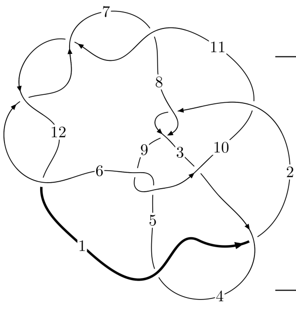
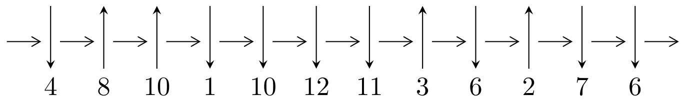
$12n_{0876}$ ($K12n_{0876}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$
\begin{aligned}
I_1^u &= \langle 5u^{19} - 38u^{18} + \cdots + 4b - 40,\ -4u^{19} + 33u^{18} + \cdots + 4a + 38,\ u^{20} - 8u^{19} + \cdots - 84u + 8 \rangle \\
I_2^u &= \langle 6a^5u^3 + 8a^4u^3 + \cdots + 2a - 2,\ -2a^4u^3 + a^3u^3 + \cdots + 15a + 9,\ u^4 + u^3 + 3u^2 + 2u + 1 \rangle \\
I_3^u &= \langle -u^{12} - u^{11} - 8u^{10} - 8u^9 - 23u^8 - 23u^7 - 28u^6 - 27u^5 - 11u^4 - 10u^3 + 2u^2 + b, \\
&\quad - u^{10} - 8u^8 - 23u^6 - 28u^4 + u^3 - 12u^2 + a + 2u, \\
&\quad u^{14} + 10u^{12} + 39u^{10} + 74u^8 - 2u^7 + 68u^6 - 9u^5 + 24u^4 - 11u^3 - 2u + 1 \rangle \\
I_4^u &= \langle u^2 + b + 2u + 2,\ -u^3 - u^2 + a - 3u - 2,\ u^4 + u^3 + 3u^2 + 2u + 1 \rangle \\
I_5^u &= \langle -u^3 - u^2 + b - 2u - 1,\ 2u^3 + 2u^2 + a + 5u + 3,\ u^4 + u^3 + 3u^2 + 2u + 1 \rangle \\
I_6^u &= \langle b + u - 1,\ 2a - u + 1,\ u^2 - u + 2 \rangle
\end{aligned}
$$

* 6 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 68 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. $\boldsymbol{I_1^u = \langle 5u^{19} - 38u^{18} + \cdots + 4b - 40,\ -4u^{19} + 33u^{18} + \cdots + 4a + 38,\ u^{20} - 8u^{19} + \cdots - 84u + 8\rangle}$

(i) Arc colorings

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

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

$$a_2 = \begin{pmatrix} u^{19} - \frac{33}{4}u^{18} + \cdots + \frac{401}{4}u - \frac{19}{2} \\ -\frac{5}{4}u^{19} + \frac{19}{2}u^{18} + \cdots - \frac{207}{2}u + 10 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} \frac{5}{4}u^{19} - \frac{35}{4}u^{18} + \cdots + \frac{103}{4}u - \frac{3}{2} \\ \frac{3}{4}u^{19} - \frac{9}{2}u^{18} + \cdots + \frac{41}{2}u - 2 \end{pmatrix}$$

