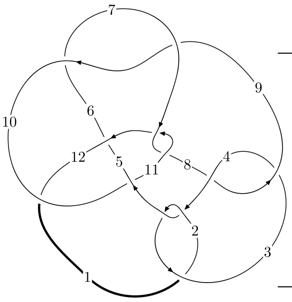
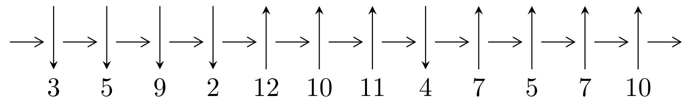
$12n_{0257}$ ($K12n_{0257}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$
\begin{aligned}
I_1^u = \langle & 1.90485 \times 10^{17} u^{17} - 2.51658 \times 10^{17} u^{16} + \cdots + 3.03349 \times 10^{16} b - 4.02818 \times 10^{17}, \\
& 2.08713 \times 10^{17} u^{17} - 2.72839 \times 10^{17} u^{16} + \cdots + 7.58374 \times 10^{15} a - 3.96132 \times 10^{17},\ u^{18} - u^{17} + \cdots - 4u + 1 \rangle \\
I_2^u = \langle & 3u^{11} - u^{10} + u^9 - 9u^8 - 6u^7 - 3u^6 + 4u^5 + 18u^4 + 12u^3 + 7u^2 + b - 3u - 3, \\
& -4u^{11} + 3u^{10} - 2u^9 + 13u^8 + 2u^7 + 2u^6 - 9u^5 - 20u^4 - 8u^3 - u^2 + a + 8u + 4, \\
& u^{12} - 3u^9 - 3u^8 - u^7 + 2u^6 + 7u^5 + 6u^4 + 2u^3 - 2u^2 - 3u - 1 \rangle \\
I_3^u = \langle & u^3 + 3u^2 + 18b - 17u + 46,\ -5u^3 + 3u^2 + 36a - 41u - 32,\ u^4 - u^3 + 7u^2 + 6u - 4 \rangle \\
I_4^u = \langle & 2b + u - 1,\ a - u - 1,\ u^2 + u - 1 \rangle \\
I_5^u = \langle & b - u - 1,\ -2u^3 + 3u^2 + 66a + 19u - 1,\ u^4 + 4u^3 + 7u^2 + 6u + 11 \rangle
\end{aligned}
$$

