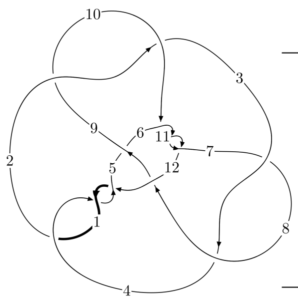
$12a_{1180}$ ($K12a_{1180}$)



A knot diagram[1]

Linearized knot diagam

$$\rightarrow\downarrow\rightarrow\downarrow\rightarrow\downarrow\rightarrow\downarrow\rightarrow\uparrow\rightarrow\uparrow\rightarrow\downarrow\rightarrow\uparrow\rightarrow\downarrow\rightarrow\uparrow\rightarrow\uparrow\rightarrow\downarrow\rightarrow$$

4 10 8 1 9 11 3 12 2 6 7 5

Solving Sequence

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

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

$$\begin{aligned}
I_1^u &= \langle 40129u^{36} + 541351u^{35} + \cdots + 64b + 3448384,\\
&\quad - 117149u^{36} - 1586205u^{35} + \cdots + 128a - 10309184,\ u^{37} + 15u^{36} + \cdots + 128u + 128\rangle\\
I_2^u &= \langle -2589926063a^5u^4 + 1727557591a^4u^4 + \cdots + 14756925898a + 2746218374,\\
&\quad a^4u^4 + 2u^4a^3 + \cdots - 2a + 5,\ u^5 - u^4 - 2u^3 + u^2 + u + 1\rangle\\
I_3^u &= \langle -1.25456 \times 10^{19}a^7u^4 - 3.69023 \times 10^{18}a^6u^4 + \cdots - 3.06241 \times 10^{19}a + 1.52681 \times 10^{20},\\
&\quad a^7u^4 + 3a^6u^4 + \cdots + 5a - 2,\ u^5 - u^4 - 2u^3 + u^2 + u + 1\rangle\\
I_4^u &= \langle -3u^{24} + 5u^{23} + \cdots + b - 3,\ -3u^{23} + 37u^{21} + \cdots + a + 1,\ u^{25} - 14u^{23} + \cdots - 6u^2 + 1\rangle
\end{aligned}$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 132 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. $\boldsymbol{I^u_1 = \langle 40129u^{36} + 541351u^{35} + \cdots + 64b + 3448384,\ -1.17 \times 10^5 u^{36} - 1.59 \times 10^6 u^{35} + \cdots + 128a - 1.03 \times 10^7,\ u^{37} + 15u^{36} + \cdots + 128u + 128\rangle}$

