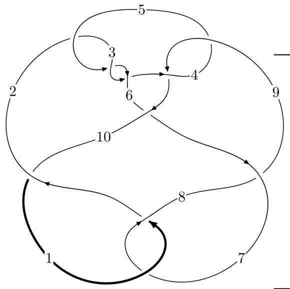
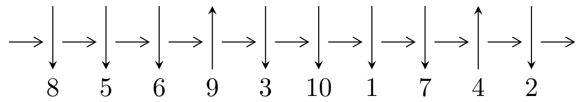
10_{56} $(K10a_{28})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 2u^{34} + 4u^{33} + \cdots + b - 2,\ 2u^{34} + 2u^{33} + \cdots + a - 2,\ u^{35} + 2u^{34} + \cdots - 2u - 1\rangle$$
$$I_2^u = \langle -u^2 + b,\ a - u,\ u^3 - u^2 + 1\rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 38 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.

$$I_1^u = \langle 2u^{34}+4u^{33}+\cdots+b-2,\ 2u^{34}+2u^{33}+\cdots+a-2,\ u^{35}+2u^{34}+\cdots-2u-1\rangle$$

(i) Arc colorings

$$a_1 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_8 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_2 = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_5 = \begin{pmatrix}-2u^{34}-2u^{33}+\cdots+6u+2\\-2u^{34}-4u^{33}+\cdots+2u+2\end{pmatrix}$$
$$a_3 = \begin{pmatrix}u^{34}+u^{33}+\cdots-4u-1\\u^{34}+2u^{33}+\cdots+9u^2-1\end{pmatrix}$$
$$a_7 = \begin{pmatrix}u\\u\end{pmatrix}$$
$$a_9 = \begin{pmatrix}-u^3\\-u^3+u\end{pmatrix}$$
$$a_4 = \begin{pmatrix}u^{32}-5u^{30}+\cdots+4u+1\\-u^{33}+5u^{31}+\cdots-4u^2-u\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}-u^2+1\\-u^4\end{pmatrix}$$
$$a_6 = \begin{pmatrix}-u^7+2u^5-2u^3+2u\\-u^9+u^7-u^5+u\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 7u^{34}+10u^{33}-33u^{32}-62u^{31}+104u^{30}+233u^{29}-217u^{28}-640u^{27}+303u^{26}+1349u^{25}-205u^{24}-2310u^{23}-276u^{22}+3206u^{21}+1184u^{20}-3622u^{19}-2289u^{18}+3265u^{17}+3165u^{16}-2158u^{15}-3352u^{14}+824u^{13}+2806u^{12}+244u^{11}-1824u^{10}-716u^{9}+828u^{8}+636u^{7}-230u^{6}-376u^{5}-32u^{4}+126u^{3}+61u^{2}-5u-13$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_7	$u^{35} + 2u^{34} + \cdots - 2u - 1$
c_2, c_3, c_5	$u^{35} - 4u^{34} + \cdots + 3u - 1$
c_4, c_9	$u^{35} - u^{34} + \cdots - 28u - 8$
c_6	$u^{35} - 2u^{34} + \cdots + 36u - 36$
c_8, c_{10}	$u^{35} + 12u^{34} + \cdots + 10u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_7	$y^{35} - 12y^{34} + \cdots + 10y - 1$
c_2, c_3, c_5	$y^{35} - 34y^{34} + \cdots + 19y - 1$
c_4, c_9	$y^{35} + 21y^{34} + \cdots + 16y - 64$
c_6	$y^{35} - 12y^{34} + \cdots + 22392y - 1296$
c_8, c_{10}	$y^{35} + 24y^{34} + \cdots + 10y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.664256+0.761558I$ $a=-0.45768-1.47251I$ $b=-1.76114-0.11415I$	$1.24148-2.67684I$	$-4.78426+2.93641I$
$u=-0.664256-0.761558I$ $a=-0.45768+1.47251I$ $b=-1.76114+0.11415I$	$1.24148+2.67684I$	$-4.78426-2.93641I$
$u=-0.741471+0.622830I$ $a=-0.57819+1.67504I$ $b=\ \ 0.590055+1.240710I$	$-0.35079+1.76625I$	$-8.73044-2.55261I$
$u=-0.741471-0.622830I$ $a=-0.57819-1.67504I$ $b=\ \ 0.590055-1.240710I$	$-0.35079-1.76625I$	$-8.73044+2.55261I$
$u=\ \ 1.037620+0.057613I$ $a=\ \ 0.554534-0.308977I$ $b=\ \ 0.096321-0.988163I$	$-4.46867-2.44036I$	$-13.20394+3.90896I$
$u=\ \ 1.037620-0.057613I$ $a=\ \ 0.554534+0.308977I$ $b=\ \ 0.096321+0.988163I$	$-4.46867+2.44036I$	$-13.20394-3.90896I$
$u=-1.04680$ $a=\ \ 2.40428$ $b=\ \ 1.22975$	-6.56245	-13.9210
$u=\ \ 0.647381+0.692758I$ $a=-0.044489+0.551561I$ $b=-1.82365+0.07795I$	$-1.45204+0.58793I$	$-6.80279+0.37603I$
$u=\ \ 0.647381-0.692758I$ $a=-0.044489-0.551561I$ $b=-1.82365-0.07795I$	$-1.45204-0.58793I$	$-6.80279-0.37603I$
