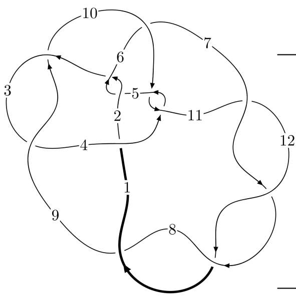
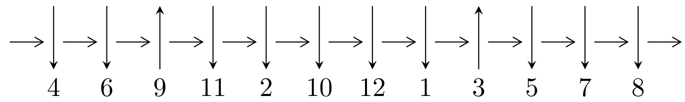
$12a_{0923}$ ($K12a_{0923}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u &= \langle -169316u^{55} + 765227u^{54} + \cdots + 1990656b + 207504590, \\
&\quad 64741301u^{55} - 347996846u^{54} + \cdots + 709337088a - 165503765534, \\
&\quad u^{56} - 6u^{55} + \cdots - 5065u + 2138 \rangle \\
I_2^u &= \langle u^5 + b + u,\ -7u^5 - 2u^4 + u^3 + u^2 + 5a - 8u - 3,\ u^6 + u^4 + 2u^2 + 1 \rangle \\
I_3^u &= \langle -a^2 + b - a,\ a^3 + 2a^2 + a - 1,\ u + 1 \rangle \\
I_4^u &= \langle b^4a^2 - 2b^3a + 2b^2a^2 - b^2a + b^2 - 2ba + a^2 + b - a - 1,\ u + 1 \rangle
\end{aligned}$$

$$I_1^v = \langle a,\ b^6 + 2b^4 + b^3 + b^2 + b - 1,\ v - 1 \rangle$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 71 representations.
* 1 irreducible components of $\dim_{\mathbb{C}} = 1$

[1]The image of knot diagram is generated by the software "**Draw programme**" developed by Andrew Bartholomew(`http://www.layer8.co.uk/maths/draw/index.htm#Running-draw`), where we modified some parts for our purpose(`https://github.com/CATsTAILs/LinksPainter`).

[2]All coefficients of polynomials are rational numbers. But the coefficients are sometimes approximated in decimal forms when there is not enough margin.

**I. $I^u_1 =$
$\langle -1.69\times10^{5}u^{55}+7.65\times10^{5}u^{54}+\cdots+1.99\times10^{6}b+2.08\times10^{8},\ 6.47\times10^{7}u^{55}-3.48\times10^{8}u^{54}+\cdots+7.09\times10^{8}a-1.66\times10^{11},\ u^{56}-6u^{55}+\cdots-5065u+2138\rangle$**

