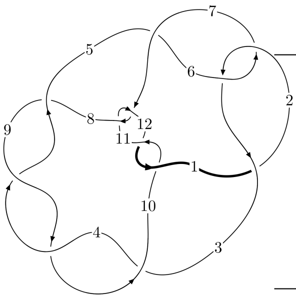
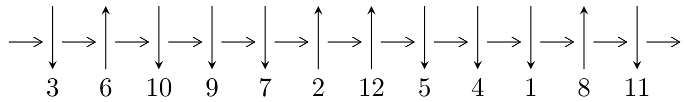
$12a_{0448}$ ($K12a_{0448}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -u^{17} + 5u^{16} + \cdots + 4b + 8,\ -2u^{17} + 9u^{16} + \cdots + 4a + 4,\ u^{18} - 5u^{17} + \cdots - 16u + 4\rangle$$
$$I_2^u = \langle -u^{22}a + 2u^{22} + \cdots - 4a + 5,\ -u^{22}a + u^{22} + \cdots - 4a + 6,\ u^{23} + 2u^{22} + \cdots + 4u + 2\rangle$$
$$I_3^u = \langle -au + b - u,\ 2a^2 + au + 4a + u + 1,\ u^2 + 2\rangle$$
$$I_4^u = \langle b^2 - b + 1,\ 2a - u + 2,\ u^2 + 2\rangle$$

$$I_1^v = \langle a,\ b^2 + b + 1,\ v + 1\rangle$$
$$I_2^v = \langle a,\ b - v + 1,\ v^2 - v + 1\rangle$$

