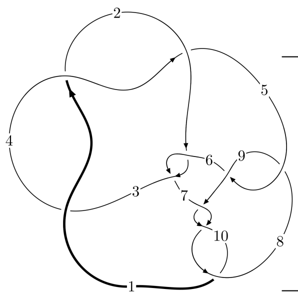
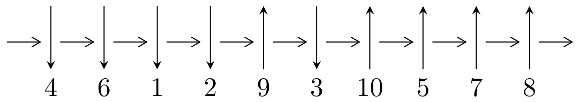
10_{79} ($K10a_{78}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 1.48752 \times 10^{31} u^{33} - 1.92107 \times 10^{31} u^{32} + \cdots + 2.67160 \times 10^{30} b - 8.42537 \times 10^{31},$$
$$2.31853 \times 10^{30} u^{33} - 3.45308 \times 10^{30} u^{32} + \cdots + 7.63313 \times 10^{29} a - 1.53986 \times 10^{31},\ u^{34} - 2u^{33} + \cdots - 4u + 4$$
$$I_2^u = \langle b - u - 1,\ a,\ u^2 + u - 1 \rangle$$

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

* 3 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.
$\boldsymbol{I_1^u = \langle 1.49\times10^{31}u^{33} - 1.92\times10^{31}u^{32} + \cdots + 2.67\times10^{30}b - 8.43\times10^{31},\ 2.32\times10^{30}u^{33} - 3.45\times10^{30}u^{32} + \cdots + 7.63\times10^{29}a - 1.54\times10^{31},\ u^{34} - 2u^{33} + \cdots - 4u + 4\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_6 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_3 = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_7 = \begin{pmatrix}-u\\-u^3+u\end{pmatrix}$$
$$a_9 = \begin{pmatrix}-3.03746u^{33} + 4.52380u^{32} + \cdots + 15.5234u + 20.1734\\-5.56789u^{33} + 7.19074u^{32} + \cdots + 16.8842u + 31.5368\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}-6.74042u^{33} + 9.34081u^{32} + \cdots + 25.8322u + 41.5551\\-3.71677u^{33} + 4.73023u^{32} + \cdots + 11.0317u + 20.5108\end{pmatrix}$$
$$a_5 = \begin{pmatrix}-8.87471u^{33} + 12.3007u^{32} + \cdots + 32.0519u + 57.5877\\-5.70723u^{33} + 7.43204u^{32} + \cdots + 16.7561u + 33.4853\end{pmatrix}$$
$$a_4 = \begin{pmatrix}-14.5819u^{33} + 19.7327u^{32} + \cdots + 48.8081u + 91.0730\\-5.70723u^{33} + 7.43204u^{32} + \cdots + 16.7561u + 33.4853\end{pmatrix}$$
$$a_1 = \begin{pmatrix}-14.5819u^{33} + 19.7327u^{32} + \cdots + 48.8081u + 91.0730\\-0.387583u^{33} + 0.811626u^{32} + \cdots + 3.84702u + 4.23934\end{pmatrix}$$
$$a_8 = \begin{pmatrix}15.6894u^{33} - 20.9276u^{32} + \cdots - 48.8834u - 95.7780\\1.33189u^{33} - 1.83094u^{32} + \cdots - 2.59403u - 8.86592\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 3.23572u^{33} - 4.86218u^{32} + \cdots - 45.6005u - 20.0908$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_3, c_4	$u^{34} - 4u^{33} + \cdots + 10u + 1$
c_2, c_6	$u^{34} + 2u^{33} + \cdots + 4u + 4$
c_5, c_8	$u^{34} - 2u^{33} + \cdots - 4u + 4$
c_7, c_9, c_{10}	$u^{34} + 4u^{33} + \cdots - 10u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3, c_4 c_7, c_9, c_{10}	$y^{34} - 32y^{33} + \cdots - 42y + 1$
c_2, c_5, c_6 c_8	$y^{34} - 18y^{33} + \cdots - 296y + 16$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.334121 + 0.939075I$ $a = 0.665187 + 1.185390I$ $b = 0.168561 - 1.149830I$	$8.19540 - 1.89242I$	$7.34522 + 1.79557I$
$u = -0.334121 - 0.939075I$ $a = 0.665187 - 1.185390I$ $b = 0.168561 + 1.149830I$	$8.19540 + 1.89242I$	$7.34522 - 1.79557I$
$u = 0.286460 + 0.973864I$ $a = 0.697313 - 0.627321I$ $b = -0.30439 + 1.55545I$	$-2.64192 + 2.05432I$	$-2.87162 - 3.29014I$
$u = 0.286460 - 0.973864I$ $a = 0.697313 + 0.627321I$ $b = -0.30439 - 1.55545I$	$-2.64192 - 2.05432I$	$-2.87162 + 3.29014I$
