u+1)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4	$((y-1)^4)(y^3-y^2+2y-1)^3(y^{26}-10y^{25}+\cdots-481y+16)$
c_2	$((y-1)^4)(y^3+3y^2+2y-1)^3(y^{26}+14y^{25}+\cdots-80993y+256)$
c_3, c_7	$y^4(y^3+3y^2+2y-1)^3(y^{26}+18y^{25}+\cdots+70400y+4096)$
c_5, c_8, c_9	$(y^4+5y^3+7y^2+2y+1)$ $\cdot(y^9+6y^8+15y^7+15y^6-5y^5-24y^4-9y^3+15y^2+10y-1)$ $\cdot(y^{26}+22y^{25}+\cdots+4y+1)$
c_6, c_{10}	$(y^4+y^3+3y^2+2y+1)$ $\cdot(y^9+6y^8+15y^7+15y^6-5y^5-24y^4-9y^3+15y^2+10y-1)$ $\cdot(y^{26}+14y^{25}+\cdots+4y+1)$
c_{11}	$(y^4+5y^3+7y^2+2y+1)(y^9-6y^8+\cdots+130y-1)$ $\cdot(y^{26}-2y^{25}+\cdots+20y+1)$