* 5 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 40 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.
$\boldsymbol{I_1^u = \langle 1.90\times10^{17}u^{17} - 2.52\times10^{17}u^{16} + \cdots + 3.03\times10^{16}b - 4.03\times10^{17},\ 2.09\times10^{17}u^{17} - 2.73\times10^{17}u^{16} + \cdots + 7.58\times10^{15}a - 3.96\times10^{17},\ u^{18} - u^{17} + \cdots - 4u + 1\rangle}$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -27.5212u^{17} + 35.9768u^{16} + \cdots - 342.299u + 52.2344 \\ -6.27938u^{17} + 8.29598u^{16} + \cdots - 84.9277u + 13.2790 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -27.5212u^{17} + 35.9768u^{16} + \cdots - 342.299u + 52.2344 \\ -11.3536u^{17} + 14.8220u^{16} + \cdots - 146.271u + 21.7346 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -7.55482u^{17} + 8.52485u^{16} + \cdots - 73.2580u + 8.96058 \\ -1.14106u^{17} + 1.22922u^{16} + \cdots - 9.94123u + 0.881867 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -12.4658u^{17} + 7.03725u^{16} + \cdots + 23.8108u - 25.5769 \\ -1.03310u^{17} + 1.07235u^{16} + \cdots - 13.6155u + 0.722053 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -6.41376u^{17} + 7.29563u^{16} + \cdots - 63.3168u + 8.07871 \\ -1.14106u^{17} + 1.22922u^{16} + \cdots - 9.94123u + 0.881867 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 6.19684u^{17} - 0.924141u^{16} + \cdots - 69.5089u + 28.5882 \\ 0.881867u^{17} + 0.259189u^{16} + \cdots - 17.5763u + 6.41376 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 7.07871u^{17} - 0.664952u^{16} + \cdots - 87.0852u + 35.0020 \\ 0.881867u^{17} + 0.259189u^{16} + \cdots - 17.5763u + 6.41376 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 7.07871u^{17} - 0.664952u^{16} + \cdots - 86.0852u + 35.0020 \\ 0.881867u^{17} + 0.259189u^{16} + \cdots - 17.5763u + 6.41376 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 22.1744u^{17} - 27.4894u^{16} + \cdots + 263.201u - 35.7652 \\ 5.27270u^{17} - 6.06640u^{16} + \cdots + 53.3756u - 6.19684 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{2063530662655740221}{30334945780497320}u^{17} + \frac{4790167344610047657}{60669891560994640}u^{16} + \cdots - \frac{39519432929474093823}{60669891560994640}u + \frac{39180649149001902 51}{60669891560994640}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{18} + 9u^{17} + \cdots - 656u + 256$
c_2, c_4	$u^{18} - 3u^{17} + \cdots + 52u - 16$
c_3, c_8	$u^{18} - 5u^{17} + \cdots + 80u + 64$