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

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

$$a_{10} = \begin{pmatrix} -u^{19} + \frac{13}{2}u^{18} + \cdots - 10u + \frac{1}{2} \\ \frac{1}{2}u^{18} - 3u^{17} + \cdots - \frac{67}{2}u + 4 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} \frac{7}{4}u^{19} - \frac{51}{4}u^{18} + \cdots + \frac{633}{4}u - 17 \\ -\frac{3}{4}u^{19} + 6u^{18} + \cdots - 161u + 18 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u^3 - 2u \\ u^3 + u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -\frac{9}{4}u^{19} + \frac{69}{4}u^{18} + \cdots - \frac{1071}{4}u + 27 \\ \frac{5}{4}u^{19} - 9u^{18} + \cdots + 86u - 8 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -\frac{1}{2}u^{19} + 4u^{18} + \cdots - \frac{147}{2}u + \frac{17}{2} \\ -u^{19} + \frac{15}{2}u^{18} + \cdots - \frac{159}{2}u + 8 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= u^{19} - 8u^{18} + 42u^{17} - 163u^{16} + 506u^{15} - 1312u^{14} + 2893u^{13} - 5517u^{12} + 9157u^{11} - 13296u^{10} + 16896u^9 - 18758u^8 + 18092u^7 - 15031u^6 + 10601u^5 - 6223u^4 + 2945u^3 - 1076u^2 + 282u - 46$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{20} - 11u^{19} + \cdots - 44u + 8$
c_2, c_8, c_{10}	$u^{20} - 3u^{19} + \cdots - 3u + 1$
c_3	$u^{20} + u^{19} + \cdots + 9u^2 + 1$
c_5, c_9	$u^{20} + 3u^{19} + \cdots + 4u + 1$
c_6, c_7, c_{11} c_{12}	$u^{20} + 8u^{19} + \cdots + 84u + 8$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{20} + 9y^{19} + \cdots + 48y + 64$
c_2, c_8, c_{10}	$y^{20} - 15y^{19} + \cdots - y + 1$
c_3	$y^{20} + 9y^{19} + \cdots + 18y + 1$
c_5, c_9	$y^{20} - 19y^{19} + \cdots + 6y + 1$
c_6, c_7, c_{11} c_{12}	$y^{20} + 22y^{19} + \cdots + 240y + 64$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.615618 + 0.809804I$ $a = 0.149188 - 1.170140I$ $b = 0.085977 + 1.072180I$	$-0.57301 - 3.95011I$	$-2.11978 + 4.63331I$
$u = 0.615618 - 0.809804I$ $a = 0.149188 + 1.170140I$ $b = 0.085977 - 1.072180I$	$-0.57301 + 3.95011I$	$-2.11978 - 4.63331I$
$u = 0.931383 + 0.280268I$ $a = 1.201130 - 0.003287I$ $b = -0.170316 + 0.290909I$	$-0.03598 + 5.05200I$	$-0.41236 - 3.99248I$