(i) Arc colorings

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

$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} 915.227u^{36} + 12392.2u^{35} + \cdots + 25110.5u + 80540.5 \\ -627.016u^{36} - 8458.61u^{35} + \cdots - 17272.5u - 53881 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -8.50000u^{36} - 98.5000u^{35} + \cdots - 495.500u + 160.500 \\ \frac{157}{4}u^{36} + 518u^{35} + \cdots + \frac{2753}{2}u + 2624 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 503.828u^{36} + 6655.03u^{35} + \cdots + 16741.3u + 34828 \\ -165.578u^{36} - 2187.45u^{35} + \cdots - 6821u - 10106 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -u^2 + 1 \\ u^4 - 2u^2 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 288.211u^{36} + 3933.62u^{35} + \cdots + 7838u + 26659.5 \\ -627.016u^{36} - 8458.61u^{35} + \cdots - 17272.5u - 53881 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -410.313u^{36} - 5606.69u^{35} + \cdots - 11464u - 37783 \\ -\frac{3733}{16}u^{36} - \frac{24335}{8}u^{35} + \cdots - 8416u - 13816 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -\frac{123}{4}u^{36} - \frac{839}{2}u^{35} + \cdots - 879u - \frac{5567}{2} \\ -\frac{157}{4}u^{36} - 518u^{35} + \cdots - \frac{2751}{2}u - 2624 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} \frac{285}{2}u^{36} + \frac{7613}{4}u^{35} + \cdots + \frac{18879}{4}u + 10688 \\ -\frac{285}{4}u^{36} - \frac{2053}{2}u^{35} + \cdots - 1055u - 9568 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{19693}{16}u^{36} + \frac{264633}{16}u^{35} + \cdots + 34556u + 102558$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4, c_{12}	$u^{37} - 12u^{36} + \cdots + 464u - 32$
c_2, c_3, c_7 c_9	$u^{37} - u^{36} + \cdots + u - 1$
c_5, c_8	$u^{37} - 15u^{35} + \cdots + 3u + 1$
c_6, c_{10}, c_{11}	$u^{37} + 15u^{36} + \cdots + 128u + 128$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_{12}	$y^{37} + 32y^{36} + \cdots - 3328y - 1024$
c_2, c_3, c_7 c_9	$y^{37} - 19y^{36} + \cdots + 9y - 1$
c_5, c_8	$y^{37} - 30y^{36} + \cdots + 19y - 1$
c_6, c_{10}, c_{11}	$y^{37} - 33y^{36} + \cdots + 65536y - 16384$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.351636 + 0.943218I$ $a = -0.475955 - 0.640393I$ $b = -1.226050 + 0.499285I$	$-4.86867 + 8.36618I$	$-5.40191 - 7.90416I$
$u = 0.351636 - 0.943218I$ $a = -0.475955 + 0.640393I$ $b = -1.226050 - 0.499285I$	$-4.86867 - 8.36618I$	$-5.40191 + 7.90416I$
$u = 0.241715 + 0.981613I$ $a = 0.517408 + 0.493867I$ $b = 1.062410 - 0.425783I$	$-3.19836 + 3.03653I$	$0. - 4.95054I$
$u = 0.241715 - 0.981613I$ $a = 0.517408 - 0.493867I$ $b = 1.062410 + 0.425783I$	$-3.19836 - 3.03653I$	$0. + 4.95054I$
$u = 0.385505 + 0.899265I$ $a = 0.501965 + 0.739361I$ $b = 1.31533 - 0.59643I$	$0.99167 + 12.76550I$	$-2.00000 - 8.13132I$
$u = 0.385505 - 0.899265I$ $a = 0.501965 - 0.739361I$ $b = 1.31533 + 0.59643I$	$0.99167 - 12.76550I$	$-2.00000 + 8.13132I$
$u = 0.839963 + 0.746345I$ $a = 0.400856 - 0.379292I$ $b = -1.154870 - 0.426854I$	$2.32825 - 7.20667I$	0
$u = 0.839963 - 0.746345I$ $a = 0.400856 + 0.379292I$ $b = -1.154870 + 0.426854I$	$2.32825 + 7.20667I$	0
$u = -1.048710 + 0.504742I$ $a = -0.767420 + 0.920923I$ $b = -0.666422 - 0.237516I$	$0.55587 - 4.70914I$	0
$u = -1.048710 - 0.504742I$ $a = -0.767420 - 0.920923I$ $b = -0.666422 + 0.237516I$	$0.55587 + 4.70914I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.959859 + 0.749495I$ $a = -0.320732 + 0.294928I$ $b = 1.068580 + 0.312720I$	$-3.11272 - 2.58575I$	0
$u = 0.959859 - 0.749495I$ $a = -0.320732 - 0.294928I$ $b = 1.068580 - 0.312720I$	$-3.11272 + 2.58575I$	0
$u = 0.611888 + 0.466895I$ $a = -0.692399 - 0.072885I$ $b = 0.456299 + 0.774896I$	$6.65717 + 1.91106I$	$4.08301 - 1.85461I$
$u = 0.611888 - 0.466895I$ $a = -0.692399 + 0.072885I$ $b = 0.456299 - 0.774896I$	$6.65717 - 1.91106I$	$4.08301 + 1.85461I$
$u = 0.226538 + 0.683581I$ $a = -0.823439 - 0.518819I$ $b = -0.671321 + 0.719640I$	$5.38858 + 1.85504I$	$1.65918 - 4.21077I$
$u = 0.226538 - 0.683581I$ $a = -0.823439 + 0.518819I$ $b = -0.671321 - 0.719640I$	$5.38858 - 1.85504I$	$1.65918 + 4.21077I$
$u = 1.155400 + 0.665505I$ $a = 0.270859 - 0.186581I$ $b = -0.965680 - 0.214781I$	$-0.48271 + 2.72718I$	0
$u = 1.155400 - 0.665505I$ $a = 0.270859 + 0.186581I$ $b = -0.965680 + 0.214781I$	$-0.48271 - 2.72718I$	0
$u = -0.403878 + 0.527053I$ $a = 1.096710 - 0.004361I$ $b = 0.568252 - 0.113383I$	$-1.299740 + 0.476763I$	$-3.83563 + 3.20361I$
$u = -0.403878 - 0.527053I$ $a = 1.096710 + 0.004361I$ $b = 0.568252 + 0.113383I$	$-1.299740 - 0.476763I$	$-3.83563 - 3.20361I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.534897 + 0.228685I$ $a = 0.418800 + 0.302376I$ $b = -0.178813 - 0.430671I$	$0.996646 + 0.648846I$	$5.86362 - 2.47329I$
$u = 0.534897 - 0.228685I$ $a = 0.418800 - 0.302376I$ $b = -0.178813 + 0.430671I$	$0.996646 - 0.648846I$	$5.86362 + 2.47329I$
$u = -1.38308 + 0.32486I$ $a = 0.20853 - 1.64548I$ $b = 0.855619 + 0.817806I$	$10.40580 - 5.60687I$	0
$u = -1.38308 - 0.32486I$ $a = 0.20853 + 1.64548I$ $b = 0.855619 - 0.817806I$	$10.40580 + 5.60687I$	0
$u = -1.49642 + 0.04783I$ $a = -0.259577 + 1.075550I$ $b = 0.089708 - 0.821263I$	$7.76376 - 1.61657I$	0
$u = -1.49642 - 0.04783I$ $a = -0.259577 - 1.075550I$ $b = 0.089708 + 0.821263I$	$7.76376 + 1.61657I$	0
$u = -1.44640 + 0.39214I$ $a = 0.11942 + 1.45524I$ $b = -1.138890 - 0.627176I$	$2.19621 - 7.93848I$	0
$u = -1.44640 - 0.39214I$ $a = 0.11942 - 1.45524I$ $b = -1.138890 + 0.627176I$	$2.19621 + 7.93848I$	0
$u = -1.51872 + 0.10886I$ $a = 0.648267 - 1.044290I$ $b = -0.271398 + 0.954079I$	$13.6891 - 3.9188I$	0
$u = -1.51872 - 0.10886I$ $a = 0.648267 + 1.044290I$ $b = -0.271398 - 0.954079I$	$13.6891 + 3.9188I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.47801 + 0.36764I$ $a = -0.29690 - 1.56872I$ $b = 1.29773 + 0.68277I$	$0.98258 - 13.07820I$	0
$u = -1.47801 - 0.36764I$ $a = -0.29690 + 1.56872I$ $b = 1.29773 - 0.68277I$	$0.98258 + 13.07820I$	0
$u = -1.48497 + 0.34858I$ $a = 0.36234 + 1.69675I$ $b = -1.38205 - 0.76698I$	$6.9843 - 17.2773I$	0
$u = -1.48497 - 0.34858I$ $a = 0.36234 - 1.69675I$ $b = -1.38205 + 0.76698I$	$6.9843 + 17.2773I$	0
$u = -1.69423 + 0.09721I$ $a = -0.688971 + 0.106749I$ $b = 0.779066 - 0.284524I$	$11.36810 + 4.06677I$	0
$u = -1.69423 - 0.09721I$ $a = -0.688971 - 0.106749I$ $b = 0.779066 + 0.284524I$	$11.36810 - 4.06677I$	0
$u = -1.70596$ $a = 0.560470$ $b = -0.674998$	7.03344	0