$u=-0.636751+0.841462I$ $a=\ \ 0.997900+0.837792I$ $b=\ \ 2.05544-1.02610I$	$-4.54695-6.58963I$	$-8.16646+3.21535I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.636751 - 0.841462I$ $a = 0.997900 - 0.837792I$ $b = 2.05544 + 1.02610I$	$-4.54695 + 6.58963I$	$-8.16646 - 3.21535I$
$u = 0.799224 + 0.732897I$ $a = -0.137052 - 0.887085I$ $b = 1.192050 - 0.720803I$	$3.23509 - 1.72545I$	$-0.63608 + 2.52233I$
$u = 0.799224 - 0.732897I$ $a = -0.137052 + 0.887085I$ $b = 1.192050 + 0.720803I$	$3.23509 + 1.72545I$	$-0.63608 - 2.52233I$
$u = 1.119540 + 0.118261I$ $a = -1.43525 + 0.93911I$ $b = -0.508472 + 1.022410I$	$-11.18060 - 5.92010I$	$-14.7078 + 4.1258I$
$u = 1.119540 - 0.118261I$ $a = -1.43525 - 0.93911I$ $b = -0.508472 - 1.022410I$	$-11.18060 + 5.92010I$	$-14.7078 - 4.1258I$
$u = -0.967598 + 0.636531I$ $a = -0.986041 - 0.154167I$ $b = -1.50085 + 0.53336I$	$-1.09066 + 3.19486I$	$-9.71319 - 2.77080I$
$u = -0.967598 - 0.636531I$ $a = -0.986041 + 0.154167I$ $b = -1.50085 - 0.53336I$	$-1.09066 - 3.19486I$	$-9.71319 + 2.77080I$
$u = 0.923611 + 0.710370I$ $a = -0.706663 + 0.972785I$ $b = -1.261460 - 0.179818I$	$2.85420 - 3.77887I$	$-1.29814 + 3.89618I$
$u = 0.923611 - 0.710370I$ $a = -0.706663 - 0.972785I$ $b = -1.261460 + 0.179818I$	$2.85420 + 3.77887I$	$-1.29814 - 3.89618I$
$u = -1.044390 + 0.520208I$ $a = -0.308880 - 1.070380I$ $b = 0.105718 - 0.418991I$	$-8.72011 + 1.04091I$	$-12.84142 - 2.04561I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.044390 - 0.520208I$ $a = -0.308880 + 1.070380I$ $b = 0.105718 + 0.418991I$	$-8.72011 - 1.04091I$	$-12.84142 + 2.04561I$
$u = -0.832533$ $a = -0.863173$ $b = -0.390504$	-1.36456	-6.49720
$u = 0.999651 + 0.662016I$ $a = 0.70686 - 2.15648I$ $b = 1.84700 - 0.41941I$	$-2.49390 - 5.84473I$	$-8.96835 + 4.95079I$
$u = 0.999651 - 0.662016I$ $a = 0.70686 + 2.15648I$ $b = 1.84700 + 0.41941I$	$-2.49390 + 5.84473I$	$-8.96835 - 4.95079I$
$u = 0.886910 + 0.817524I$ $a = 1.29729 + 0.86025I$ $b = 0.19926 + 2.00598I$	$0.09589 - 3.04539I$	$-10.49856 + 3.07346I$
$u = 0.886910 - 0.817524I$ $a = 1.29729 - 0.86025I$ $b = 0.19926 - 2.00598I$	$0.09589 + 3.04539I$	$-10.49856 - 3.07346I$
$u = -0.280203 + 0.733036I$ $a = 0.964828 - 0.842495I$ $b = 0.673575 - 0.185802I$	$-6.48734 + 3.48149I$	$-9.01514 - 3.12997I$
$u = -0.280203 - 0.733036I$ $a = 0.964828 + 0.842495I$ $b = 0.673575 + 0.185802I$	$-6.48734 - 3.48149I$	$-9.01514 + 3.12997I$
$u = -1.007860 + 0.690657I$ $a = 0.76872 + 1.59182I$ $b = 2.25197 + 0.62559I$	$0.21056 + 8.20034I$	$-6.93623 - 7.67757I$
$u = -1.007860 - 0.690657I$ $a = 0.76872 - 1.59182I$ $b = 2.25197 - 0.62559I$	$0.21056 - 8.20034I$	$-6.93623 + 7.67757I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.045240 + 0.713362I$ $a = -0.03530 - 2.41846I$ $b = -2.14450 - 1.67720I$	$-5.78918 + 12.39880I$	$-9.85333 - 7.70880I$
$u = -1.045240 - 0.713362I$ $a = -0.03530 + 2.41846I$ $b = -2.14450 + 1.67720I$	$-5.78918 - 12.39880I$	$-9.85333 + 7.70880I$
$u = -0.282825 + 0.410007I$ $a = -0.74438 + 1.30353I$ $b = -0.006557 + 0.477496I$	$-0.429568 + 1.170440I$	$-5.16678 - 5.64189I$
$u = -0.282825 - 0.410007I$ $a = -0.74438 - 1.30353I$ $b = -0.006557 - 0.477496I$	$-0.429568 - 1.170440I$	$-5.16678 + 5.64189I$
$u = 0.392648$ $a = 1.74649$ $b = -0.848760$	-2.15415	-1.93570