(i) Arc colorings

$$a_2 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_5 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_6 = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_3 = \begin{pmatrix}-u\\-u^3+u\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-0.0912701u^{55}+0.490594u^{54}+\cdots-305.555u+233.322\\0.0850554u^{55}-0.384409u^{54}+\cdots+202.825u-104.239\end{pmatrix}$$
$$a_4 = \begin{pmatrix}-0.0214370u^{55}+0.107795u^{54}+\cdots-64.6193u+46.3327\\0.00435384u^{55}-0.0207994u^{54}+\cdots+12.3366u-6.37981\end{pmatrix}$$
$$a_1 = \begin{pmatrix}0.0281056u^{55}-0.145026u^{54}+\cdots+85.8717u-67.5545\\-0.0278343u^{55}+0.123449u^{54}+\cdots-62.7416u+34.1313\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}-0.00621477u^{55}+0.106185u^{54}+\cdots-102.730u+129.082\\0.0850554u^{55}-0.384409u^{54}+\cdots+202.825u-104.239\end{pmatrix}$$
$$a_7 = \begin{pmatrix}0.0442234u^{55}-0.241015u^{54}+\cdots+145.317u-135.156\\-0.0182020u^{55}+0.0910577u^{54}+\cdots-54.3352u+39.5251\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}0.111606u^{55}-0.585341u^{54}+\cdots+348.486u-276.321\\0.0596452u^{55}-0.316842u^{54}+\cdots+200.960u-123.452\end{pmatrix}$$
$$a_9 = \begin{pmatrix}0.0627283u^{55}-0.266879u^{54}+\cdots+135.607u-49.3441\\0.0142003u^{55}-0.0564472u^{54}+\cdots+22.6996u-12.6041\end{pmatrix}$$
$$a_8 = \begin{pmatrix}0.180172u^{55}-0.822387u^{54}+\cdots+451.374u-189.430\\0.0792387u^{55}-0.456648u^{54}+\cdots+304.815u-239.788\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{563051}{2985984}u^{55}+\frac{2308397}{2985984}u^{54}+\cdots-\frac{186951611}{497664}u+\frac{9690719}{186624}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$16(16u^{56} - 48u^{55} + \cdots + 388278u + 882567)$
c_2, c_5	$u^{56} - 6u^{55} + \cdots - 5065u + 2138$
c_3, c_9	$9(9u^{56} - 9u^{55} + \cdots + 80u + 25)$
c_4, c_{10}	$9(9u^{56} - 9u^{55} + \cdots - 50u + 25)$
c_6	$16(16u^{56} + 32u^{55} + \cdots + 735282u + 119709)$
c_7, c_8, c_{11} c_{12}	$u^{56} + 4u^{55} + \cdots - 7u + 62$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$256 \cdot (256y^{56} - 11136y^{55} + \cdots - 10663154787870y + 778924509489)$
c_2, c_5	$y^{56} - 32y^{55} + \cdots - 6390845y + 4571044$
c_3, c_9	$81(81y^{56} + 4239y^{55} + \cdots + 12400y + 625)$
c_4, c_{10}	$81(81y^{56} + 1971y^{55} + \cdots + 16400y + 625)$
c_6	$256(256y^{56} - 10624y^{55} + \cdots - 1.77562 \times 10^{11}y + 1.43302 \times 10^{10})$
c_7, c_8, c_{11} c_{12}	$y^{56} - 66y^{55} + \cdots - 2901y + 3844$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.984706 + 0.213928I$ $a = 2.54376 - 1.38909I$ $b = 0.219398 + 0.692771I$	$-10.33120 - 0.88863I$	$-11.9568 + 8.3028I$
$u = 0.984706 - 0.213928I$ $a = 2.54376 + 1.38909I$ $b = 0.219398 - 0.692771I$	$-10.33120 + 0.88863I$	$-11.9568 - 8.3028I$
$u = 0.981741 + 0.367067I$ $a = -1.39029 + 1.32174I$ $b = -0.297204 - 0.885770I$	$-1.84811 - 1.66866I$	$-10.40782 + 3.06587I$
$u = 0.981741 - 0.367067I$ $a = -1.39029 - 1.32174I$ $b = -0.297204 + 0.885770I$	$-1.84811 + 1.66866I$	$-10.40782 - 3.06587I$