II. $I_2^u = \langle -2.59 \times 10^9 a^5 u^4 + 1.73 \times 10^9 a^4 u^4 + \cdots + 1.48 \times 10^{10} a + 2.75 \times 10^9,\ a^4 u^4 + 2u^4 a^3 + \cdots - 2a + 5,\ u^5 - u^4 - 2u^3 + u^2 + u + 1 \rangle$

(i) Arc colorings

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

$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} a \\ 0.124859 a^5 u^4 - 0.0832850 a^4 u^4 + \cdots - 0.711427 a - 0.132394 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.0979620 a^5 u^4 + 0.0759674 a^4 u^4 + \cdots + 0.505812 a - 0.113842 \\ 0.0345273 a^5 u^4 - 0.00705487 a^4 u^4 + \cdots - 0.840409 a - 0.179055 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 0.0432073 a^5 u^4 - 0.113086 a^4 u^4 + \cdots + 0.500928 a + 0.0922135 \\ 0.0502622 a^5 u^4 - 0.0790089 a^4 u^4 + \cdots - 0.467161 a - 0.981542 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -u^2 + 1 \\ u^4 - 2u^2 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.124859 a^5 u^4 - 0.0832850 a^4 u^4 + \cdots + 0.288573 a - 0.132394 \\ 0.124859 a^5 u^4 - 0.0832850 a^4 u^4 + \cdots - 0.711427 a - 0.132394 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.284867 a^5 u^4 + 0.0446397 a^4 u^4 + \cdots - 1.45328 a - 1.34183 \\ 0.0515099 a^5 u^4 - 0.161076 a^4 u^4 + \cdots + 0.812525 a - 0.370598 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.0785549 a^5 u^4 - 0.0850389 a^4 u^4 + \cdots - 0.267433 a + 0.538555 \\ -0.00473010 a^5 u^4 - 0.0327094 a^4 u^4 + \cdots + 0.0682477 a - 0.447528 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 0.194130 a^5 u^4 - 0.117364 a^4 u^4 + \cdots - 0.691049 a + 0.228864 \\ 0.117103 a^5 u^4 - 0.123426 a^4 u^4 + \cdots - 0.336667 a + 0.0262128 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= -\frac{9003260688}{20742725197} a^5 u^4 - \frac{2304371456}{20742725197} a^4 u^4 + \cdots + \frac{62017865700}{20742725197} a + \frac{44509663466}{20742725197}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4, c_{12}	$(u^3 + 2u - 1)^{10}$
c_2, c_3, c_7 c_9	$u^{30} - 7u^{28} + \cdots + 284u - 103$
c_5, c_8	$u^{30} - 2u^{29} + \cdots - 860u + 71$
c_6, c_{10}, c_{11}	$(u^5 - u^4 - 2u^3 + u^2 + u + 1)^6$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_{12}	$(y^3 + 4y^2 + 4y - 1)^{10}$
c_2, c_3, c_7 c_9	$y^{30} - 14y^{29} + \cdots - 104964y + 10609$
c_5, c_8	$y^{30} - 6y^{29} + \cdots - 715744y + 5041$
c_6, c_{10}, c_{11}	$(y^5 - 5y^4 + 8y^3 - 3y^2 - y - 1)^6$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.21774$ $a=\ \ 1.27787$ $b=-1.85426$	-3.32092	-11.1550
$u=-1.21774$ $a=-0.07135+1.91835I$ $b=-0.605704-0.011731I$	$6.90702+5.13794I$	$0.79908-3.20902I$
$u=-1.21774$ $a=-0.07135-1.91835I$ $b=-0.605704+0.011731I$	$6.90702-5.13794I$	$0.79908+3.20902I$
$u=-1.21774$ $a=\ \ 0.0333999$ $b=\ \ 1.50658$	-3.32092	-11.1550
$u=-1.21774$ $a=-0.58429+2.32641I$ $b=\ \ 0.779542-1.113750I$	$6.90702+5.13794I$	$0.79908-3.20902I$
$u=-1.21774$ $a=-0.58429-2.32641I$ $b=\ \ 0.779542+1.113750I$	$6.90702-5.13794I$	$0.79908+3.20902I$
$u=-0.309916+0.549911I$ $a=\ \ 0.087576-1.097330I$ $b=\ \ 1.36800+0.41353I$	$-5.39290-1.53058I$	$-12.12075+4.43065I$
$u=-0.309916+0.549911I$ $a=\ \ 0.302344+0.470337I$ $b=\ \ 0.068172-1.183920I$	$4.83503-6.66852I$	$-0.16695+7.63967I$
$u=-0.309916+0.549911I$ $a=-0.489001+0.040863I$ $b=-0.903808+0.742837I$	$4.83503+3.60736I$	$-0.166951+1.221630I$
$u=-0.309916+0.549911I$ $a=-0.08298+1.82141I$ $b=-1.214240-0.040664I$	$-5.39290-1.53058I$	$-12.12075+4.43065I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.309916+0.549911I$ $a=-1.85727-0.38802I$ $b=-0.380077-0.431553I$	$4.83503+3.60736I$	$-0.166951+1.221630I$
$u=-0.309916+0.549911I$ $a=\quad 2.03933-0.84727I$ $b=\quad 1.061960+0.499774I$	$4.83503-6.66852I$	$-0.16695+7.63967I$
$u=-0.309916-0.549911I$ $a=\quad 0.087576+1.097330I$ $b=\quad 1.36800-0.41353I$	$-5.39290+1.53058I$	$-12.12075-4.43065I$
$u=-0.309916-0.549911I$ $a=\quad 0.302344-0.470337I$ $b=\quad 0.068172+1.183920I$	$4.83503+6.66852I$	$-0.16695-7.63967I$
$u=-0.309916-0.549911I$ $a=-0.489001-0.040863I$ $b=-0.903808-0.742837I$	$4.83503-3.60736I$	$-0.166951-1.221630I$
$u=-0.309916-0.549911I$ $a=-0.08298-1.82141I$ $b=-1.214240+0.040664I$	$-5.39290+1.53058I$	$-12.12075-4.43065I$
$u=-0.309916-0.549911I$ $a=-1.85727+0.38802I$ $b=-0.380077+0.431553I$	$4.83503-3.60736I$	$-0.166951-1.221630I$
$u=-0.309916-0.549911I$ $a=\quad 2.03933+0.84727I$ $b=\quad 1.061960-0.499774I$	$4.83503+6.66852I$	$-0.16695-7.63967I$
$u=\quad 1.41878+0.21917I$ $a=\quad 0.300995+0.889843I$ $b=\quad 0.973408-0.513781I$	$10.37850-0.73711I$	$4.06225-0.28957I$
$u=\quad 1.41878+0.21917I$ $a=-0.847485-0.871262I$ $b=\quad 0.891375+0.910540I$	$10.37850-0.73711I$	$4.06225-0.28957I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.41878 + 0.21917I$ $a = -0.09327 - 1.57467I$ $b = -1.29815 + 0.57331I$	$10.37850 + 9.53877I$	$4.06225 - 6.70760I$
$u = 1.41878 + 0.21917I$ $a = -0.82131 + 1.49615I$ $b = 0.986584 - 0.255514I$	$0.15056 + 4.40083I$	$-7.89155 - 3.49859I$
$u = 1.41878 + 0.21917I$ $a = 0.61990 + 1.72184I$ $b = -0.36003 - 1.51422I$	$10.37850 + 9.53877I$	$4.06225 - 6.70760I$
$u = 1.41878 + 0.21917I$ $a = 0.84117 - 1.66190I$ $b = -1.19320 + 0.79966I$	$0.15056 + 4.40083I$	$-7.89155 - 3.49859I$
$u = 1.41878 - 0.21917I$ $a = 0.300995 - 0.889843I$ $b = 0.973408 + 0.513781I$	$10.37850 + 0.73711I$	$4.06225 + 0.28957I$
$u = 1.41878 - 0.21917I$ $a = -0.847485 + 0.871262I$ $b = 0.891375 - 0.910540I$	$10.37850 + 0.73711I$	$4.06225 + 0.28957I$
$u = 1.41878 - 0.21917I$ $a = -0.09327 + 1.57467I$ $b = -1.29815 - 0.57331I$	$10.37850 - 9.53877I$	$4.06225 + 6.70760I$
$u = 1.41878 - 0.21917I$ $a = -0.82131 - 1.49615I$ $b = 0.986584 + 0.255514I$	$0.15056 - 4.40083I$	$-7.89155 + 3.49859I$
$u = 1.41878 - 0.21917I$ $a = 0.61990 - 1.72184I$ $b = -0.36003 + 1.51422I$	$10.37850 - 9.53877I$	$4.06225 + 6.70760I$
$u = 1.41878 - 0.21917I$ $a = 0.84117 + 1.66190I$ $b = -1.19320 - 0.79966I$	$0.15056 - 4.40083I$	$-7.89155 + 3.49859I$

III. $\boldsymbol{I^u_3 = \langle -1.25\times 10^{19} a^7u^4 - 3.69\times 10^{18} a^6u^4 + \cdots - 3.06\times 10^{19} a + 1.53\times 10^{20},\ a^7u^4 + 3a^6u^4 + \cdots + 5a - 2,\ u^5 - u^4 - 2u^3 + u^2 + u + 1\rangle}$