$u = 0.810678 + 0.499386I$ $a = 0.792602 + 0.713045I$ $b = 0.050287 - 0.622907I$	$2.64192 - 2.05432I$	$2.87162 + 3.29014I$
$u = 0.810678 - 0.499386I$ $a = 0.792602 - 0.713045I$ $b = 0.050287 + 0.622907I$	$2.64192 + 2.05432I$	$2.87162 - 3.29014I$
$u = -0.995699 + 0.467507I$ $a = 0.638734 + 0.769428I$ $b = 0.60499 - 1.49342I$	$4.00435I$	$0. - 6.49701I$
$u = -0.995699 - 0.467507I$ $a = 0.638734 - 0.769428I$ $b = 0.60499 + 1.49342I$	$-4.00435I$	$0. + 6.49701I$
$u = 1.088970 + 0.372927I$ $a = 0.911686 - 0.699013I$ $b = 1.62610 + 0.98618I$	$-3.39729 - 2.12414I$	$-2.18234 + 2.03948I$
$u = 1.088970 - 0.372927I$ $a = 0.911686 + 0.699013I$ $b = 1.62610 - 0.98618I$	$-3.39729 + 2.12414I$	$-2.18234 - 2.03948I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.845756 + 0.036069I$ $a = -0.613787 + 0.538660I$ $b = 0.203218 - 0.673856I$	$-1.359860 + 0.095322I$	$-5.80027 + 0.42636I$
$u = 0.845756 - 0.036069I$ $a = -0.613787 - 0.538660I$ $b = 0.203218 + 0.673856I$	$-1.359860 - 0.095322I$	$-5.80027 - 0.42636I$
$u = -1.112820 + 0.516604I$ $a = -0.842410 + 0.743758I$ $b = -0.101206 + 0.252455I$	$-2.34523 + 5.26340I$	$-1.79194 - 3.97493I$
$u = -1.112820 - 0.516604I$ $a = -0.842410 - 0.743758I$ $b = -0.101206 - 0.252455I$	$-2.34523 - 5.26340I$	$-1.79194 + 3.97493I$
$u = -0.304859 + 0.635319I$ $a = -0.625675 + 0.780084I$ $b = 0.24828 - 2.17048I$	$-0.739532I$	$0. - 4.35806I$
$u = -0.304859 - 0.635319I$ $a = -0.625675 - 0.780084I$ $b = 0.24828 + 2.17048I$	$0.739532I$	$0. + 4.35806I$
$u = -0.538543 + 0.433436I$ $a = -0.920373 - 0.807720I$ $b = -0.674327 + 1.021010I$	$1.359860 - 0.095322I$	$5.80027 - 0.42636I$
$u = -0.538543 - 0.433436I$ $a = -0.920373 + 0.807720I$ $b = -0.674327 - 1.021010I$	$1.359860 + 0.095322I$	$5.80027 + 0.42636I$
$u = 1.253480 + 0.421212I$ $a = 0.690781 - 0.529640I$ $b = -0.104017 + 0.977410I$	$3.39729 - 2.12414I$	$2.18234 + 2.03948I$
$u = 1.253480 - 0.421212I$ $a = 0.690781 + 0.529640I$ $b = -0.104017 - 0.977410I$	$3.39729 + 2.12414I$	$2.18234 - 2.03948I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.650050$ $a = -2.72250$ $b = -1.02677$	6.73970	-7.32000
$u = -1.335420 + 0.228599I$ $a = 0.360026 - 0.641577I$ $b = 0.062959 - 0.180613I$	$-8.19540 + 1.89242I$	$-7.34522 - 1.79557I$
$u = -1.335420 - 0.228599I$ $a = 0.360026 + 0.641577I$ $b = 0.062959 + 0.180613I$	$-8.19540 - 1.89242I$	$-7.34522 + 1.79557I$
$u = 1.215470 + 0.599118I$ $a = -0.588471 + 0.824257I$ $b = -1.38976 - 1.48159I$	$-5.53452 - 7.73594I$	$-3.53535 + 5.97450I$
$u = 1.215470 - 0.599118I$ $a = -0.588471 - 0.824257I$ $b = -1.38976 + 1.48159I$	$-5.53452 + 7.73594I$	$-3.53535 - 5.97450I$
$u = -1.209090 + 0.649293I$ $a = -0.573728 - 0.803607I$ $b = -0.46886 + 1.54639I$	$5.53452 + 7.73594I$	$3.53535 - 5.97450I$
$u = -1.209090 - 0.649293I$ $a = -0.573728 + 0.803607I$ $b = -0.46886 - 1.54639I$	$5.53452 - 7.73594I$	$3.53535 + 5.97450I$
$u = 0.553222 + 1.262860I$ $a = -0.667081 + 0.588961I$ $b = 0.13797 - 1.43868I$	$2.34523 + 5.26340I$	$1.79194 - 3.97493I$
$u = 0.553222 - 1.262860I$ $a = -0.667081 - 0.588961I$ $b = 0.13797 + 1.43868I$	$2.34523 - 5.26340I$	$1.79194 + 3.97493I$
$u = 0.522880$ $a = -0.711056$ $b = 0.786385$	-1.14323	-10.3340