c_5, c_6, c_9	$u^{18} + 5u^{16} + \cdots - 5u - 1$
c_7, c_{10}, c_{11}	$u^{18} + u^{17} + \cdots + 4u + 1$
c_{12}	$u^{18} + 12u^{17} + \cdots + 6u - 4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{18} + 3y^{17} + \cdots + 495872y + 65536$
c_2, c_4	$y^{18} - 9y^{17} + \cdots + 656y + 256$
c_3, c_8	$y^{18} + 9y^{17} + \cdots - 29440y + 4096$
c_5, c_6, c_9	$y^{18} + 10y^{17} + \cdots - 45y + 1$
c_7, c_{10}, c_{11}	$y^{18} + 31y^{17} + \cdots + 6y + 1$
c_{12}	$y^{18} - 50y^{17} + \cdots - 2700y + 16$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.584558+0.366182I$ $a=-0.031695+0.764128I$ $b=-0.238877+0.648680I$	$1.158820-0.715487I$	$6.82546+3.87567I$
$u=-0.584558-0.366182I$ $a=-0.031695-0.764128I$ $b=-0.238877-0.648680I$	$1.158820+0.715487I$	$6.82546-3.87567I$
$u=\ \ 1.51394+0.18364I$ $a=-0.619867+0.808006I$ $b=-0.40901+1.77160I$	$10.72160+4.05902I$	$-5.48776-6.30227I$
$u=\ \ 1.51394-0.18364I$ $a=-0.619867-0.808006I$ $b=-0.40901-1.77160I$	$10.72160-4.05902I$	$-5.48776+6.30227I$
$u=-0.022331+0.452997I$ $a=\ \ 1.61941+0.40552I$ $b=\ \ 0.156583+0.047051I$	$0.21869-2.12649I$	$2.57122+5.28808I$
$u=-0.022331-0.452997I$ $a=\ \ 1.61941-0.40552I$ $b=\ \ 0.156583-0.047051I$	$0.21869+2.12649I$	$2.57122-5.28808I$
$u=\ \ 0.025010+0.431550I$ $a=-1.34703+2.60646I$ $b=\ \ 0.250192+0.749320I$	$-2.52651-6.83690I$	$1.00389+11.16505I$
$u=\ \ 0.025010-0.431550I$ $a=-1.34703-2.60646I$ $b=\ \ 0.250192-0.749320I$	$-2.52651+6.83690I$	$1.00389-11.16505I$
$u=\ \ 0.007817+0.411255I$ $a=-0.85304-2.78085I$ $b=\ \ 0.325456-0.844226I$	$-3.55439+1.25550I$	$-1.98701-1.61045I$
$u=\ \ 0.007817-0.411255I$ $a=-0.85304+2.78085I$ $b=\ \ 0.325456+0.844226I$	$-3.55439-1.25550I$	$-1.98701+1.61045I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.75357$ $a = -0.620403$ $b = 1.40026$	7.06782	-18.1410
$u = 0.204909$ $a = 4.38528$ $b = 0.536453$	-1.30691	-9.62130
$u = -1.10465 + 2.31020I$ $a = 0.029942 + 0.642788I$ $b = 0.31930 + 2.83217I$	$-13.4615 - 12.9156I$	0
$u = -1.10465 - 2.31020I$ $a = 0.029942 - 0.642788I$ $b = 0.31930 - 2.83217I$	$-13.4615 + 12.9156I$	0
$u = -0.50858 + 2.58223I$ $a = 0.535381 - 0.129487I$ $b = -0.444741 - 0.317296I$	$-8.47225 - 5.66445I$	0
$u = -0.50858 - 2.58223I$ $a = 0.535381 + 0.129487I$ $b = -0.444741 + 0.317296I$	$-8.47225 + 5.66445I$	0
$u = 0.19411 + 2.91147I$ $a = -0.215532 - 0.577704I$ $b = 0.82274 - 2.38447I$	$-13.28390 + 2.28868I$	0
$u = 0.19411 - 2.91147I$ $a = -0.215532 + 0.577704I$ $b = 0.82274 + 2.38447I$	$-13.28390 - 2.28868I$	0