(i) Arc colorings

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

$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} a \\ 0.0975958a^7u^4 + 0.0287075a^6u^4 + \cdots + 0.238235a - 1.18775 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.0276431a^7u^4 + 0.0849279a^6u^4 + \cdots + 0.0296300a - 0.220137 \\ 0.0600561a^7u^4 + 0.0555266a^6u^4 + \cdots + 0.749500a - 1.15847 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 0.00211354a^7u^4 - 0.188289a^6u^4 + \cdots - 0.889871a - 0.546554 \\ -0.0608280a^7u^4 - 0.206776a^6u^4 + \cdots - 0.852334a + 0.0387557 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -u^2 + 1 \\ u^4 - 2u^2 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.0975958a^7u^4 + 0.0287075a^6u^4 + \cdots + 1.23823a - 1.18775 \\ 0.0975958a^7u^4 + 0.0287075a^6u^4 + \cdots + 0.238235a - 1.18775 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.100783a^7u^4 - 0.535652a^6u^4 + \cdots - 0.974337a - 0.112671 \\ -0.0892132a^7u^4 - 0.252070a^6u^4 + \cdots - 1.16430a - 0.394363 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.137649a^7u^4 - 0.0196861a^6u^4 + \cdots + 0.367556a - 0.443696 \\ 0.130118a^7u^4 - 0.105349a^6u^4 + \cdots - 0.598093a - 1.74754 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -0.109449a^7u^4 - 0.350445a^6u^4 + \cdots - 1.86475a + 1.24226 \\ -0.200587a^7u^4 - 0.180483a^6u^4 + \cdots - 1.73289a + 1.61500 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= -\frac{2502287270436}{24311107335083}a^7u^4 - \frac{11867301610360}{24311107335083}a^6u^4 + \cdots - \frac{101785824635476}{24311107335083}a + \frac{52009104080618}{24311107335083}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4, c_{12}	$(u^4 + u^3 + 2u^2 + 2u + 1)^{10}$
c_2, c_3, c_7 c_9	$u^{40} + u^{39} + \cdots + 330u + 139$
c_5, c_8	$u^{40} - 5u^{39} + \cdots + 16u + 7$
c_6, c_{10}, c_{11}	$(u^5 - u^4 - 2u^3 + u^2 + u + 1)^8$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_{12}	$(y^4 + 3y^3 + 2y^2 + 1)^{10}$
c_2, c_3, c_7 c_9	$y^{40} - 35y^{39} + \cdots - 336860y + 19321$
c_5, c_8	$y^{40} + 13y^{39} + \cdots + 724y + 49$
c_6, c_{10}, c_{11}	$(y^5 - 5y^4 + 8y^3 - 3y^2 - y - 1)^8$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.21774$ $a=-0.274675+0.568128I$ $b=-1.44788+0.01740I$	$0.75615+2.02988I$	$-2.51886-3.46410I$
$u=-1.21774$ $a=-0.274675-0.568128I$ $b=-1.44788-0.01740I$	$0.75615-2.02988I$	$-2.51886+3.46410I$
$u=-1.21774$ $a=-1.52347+0.70612I$ $b=\ \ 1.92464-0.35527I$	$0.75615+2.02988I$	$-2.51886-3.46410I$
$u=-1.21774$ $a=-1.52347-0.70612I$ $b=\ \ 1.92464+0.35527I$	$0.75615-2.02988I$	$-2.51886+3.46410I$
$u=-1.21774$ $a=-0.13258+1.80838I$ $b=\ \ 0.786811-0.282066I$	$0.75615-2.02988I$	$-2.51886+3.46410I$
$u=-1.21774$ $a=-0.13258-1.80838I$ $b=\ \ 0.786811+0.282066I$	$0.75615+2.02988I$	$-2.51886-3.46410I$
$u=-1.21774$ $a=\ \ 0.48468+1.97050I$ $b=-0.880168-0.719885I$	$0.75615-2.02988I$	$-2.51886+3.46410I$
$u=-1.21774$ $a=\ \ 0.48468-1.97050I$ $b=-0.880168+0.719885I$	$0.75615+2.02988I$	$-2.51886-3.46410I$
$u=-0.309916+0.549911I$ $a=\ \ 0.939913+0.332699I$ $b=\ \ 0.353022-0.289251I$	$-1.315830+0.499304I$	$-3.48489+0.96655I$
$u=-0.309916+0.549911I$ $a=\ \ 0.066805+0.994497I$ $b=-1.22515-0.73607I$	$-1.31583-3.56046I$	$-3.48489+7.89475I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.309916+0.549911I$ $a=-0.236439+0.948140I$ $b=-1.58368-0.22473I$	$-1.315830+0.499304I$	$-3.48489+0.96655I$
$u=-0.309916+0.549911I$ $a=\ \ 1.148030-0.151525I$ $b=\ \ 0.762797-0.053718I$	$-1.315830+0.499304I$	$-3.48489+0.96655I$