Solutions to I^u_1	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=$ $1.26084+0.79719I$ $a=$ $0.428806-0.903397I$ $b=$ $1.11261+1.64372I$	$-12.5403I$	$0.+7.07308I$
$u=$ $1.26084-0.79719I$ $a=$ $0.428806+0.903397I$ $b=$ $1.11261-1.64372I$	$12.5403I$	$0.-7.07308I$
$u=-0.371797$ $a=-1.40636$ $b=-0.980790$	1.14323	10.3340
$u=-1.76976$ $a=-0.367310$ $b=-0.123664$	-6.73970	0

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -9$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.618034$ $a = 0$ $b = 1.61803$	0.657974	-9.00000
$u = -1.61803$ $a = 0$ $b = -0.618034$	-7.23771	-9.00000

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 9$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = 0.381966$ $a = 0$ $b = -1.61803$	-0.657974	9.00000
$v = 2.61803$ $a = 0$ $b = 0.618034$	7.23771	9.00000

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^2)(u^2+u-1)(u^{34}-4u^{33}+\cdots+10u+1)$
c_2	$u^2(u^2+u-1)(u^{34}+2u^{33}+\cdots+4u+4)$
c_3, c_4	$((u+1)^2)(u^2-u-1)(u^{34}-4u^{33}+\cdots+10u+1)$
c_5	$u^2(u^2-u-1)(u^{34}-2u^{33}+\cdots-4u+4)$
c_6	$u^2(u^2-u-1)(u^{34}+2u^{33}+\cdots+4u+4)$
c_7	$((u+1)^2)(u^2-u-1)(u^{34}+4u^{33}+\cdots-10u+1)$
c_8	$u^2(u^2+u-1)(u^{34}-2u^{33}+\cdots-4u+4)$
c_9, c_{10}	$((u-1)^2)(u^2+u-1)(u^{34}+4u^{33}+\cdots-10u+1)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_3, c_4 c_7, c_9, c_{10}	$((y-1)^2)(y^2-3y+1)(y^{34}-32y^{33}+\cdots-42y+1)$
c_2, c_5, c_6 c_8	$y^2(y^2-3y+1)(y^{34}-18y^{33}+\cdots-296y+16)$