* 6 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 76 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. $\boldsymbol{I^u_1} =$
$\langle -u^{17}+5u^{16}+\cdots+4b+8,\ -2u^{17}+9u^{16}+\cdots+4a+4,\ u^{18}-5u^{17}+\cdots-16u+4\rangle$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} \frac{1}{2}u^{17} - \frac{9}{4}u^{16} + \cdots + 7u - 1 \\ \frac{1}{4}u^{17} - \frac{5}{4}u^{16} + \cdots + 6u - 2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -\frac{1}{4}u^{16} + \frac{5}{4}u^{15} + \cdots + 5u - 2 \\ \frac{1}{4}u^{17} - \frac{3}{4}u^{16} + \cdots + u - 1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -\frac{1}{4}u^{17} + u^{16} + \cdots + u^3 + \frac{5}{2}u^2 \\ -\frac{1}{4}u^{17} + \frac{5}{4}u^{16} + \cdots - 8u + 3 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} \frac{1}{4}u^{17} - u^{16} + \cdots + 6u - 3 \\ \frac{1}{4}u^{17} - \frac{3}{4}u^{16} + \cdots + u - 1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -\frac{1}{4}u^{16} + \frac{3}{4}u^{15} + \cdots + 2u - 1 \\ -\frac{1}{4}u^{17} + \frac{3}{4}u^{16} + \cdots - \frac{7}{2}u^3 + 2u^2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} u^2 + 1 \\ u^4 + 2u^2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} u^3 + 2u \\ u^5 + 3u^3 + u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -\frac{3}{4}u^{16} + \frac{9}{4}u^{15} + \cdots + 6u - 3 \\ -\frac{5}{4}u^{17} + \frac{17}{4}u^{16} + \cdots - 6u + 1 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -2u^{17} + 5u^{16} - 25u^{15} + 46u^{14} - 111u^{13} + 143u^{12} - 191u^{11} + 117u^{10} + 13u^9 - 240u^8 + 433u^7 - 502u^6 + 435u^5 - 247u^4 + 94u^3 - 14u^2 + 10u - 14$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5, c_{10} c_{12}	$y^{18} + 21y^{17} + \cdots + 25y + 1$
c_2, c_6, c_7 c_{11}	$y^{18} + 5y^{17} + \cdots + 9y + 1$
c_3, c_4, c_8 c_9	$y^{18} + 21y^{17} + \cdots + 64y + 16$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.638269 + 0.881512I$ $a = -1.60019 - 0.74448I$ $b = 0.798989 - 0.998980I$	$7.85728 - 11.04010I$	$0.91859 + 8.54564I$
$u = 0.638269 - 0.881512I$ $a = -1.60019 + 0.74448I$ $b = 0.798989 + 0.998980I$	$7.85728 + 11.04010I$	$0.91859 - 8.54564I$
$u = 0.852606 + 0.090205I$ $a = 0.296474 - 0.662577I$ $b = -0.806782 - 0.920581I$	$5.47619 + 6.09265I$	$-0.58572 - 4.92211I$
$u = 0.852606 - 0.090205I$ $a = 0.296474 + 0.662577I$ $b = -0.806782 + 0.920581I$	$5.47619 - 6.09265I$	$-0.58572 + 4.92211I$
$u = 0.535129 + 1.029760I$ $a = -0.479909 - 0.577813I$ $b = 0.859278 + 0.833662I$	$8.92136 + 1.41173I$	$3.03885 - 1.48819I$
$u = 0.535129 - 1.029760I$ $a = -0.479909 + 0.577813I$ $b = 0.859278 - 0.833662I$	$8.92136 - 1.41173I$	$3.03885 + 1.48819I$
$u = 0.451443 + 0.440431I$ $a = 1.09739 + 1.26550I$ $b = -0.064887 + 0.931862I$	$-3.52462 - 1.59054I$	$-11.07724 + 4.91257I$
$u = 0.451443 - 0.440431I$ $a = 1.09739 - 1.26550I$ $b = -0.064887 - 0.931862I$	$-3.52462 + 1.59054I$	$-11.07724 - 4.91257I$
$u = -0.10451 + 1.44331I$ $a = -1.113270 + 0.030081I$ $b = 0.523980 + 0.536010I$	$5.86276 + 2.35783I$	$3.62999 - 2.31324I$
$u = -0.10451 - 1.44331I$ $a = -1.113270 - 0.030081I$ $b = 0.523980 - 0.536010I$	$5.86276 - 2.35783I$	$3.62999 + 2.31324I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.08738 + 1.48686I$ $a = -1.038310 - 0.257211I$ $b = 0.200297 - 0.935744I$	$2.79590 - 3.37304I$	$-6.91564 + 4.05499I$
$u = 0.08738 - 1.48686I$ $a = -1.038310 + 0.257211I$ $b = 0.200297 + 0.935744I$	$2.79590 + 3.37304I$	$-6.91564 - 4.05499I$
$u = -0.285768 + 0.364542I$ $a = 0.901755 - 0.405570I$ $b = -0.242963 - 0.416893I$	$-0.074410 + 0.940749I$	$-1.49251 - 7.14224I$
$u = -0.285768 - 0.364542I$ $a = 0.901755 + 0.405570I$ $b = -0.242963 + 0.416893I$	$-0.074410 - 0.940749I$	$-1.49251 + 7.14224I$
$u = 0.19312 + 1.68324I$ $a = 1.82710 + 0.07303I$ $b = -0.804956 + 1.067950I$	$16.6140 - 14.3108I$	$2.04409 + 7.60234I$
$u = 0.19312 - 1.68324I$ $a = 1.82710 - 0.07303I$ $b = -0.804956 - 1.067950I$	$16.6140 + 14.3108I$	$2.04409 - 7.60234I$
$u = 0.13233 + 1.72622I$ $a = 1.108960 + 0.785050I$ $b = -0.962956 - 0.771207I$	$18.5790 - 1.2471I$	$4.43961 - 1.42871I$
$u = 0.13233 - 1.72622I$ $a = 1.108960 - 0.785050I$ $b = -0.962956 + 0.771207I$	$18.5790 + 1.2471I$	$4.43961 + 1.42871I$