$u = -0.392152 + 0.823059I$ $a = 0.331863 + 0.870571I$ $b = -0.459949 - 0.211030I$	$-4.33948 + 2.58823I$	$-15.9377 - 3.4312I$
$u = -0.392152 - 0.823059I$ $a = 0.331863 - 0.870571I$ $b = -0.459949 + 0.211030I$	$-4.33948 - 2.58823I$	$-15.9377 + 3.4312I$
$u = -0.210486 + 0.885885I$ $a = -0.754309 - 0.859129I$ $b = 0.916464 + 0.273165I$	$-13.7069 + 4.2294I$	$-15.0908 - 2.2409I$
$u = -0.210486 - 0.885885I$ $a = -0.754309 + 0.859129I$ $b = 0.916464 - 0.273165I$	$-13.7069 - 4.2294I$	$-15.0908 + 2.2409I$
$u = -1.117840 + 0.121937I$ $a = 0.183222 - 0.754249I$ $b = -0.175598 - 0.720988I$	$-2.33703 - 0.81235I$	$-9.18182 + 8.94342I$
$u = -1.117840 - 0.121937I$ $a = 0.183222 + 0.754249I$ $b = -0.175598 + 0.720988I$	$-2.33703 + 0.81235I$	$-9.18182 - 8.94342I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.783032 + 0.807710I$ $a = -0.52560 + 1.38392I$ $b = -0.010851 - 1.124970I$	$-1.59922 - 2.81223I$	$-5.39241 + 2.86664I$
$u = 0.783032 - 0.807710I$ $a = -0.52560 - 1.38392I$ $b = -0.010851 + 1.124970I$	$-1.59922 + 2.81223I$	$-5.39241 - 2.86664I$
$u = -0.066075 + 1.135000I$ $a = -0.36094 - 1.62838I$ $b = 0.615579 + 1.197570I$	$-10.9441 - 9.8213I$	$-12.63911 + 5.52696I$
$u = -0.066075 - 1.135000I$ $a = -0.36094 + 1.62838I$ $b = 0.615579 - 1.197570I$	$-10.9441 + 9.8213I$	$-12.63911 - 5.52696I$
$u = 0.411231 + 0.747950I$ $a = 0.36943 - 1.47797I$ $b = -0.166040 + 1.104020I$	$3.36428 - 0.23401I$	$-0.97991 + 2.43933I$
$u = 0.411231 - 0.747950I$ $a = 0.36943 + 1.47797I$ $b = -0.166040 - 1.104020I$	$3.36428 + 0.23401I$	$-0.97991 - 2.43933I$
$u = 1.098780 + 0.455875I$ $a = 1.02438 - 1.04747I$ $b = 0.490597 + 1.118040I$	$1.18518 - 4.32062I$	$-5.36534 + 4.17876I$
$u = 1.098780 - 0.455875I$ $a = 1.02438 + 1.04747I$ $b = 0.490597 - 1.118040I$	$1.18518 + 4.32062I$	$-5.36534 - 4.17876I$
$u = -1.182510 + 0.227112I$ $a = -0.429835 + 0.746826I$ $b = 0.377689 + 0.830409I$	$-9.97809 - 1.88428I$	$-12.95942 + 3.16374I$
$u = -1.182510 - 0.227112I$ $a = -0.429835 - 0.746826I$ $b = 0.377689 - 0.830409I$	$-9.97809 + 1.88428I$	$-12.95942 - 3.16374I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.651226 + 1.017980I$ $a = 0.229212 + 1.095150I$ $b = -0.154199 - 0.511987I$	$-4.36511 + 2.70896I$	$-17.8835 - 1.9240I$
$u = -0.651226 - 1.017980I$ $a = 0.229212 - 1.095150I$ $b = -0.154199 + 0.511987I$	$-4.36511 - 2.70896I$	$-17.8835 + 1.9240I$
$u = -0.118014 + 1.203290I$ $a = 0.30642 + 1.47527I$ $b = -0.503344 - 1.061300I$	$-2.28016 - 6.66641I$	$-11.44494 + 7.11180I$
$u = -0.118014 - 1.203290I$ $a = 0.30642 - 1.47527I$ $b = -0.503344 + 1.061300I$	$-2.28016 + 6.66641I$	$-11.44494 - 7.11180I$
$u = 0.143056 + 0.772743I$ $a = 0.641494 - 1.196870I$ $b = -0.574548 + 1.166620I$	$-5.75586 + 5.22238I$	$-8.67240 - 3.67476I$
$u = 0.143056 - 0.772743I$ $a = 0.641494 + 1.196870I$ $b = -0.574548 - 1.166620I$	$-5.75586 - 5.22238I$	$-8.67240 + 3.67476I$
$u = 0.233014 + 0.741341I$ $a = -0.428118 + 1.316410I$ $b = 0.373389 - 1.116040I$	$2.07162 + 3.27052I$	$-5.16362 - 5.02421I$
$u = 0.233014 - 0.741341I$ $a = -0.428118 - 1.316410I$ $b = 0.373389 + 1.116040I$	$2.07162 - 3.27052I$	$-5.16362 + 5.02421I$