$u=-0.309916+0.549911I$ $a=-0.473712-0.544424I$ $b=\ \ 0.001897+0.845606I$	$-1.31583-3.56046I$	$-3.48489+7.89475I$
$u=-0.309916+0.549911I$ $a=-1.61176+0.75211I$ $b=-1.035150-0.302398I$	$-1.31583-3.56046I$	$-3.48489+7.89475I$
$u=-0.309916+0.549911I$ $a=-0.47351-1.93661I$ $b=\ \ 1.010500-0.137162I$	$-1.315830+0.499304I$	$-3.48489+0.96655I$
$u=-0.309916+0.549911I$ $a=\ \ 0.63053-1.99191I$ $b=\ \ 1.376650+0.075353I$	$-1.31583-3.56046I$	$-3.48489+7.89475I$
$u=-0.309916-0.549911I$ $a=\ \ 0.939913-0.332699I$ $b=\ \ 0.353022+0.289251I$	$-1.315830-0.499304I$	$-3.48489-0.96655I$
$u=-0.309916-0.549911I$ $a=\ \ 0.066805-0.994497I$ $b=-1.22515+0.73607I$	$-1.31583+3.56046I$	$-3.48489-7.89475I$
$u=-0.309916-0.549911I$ $a=-0.236439-0.948140I$ $b=-1.58368+0.22473I$	$-1.315830-0.499304I$	$-3.48489-0.96655I$
$u=-0.309916-0.549911I$ $a=\ \ 1.148030+0.151525I$ $b=\ \ 0.762797+0.053718I$	$-1.315830-0.499304I$	$-3.48489-0.96655I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.309916 - 0.549911I$ $a = -0.473712 + 0.544424I$ $b = 0.001897 - 0.845606I$	$-1.31583 + 3.56046I$	$-3.48489 - 7.89475I$
$u = -0.309916 - 0.549911I$ $a = -1.61176 - 0.75211I$ $b = -1.035150 + 0.302398I$	$-1.31583 + 3.56046I$	$-3.48489 - 7.89475I$
$u = -0.309916 - 0.549911I$ $a = -0.47351 + 1.93661I$ $b = 1.010500 + 0.137162I$	$-1.315830 - 0.499304I$	$-3.48489 - 0.96655I$
$u = -0.309916 - 0.549911I$ $a = 0.63053 + 1.99191I$ $b = 1.376650 - 0.075353I$	$-1.31583 + 3.56046I$	$-3.48489 - 7.89475I$
$u = 1.41878 + 0.21917I$ $a = 0.053326 - 1.038210I$ $b = -1.129730 + 0.421599I$	$4.22763 + 2.37095I$	$0.744314 - 0.034484I$
$u = 1.41878 + 0.21917I$ $a = 0.429676 + 1.050940I$ $b = -0.493899 - 0.870912I$	$4.22763 + 2.37095I$	$0.744314 - 0.034484I$
$u = 1.41878 + 0.21917I$ $a = -0.073718 + 1.400720I$ $b = 1.252220 - 0.487412I$	$4.22763 + 6.43072I$	$0.74431 - 6.96269I$
$u = 1.41878 + 0.21917I$ $a = 0.88226 - 1.26405I$ $b = -0.678147 + 0.081197I$	$4.22763 + 2.37095I$	$0.744314 - 0.034484I$
$u = 1.41878 + 0.21917I$ $a = -0.39862 - 1.50246I$ $b = 0.260452 + 1.228950I$	$4.22763 + 6.43072I$	$0.74431 - 6.96269I$
$u = 1.41878 + 0.21917I$ $a = -1.07056 + 1.47204I$ $b = 1.49026 - 0.62661I$	$4.22763 + 2.37095I$	$0.744314 - 0.034484I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.41878 + 0.21917I$ $a = 0.77721 - 1.66215I$ $b = -1.229700 + 0.215548I$	$4.22763 + 6.43072I$	$0.74431 - 6.96269I$
$u = 1.41878 + 0.21917I$ $a = -0.64337 + 1.90875I$ $b = 0.98424 - 1.16251I$	$4.22763 + 6.43072I$	$0.74431 - 6.96269I$
$u = 1.41878 - 0.21917I$ $a = 0.053326 + 1.038210I$ $b = -1.129730 - 0.421599I$	$4.22763 - 2.37095I$	$0.744314 + 0.034484I$
$u = 1.41878 - 0.21917I$ $a = 0.429676 - 1.050940I$ $b = -0.493899 + 0.870912I$	$4.22763 - 2.37095I$	$0.744314 + 0.034484I$
$u = 1.41878 - 0.21917I$ $a = -0.073718 - 1.400720I$ $b = 1.252220 + 0.487412I$	$4.22763 - 6.43072I$	$0.74431 + 6.96269I$
$u = 1.41878 - 0.21917I$ $a = 0.88226 + 1.26405I$ $b = -0.678147 - 0.081197I$	$4.22763 - 2.37095I$	$0.744314 + 0.034484I$
$u = 1.41878 - 0.21917I$ $a = -0.39862 + 1.50246I$ $b = 0.260452 - 1.228950I$	$4.22763 - 6.43072I$	$0.74431 + 6.96269I$
$u = 1.41878 - 0.21917I$ $a = -1.07056 - 1.47204I$ $b = 1.49026 + 0.62661I$	$4.22763 - 2.37095I$	$0.744314 + 0.034484I$
$u = 1.41878 - 0.21917I$ $a = 0.77721 + 1.66215I$ $b = -1.229700 - 0.215548I$	$4.22763 - 6.43072I$	$0.74431 + 6.96269I$
$u = 1.41878 - 0.21917I$ $a = -0.64337 - 1.90875I$ $b = 0.98424 + 1.16251I$	$4.22763 - 6.43072I$	$0.74431 + 6.96269I$