II. $I_2^u = \langle -u^{22}a+2u^{22}+\cdots-4a+5,\ -u^{22}a+u^{22}+\cdots-4a+6,\ u^{23}+2u^{22}+\cdots+4u+2\rangle$

(i) Arc colorings

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

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

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

$$a_6 = \begin{pmatrix} a \\ \frac{1}{6}u^{22}a - \frac{1}{3}u^{22} + \cdots + \frac{2}{3}a - \frac{5}{6} \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -\frac{2}{3}u^{22}a + \frac{1}{12}u^{22} + \cdots - \frac{1}{6}a + \frac{5}{6} \\ \frac{1}{3}u^{22}a + \frac{1}{3}u^{22} + \cdots - \frac{2}{3}a - \frac{1}{6} \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -\frac{1}{6}u^{22}a + \frac{1}{12}u^{22} + \cdots + \frac{5}{6}a + \frac{4}{3} \\ \frac{1}{3}u^{22}a - \frac{1}{6}u^{22} + \cdots + \frac{1}{3}a - \frac{1}{6} \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -\frac{1}{3}u^{22}a + \frac{5}{12}u^{22} + \cdots - \frac{5}{6}a + \frac{2}{3} \\ \frac{1}{3}u^{22}a + \frac{1}{3}u^{22} + \cdots - \frac{2}{3}a - \frac{1}{6} \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -\frac{1}{6}u^{22}a + \frac{1}{12}u^{22} + \cdots - \frac{7}{6}a + \frac{1}{3} \\ -\frac{1}{2}u^{19} - u^{18} + \cdots + 2u^3 - 1 \end{pmatrix}$$

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

$$a_5 = \begin{pmatrix} u^2 + 1 \\ u^4 + 2u^2 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} u^3 + 2u \\ u^5 + 3u^3 + u \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -\frac{1}{6}u^{22}a + \frac{1}{12}u^{22} + \cdots - \frac{7}{6}a + \frac{4}{3} \\ \frac{1}{6}u^{22}a + \frac{1}{6}u^{22} + \cdots - \frac{1}{3}a - \frac{4}{3} \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$= -u^{22} - 2u^{21} - 17u^{20} - 30u^{19} - 123u^{18} - 188u^{17} - 490u^{16} - 634u^{15} - 1160u^{14} - 1234u^{13} - 1637u^{12} - 1380u^{11} - 1295u^{10} - 836u^{9} - 474u^{8} - 258u^{7} - 17u^{6} - 62u^{5} + 31u^{4} - 24u^{3} - u^{2} - 10u - 4$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5, c_{10} c_{12}	$u^{46} + 14u^{45} + \cdots + 143u + 9$
c_2, c_6, c_7 c_{11}	$u^{46} - 2u^{45} + \cdots - u + 3$
c_3, c_4, c_8 c_9	$(u^{23} + 2u^{22} + \cdots + 4u + 2)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5, c_{10} c_{12}	$y^{46} + 38y^{45} + \cdots - 1657y + 81$
c_2, c_6, c_7 c_{11}	$y^{46} + 14y^{45} + \cdots + 143y + 9$
c_3, c_4, c_8 c_9	$(y^{23} + 30y^{22} + \cdots - 16y - 4)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.101717 + 0.956988I$ $a = -1.60922 - 0.38645I$ $b = 0.711126 + 0.848084I$	$4.02906 + 2.70329I$	$3.85709 - 3.53932I$
$u = -0.101717 + 0.956988I$ $a = 0.226852 - 0.116990I$ $b = -0.646487 - 0.011771I$	$4.02906 + 2.70329I$	$3.85709 - 3.53932I$
$u = -0.101717 - 0.956988I$ $a = -1.60922 + 0.38645I$ $b = 0.711126 - 0.848084I$	$4.02906 - 2.70329I$	$3.85709 + 3.53932I$
$u = -0.101717 - 0.956988I$ $a = 0.226852 + 0.116990I$ $b = -0.646487 + 0.011771I$	$4.02906 - 2.70329I$	$3.85709 + 3.53932I$
$u = -0.590527 + 0.950438I$ $a = -0.372401 + 0.626274I$ $b = 0.877763 - 0.787116I$	$8.51760 + 4.81347I$	$2.29624 - 3.66244I$
$u = -0.590527 + 0.950438I$ $a = -1.57386 + 0.59427I$ $b = 0.814494 + 0.963779I$	$8.51760 + 4.81347I$	$2.29624 - 3.66244I$
$u = -0.590527 - 0.950438I$ $a = -0.372401 - 0.626274I$ $b = 0.877763 + 0.787116I$	$8.51760 - 4.81347I$	$2.29624 + 3.66244I$
$u = -0.590527 - 0.950438I$ $a = -1.57386 - 0.59427I$ $b = 0.814494 - 0.963779I$	$8.51760 - 4.81347I$	$2.29624 + 3.66244I$
$u = -0.851549$ $a = 0.318977 + 0.641567I$ $b = -0.822919 + 0.871364I$	5.62987	-0.159510
$u = -0.851549$ $a = 0.318977 - 0.641567I$ $b = -0.822919 - 0.871364I$	5.62987	-0.159510