II. $I_2^u = \langle -u^2 + b,\ a - u,\ u^3 - u^2 + 1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -2u^2 + 7u - 10$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.877439 + 0.744862I$ $a = 0.877439 + 0.744862I$ $b = 0.215080 + 1.307140I$	$1.37919 - 2.82812I$	$-4.28809 + 2.59975I$
$u = 0.877439 - 0.744862I$ $a = 0.877439 - 0.744862I$ $b = 0.215080 - 1.307140I$	$1.37919 + 2.82812I$	$-4.28809 - 2.59975I$
$u = -0.754878$ $a = -0.754878$ $b = 0.569840$	-2.75839	-16.4240

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^3-u^2+1)(u^{35}+2u^{34}+\cdots-2u-1)$
c_2, c_3	$((u-1)^3)(u^{35}-4u^{34}+\cdots+3u-1)$
c_4, c_9	$u^3(u^{35}-u^{34}+\cdots-28u-8)$
c_5	$((u+1)^3)(u^{35}-4u^{34}+\cdots+3u-1)$
c_6	$(u^3-u^2+2u-1)(u^{35}-2u^{34}+\cdots+36u-36)$
c_7	$(u^3+u^2-1)(u^{35}+2u^{34}+\cdots-2u-1)$
c_8	$(u^3+u^2+2u+1)(u^{35}+12u^{34}+\cdots+10u+1)$
c_{10}	$(u^3-u^2+2u-1)(u^{35}+12u^{34}+\cdots+10u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_7	$(y^3 - y^2 + 2y - 1)(y^{35} - 12y^{34} + \cdots + 10y - 1)$
c_2, c_3, c_5	$((y-1)^3)(y^{35} - 34y^{34} + \cdots + 19y - 1)$
c_4, c_9	$y^3(y^{35} + 21y^{34} + \cdots + 16y - 64)$
c_6	$(y^3 + 3y^2 + 2y - 1)(y^{35} - 12y^{34} + \cdots + 22392y - 1296)$
c_8, c_{10}	$(y^3 + 3y^2 + 2y - 1)(y^{35} + 24y^{34} + \cdots + 10y - 1)$