$u = 0.931383 - 0.280268I$ $a = 1.201130 + 0.003287I$ $b = -0.170316 - 0.290909I$	$-0.03598 - 5.05200I$	$-0.41236 + 3.99248I$
$u = 0.746449 + 0.775861I$ $a = -0.471110 + 1.236680I$ $b = -0.100180 - 1.158660I$	$1.47378 - 10.55160I$	$0.34887 + 7.91165I$
$u = 0.746449 - 0.775861I$ $a = -0.471110 - 1.236680I$ $b = -0.100180 + 1.158660I$	$1.47378 + 10.55160I$	$0.34887 - 7.91165I$
$u = 0.733781 + 0.211411I$ $a = -1.008810 - 0.357032I$ $b = 0.277449 - 0.014017I$	$-2.40729 - 0.59322I$	$-4.18556 - 0.45547I$
$u = 0.733781 - 0.211411I$ $a = -1.008810 + 0.357032I$ $b = 0.277449 + 0.014017I$	$-2.40729 + 0.59322I$	$-4.18556 + 0.45547I$
$u = -0.024618 + 1.249360I$ $a = 0.348669 + 0.434224I$ $b = 0.033771 - 1.123880I$	$4.75638 - 1.46611I$	$2.62808 + 4.96498I$
$u = -0.024618 - 1.249360I$ $a = 0.348669 - 0.434224I$ $b = 0.033771 + 1.123880I$	$4.75638 + 1.46611I$	$2.62808 - 4.96498I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.259646 + 1.352180I$ $a = 0.352486 - 0.235426I$ $b = -0.865270 + 0.246592I$	$2.47957 - 4.10039I$	$3.08727 - 0.58697I$
$u = 0.259646 - 1.352180I$ $a = 0.352486 + 0.235426I$ $b = -0.865270 - 0.246592I$	$2.47957 + 4.10039I$	$3.08727 + 0.58697I$
$u = 0.240761 + 0.325217I$ $a = -0.616636 - 1.071860I$ $b = -0.002796 + 0.413272I$	$-0.172616 - 0.899774I$	$-3.76752 + 7.66615I$
$u = 0.240761 - 0.325217I$ $a = -0.616636 + 1.071860I$ $b = -0.002796 - 0.413272I$	$-0.172616 + 0.899774I$	$-3.76752 - 7.66615I$
$u = 0.23882 + 1.63854I$ $a = -0.282035 - 0.978235I$ $b = -0.02878 + 3.04561I$	$9.5379 - 14.3084I$	$2.45273 + 7.13980I$
$u = 0.23882 - 1.63854I$ $a = -0.282035 + 0.978235I$ $b = -0.02878 - 3.04561I$	$9.5379 + 14.3084I$	$2.45273 - 7.13980I$
$u = 0.19941 + 1.65855I$ $a = 0.329642 + 0.850090I$ $b = -0.11179 - 2.80281I$	$7.82775 - 7.13457I$	$0.46687 + 4.13636I$
$u = 0.19941 - 1.65855I$ $a = 0.329642 - 0.850090I$ $b = -0.11179 + 2.80281I$	$7.82775 + 7.13457I$	$0.46687 - 4.13636I$
$u = 0.05874 + 1.80462I$ $a = -0.252521 - 0.599270I$ $b = -0.11806 + 2.38692I$	$16.5920 - 2.0882I$	$-4.99860 + 4.75350I$
$u = 0.05874 - 1.80462I$ $a = -0.252521 + 0.599270I$ $b = -0.11806 - 2.38692I$	$16.5920 + 2.0882I$	$-4.99860 - 4.75350I$