IV. $\boldsymbol{I^u_4 =}$
$\boldsymbol{\langle -3u^{24}+5u^{23}+\cdots+b-3,\ -3u^{23}+37u^{21}+\cdots+a+1,\ u^{25}-14u^{23}+\cdots-6u^2+1\rangle}$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 3u^{23} - 37u^{21} + \cdots - 3u - 1 \\ 3u^{24} - 5u^{23} + \cdots - u + 3 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u^{23} - u^{22} + \cdots - 27u^2 + 3 \\ u^{22} - 12u^{20} + \cdots + 4u - 1 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -2u^{24} + 4u^{23} + \cdots - 5u - 4 \\ -4u^{24} + 4u^{23} + \cdots + 7u^2 - 2 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -u^2 + 1 \\ u^4 - 2u^2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 3u^{24} - 2u^{23} + \cdots - 4u + 2 \\ 3u^{24} - 5u^{23} + \cdots - u + 3 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 3u^{24} - 4u^{23} + \cdots - 11u + 3 \\ 6u^{24} - 7u^{23} + \cdots - 2u + 3 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -u^{23} + 13u^{21} + \cdots + 2u + 3 \\ u^{22} - 12u^{20} + \cdots + 3u - 1 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -2u^{22} + 24u^{20} + \cdots + 5u - 1 \\ -u^{24} + 3u^{23} + \cdots + 3u - 3 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4u^{24} - 2u^{23} + 49u^{22} + 19u^{21} - 257u^{20} - 77u^{19} + 745u^{18} + 179u^{17} - 1281u^{16} - 279u^{15} + 1281u^{14} + 331u^{13} - 628u^{12} - 325u^{11} + 27u^{10} + 261u^9 + 42u^8 - 136u^7 + 64u^6 + 5u^5 - 37u^4 + 23u^3 + 13u^2 + 7u - 6$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{12}	$u^{25} - 3u^{24} + \cdots - u^2 - 1$
c_2, c_7	$u^{25} + u^{24} + \cdots - 11u^2 + 1$
c_3, c_9	$u^{25} - u^{24} + \cdots + 11u^2 - 1$
c_4	$u^{25} + 3u^{24} + \cdots + u^2 + 1$
c_5, c_8	$u^{25} - 5u^{22} + \cdots + 4u^2 + 1$
c_6	$u^{25} - 14u^{23} + \cdots + 6u^2 - 1$
c_{10}, c_{11}	$u^{25} - 14u^{23} + \cdots - 6u^2 + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_{12}	$y^{25} + 25y^{24} + \cdots - 2y - 1$
c_2, c_3, c_7 c_9	$y^{25} - 25y^{24} + \cdots + 22y - 1$
c_5, c_8	$y^{25} - 17y^{22} + \cdots - 8y - 1$
c_6, c_{10}, c_{11}	$y^{25} - 28y^{24} + \cdots + 12y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.030090 + 0.454054I$ $a = 0.448614 + 0.296928I$ $b = -1.258210 + 0.063634I$	$-1.83034 - 3.35231I$	$-4.09027 + 4.01077I$
$u = -1.030090 - 0.454054I$ $a = 0.448614 - 0.296928I$ $b = -1.258210 - 0.063634I$	$-1.83034 + 3.35231I$	$-4.09027 - 4.01077I$
$u = -0.268282 + 0.743510I$ $a = 0.342777 - 0.927210I$ $b = 1.132150 + 0.194527I$	$-3.94761 - 1.10722I$	$-5.31691 + 1.26220I$
$u = -0.268282 - 0.743510I$ $a = 0.342777 + 0.927210I$ $b = 1.132150 - 0.194527I$	$-3.94761 + 1.10722I$	$-5.31691 - 1.26220I$
$u = 0.652668 + 0.432339I$ $a = 1.20634 + 0.76303I$ $b = 0.599681 + 0.156351I$	$-1.41781 - 1.00721I$	$-7.76689 + 8.43698I$
$u = 0.652668 - 0.432339I$ $a = 1.20634 - 0.76303I$ $b = 0.599681 - 0.156351I$	$-1.41781 + 1.00721I$	$-7.76689 - 8.43698I$
$u = 1.143480 + 0.452971I$ $a = -0.412983 - 1.196470I$ $b = -0.714465 + 0.191546I$	$0.35046 + 4.37521I$	$-6.32546 + 0.18516I$
$u = 1.143480 - 0.452971I$ $a = -0.412983 + 1.196470I$ $b = -0.714465 - 0.191546I$	$0.35046 - 4.37521I$	$-6.32546 - 0.18516I$
$u = -1.24578$ $a = 0.597201$ $b = -1.67082$	-2.74092	5.86080
$u = -1.283100 + 0.051744I$ $a = -0.591468 + 0.025760I$ $b = 1.72633 - 0.18454I$	$1.75989 + 1.39477I$	$4.78234 + 0.86929I$