II.
$$\boldsymbol{I_2^u = \langle 3u^{11}-u^{10}+\cdots+b-3,\ -4u^{11}+3u^{10}+\cdots+a+4,\ u^{12}-3u^9+\cdots-3u-1\rangle}$$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 4u^{11}-3u^{10}+\cdots-8u-4 \\ -3u^{11}+u^{10}+\cdots+3u+3 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 4u^{11}-3u^{10}+\cdots-8u-4 \\ -5u^{11}+2u^{10}+\cdots+8u+6 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -3u^{11}+u^{10}+9u^8+6u^7-7u^5-19u^4-11u^3-u^2+8u+6 \\ -u^2-1 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -6u^{11}+4u^{10}+\cdots+14u+8 \\ 7u^{11}-5u^{10}+\cdots-21u-13 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -3u^{11}+u^{10}+9u^8+6u^7-7u^5-19u^4-11u^3+8u+7 \\ -u^2-1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 7u^{11}-3u^{10}+\cdots-14u-13 \\ -u^{11}+3u^8+3u^7+u^6-2u^5-7u^4-6u^3-2u^2+2u+3 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 6u^{11}-3u^{10}+u^9-18u^8-9u^7+12u^5+35u^4+17u^3+u^2-12u-10 \\ -u^{11}+3u^8+3u^7+u^6-2u^5-7u^4-6u^3-2u^2+2u+3 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 6u^{11}-3u^{10}+u^9-18u^8-9u^7+12u^5+35u^4+17u^3+u^2-13u-10 \\ -u^{11}+3u^8+3u^7+u^6-2u^5-7u^4-5u^3-2u^2+2u+3 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 10u^{11}-6u^{10}+\cdots-21u-17 \\ -3u^{11}+u^{10}+9u^8+6u^7-7u^5-19u^4-11u^3+8u+7 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes
$= 12u^{11}-12u^{10}+3u^9-41u^8+15u^6+38u^5+73u^4-u^3-22u^2-57u-30$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{12} + 12y^{11} + \cdots - 81y + 1$
c_2, c_4	$y^{12} - 4y^{11} + \cdots - 13y + 1$
c_3, c_8	$y^{12} + 12y^{11} + \cdots - 13y + 1$
c_5, c_6, c_9	$y^{12} - 5y^{11} + 4y^{10} + 10y^9 - 27y^7 - 8y^6 + 25y^5 + 15y^4 - 5y^3 - 6y^2 + 1$
c_7, c_{10}, c_{11}	$y^{12} - 6y^{10} - 5y^9 + 15y^8 + 25y^7 - 8y^6 - 27y^5 + 10y^3 + 4y^2 - 5y + 1$
c_{12}	$y^{12} - 24y^{11} + \cdots - 234y + 81$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.366604+0.825368I$ $a=\ \ 1.11814+0.91713I$ $b=-0.413716+0.377477I$	$-2.86185+6.14960I$	$-3.55511-1.94828I$
$u=-0.366604-0.825368I$ $a=\ \ 1.11814-0.91713I$ $b=-0.413716-0.377477I$	$-2.86185-6.14960I$	$-3.55511+1.94828I$
$u=-0.851892$ $a=-0.391239$ $b=-2.26079$	3.56755	13.7860
$u=\ \ 0.111536+1.194340I$ $a=\ \ 0.317924-0.704003I$ $b=-0.993719+0.895794I$	$-5.28057-0.69048I$	$-8.92309+4.67234I$
$u=\ \ 0.111536-1.194340I$ $a=\ \ 0.317924+0.704003I$ $b=-0.993719-0.895794I$	$-5.28057+0.69048I$	$-8.92309-4.67234I$
$u=\ \ 0.765921$ $a=\ \ 1.24205$ $b=-9.03089$	2.40622	-53.6250
$u=-0.496770+1.152800I$ $a=-0.554307+0.648652I$ $b=\ \ 0.388509+0.841432I$	$-0.483582+0.496104I$	$-0.592681-0.118839I$
$u=-0.496770-1.152800I$ $a=-0.554307-0.648652I$ $b=\ \ 0.388509-0.841432I$	$-0.483582-0.496104I$	$-0.592681+0.118839I$
$u=-0.629825+0.069225I$ $a=\ \ 1.33711-0.51168I$ $b=-0.874744+0.682079I$	$4.44304+1.79476I$	$4.83493-4.62713I$
$u=-0.629825-0.069225I$ $a=\ \ 1.33711+0.51168I$ $b=-0.874744-0.682079I$	$4.44304-1.79476I$	$4.83493+4.62713I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \quad 1.42465 + 0.18625I$ $a = -0.644266 + 0.830701I$ $b = -0.46049 + 1.87154I$	$11.06570 + 3.92660I$	$15.1553 + 1.2084I$
$u = \quad 1.42465 - 0.18625I$ $a = -0.644266 - 0.830701I$ $b = -0.46049 - 1.87154I$	$11.06570 - 3.92660I$	$15.1553 - 1.2084I$