II. $I_2^u = \langle 6a^5u^3+8a^4u^3+\cdots+2a-2,\ -2a^4u^3+a^3u^3+\cdots+15a+9,\ u^4+u^3+3u^2+2u+1\rangle$

(i) Arc colorings

$$a_7 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} a \\ -3a^5u^3 - 4a^4u^3 + \cdots - a + 1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -3a^5u^3 - 4a^4u^3 + \cdots - \frac{5}{2}a^2 + 1 \\ 5a^5u^3 + 7a^4u^3 + \cdots - a - 2 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u^2 + 1 \\ -u^2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -a^2u \\ 4a^5u^3 + \frac{11}{2}a^4u^3 + \cdots - \frac{1}{2}a - \frac{1}{2} \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 2a^5u^3 + \frac{3}{2}a^4u^3 + \cdots + \frac{5}{2}a - \frac{1}{2} \\ -3a^5u^3 + \frac{3}{2}a^4u^3 + \cdots - \frac{17}{2}a - \frac{1}{2} \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u^3 - 2u \\ u^3 + u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 2a^5u^3 + a^4u^3 + \cdots + 4a - 1 \\ -a^5u^3 + \frac{11}{2}a^4u^3 + \cdots - 12a - \frac{5}{2} \end{pmatrix}$$
$$a_9 = \begin{pmatrix} \frac{17}{2}a^5u^3 + \frac{27}{2}a^4u^3 + \cdots - 4a - 4 \\ -\frac{21}{2}a^5u^3 - 17a^4u^3 + \cdots + 5a + \frac{15}{2} \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$= -4a^5u^3 + 6a^5u^2 - 8a^4u^3 + 6a^5u + 8a^4u^2 - 6a^3u^3 + 4a^5 + 8a^4u + 24a^3u^2 - 4u^3a^2 + 6a^4 + 20a^3u + 30a^2u^2 + 12a^3 + 26a^2u + 20u^2a + 2u^3 + 14a^2 + 14au + 12u^2 + 6a + 2u$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$(u^4 + u^3 + u^2 + 1)^6$
c_2, c_8, c_{10}	$u^{24} - u^{23} + \cdots - 1188u + 328$
c_3	$u^{24} + 3u^{23} + \cdots - 3996u + 648$
c_5, c_9	$u^{24} + 5u^{23} + \cdots + 168u + 8$
c_6, c_7, c_{11} c_{12}	$(u^4 - u^3 + 3u^2 - 2u + 1)^6$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$(y^4 + y^3 + 3y^2 + 2y + 1)^6$
c_2, c_8, c_{10}	$y^{24} - 15y^{23} + \cdots - 453584y + 107584$
c_3	$y^{24} - 3y^{23} + \cdots - 5750352y + 419904$
c_5, c_9	$y^{24} - 7y^{23} + \cdots - 7776y + 64$
c_6, c_7, c_{11} c_{12}	$(y^4 + 5y^3 + 7y^2 + 2y + 1)^6$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.395123 + 0.506844I$ $a = 0.103728 - 1.096500I$ $b = -1.09009 + 1.02540I$	$-2.06694 - 1.74886I$	$-1.65348 - 2.34394I$
$u = -0.395123 + 0.506844I$ $a = 0.16699 + 1.52687I$ $b = 0.83629 - 1.36113I$	$-2.06694 + 4.57907I$	$-1.65348 - 7.47354I$
$u = -0.395123 + 0.506844I$ $a = -1.78646 + 0.12907I$ $b = -0.283051 + 0.216704I$	$-2.06694 - 1.74886I$	$-1.65348 - 2.34394I$
$u = -0.395123 + 0.506844I$ $a = 1.63057 - 0.79455I$ $b = 0.357314 - 0.054366I$	$-2.06694 + 4.57907I$	$-1.65348 - 7.47354I$