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.283100 - 0.051744I$ $a = -0.591468 - 0.025760I$ $b = 1.72633 + 0.18454I$	$1.75989 - 1.39477I$	$4.78234 - 0.86929I$
$u = 1.294680 + 0.135323I$ $a = -0.35608 + 2.37011I$ $b = 0.639088 - 0.784249I$	$7.90352 + 6.28581I$	$4.67493 - 7.71186I$
$u = 1.294680 - 0.135323I$ $a = -0.35608 - 2.37011I$ $b = 0.639088 + 0.784249I$	$7.90352 - 6.28581I$	$4.67493 + 7.71186I$
$u = -0.690842$ $a = -1.19564$ $b = 1.39664$	-5.04446	-9.92490
$u = 1.384300 + 0.232124I$ $a = 0.58085 - 1.61782I$ $b = -0.941880 + 0.535029I$	$1.22524 + 4.53551I$	$0.99353 - 4.86693I$
$u = 1.384300 - 0.232124I$ $a = 0.58085 + 1.61782I$ $b = -0.941880 - 0.535029I$	$1.22524 - 4.53551I$	$0.99353 + 4.86693I$
$u = 1.45475 + 0.16975I$ $a = -1.11846 + 1.47785I$ $b = 1.186710 - 0.572548I$	$4.31160 + 4.32943I$	$1.56300 - 3.56691I$
$u = 1.45475 - 0.16975I$ $a = -1.11846 - 1.47785I$ $b = 1.186710 + 0.572548I$	$4.31160 - 4.32943I$	$1.56300 + 3.56691I$
$u = 0.347505 + 0.259956I$ $a = -2.22603 - 1.29308I$ $b = -0.552650 - 0.557071I$	$4.59738 - 4.80390I$	$-2.62909 + 5.16420I$
$u = 0.347505 - 0.259956I$ $a = -2.22603 + 1.29308I$ $b = -0.552650 + 0.557071I$	$4.59738 + 4.80390I$	$-2.62909 - 5.16420I$