$u = 1.154880 + 0.445094I$ $a = -0.940220 + 0.970110I$ $b = -0.705436 - 1.185240I$	$-0.73558 - 7.71938I$	$-8.00000 + 9.01590I$
$u = 1.154880 - 0.445094I$ $a = -0.940220 - 0.970110I$ $b = -0.705436 + 1.185240I$	$-0.73558 + 7.71938I$	$-8.00000 - 9.01590I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.186190 + 0.441930I$ $a = 0.863048 - 0.971863I$ $b = 0.89596 + 1.24873I$	$-8.91014 - 9.70074I$	0
$u = 1.186190 - 0.441930I$ $a = 0.863048 + 0.971863I$ $b = 0.89596 - 1.24873I$	$-8.91014 + 9.70074I$	0
$u = -0.281565 + 1.254220I$ $a = -0.289928 - 1.294920I$ $b = 0.396705 + 0.868356I$	$-0.09114 - 1.67831I$	0
$u = -0.281565 - 1.254220I$ $a = -0.289928 + 1.294920I$ $b = 0.396705 - 0.868356I$	$-0.09114 + 1.67831I$	0
$u = 1.324820 + 0.384063I$ $a = 0.055551 + 0.278282I$ $b = -1.364170 + 0.268279I$	$-18.4368 - 8.6427I$	0
$u = 1.324820 - 0.384063I$ $a = 0.055551 - 0.278282I$ $b = -1.364170 - 0.268279I$	$-18.4368 + 8.6427I$	0
$u = 1.335470 + 0.358449I$ $a = 0.0527808 - 0.1215550I$ $b = 1.127220 - 0.238919I$	$-9.45136 - 6.69405I$	0
$u = 1.335470 - 0.358449I$ $a = 0.0527808 + 0.1215550I$ $b = 1.127220 + 0.238919I$	$-9.45136 + 6.69405I$	0
$u = -1.225400 + 0.652300I$ $a = -0.32305 - 1.43167I$ $b = -0.732798 + 0.721623I$	$-16.5150 + 1.3611I$	0
$u = -1.225400 - 0.652300I$ $a = -0.32305 + 1.43167I$ $b = -0.732798 - 0.721623I$	$-16.5150 - 1.3611I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.37863 + 0.31544I$ $a = -0.092380 - 0.165122I$ $b = -0.799954 + 0.318153I$	$-6.21382 - 3.21160I$	0
$u = 1.37863 - 0.31544I$ $a = -0.092380 + 0.165122I$ $b = -0.799954 - 0.318153I$	$-6.21382 + 3.21160I$	0
$u = -1.35351 + 0.56530I$ $a = -0.87548 - 1.35090I$ $b = -0.72269 + 1.34990I$	$-15.0022 + 15.8154I$	0
$u = -1.35351 - 0.56530I$ $a = -0.87548 + 1.35090I$ $b = -0.72269 - 1.34990I$	$-15.0022 - 15.8154I$	0
$u = -1.36457 + 0.58672I$ $a = 0.77901 + 1.28814I$ $b = 0.65208 - 1.26539I$	$-6.2885 + 12.9423I$	0
$u = -1.36457 - 0.58672I$ $a = 0.77901 - 1.28814I$ $b = 0.65208 + 1.26539I$	$-6.2885 - 12.9423I$	0
$u = -1.32133 + 0.68751I$ $a = 0.471952 + 1.284130I$ $b = 0.577036 - 0.948979I$	$-6.95153 + 3.85491I$	0
$u = -1.32133 - 0.68751I$ $a = 0.471952 - 1.284130I$ $b = 0.577036 + 0.948979I$	$-6.95153 - 3.85491I$	0
$u = 1.46368 + 0.35591I$ $a = -0.123992 + 0.336867I$ $b = 0.659559 - 0.634367I$	$-7.88342 + 0.96412I$	0
$u = 1.46368 - 0.35591I$ $a = -0.123992 - 0.336867I$ $b = 0.659559 + 0.634367I$	$-7.88342 - 0.96412I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.37201 + 0.62798I$ $a = -0.645034 - 1.241570I$ $b = -0.581916 + 1.144830I$	$-3.77550 + 8.37956I$	0
$u = -1.37201 - 0.62798I$ $a = -0.645034 + 1.241570I$ $b = -0.581916 - 1.144830I$	$-3.77550 - 8.37956I$	0
$u = 1.46550 + 0.44360I$ $a = 0.324608 - 0.372587I$ $b = -0.689131 + 0.909581I$	$-15.9597 + 4.0146I$	0
$u = 1.46550 - 0.44360I$ $a = 0.324608 + 0.372587I$ $b = -0.689131 - 0.909581I$	$-15.9597 - 4.0146I$	0
$u = -0.288024 + 0.269790I$ $a = 0.642999 - 0.968459I$ $b = 0.136152 - 0.381527I$	$-0.573993 + 0.867939I$	$-10.17045 - 7.71087I$
$u = -0.288024 - 0.269790I$ $a = 0.642999 + 0.968459I$ $b = 0.136152 + 0.381527I$	$-0.573993 - 0.867939I$	$-10.17045 + 7.71087I$