$u = -0.395123 + 0.506844I$ $a = -0.39246 - 1.95028I$ $b = 0.628050 + 0.462471I$	$4.93480 + 2.83021I$	$2.00000 - 9.81749I$
$u = -0.395123 + 0.506844I$ $a = 1.17687 + 1.78486I$ $b = -0.547258 - 1.222920I$	$4.93480 + 2.83021I$	$2.00000 - 9.81749I$
$u = -0.395123 - 0.506844I$ $a = 0.103728 + 1.096500I$ $b = -1.09009 - 1.02540I$	$-2.06694 + 1.74886I$	$-1.65348 + 2.34394I$
$u = -0.395123 - 0.506844I$ $a = 0.16699 - 1.52687I$ $b = 0.83629 + 1.36113I$	$-2.06694 - 4.57907I$	$-1.65348 + 7.47354I$
$u = -0.395123 - 0.506844I$ $a = -1.78646 - 0.12907I$ $b = -0.283051 - 0.216704I$	$-2.06694 + 1.74886I$	$-1.65348 + 2.34394I$
$u = -0.395123 - 0.506844I$ $a = 1.63057 + 0.79455I$ $b = 0.357314 + 0.054366I$	$-2.06694 - 4.57907I$	$-1.65348 + 7.47354I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.395123 - 0.506844I$ $a = -0.39246 + 1.95028I$ $b = 0.628050 - 0.462471I$	$4.93480 - 2.83021I$	$2.00000 + 9.81749I$
$u = -0.395123 - 0.506844I$ $a = 1.17687 - 1.78486I$ $b = -0.547258 + 1.222920I$	$4.93480 - 2.83021I$	$2.00000 + 9.81749I$
$u = -0.10488 + 1.55249I$ $a = 0.104373 - 0.975826I$ $b = 0.81052 + 3.36343I$	$11.93650 + 4.57907I$	$5.65348 - 7.47354I$
$u = -0.10488 + 1.55249I$ $a = -1.045950 - 0.024912I$ $b = 1.324300 + 0.197152I$	$4.93480 + 6.32793I$	$2.00000 - 5.12960I$
$u = -0.10488 + 1.55249I$ $a = -0.617508 + 0.929773I$ $b = 0.28030 - 2.29404I$	$11.93650 + 4.57907I$	$5.65348 - 7.47354I$
$u = -0.10488 + 1.55249I$ $a = -0.145302 + 1.200950I$ $b = -0.31108 - 3.25723I$	$11.93650 + 1.74886I$	$5.65348 + 2.34394I$
$u = -0.10488 + 1.55249I$ $a = 0.079320 - 0.763538I$ $b = -0.58732 + 3.42729I$	$4.93480 + 6.32793I$	$2.00000 - 5.12960I$
$u = -0.10488 + 1.55249I$ $a = 0.225836 - 0.692087I$ $b = 1.08202 + 1.93847I$	$11.93650 + 1.74886I$	$5.65348 + 2.34394I$
$u = -0.10488 - 1.55249I$ $a = 0.104373 + 0.975826I$ $b = 0.81052 - 3.36343I$	$11.93650 - 4.57907I$	$5.65348 + 7.47354I$
$u = -0.10488 - 1.55249I$ $a = -1.045950 + 0.024912I$ $b = 1.324300 - 0.197152I$	$4.93480 - 6.32793I$	$2.00000 + 5.12960I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.10488-1.55249I$ $a=-0.617508-0.929773I$ $b=\ \ 0.28030+2.29404I$	$11.93650-4.57907I$	$5.65348+7.47354I$
$u=-0.10488-1.55249I$ $a=-0.145302-1.200950I$ $b=-0.31108+3.25723I$	$11.93650-1.74886I$	$5.65348-2.34394I$
$u=-0.10488-1.55249I$ $a=\ \ 0.079320+0.763538I$ $b=-0.58732-3.42729I$	$4.93480-6.32793I$	$2.00000+5.12960I$
$u=-0.10488-1.55249I$ $a=\ \ 0.225836+0.692087I$ $b=\ \ 1.08202-1.93847I$	$11.93650-1.74886I$	$5.65348-2.34394I$