Solutions to I_2^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.310581 + 0.724102I$ $a = 0.74445 + 1.33030I$ $b = -0.287866 + 1.056100I$	$0.71904 - 5.93181I$	$-2.27026 + 8.51733I$
$u = 0.310581 + 0.724102I$ $a = -2.48407 - 0.16612I$ $b = 0.687979 - 0.915445I$	$0.71904 - 5.93181I$	$-2.27026 + 8.51733I$
$u = 0.310581 - 0.724102I$ $a = 0.74445 - 1.33030I$ $b = -0.287866 - 1.056100I$	$0.71904 + 5.93181I$	$-2.27026 - 8.51733I$
$u = 0.310581 - 0.724102I$ $a = -2.48407 + 0.16612I$ $b = 0.687979 + 0.915445I$	$0.71904 + 5.93181I$	$-2.27026 - 8.51733I$
$u = -0.142481 + 0.697709I$ $a = 0.596174 - 1.278220I$ $b = -0.350478 - 1.020240I$	$1.074320 + 0.665738I$	$-0.12924 - 2.13889I$
$u = -0.142481 + 0.697709I$ $a = -1.30149 + 1.63106I$ $b = 0.674450 - 0.798832I$	$1.074320 + 0.665738I$	$-0.12924 - 2.13889I$
$u = -0.142481 - 0.697709I$ $a = 0.596174 + 1.278220I$ $b = -0.350478 + 1.020240I$	$1.074320 - 0.665738I$	$-0.12924 + 2.13889I$
$u = -0.142481 - 0.697709I$ $a = -1.30149 - 1.63106I$ $b = 0.674450 + 0.798832I$	$1.074320 - 0.665738I$	$-0.12924 + 2.13889I$
$u = 0.06498 + 1.43187I$ $a = -0.914346 - 0.030523I$ $b = 0.538898 + 0.948585I$	$4.71222 + 1.83282I$	$-1.19119 - 3.38662I$
$u = 0.06498 + 1.43187I$ $a = -1.185950 + 0.041711I$ $b = 0.103552 - 0.462526I$	$4.71222 + 1.83282I$	$-1.19119 - 3.38662I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.06498 - 1.43187I$ $a = -0.914346 + 0.030523I$ $b = 0.538898 - 0.948585I$	$4.71222 - 1.83282I$	$-1.19119 + 3.38662I$
$u = 0.06498 - 1.43187I$ $a = -1.185950 - 0.041711I$ $b = 0.103552 + 0.462526I$	$4.71222 - 1.83282I$	$-1.19119 + 3.38662I$
$u = 0.412009 + 0.257420I$ $a = 0.363474 - 0.843475I$ $b = -0.582313 - 0.938382I$	$-0.68358 + 3.35221I$	$-7.56970 - 0.50241I$
$u = 0.412009 + 0.257420I$ $a = 2.42625 + 1.01899I$ $b = 0.239705 + 0.775765I$	$-0.68358 + 3.35221I$	$-7.56970 - 0.50241I$
$u = 0.412009 - 0.257420I$ $a = 0.363474 + 0.843475I$ $b = -0.582313 + 0.938382I$	$-0.68358 - 3.35221I$	$-7.56970 + 0.50241I$
$u = 0.412009 - 0.257420I$ $a = 2.42625 - 1.01899I$ $b = 0.239705 - 0.775765I$	$-0.68358 - 3.35221I$	$-7.56970 + 0.50241I$
$u = -0.383099 + 0.261626I$ $a = 0.585655 - 0.689766I$ $b = -0.517899 - 0.693977I$	$0.093901 + 1.148620I$	$-3.53575 - 5.49340I$
$u = -0.383099 + 0.261626I$ $a = 1.57410 + 0.04794I$ $b = 0.258543 - 0.493766I$	$0.093901 + 1.148620I$	$-3.53575 - 5.49340I$
$u = -0.383099 - 0.261626I$ $a = 0.585655 + 0.689766I$ $b = -0.517899 + 0.693977I$	$0.093901 - 1.148620I$	$-3.53575 + 5.49340I$
$u = -0.383099 - 0.261626I$ $a = 1.57410 - 0.04794I$ $b = 0.258543 + 0.493766I$	$0.093901 - 1.148620I$	$-3.53575 + 5.49340I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.08026 + 1.64365I$ $a = -0.748904 - 0.268338I$ $b = 0.290120 - 1.211260I$	$9.00822 - 7.36719I$	$-0.13452 + 5.65922I$
$u = 0.08026 + 1.64365I$ $a = 2.05640 - 0.46486I$ $b = -0.792060 + 0.953651I$	$9.00822 - 7.36719I$	$-0.13452 + 5.65922I$
$u = 0.08026 - 1.64365I$ $a = -0.748904 + 0.268338I$ $b = 0.290120 + 1.211260I$	$9.00822 + 7.36719I$	$-0.13452 - 5.65922I$
$u = 0.08026 - 1.64365I$ $a = 2.05640 + 0.46486I$ $b = -0.792060 - 0.953651I$	$9.00822 + 7.36719I$	$-0.13452 - 5.65922I$
$u = -0.03421 + 1.64579I$ $a = -0.745240 + 0.215693I$ $b = 0.349052 + 1.200860I$	$9.38747 + 1.29678I$	$0.796324 - 0.636248I$
$u = -0.03421 + 1.64579I$ $a = 1.59194 - 1.02205I$ $b = -0.830675 + 0.831897I$	$9.38747 + 1.29678I$	$0.796324 - 0.636248I$
$u = -0.03421 - 1.64579I$ $a = -0.745240 - 0.215693I$ $b = 0.349052 - 1.200860I$	$9.38747 - 1.29678I$	$0.796324 + 0.636248I$
$u = -0.03421 - 1.64579I$ $a = 1.59194 + 1.02205I$ $b = -0.830675 - 0.831897I$	$9.38747 - 1.29678I$	$0.796324 + 0.636248I$
$u = -0.02383 + 1.69128I$ $a = -1.015700 + 0.009140I$ $b = 0.935462 + 0.040302I$	$13.36410 + 3.17654I$	$4.50027 - 2.52968I$
$u = -0.02383 + 1.69128I$ $a = 1.68568 + 0.63299I$ $b = -0.856758 - 0.910373I$	$13.36410 + 3.17654I$	$4.50027 - 2.52968I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.02383-1.69128I$ $a=-1.015700-0.009140I$ $b=\ \ 0.935462-0.040302I$	$13.36410-3.17654I$	$4.50027+2.52968I$
$u=-0.02383-1.69128I$ $a=\ \ 1.68568-0.63299I$ $b=-0.856758+0.910373I$	$13.36410-3.17654I$	$4.50027+2.52968I$
$u=-0.16619+1.70559I$ $a=\ \ 1.009680-0.837259I$ $b=-0.963165+0.726960I$	$17.6949+7.8244I$	$3.46049-3.10546I$
$u=-0.16619+1.70559I$ $a=\ \ 1.77155+0.04416I$ $b=-0.830523-1.049140I$	$17.6949+7.8244I$	$3.46049-3.10546I$
$u=-0.16619-1.70559I$ $a=\ \ 1.009680+0.837259I$ $b=-0.963165-0.726960I$	$17.6949-7.8244I$	$3.46049+3.10546I$
$u=-0.16619-1.70559I$ $a=\ \ 1.77155-0.04416I$ $b=-0.830523+1.049140I$	$17.6949-7.8244I$	$3.46049+3.10546I$