II. $\boldsymbol{I_2^u = \langle u^5 + b + u,\ -7u^5 - 2u^4 + u^3 + u^2 + 5a - 8u - 3,\ u^6 + u^4 + 2u^2 + 1\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} \frac{7}{5}u^5 + \frac{2}{5}u^4 + \cdots + \frac{8}{5}u + \frac{3}{5} \\ -u^5 - u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} \frac{4}{5}u^5 - \frac{1}{5}u^4 + \cdots + \frac{6}{5}u - \frac{4}{5} \\ 1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -0.240000u^5 + 0.560000u^4 + \cdots - 0.160000u + 1.04000 \\ -\frac{1}{5}u^5 - \frac{1}{5}u^4 + \cdots + \frac{1}{5}u - \frac{4}{5} \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} \frac{2}{5}u^5 + \frac{2}{5}u^4 + \cdots + \frac{3}{5}u + \frac{3}{5} \\ -u^5 - u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -0.240000u^5 + 0.560000u^4 + \cdots - 0.160000u + 2.04000 \\ -\frac{1}{5}u^5 - \frac{1}{5}u^4 + \cdots - \frac{4}{5}u - \frac{4}{5} \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -0.0800000u^5 + 0.520000u^4 + \cdots + 0.280000u + 0.680000 \\ -\frac{2}{5}u^5 - \frac{2}{5}u^4 + \cdots + \frac{2}{5}u - \frac{3}{5} \end{pmatrix}$$
$$a_9 = \begin{pmatrix} \frac{2}{5}u^5 + \frac{7}{5}u^4 + \cdots + \frac{3}{5}u + \frac{8}{5} \\ -u^5 - u^4 - 2u^2 - u - 2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -0.0800000u^5 + 1.52000u^4 + \cdots + 0.280000u + 1.68000 \\ -\frac{2}{5}u^5 - \frac{7}{5}u^4 + \cdots - \frac{3}{5}u - \frac{8}{5} \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4u^4 + 4u^2 - 4$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$5(5u^6 - 14u^5 + 23u^4 - 24u^3 + 16u^2 - 6u + 1)$
c_2, c_5	$u^6 + u^4 + 2u^2 + 1$
c_3, c_4, c_9 c_{10}	$(u^2 + 1)^3$
c_6	$5(5u^6 + 8u^5 + 3u^4 + 2u^3 + 4u^2 + 2u + 1)$
c_7, c_8, c_{11} c_{12}	$u^6 - 3u^4 + 2u^2 + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$25(25y^6+34y^5+17y^4+2y^3+14y^2-4y+1)$
c_2, c_5	$(y^3+y^2+2y+1)^2$
c_3, c_4, c_9 c_{10}	$(y+1)^6$
c_6	$25(25y^6-34y^5+17y^4-2y^3+14y^2+4y+1)$
c_7, c_8, c_{11} c_{12}	$(y^3-3y^2+2y+1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.744862 + 0.877439I$ $a = 0.38847 - 1.86784I$ $b = 1.000000I$	$-3.02413 + 2.82812I$	$-11.50976 + 2.97945I$
$u = 0.744862 - 0.877439I$ $a = 0.38847 + 1.86784I$ $b = -1.000000I$	$-3.02413 - 2.82812I$	$-11.50976 - 2.97945I$
$u = -0.744862 + 0.877439I$ $a = -0.432328 - 0.895156I$ $b = 1.000000I$	$-3.02413 - 2.82812I$	$-11.50976 - 2.97945I$
$u = -0.744862 - 0.877439I$ $a = -0.432328 + 0.895156I$ $b = -1.000000I$	$-3.02413 + 2.82812I$	$-11.50976 + 2.97945I$
$u = 0.754878I$ $a = 0.84386 + 1.63701I$ $b = -1.000000I$	1.11345	-4.98050
$u = -0.754878I$ $a = 0.84386 - 1.63701I$ $b = 1.000000I$	1.11345	-4.98050