III. $\boldsymbol{I_3^u =}$
$\boldsymbol{\langle u^3+3u^2+18b-17u+46,\ -5u^3+3u^2+36a-41u-32,\ u^4-u^3+7u^2+6u-4\rangle}$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} \frac{5}{36}u^3 - \frac{1}{12}u^2 + \frac{41}{36}u + \frac{8}{9} \\ -\frac{1}{18}u^3 - \frac{1}{6}u^2 + \frac{17}{18}u - \frac{23}{9} \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} \frac{5}{36}u^3 - \frac{1}{12}u^2 + \frac{41}{36}u + \frac{8}{9} \\ -\frac{5}{18}u^3 + \frac{1}{6}u^2 + \frac{13}{18}u - \frac{25}{9} \end{pmatrix}$$
$$a_1 = \begin{pmatrix} \frac{1}{9}u^3 - \frac{1}{6}u^2 + \frac{11}{18}u + \frac{11}{18} \\ -\frac{1}{18}u^3 - \frac{1}{6}u^2 - \frac{1}{18}u - \frac{14}{9} \end{pmatrix}$$
$$a_4 = \begin{pmatrix} \frac{1}{9}u^3 - \frac{1}{6}u^2 + \frac{11}{18}u + \frac{11}{18} \\ \frac{7}{18}u^3 - \frac{5}{6}u^2 + \frac{7}{18}u - \frac{10}{9} \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} \frac{1}{6}u^3 + \frac{2}{3}u + \frac{13}{6} \\ -\frac{1}{18}u^3 - \frac{1}{6}u^2 - \frac{1}{18}u - \frac{14}{9} \end{pmatrix}$$
$$a_6 = \begin{pmatrix} \frac{5}{12}u^3 - \frac{1}{4}u^2 + \frac{29}{12}u + \frac{5}{3} \\ -\frac{5}{18}u^3 + \frac{1}{6}u^2 - \frac{23}{18}u - \frac{7}{9} \end{pmatrix}$$
$$a_7 = \begin{pmatrix} \frac{5}{36}u^3 - \frac{1}{12}u^2 + \frac{41}{36}u + \frac{8}{9} \\ -\frac{5}{18}u^3 + \frac{1}{6}u^2 - \frac{23}{18}u - \frac{7}{9} \end{pmatrix}$$
$$a_8 = \begin{pmatrix} \frac{1}{12}u^3 - \frac{1}{4}u^2 + \frac{1}{12}u + \frac{1}{3} \\ \frac{11}{18}u^3 - \frac{7}{6}u^2 - \frac{43}{18}u + \frac{1}{9} \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -\frac{1}{9}u^3 + \frac{1}{6}u^2 - \frac{11}{18}u - \frac{11}{18} \\ -\frac{1}{6}u^3 + \frac{1}{2}u^2 + \frac{5}{6}u + \frac{4}{3} \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -2$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^2 - 7y + 1)^2$
c_2, c_3, c_4 c_8, c_{12}	$(y^2 - 3y + 1)^2$
c_5, c_6, c_9	$y^4 - 6y^3 + 67y^2 - 174y + 121$
c_7, c_{10}, c_{11}	$y^4 + 13y^3 + 53y^2 - 92y + 16$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.06243$ $a = -0.581719$ $b = -3.68046$	2.96088	−2.00000
$u = 0.444394$ $a = 1.39074$ $b = -2.17364$	2.96088	−2.00000
$u = 0.80902 + 2.79600I$ $a = -0.154508 + 0.533989I$ $b = 0.42705 + 2.79600I$	−12.8305	−2.00000
$u = 0.80902 - 2.79600I$ $a = -0.154508 - 0.533989I$ $b = 0.42705 - 2.79600I$	−12.8305	−2.00000