III. $I^u_3 =$
$\langle -u^{12}-u^{11}+\cdots+2u^2+b,\ -u^{10}-8u^8+\cdots+a+2u,\ u^{14}+10u^{12}+\cdots-2u+1\rangle$

(i) Arc colorings

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

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

$$a_2 = \begin{pmatrix} u^{10}+8u^8+23u^6+28u^4-u^3+12u^2-2u \\ u^{12}+u^{11}+\cdots+10u^3-2u^2 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} u^{11}+u^{10}+\cdots+10u^2-2u \\ u^{13}+u^{12}+\cdots+10u^3-2u^2 \end{pmatrix}$$

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

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

$$a_{10} = \begin{pmatrix} -u^{12}-9u^{10}-31u^8-51u^6+2u^5-40u^4+7u^3-12u^2+6u \\ -u^{13}+u^{12}+\cdots-u+1 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} u^{11}+9u^9+30u^7+45u^5-u^4+29u^3-4u^2+6u-3 \\ u^{10}+7u^8+17u^6+16u^4-2u^3+4u^2-3u \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u^3-2u \\ u^3+u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u^9+7u^7+17u^5+17u^3-u^2+6u-2 \\ u^{12}+u^{11}+\cdots+2u^2-4u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u^{13}-u^{12}+\cdots+6u+1 \\ u^{12}-u^{11}+\cdots-u+1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes
$= -u^{13}+2u^{12}-8u^{11}+17u^{10}-24u^9+51u^8-37u^7+60u^6-43u^5+12u^4-41u^3-15u^2-11u+6$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{14} - 3u^{13} + \cdots + 7u^2 + 1$
c_2, c_{10}	$u^{14} - u^{13} + \cdots - u + 1$
c_3	$u^{14} - u^{12} + \cdots + 22u + 29$
c_4	$u^{14} + 3u^{13} + \cdots + 7u^2 + 1$
c_5	$u^{14} + u^{13} + \cdots + 4u^2 + 1$
c_6, c_7	$u^{14} + 10u^{12} + \cdots - 2u + 1$
c_8	$u^{14} + u^{13} + \cdots + u + 1$
c_9	$u^{14} - u^{13} + \cdots + 4u^2 + 1$
c_{11}, c_{12}	$u^{14} + 10u^{12} + \cdots + 2u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{14} + 11y^{13} + \cdots + 14y + 1$
c_2, c_8, c_{10}	$y^{14} - 11y^{13} + \cdots + 5y + 1$
c_3	$y^{14} - 2y^{13} + \cdots + 1082y + 841$
c_5, c_9	$y^{14} - 3y^{13} + \cdots + 8y + 1$
c_6, c_7, c_{11} c_{12}	$y^{14} + 20y^{13} + \cdots - 4y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.311609 + 0.942763I$ $a = 0.291653 + 1.169250I$ $b = -0.737119 - 1.186440I$	$7.09672 + 0.19743I$	$7.21171 - 0.40759I$
$u = -0.311609 - 0.942763I$ $a = 0.291653 - 1.169250I$ $b = -0.737119 + 1.186440I$	$7.09672 - 0.19743I$	$7.21171 + 0.40759I$
$u = 0.161029 + 1.344040I$ $a = 0.433516 + 0.120817I$ $b = -0.916757 + 0.574654I$	$2.08475 - 4.90341I$	$-1.06931 + 6.62394I$
$u = 0.161029 - 1.344040I$ $a = 0.433516 - 0.120817I$ $b = -0.916757 - 0.574654I$	$2.08475 + 4.90341I$	$-1.06931 - 6.62394I$
$u = 0.23888 + 1.43943I$ $a = -0.435879 + 0.255328I$ $b = 0.231007 - 1.380650I$	$3.18169 + 0.60898I$	$-3.58539 - 1.80775I$
$u = 0.23888 - 1.43943I$ $a = -0.435879 - 0.255328I$ $b = 0.231007 + 1.380650I$	$3.18169 - 0.60898I$	$-3.58539 + 1.80775I$
$u = -0.293216 + 0.377036I$ $a = -1.27142 - 2.57328I$ $b = 0.845482 + 0.700844I$	$5.21647 + 1.94152I$	$5.99803 - 0.90958I$
$u = -0.293216 - 0.377036I$ $a = -1.27142 + 2.57328I$ $b = 0.845482 - 0.700844I$	$5.21647 - 1.94152I$	$5.99803 + 0.90958I$
$u = -0.09214 + 1.54037I$ $a = -0.305542 + 0.999070I$ $b = -0.50480 - 2.83803I$	$11.88620 + 3.33387I$	$5.15657 - 1.10675I$
$u = -0.09214 - 1.54037I$ $a = -0.305542 - 0.999070I$ $b = -0.50480 + 2.83803I$	$11.88620 - 3.33387I$	$5.15657 + 1.10675I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.376292 + 0.105089I$ $a = 1.06759 + 1.35883I$ $b = 0.290833 + 0.885340I$	$-2.11738 + 2.98340I$	$-1.73215 - 4.07562I$
$u = 0.376292 - 0.105089I$ $a = 1.06759 - 1.35883I$ $b = 0.290833 - 0.885340I$	$-2.11738 - 2.98340I$	$-1.73215 + 4.07562I$
$u = -0.07924 + 1.76897I$ $a = 0.220085 - 0.669149I$ $b = 0.29136 + 2.47039I$	$17.0648 + 1.9156I$	$10.52053 + 0.88434I$
$u = -0.07924 - 1.76897I$ $a = 0.220085 + 0.669149I$ $b = 0.29136 - 2.47039I$	$17.0648 - 1.9156I$	$10.52053 - 0.88434I$