III. $\boldsymbol{I_3^u = \langle -au + b - u,\ 2a^2 + au + 4a + u + 1,\ u^2 + 2\rangle}$

(i) Arc colorings

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

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

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

$$a_6 = \begin{pmatrix} a \\ au + u \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} a + \frac{1}{2}u + 1 \\ au + u - 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} a + \frac{1}{2}u + 1 \\ au + u - 1 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} a + 1 \\ au + 2u \end{pmatrix}$$

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

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

$$a_8 = \begin{pmatrix} 0 \\ -u \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} a + 1 \\ au + 2a + 2u + 2 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -8au - 8u + 4$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.414210I$ $a = -0.387628 - 0.353553I$ $b = 0.500000 + 0.866025I$	$4.93480 + 4.05977I$	$0. - 6.92820I$
$u = 1.414210I$ $a = -1.61237 - 0.35355I$ $b = 0.500000 - 0.866025I$	$4.93480 - 4.05977I$	$0. + 6.92820I$
$u = -1.414210I$ $a = -0.387628 + 0.353553I$ $b = 0.500000 - 0.866025I$	$4.93480 - 4.05977I$	$0. + 6.92820I$
$u = -1.414210I$ $a = -1.61237 + 0.35355I$ $b = 0.500000 + 0.866025I$	$4.93480 + 4.05977I$	$0. - 6.92820I$