IV. $I_4^u = \langle 2b + u - 1,\ a - u - 1,\ u^2 + u - 1 \rangle$

(i) Arc colorings

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

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

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

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

$$a_2 = \begin{pmatrix} u+1 \\ -\frac{3}{2}u + \frac{1}{2} \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0 \\ -u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} u+1 \\ -\frac{1}{2}u + \frac{1}{2} \end{pmatrix}$$

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

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

$$a_7 = \begin{pmatrix} u \\ -u+1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 2u \\ -3u+2 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 2u \\ -3u+2 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -\frac{45}{4}u + \frac{45}{4}$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.618034$ $a = 1.61803$ $b = 0.190983$	-0.657974	4.29710
$u = -1.61803$ $a = -0.618034$ $b = 1.30902$	7.23771	29.4530

V. $I^u_5 = \langle b-u-1,\ -2u^3+3u^2+66a+19u-1,\ u^4+4u^3+7u^2+6u+11\rangle$

(i) Arc colorings

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

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

$$a_3 = \begin{pmatrix} 0.0303030u^3 - 0.0454545u^2 - 0.287879u + 0.0151515 \\ u+1 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} 0.0303030u^3 - 0.0454545u^2 - 0.287879u + 0.0151515 \\ -\frac{1}{6}u^3 - u^2 + \frac{1}{3}u - \frac{5}{6} \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -0.121212u^3 - 0.318182u^2 - 0.348485u - 0.560606 \\ -\frac{1}{6}u^3 - \frac{1}{2}u^2 - \frac{1}{6}u - \frac{1}{3} \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -0.121212u^3 - 0.318182u^2 - 0.348485u - 0.560606 \\ \frac{1}{6}u^3 + \frac{3}{2}u^2 + \frac{7}{6}u + \frac{10}{3} \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 0.0454545u^3 + 0.181818u^2 - 0.181818u - 0.227273 \\ -\frac{1}{6}u^3 - \frac{1}{2}u^2 - \frac{1}{6}u - \frac{1}{3} \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0.227273u^3 + 0.409091u^2 + 0.590909u + 0.363636 \\ -\frac{1}{6}u^3 + \frac{1}{3}u + \frac{1}{6} \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0.0606061u^3 + 0.409091u^2 + 0.924242u + 0.530303 \\ -\frac{1}{6}u^3 + \frac{1}{3}u + \frac{1}{6} \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.272727u^3 - 0.590909u^2 - 0.409091u - 1.13636 \\ \frac{1}{6}u^3 + 2u^2 - \frac{4}{3}u + \frac{23}{6} \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.121212u^3 + 0.318182u^2 + 0.348485u + 0.560606 \\ -\frac{1}{2}u^2 + \frac{1}{2}u - \frac{3}{2} \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -2$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^2 - 7y + 1)^2$
c_2, c_3, c_4 c_8, c_{12}	$(y^2 - 3y + 1)^2$
c_5, c_6, c_9	$y^4 + 9y^3 + 37y^2 + 36y + 16$
c_7, c_{10}, c_{11}	$y^4 - 2y^3 + 23y^2 + 118y + 121$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.118034 + 1.322880I$ $a = 0.041356 - 0.463500I$ $b = 1.11803 + 1.32288I$	-4.93480	-2.00000
$u = 0.118034 - 1.322880I$ $a = 0.041356 + 0.463500I$ $b = 1.11803 - 1.32288I$	-4.93480	-2.00000
$u = -2.11803 + 1.32288I$ $a = 0.549553 + 0.343238I$ $b = -1.11803 + 1.32288I$	-4.93480	-2.00000
$u = -2.11803 - 1.32288I$ $a = 0.549553 - 0.343238I$ $b = -1.11803 - 1.32288I$	-4.93480	-2.00000