IV. $\boldsymbol{I_4^u = \langle u^2 + b + 2u + 2,\ -u^3 - u^2 + a - 3u - 2,\ u^4 + u^3 + 3u^2 + 2u + 1\rangle}$

(i) Arc colorings

$$a_7 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} u^3 + u^2 + 3u + 2 \\ -u^2 - 2u - 2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u^3 + 2u \\ -1 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u^2 + 1 \\ -u^2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u^3 + u^2 + 3u + 2 \\ -u^2 - u - 2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -u^3 - 2u^2 - 3u - 4 \\ u^2 + 2 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u^3 - 2u \\ u^3 + u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -u^3 - 2u^2 - 3u - 3 \\ 2u^2 + u + 2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} u^3 + 3u + 1 \\ -u - 2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 2$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^4 + y^3 + 3y^2 + 2y + 1$
c_2, c_8	$y^4 - 2y^3 - 3y^2 - y + 16$
c_3	$y^4 - 7y^3 + 15y^2 - 2y + 1$
c_5, c_9, c_{10}	$(y-1)^4$
c_6, c_7, c_{11} c_{12}	$y^4 + 5y^3 + 7y^2 + 2y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.395123 + 0.506844I$ $a = 0.95668 + 1.22719I$ $b = -1.108990 - 0.613156I$	4.93480	2.00000
$u = -0.395123 - 0.506844I$ $a = 0.95668 - 1.22719I$ $b = -1.108990 + 0.613156I$	4.93480	2.00000
$u = -0.10488 + 1.55249I$ $a = 0.043315 + 0.641200I$ $b = 0.60898 - 2.77934I$	4.93480	2.00000
$u = -0.10488 - 1.55249I$ $a = 0.043315 - 0.641200I$ $b = 0.60898 + 2.77934I$	4.93480	2.00000

V.

$$\boldsymbol{I_5^u = \langle -u^3 - u^2 + b - 2u - 1,\ 2u^3 + 2u^2 + a + 5u + 3,\ u^4 + u^3 + 3u^2 + 2u + 1 \rangle}$$

(i) Arc colorings

$$a_7 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -2u^3 - 2u^2 - 5u - 3 \\ u^3 + u^2 + 2u + 1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -2u^3 - 2u^2 - 5u - 2 \\ u^3 + 2u^2 + 2u + 1 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u^2 + 1 \\ -u^2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 3u^3 + 2u^2 + 7u + 4 \\ -u^3 - u - 1 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -u^3 - 3u + 1 \\ u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u^3 - 2u \\ u^3 + u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -u^3 - 3u + 2 \\ u^2 + 2u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 2u^3 + 2u^2 + 5u + 3 \\ -u^3 - u^2 - 2u - 1 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 2$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^4 + y^3 + 3y^2 + 2y + 1$
c_2, c_8	$(y-1)^4$
c_3, c_6, c_7 c_{11}, c_{12}	$y^4 + 5y^3 + 7y^2 + 2y + 1$
c_5, c_9	$y^4 + 2y^3 + y^2 + 3y + 4$
c_{10}	$y^4 - 2y^3 - 3y^2 - y + 16$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.395123 + 0.506844I$ $a = -1.30849 - 1.94753I$ $b = 0.351808 + 0.720342I$	4.93480	2.00000
$u = -0.395123 - 0.506844I$ $a = -1.30849 + 1.94753I$ $b = 0.351808 - 0.720342I$	4.93480	2.00000
$u = -0.10488 + 1.55249I$ $a = 0.808493 + 0.270093I$ $b = -0.851808 - 0.911292I$	4.93480	2.00000
$u = -0.10488 - 1.55249I$ $a = 0.808493 - 0.270093I$ $b = -0.851808 + 0.911292I$	4.93480	2.00000

VI. $I_6^u = \langle b + u - 1,\ 2a - u + 1,\ u^2 - u + 2 \rangle$

(i) Arc colorings

$$a_7 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} \frac{1}{2}u - \frac{1}{2} \\ -u + 1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ u - 2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} \frac{1}{2}u + \frac{1}{2} \\ -1 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u - 1 \\ -u + 2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} \frac{1}{2}u - \frac{1}{2} \\ 1 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} \frac{1}{2}u + \frac{3}{2} \\ -u - 1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u + 2 \\ -2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -\frac{3}{2}u + \frac{3}{2} \\ u - 3 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -\frac{1}{2}u + \frac{1}{2} \\ u - 1 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 2$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_3, c_4	$u^2 - u + 2$
c_2, c_8, c_{10}	$(u + 1)^2$
c_5, c_9	$(u - 1)^2$
c_6, c_7, c_{11} c_{12}	$u^2 + u + 2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3, c_4 c_6, c_7, c_{11} c_{12}	$y^2 + 3y + 4$
c_2, c_5, c_8 c_9, c_{10}	$(y-1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_6^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \quad 0.50000 + 1.32288I$ $a = -0.250000 + 0.661438I$ $b = \quad 0.50000 - 1.32288I$	4.93480	2.00000
$u = \quad 0.50000 - 1.32288I$ $a = -0.250000 - 0.661438I$ $b = \quad 0.50000 + 1.32288I$	4.93480	2.00000

