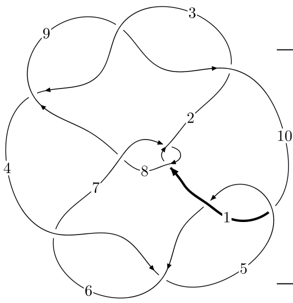
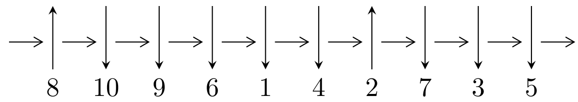
10_{67} $(K10a_{37})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u &= \langle 54165895u^{25} - 37175946u^{24} + \cdots + 402337748b - 246895131, \\
&\quad 25054784u^{25} - 23549273u^{24} + \cdots + 10058437a - 172885695,\ u^{26} - u^{25} + \cdots - 10u + 1\rangle \\
I_2^u &= \langle -u^3 + b - u,\ a + u,\ u^9 + 3u^7 + u^6 + 3u^5 + 2u^4 + 3u^3 + u^2 + 2u + 1\rangle \\
I_3^u &= \langle b^2 - b + 1,\ a + u,\ u^2 + 1\rangle
\end{aligned}$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 39 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. $I^u_1 = \langle 5.42\times10^{7}u^{25} - 3.72\times10^{7}u^{24} + \cdots + 4.02\times10^{7}b - 2.47\times10^{8},\ 2.51\times10^{7}u^{25} - 2.35\times10^{7}u^{24} + \cdots + 1.01\times10^{7}a - 1.73\times10^{8},\ u^{26} - u^{25} + \cdots - 10u + 1\rangle$