VI. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^2)(u^2+3u+1)^4(u^{12}-4u^{11}+\cdots-13u+1)$ $\cdot(u^{18}+9u^{17}+\cdots-656u+256)$
c_2	$((u-1)^2)(u^2-u-1)^4(u^{12}+4u^{11}+\cdots-u+1)$ $\cdot(u^{18}-3u^{17}+\cdots+52u-16)$
c_3	$u^2(u^2+u-1)^4$ $\cdot(u^{12}+6u^{10}+3u^9+13u^8+7u^7+15u^6+6u^5+2u^3-2u^2-3u+1)$ $\cdot(u^{18}-5u^{17}+\cdots+80u+64)$
c_4	$((u+1)^2)(u^2-u-1)^4(u^{12}-4u^{11}+\cdots+u+1)$ $\cdot(u^{18}-3u^{17}+\cdots+52u-16)$
c_5	$(u^2+3u+1)(u^4-u^3+5u^2+2u+4)(u^4+4u^3+5u^2-8u-11)$ $\cdot(u^{12}-3u^{11}+2u^{10}+2u^9-6u^8+7u^7-2u^6-u^5+3u^4-3u^3-1)$ $\cdot(u^{18}+5u^{16}+\cdots-5u-1)$
c_6	$(u^2+3u+1)(u^4-u^3+5u^2+2u+4)(u^4+4u^3+5u^2-8u-11)$ $\cdot(u^{12}+3u^{11}+2u^{10}-2u^9-6u^8-7u^7-2u^6+u^5+3u^4+3u^3-1)$ $\cdot(u^{18}+5u^{16}+\cdots-5u-1)$
c_7	$(u^2-u-1)(u^4-4u^3+7u^2-6u+11)(u^4+u^3+7u^2-6u-4)$ $\cdot(u^{12}-3u^9-3u^8-u^7+2u^6+7u^5+6u^4+2u^3-2u^2-3u-1)$ $\cdot(u^{18}+u^{17}+\cdots+4u+1)$
c_8	$u^2(u^2+u-1)^4$ $\cdot(u^{12}+6u^{10}-3u^9+13u^8-7u^7+15u^6-6u^5-2u^3-2u^2+3u+1)$ $\cdot(u^{18}-5u^{17}+\cdots+80u+64)$
c_9	$(u^2-3u+1)(u^4-u^3+5u^2+2u+4)(u^4+4u^3+5u^2-8u-11)$ $\cdot(u^{12}-3u^{11}+2u^{10}+2u^9-6u^8+7u^7-2u^6-u^5+3u^4-3u^3-1)$ $\cdot(u^{18}+5u^{16}+\cdots-5u-1)$
c_{10}	$(u^2+u-1)(u^4-4u^3+7u^2-6u+11)(u^4+u^3+7u^2-6u-4)$ $\cdot(u^{12}-3u^9-3u^8-u^7+2u^6+7u^5+6u^4+2u^3-2u^2-3u-1)$ $\cdot(u^{18}+u^{17}+\cdots+4u+1)$
c_{11}	$(u^2+u-1)(u^4-4u^3+7u^2-6u+11)(u^4+u^3+7u^2-6u-4)$ $\cdot(u^{12}+3u^9-3u^8+u^7+2u^6-7u^5+6u^4-2u^3-2u^2+3u-1)$ $\cdot(u^{18}+u^{17}+\cdots+4u+1)$
c_{12}	$((u^2-u-1)^4)(u^2+u-1)(u^{12}-12u^{11}+\cdots-12u+9)$ $\cdot(u^{18}+12u^{17}+\cdots+6u-4)$

VII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^2)(y^2-7y+1)^4(y^{12}+12y^{11}+\cdots-81y+1)$ $\cdot(y^{18}+3y^{17}+\cdots+495872y+65536)$
c_2, c_4	$((y-1)^2)(y^2-3y+1)^4(y^{12}-4y^{11}+\cdots-13y+1)$ $\cdot(y^{18}-9y^{17}+\cdots+656y+256)$
c_3, c_8	$y^2(y^2-3y+1)^4(y^{12}+12y^{11}+\cdots-13y+1)$ $\cdot(y^{18}+9y^{17}+\cdots-29440y+4096)$
c_5, c_6, c_9	$(y^2-7y+1)(y^4-6y^3+67y^2-174y+121)$ $\cdot(y^4+9y^3+37y^2+36y+16)$ $\cdot(y^{12}-5y^{11}+4y^{10}+10y^9-27y^7-8y^6+25y^5+15y^4-5y^3-6y^2+1)$ $\cdot(y^{18}+10y^{17}+\cdots-45y+1)$
c_7, c_{10}, c_{11}	$(y^2-3y+1)(y^4-2y^3+23y^2+118y+121)$ $\cdot(y^4+13y^3+53y^2-92y+16)$ $\cdot(y^{12}-6y^{10}-5y^9+15y^8+25y^7-8y^6-27y^5+10y^3+4y^2-5y+1)$ $\cdot(y^{18}+31y^{17}+\cdots+6y+1)$
c_{12}	$((y^2-3y+1)^5)(y^{12}-24y^{11}+\cdots-234y+81)$ $\cdot(y^{18}-50y^{17}+\cdots-2700y+16)$