VII. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^2-u+2)(u^4+u^3+u^2+1)^8(u^{14}-3u^{13}+\cdots+7u^2+1)$ $\cdot(u^{20}-11u^{19}+\cdots-44u+8)$
c_2, c_{10}	$((u+1)^6)(u^4-2u^3+u^2-3u+4)(u^{14}-u^{13}+\cdots-u+1)$ $\cdot(u^{20}-3u^{19}+\cdots-3u+1)(u^{24}-u^{23}+\cdots-1188u+328)$
c_3	$(u^2-u+2)(u^4-3u^3+u^2+2u+1)(u^4+u^3+3u^2+2u+1)$ $\cdot(u^{14}-u^{12}+\cdots+22u+29)(u^{20}+u^{19}+\cdots+9u^2+1)$ $\cdot(u^{24}+3u^{23}+\cdots-3996u+648)$
c_4	$(u^2-u+2)(u^4+u^3+u^2+1)^8(u^{14}+3u^{13}+\cdots+7u^2+1)$ $\cdot(u^{20}-11u^{19}+\cdots-44u+8)$
c_5	$((u-1)^6)(u^4+2u^3+\cdots+3u+2)(u^{14}+u^{13}+\cdots+4u^2+1)$ $\cdot(u^{20}+3u^{19}+\cdots+4u+1)(u^{24}+5u^{23}+\cdots+168u+8)$
c_6, c_7	$(u^2+u+2)(u^4-u^3+3u^2-2u+1)^8(u^{14}+10u^{12}+\cdots-2u+1)$ $\cdot(u^{20}+8u^{19}+\cdots+84u+8)$
c_8	$((u+1)^6)(u^4-2u^3+u^2-3u+4)(u^{14}+u^{13}+\cdots+u+1)$ $\cdot(u^{20}-3u^{19}+\cdots-3u+1)(u^{24}-u^{23}+\cdots-1188u+328)$
c_9	$((u-1)^6)(u^4+2u^3+\cdots+3u+2)(u^{14}-u^{13}+\cdots+4u^2+1)$ $\cdot(u^{20}+3u^{19}+\cdots+4u+1)(u^{24}+5u^{23}+\cdots+168u+8)$
c_{11}, c_{12}	$(u^2+u+2)(u^4-u^3+3u^2-2u+1)^8(u^{14}+10u^{12}+\cdots+2u+1)$ $\cdot(u^{20}+8u^{19}+\cdots+84u+8)$

VIII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4	$(y^2+3y+4)(y^4+y^3+3y^2+2y+1)^8(y^{14}+11y^{13}+\cdots+14y+1)$ $\cdot (y^{20}+9y^{19}+\cdots+48y+64)$
c_2, c_8, c_{10}	$((y-1)^6)(y^4-2y^3+\cdots-y+16)(y^{14}-11y^{13}+\cdots+5y+1)$ $\cdot (y^{20}-15y^{19}+\cdots-y+1)(y^{24}-15y^{23}+\cdots-453584y+107584)$
c_3	$(y^2+3y+4)(y^4-7y^3+15y^2-2y+1)(y^4+5y^3+7y^2+2y+1)$ $\cdot (y^{14}-2y^{13}+\cdots+1082y+841)(y^{20}+9y^{19}+\cdots+18y+1)$ $\cdot (y^{24}-3y^{23}+\cdots-5750352y+419904)$
c_5, c_9	$((y-1)^6)(y^4+2y^3+y^2+3y+4)(y^{14}-3y^{13}+\cdots+8y+1)$ $\cdot (y^{20}-19y^{19}+\cdots+6y+1)(y^{24}-7y^{23}+\cdots-7776y+64)$
c_6, c_7, c_{11} c_{12}	$(y^2+3y+4)(y^4+5y^3+\cdots+2y+1)^8(y^{14}+20y^{13}+\cdots-4y+1)$ $\cdot (y^{20}+22y^{19}+\cdots+240y+64)$