III. $I_3^u = \langle -a^2 + b - a,\ a^3 + 2a^2 + a - 1,\ u + 1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.00000$ $a=-1.23279+0.79255I$ $b=-0.341164-1.161540I$	-1.64493	-6.00000
$u=-1.00000$ $a=-1.23279-0.79255I$ $b=-0.341164+1.161540I$	-1.64493	-6.00000
$u=-1.00000$ $a=\ \ 0.465571$ $b=\ \ 0.682328$	-1.64493	-6.00000

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -16$

(iv) u-Polynomials at the component : It cannot be defined for a positive dimension component.

(v) Riley Polynomials at the component : It cannot be defined for a positive dimension component.

(iv) Complex Volumes and Cusp Shapes

Solution to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \cdots$ $a = \cdots$ $b = \cdots$	-10.5276	-16.0000

V. $I_1^v = \langle a,\ b^6 + 2b^4 + b^3 + b^2 + b - 1,\ v - 1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -10$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^6 - 4y^5 + 18y^4 - 35y^3 + 43y^2 - 19y + 1$
c_2, c_5	y^6
c_3, c_4, c_6 c_9, c_{10}	$y^6 + 4y^5 + 6y^4 + y^3 - 5y^2 - 3y + 1$
c_7, c_8, c_{11} c_{12}	$(y^2 - 3y + 1)^3$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$v = 1.00000$ $a = 0$ $b = -0.896795$	-8.88264	-10.0000
$v = 1.00000$ $a = 0$ $b = -0.248003 + 1.088360I$	-0.986960	-10.0000
$v = 1.00000$ $a = 0$ $b = -0.248003 - 1.088360I$	-0.986960	-10.0000
$v = 1.00000$ $a = 0$ $b = 0.448397 + 1.266170I$	-8.88264	-10.0000
$v = 1.00000$ $a = 0$ $b = 0.448397 - 1.266170I$	-8.88264	-10.0000
$v = 1.00000$ $a = 0$ $b = 0.496006$	-0.986960	-10.0000

VI. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$80(u^3+u+1)(u^6+4u^5+6u^4+u^3-5u^2-3u+1)$ $\cdot(5u^6-14u^5+23u^4-24u^3+16u^2-6u+1)$ $\cdot(16u^{56}-48u^{55}+\cdots+388278u+882567)$
c_2, c_5	$u^6(u+1)^3(u^6+u^4+2u^2+1)(u^{56}-6u^{55}+\cdots-5065u+2138)$
c_3, c_9	$9(u^2+1)^3(u^3+u+1)(u^6+2u^4-u^3+u^2-u-1)$ $\cdot(9u^{56}-9u^{55}+\cdots+80u+25)$
c_4, c_{10}	$9(u^2+1)^3(u^3+u+1)(u^6+2u^4-u^3+u^2-u-1)$ $\cdot(9u^{56}-9u^{55}+\cdots-50u+25)$
c_6	$80(u^3+2u^2+u-1)(u^6+2u^4-u^3+u^2-u-1)$ $\cdot(5u^6+8u^5+3u^4+2u^3+4u^2+2u+1)$ $\cdot(16u^{56}+32u^{55}+\cdots+735282u+119709)$
c_7, c_8, c_{11} c_{12}	$u^3(u^2-u-1)^3(u^6-3u^4+2u^2+1)(u^{56}+4u^{55}+\cdots-7u+62)$

VII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$6400(y^3+2y^2+y-1)(y^6-4y^5+18y^4-35y^3+43y^2-19y+1)$ $\cdot(25y^6+34y^5+17y^4+2y^3+14y^2-4y+1)$ $\cdot(256y^{56}-11136y^{55}+\cdots-10663154787870y+778924509489)$
c_2, c_5	$y^6(y-1)^3(y^3+y^2+2y+1)^2$ $\cdot(y^{56}-32y^{55}+\cdots-6390845y+4571044)$
c_3, c_9	$81(y+1)^6(y^3+2y^2+y-1)(y^6+4y^5+6y^4+y^3-5y^2-3y+1)$ $\cdot(81y^{56}+4239y^{55}+\cdots+12400y+625)$
c_4, c_{10}	$81(y+1)^6(y^3+2y^2+y-1)(y^6+4y^5+6y^4+y^3-5y^2-3y+1)$ $\cdot(81y^{56}+1971y^{55}+\cdots+16400y+625)$
c_6	$6400(y^3-2y^2+5y-1)(y^6+4y^5+6y^4+y^3-5y^2-3y+1)$ $\cdot(25y^6-34y^5+17y^4-2y^3+14y^2+4y+1)$ $\cdot(256y^{56}-10624y^{55}+\cdots-177561504270y+14330244681)$
c_7, c_8, c_{11} c_{12}	$y^3(y^2-3y+1)^3(y^3-3y^2+2y+1)^2$ $\cdot(y^{56}-66y^{55}+\cdots-2901y+3844)$