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.288232 + 0.286768I$ $a = 0.98808 + 2.50810I$ $b = -1.41949 - 0.27834I$	$-1.55985 - 2.35760I$	$-5.72488 + 1.44341I$
$u = -0.288232 - 0.286768I$ $a = 0.98808 - 2.50810I$ $b = -1.41949 + 0.27834I$	$-1.55985 + 2.35760I$	$-5.72488 - 1.44341I$
$u = -1.61550 + 0.05395I$ $a = -0.1069810 + 0.0764861I$ $b = 0.434263 - 0.347377I$	$11.83330 + 3.60878I$	$6.43525 + 0.91653I$
$u = -1.61550 - 0.05395I$ $a = -0.1069810 - 0.0764861I$ $b = 0.434263 + 0.347377I$	$11.83330 - 3.60878I$	$6.43525 - 0.91653I$
$u = -1.64773$ $a = 0.0891278$ $b = -0.388841$	7.39199	10.8730

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_{12}	$((u^3+2u-1)^{10})(u^4+u^3+2u^2+2u+1)^{10}(u^{25}-3u^{24}+\cdots-u^2-1)$ $\cdot(u^{37}-12u^{36}+\cdots+464u-32)$
c_2, c_7	$(u^{25}+u^{24}+\cdots-11u^2+1)(u^{30}-7u^{28}+\cdots+284u-103)$ $\cdot(u^{37}-u^{36}+\cdots+u-1)(u^{40}+u^{39}+\cdots+330u+139)$
c_3, c_9	$(u^{25}-u^{24}+\cdots+11u^2-1)(u^{30}-7u^{28}+\cdots+284u-103)$ $\cdot(u^{37}-u^{36}+\cdots+u-1)(u^{40}+u^{39}+\cdots+330u+139)$
c_4	$((u^3+2u-1)^{10})(u^4+u^3+2u^2+2u+1)^{10}(u^{25}+3u^{24}+\cdots+u^2+1)$ $\cdot(u^{37}-12u^{36}+\cdots+464u-32)$
c_5, c_8	$(u^{25}-5u^{22}+\cdots+4u^2+1)(u^{30}-2u^{29}+\cdots-860u+71)$ $\cdot(u^{37}-15u^{35}+\cdots+3u+1)(u^{40}-5u^{39}+\cdots+16u+7)$
c_6	$((u^5-u^4-2u^3+u^2+u+1)^{14})(u^{25}-14u^{23}+\cdots+6u^2-1)$ $\cdot(u^{37}+15u^{36}+\cdots+128u+128)$
c_{10}, c_{11}	$((u^5-u^4-2u^3+u^2+u+1)^{14})(u^{25}-14u^{23}+\cdots-6u^2+1)$ $\cdot(u^{37}+15u^{36}+\cdots+128u+128)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_{12}	$(y^3+4y^2+4y-1)^{10}(y^4+3y^3+2y^2+1)^{10}$ $\cdot\,(y^{25}+25y^{24}+\cdots-2y-1)(y^{37}+32y^{36}+\cdots-3328y-1024)$
c_2, c_3, c_7 c_9	$(y^{25}-25y^{24}+\cdots+22y-1)(y^{30}-14y^{29}+\cdots-104964y+10609)$ $\cdot\,(y^{37}-19y^{36}+\cdots+9y-1)(y^{40}-35y^{39}+\cdots-336860y+19321)$
c_5, c_8	$(y^{25}-17y^{22}+\cdots-8y-1)(y^{30}-6y^{29}+\cdots-715744y+5041)$ $\cdot\,(y^{37}-30y^{36}+\cdots+19y-1)(y^{40}+13y^{39}+\cdots+724y+49)$
c_6, c_{10}, c_{11}	$((y^5-5y^4+8y^3-3y^2-y-1)^{14})(y^{25}-28y^{24}+\cdots+12y-1)$ $\cdot\,(y^{37}-33y^{36}+\cdots+65536y-16384)$