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

(i) Arc colorings

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

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

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

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

$$a_2 = \begin{pmatrix} \frac{1}{2}bu - b + 1 \\ b - 1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} \frac{1}{2}bu \\ b - 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} \frac{1}{2}bu \\ b - 1 \end{pmatrix}$$

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

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

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

$$a_8 = \begin{pmatrix} 0 \\ -u \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} \frac{1}{2}bu - \frac{1}{2}u \\ bu - 1 \end{pmatrix}$$

(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_7, c_{10}	$(u^2 - u + 1)^2$
c_3, c_4, c_8 c_9	$(u^2 + 2)^2$
c_6, c_{11}, c_{12}	$(u^2 + u + 1)^2$

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.414210I$ $a = -1.000000 + 0.707107I$ $b = 0.500000 + 0.866025I$	4.93480	0
$u = 1.414210I$ $a = -1.000000 + 0.707107I$ $b = 0.500000 - 0.866025I$	4.93480	0
$u = -1.414210I$ $a = -1.000000 - 0.707107I$ $b = 0.500000 + 0.866025I$	4.93480	0
$u = -1.414210I$ $a = -1.000000 - 0.707107I$ $b = 0.500000 - 0.866025I$	4.93480	0

V. $I_1^v = \langle a,\ b^2+b+1,\ v+1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 8b + 4$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = -1.00000$ $a = 0$ $b = -0.500000 + 0.866025I$	$-4.05977I$	$0. + 6.92820I$
$v = -1.00000$ $a = 0$ $b = -0.500000 - 0.866025I$	$4.05977I$	$0. - 6.92820I$

VI. $I_2^v = \langle a,\ b - v + 1,\ v^2 - v + 1\rangle$

(i) Arc colorings

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

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

$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$

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

$a_2 = \begin{pmatrix} 1 \\ -v \end{pmatrix}$

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

$a_1 = \begin{pmatrix} -v+1 \\ -v \end{pmatrix}$

$a_{11} = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$

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

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

$a_8 = \begin{pmatrix} v \\ 0 \end{pmatrix}$

$a_{12} = \begin{pmatrix} -v+1 \\ -1 \end{pmatrix}$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = 0.500000 + 0.866025I$ $a = 0$ $b = -0.500000 + 0.866025I$	0	−6.00000
$v = 0.500000 - 0.866025I$ $a = 0$ $b = -0.500000 - 0.866025I$	0	−6.00000

VII. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_5, c_{10}	$((u^2-u+1)^6)(u^{18}+5u^{17}+\cdots+9u+1)(u^{46}+14u^{45}+\cdots+143u+9)$
c_2, c_7	$((u^2-u+1)^4)(u^2+u+1)^2(u^{18}-u^{17}+\cdots-u+1)$ $\cdot(u^{46}-2u^{45}+\cdots-u+3)$
c_3, c_4, c_8 c_9	$u^4(u^2+2)^4(u^{18}-5u^{17}+\cdots-16u+4)(u^{23}+2u^{22}+\cdots+4u+2)^2$
c_6, c_{11}	$((u^2-u+1)^2)(u^2+u+1)^4(u^{18}-u^{17}+\cdots-u+1)$ $\cdot(u^{46}-2u^{45}+\cdots-u+3)$
c_{12}	$((u^2+u+1)^6)(u^{18}+5u^{17}+\cdots+9u+1)(u^{46}+14u^{45}+\cdots+143u+9)$

VIII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_5, c_{10} c_{12}	$((y^2+y+1)^6)(y^{18}+21y^{17}+\cdots+25y+1)$ $\cdot\,(y^{46}+38y^{45}+\cdots-1657y+81)$
c_2, c_6, c_7 c_{11}	$((y^2+y+1)^6)(y^{18}+5y^{17}+\cdots+9y+1)(y^{46}+14y^{45}+\cdots+143y+9)$
c_3, c_4, c_8 c_9	$y^4(y+2)^8(y^{18}+21y^{17}+\cdots+64y+16)$ $\cdot\,(y^{23}+30y^{22}+\cdots-16y-4)^2$