(i) Arc colorings

$$a_4 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_9 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_3 = \begin{pmatrix}1\\-u^2\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}-u\\u^3+u\end{pmatrix}$$
$$a_2 = \begin{pmatrix}u^2+1\\-u^4-2u^2\end{pmatrix}$$
$$a_7 = \begin{pmatrix}-2.49092u^{25}+2.34125u^{24}+\cdots-66.6876u+17.1881\\-1.34628u^{25}+0.923999u^{24}+\cdots-34.6377u+6.13652\end{pmatrix}$$
$$a_6 = \begin{pmatrix}-3.83720u^{25}+3.26524u^{24}+\cdots-101.325u+23.3246\\-1.34628u^{25}+0.923999u^{24}+\cdots-34.6377u+6.13652\end{pmatrix}$$
$$a_5 = \begin{pmatrix}-4.25185u^{25}+3.16846u^{24}+\cdots-103.985u+15.7177\\1.25534u^{25}-1.00540u^{24}+\cdots+37.9947u-7.88999\end{pmatrix}$$
$$a_8 = \begin{pmatrix}-4.11984u^{25}+3.49052u^{24}+\cdots-105.381u+24.5259\\-1.33333u^{25}+0.849641u^{24}+\cdots-31.4642u+5.50719\end{pmatrix}$$
$$a_1 = \begin{pmatrix}-6.70848u^{25}+5.09250u^{24}+\cdots-173.700u+30.5647\\1.11302u^{25}-1.09292u^{24}+\cdots+24.4986u-5.45317\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{46161492}{10058437}u^{25} - \frac{42859051}{10058437}u^{24} + \cdots + \frac{1130296717}{10058437}u - \frac{328648814}{10058437}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_7	$u^{26} - u^{25} + \cdots - 8u + 1$
c_2, c_3, c_9	$u^{26} - u^{25} + \cdots - 10u + 1$
c_4, c_6	$u^{26} + 8u^{25} + \cdots - 19u + 4$
c_5, c_{10}	$u^{26} + 2u^{25} + \cdots + 3u + 2$
c_8	$u^{26} + 9u^{25} + \cdots - 10u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_7	$y^{26} + 9y^{25} + \cdots - 10y + 1$
c_2, c_3, c_9	$y^{26} + 29y^{25} + \cdots - 42y + 1$
c_4, c_6	$y^{26} + 20y^{25} + \cdots - 289y + 16$
c_5, c_{10}	$y^{26} - 8y^{25} + \cdots + 19y + 4$
c_8	$y^{26} + 21y^{25} + \cdots + 102y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.142027 + 0.957282I$ $a = -0.0519905 + 0.0539815I$ $b = -0.331584 + 0.800882I$	$1.78211 + 2.09880I$	$0.37548 - 4.34730I$
$u = -0.142027 - 0.957282I$ $a = -0.0519905 - 0.0539815I$ $b = -0.331584 - 0.800882I$	$1.78211 - 2.09880I$	$0.37548 + 4.34730I$
$u = 0.867268 + 0.410491I$ $a = 1.15659 + 0.97828I$ $b = -0.39998 - 1.44546I$	$1.87436 - 8.06990I$	$-5.21390 + 7.61920I$
$u = 0.867268 - 0.410491I$ $a = 1.15659 - 0.97828I$ $b = -0.39998 + 1.44546I$	$1.87436 + 8.06990I$	$-5.21390 - 7.61920I$
$u = -0.805271 + 0.489072I$ $a = -1.057530 + 0.864294I$ $b = 0.050804 - 1.204580I$	$2.52884 + 2.28245I$	$-3.60243 - 2.76883I$
$u = -0.805271 - 0.489072I$ $a = -1.057530 - 0.864294I$ $b = 0.050804 + 1.204580I$	$2.52884 - 2.28245I$	$-3.60243 + 2.76883I$
$u = 0.005357 + 1.342280I$ $a = 0.598391 - 0.082953I$ $b = -1.020530 + 0.849992I$	$2.37838 + 1.33649I$	$-3.37936 - 0.64092I$
$u = 0.005357 - 1.342280I$ $a = 0.598391 + 0.082953I$ $b = -1.020530 - 0.849992I$	$2.37838 - 1.33649I$	$-3.37936 + 0.64092I$
$u = 0.620125 + 0.190982I$ $a = 1.70404 + 0.76762I$ $b = -0.941748 - 0.311004I$	$-3.68014 - 3.21386I$	$-12.77386 + 5.40899I$
$u = 0.620125 - 0.190982I$ $a = 1.70404 - 0.76762I$ $b = -0.941748 + 0.311004I$	$-3.68014 + 3.21386I$	$-12.77386 - 5.40899I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.203679 + 1.390330I$ $a = 0.917399 - 0.307104I$ $b = -1.237320 - 0.529870I$	$1.38330 - 6.14693I$	$-5.92538 + 6.07633I$
$u = 0.203679 - 1.390330I$ $a = 0.917399 + 0.307104I$ $b = -1.237320 + 0.529870I$	$1.38330 + 6.14693I$	$-5.92538 - 6.07633I$
$u = -0.09127 + 1.45225I$ $a = -0.858293 - 0.088928I$ $b = 0.632773 + 0.158193I$	$5.55732 + 2.75521I$	$0.17738 - 3.03141I$
$u = -0.09127 - 1.45225I$ $a = -0.858293 + 0.088928I$ $b = 0.632773 - 0.158193I$	$5.55732 - 2.75521I$	$0.17738 + 3.03141I$
$u = -0.345805 + 0.407161I$ $a = -1.277870 - 0.234930I$ $b = 0.165885 + 0.110267I$	$-0.439201 + 1.278560I$	$-4.70955 - 5.15889I$
$u = -0.345805 - 0.407161I$ $a = -1.277870 + 0.234930I$ $b = 0.165885 - 0.110267I$	$-0.439201 - 1.278560I$	$-4.70955 + 5.15889I$
$u = 0.32724 + 1.50601I$ $a = 1.191910 - 0.296128I$ $b = -0.49080 - 1.60111I$	$8.0695 - 12.4216I$	$-2.63275 + 7.54670I$
$u = 0.32724 - 1.50601I$ $a = 1.191910 + 0.296128I$ $b = -0.49080 + 1.60111I$	$8.0695 + 12.4216I$	$-2.63275 - 7.54670I$
$u = -0.28252 + 1.52523I$ $a = -1.160510 - 0.229643I$ $b = 0.300935 - 1.274240I$	$9.09667 + 6.25190I$	$-1.00234 - 2.90360I$
$u = -0.28252 - 1.52523I$ $a = -1.160510 + 0.229643I$ $b = 0.300935 + 1.274240I$	$9.09667 - 6.25190I$	$-1.00234 + 2.90360I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.21524 + 1.54201I$ $a = 0.711239 + 0.409154I$ $b = -0.33688 + 1.58737I$	$10.14430 + 6.11174I$	$0. - 3.37506I$
$u = -0.21524 - 1.54201I$ $a = 0.711239 - 0.409154I$ $b = -0.33688 - 1.58737I$	$10.14430 - 6.11174I$	$0. + 3.37506I$
$u = 0.15473 + 1.55892I$ $a = -0.778021 + 0.341219I$ $b = 0.146371 + 1.395820I$	$10.76070 + 0.12219I$	$0.65472 - 1.66625I$
$u = 0.15473 - 1.55892I$ $a = -0.778021 - 0.341219I$ $b = 0.146371 - 1.395820I$	$10.76070 - 0.12219I$	$0.65472 + 1.66625I$
$u = 0.203738 + 0.030867I$ $a = 4.90464 - 1.72660I$ $b = -0.537925 - 0.970190I$	$-1.75304 - 2.04961I$	$-11.77790 + 2.96215I$
$u = 0.203738 - 0.030867I$ $a = 4.90464 + 1.72660I$ $b = -0.537925 + 0.970190I$	$-1.75304 + 2.04961I$	$-11.77790 - 2.96215I$

II. $\boldsymbol{I^u_2 = \langle -u^3 + b - u,\ a + u,\ u^9 + 3u^7 + u^6 + 3u^5 + 2u^4 + 3u^3 + u^2 + 2u + 1 \rangle}$

(i) Arc colorings

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

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

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

$$a_{10} = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u^2 + 1 \\ -u^4 - 2u^2 \end{pmatrix}$$

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

$$a_6 = \begin{pmatrix} u^3 \\ u^3 + u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u^6 + u^4 + 1 \\ u^6 + 2u^4 + u^2 \end{pmatrix}$$

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

$$a_1 = \begin{pmatrix} u^4 + u^2 + 1 \\ -u^6 - 2u^4 - u^2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^6 - 8u^4 - 4u^3 - 4u^2 - 4u - 10$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_3 c_7, c_9	$u^9 + 3u^7 + u^6 + 3u^5 + 2u^4 + 3u^3 + u^2 + 2u + 1$
c_4, c_6	$(u^3 + u^2 + 2u + 1)^3$
c_5, c_{10}	$(u^3 - u^2 + 1)^3$
c_8	$u^9 + 6u^8 + 15u^7 + 23u^6 + 27u^5 + 24u^4 + 15u^3 + 7u^2 + 2u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_3 c_7, c_9	$y^9 + 6y^8 + 15y^7 + 23y^6 + 27y^5 + 24y^4 + 15y^3 + 7y^2 + 2y - 1$
c_4, c_6	$(y^3 + 3y^2 + 2y - 1)^3$
c_5, c_{10}	$(y^3 - y^2 + 2y - 1)^3$
c_8	$y^9 - 6y^8 + 3y^7 + 23y^6 - 5y^5 - 16y^4 + 43y^3 + 59y^2 + 18y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.656619 + 0.765660I$ $a = -0.656619 - 0.765660I$ $b = -0.215080 + 1.307140I$	$3.02413 + 2.82812I$	$-2.49024 - 2.97945I$
$u = 0.656619 - 0.765660I$ $a = -0.656619 + 0.765660I$ $b = -0.215080 - 1.307140I$	$3.02413 - 2.82812I$	$-2.49024 + 2.97945I$
$u = -0.701160 + 0.628458I$ $a = 0.701160 - 0.628458I$ $b = -0.215080 + 1.307140I$	$3.02413 + 2.82812I$	$-2.49024 - 2.97945I$
$u = -0.701160 - 0.628458I$ $a = 0.701160 + 0.628458I$ $b = -0.215080 - 1.307140I$	$3.02413 - 2.82812I$	$-2.49024 + 2.97945I$
$u = 0.233800 + 1.078880I$ $a = -0.233800 - 1.078880I$ $b = -0.569840$	-1.11345	$-9.01951 + 0.I$
$u = 0.233800 - 1.078880I$ $a = -0.233800 + 1.078880I$ $b = -0.569840$	-1.11345	$-9.01951 + 0.I$
$u = 0.044542 + 1.394120I$ $a = -0.044542 - 1.394120I$ $b = -0.215080 - 1.307140I$	$3.02413 - 2.82812I$	$-2.49024 + 2.97945I$
$u = 0.044542 - 1.394120I$ $a = -0.044542 + 1.394120I$ $b = -0.215080 + 1.307140I$	$3.02413 + 2.82812I$	$-2.49024 - 2.97945I$
$u = -0.467600$ $a = 0.467600$ $b = -0.569840$	-1.11345	-9.01950

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

(i) Arc colorings

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

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

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

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

$$a_2 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u \\ b \end{pmatrix}$$

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

$$a_5 = \begin{pmatrix} -bu + b \\ b - 1 \end{pmatrix}$$

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

$$a_1 = \begin{pmatrix} 1 \\ bu \end{pmatrix}$$

(ii) Obstruction class $= 1$

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

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u		$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=$	$1.000000I$		
$a=$	$-1.000000I$	$-2.02988I$	$-6.00000+3.46410I$
$b=$	$0.500000+0.866025I$		
$u=$	$1.000000I$		
$a=$	$-1.000000I$	$2.02988I$	$-6.00000-3.46410I$
$b=$	$0.500000-0.866025I$		
$u=$	$-1.000000I$		
$a=$	$1.000000I$	$-2.02988I$	$-6.00000+3.46410I$
$b=$	$0.500000+0.866025I$		
$u=$	$-1.000000I$		
$a=$	$1.000000I$	$2.02988I$	$-6.00000-3.46410I$
$b=$	$0.500000-0.866025I$		

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_7	$(u^2+1)^2(u^9+3u^7+u^6+3u^5+2u^4+3u^3+u^2+2u+1)$ $\cdot (u^{26}-u^{25}+\cdots-8u+1)$
c_2, c_3, c_9	$(u^2+1)^2(u^9+3u^7+u^6+3u^5+2u^4+3u^3+u^2+2u+1)$ $\cdot (u^{26}-u^{25}+\cdots-10u+1)$
c_4	$((u^2-u+1)^2)(u^3+u^2+2u+1)^3(u^{26}+8u^{25}+\cdots-19u+4)$
c_5, c_{10}	$((u^3-u^2+1)^3)(u^4-u^2+1)(u^{26}+2u^{25}+\cdots+3u+2)$
c_6	$((u^2+u+1)^2)(u^3+u^2+2u+1)^3(u^{26}+8u^{25}+\cdots-19u+4)$
c_8	$((u+1)^4)(u^9+6u^8+\cdots+2u-1)$ $\cdot (u^{26}+9u^{25}+\cdots-10u+1)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_7	$((y+1)^4)(y^9+6y^8+\cdots+2y-1)$ $\cdot\,(y^{26}+9y^{25}+\cdots-10y+1)$
c_2, c_3, c_9	$((y+1)^4)(y^9+6y^8+\cdots+2y-1)$ $\cdot\,(y^{26}+29y^{25}+\cdots-42y+1)$
c_4, c_6	$((y^2+y+1)^2)(y^3+3y^2+2y-1)^3(y^{26}+20y^{25}+\cdots-289y+16)$
c_5, c_{10}	$((y^2-y+1)^2)(y^3-y^2+2y-1)^3(y^{26}-8y^{25}+\cdots+19y+4)$
c_8	$((y-1)^4)(y^9-6y^8+\cdots+18y-1)$ $\cdot\,(y^{26}+21y^{25}+\cdots+102y+1)$