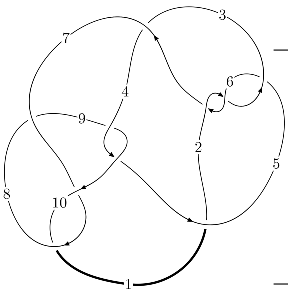
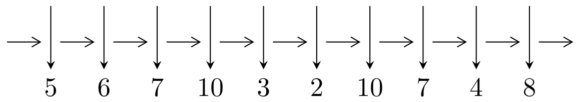
10_{128} $(K10n_{22})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -3u^7 - 3u^6 + 17u^5 + 4u^4 - 31u^3 + 12u^2 + 4b - u + 1,\ -u^7 - 3u^6 + u^5 + 8u^4 + 3u^3 - 6u^2 + 2a - 9u - 1,$$
$$u^8 + 4u^7 - 13u^5 - 3u^4 + 15u^3 + 3u^2 + 2u - 1\rangle$$
$$I_2^u = \langle b^3 - b^2 + 1,\ a,\ u - 1\rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 11 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. $I_1^u = \langle -3u^7 - 3u^6 + \cdots + 4b + 1,\ -u^7 - 3u^6 + \cdots + 2a - 1,\ u^8 + 4u^7 - 13u^5 - 3u^4 + 15u^3 + 3u^2 + 2u - 1\rangle$

(i) Arc colorings

$$a_7 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} \frac{1}{2}u^7 + \frac{3}{2}u^6 + \cdots + \frac{9}{2}u + \frac{1}{2} \\ \frac{3}{4}u^7 + \frac{3}{4}u^6 + \cdots + \frac{1}{4}u - \frac{1}{4} \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -1 \\ -\frac{1}{4}u^7 - \frac{3}{4}u^6 + \cdots + \frac{5}{4}u + \frac{1}{4} \end{pmatrix}$$
$$a_4 = \begin{pmatrix} \frac{1}{2}u^7 + \frac{3}{2}u^6 + \cdots + \frac{9}{2}u + \frac{1}{2} \\ -\frac{3}{4}u^7 - \frac{7}{4}u^6 + \cdots - \frac{5}{4}u + \frac{1}{4} \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -\frac{1}{4}u^7 - \frac{1}{4}u^6 + \cdots + \frac{13}{4}u + \frac{3}{4} \\ -\frac{3}{4}u^7 - \frac{7}{4}u^6 + \cdots - \frac{5}{4}u + \frac{1}{4} \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -\frac{1}{4}u^7 - \frac{3}{4}u^6 + \cdots + \frac{5}{4}u + \frac{5}{4} \\ -\frac{1}{2}u^6 - u^5 + \cdots - 2u + \frac{1}{2} \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -u^2 + 1 \\ u^2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -u^7 - \frac{11}{2}u^6 - 3u^5 + \frac{39}{2}u^4 + \frac{23}{2}u^3 - 27u^2 - 6u - \frac{23}{2}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_3	$u^8 + 2u^7 - 7u^6 - 12u^5 + 7u^4 + 2u^3 - 2u^2 - 3u - 1$
c_2, c_5, c_6	$u^8 - 2u^7 + 5u^6 - 6u^5 + 7u^4 - 6u^3 + 2u^2 - u - 1$
c_4, c_9	$u^8 - u^7 - 10u^6 + 7u^5 + 19u^4 + 23u^3 + 12u + 8$
c_7, c_{10}	$u^8 - 4u^7 + 13u^5 - 3u^4 - 15u^3 + 3u^2 - 2u - 1$
c_8	$u^8 + 16u^7 + 98u^6 + 283u^5 + 381u^4 + 191u^3 - 45u^2 + 10u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3	$y^8 - 18y^7 + 111y^6 - 254y^5 + 135y^4 - 90y^3 + 2y^2 - 5y + 1$
c_2, c_5, c_6	$y^8 + 6y^7 + 15y^6 + 14y^5 - 9y^4 - 30y^3 - 22y^2 - 5y + 1$
c_4, c_9	$y^8 - 21y^7 + 152y^6 - 383y^5 + 79y^4 - 857y^3 - 248y^2 - 144y + 64$
c_7, c_{10}	$y^8 - 16y^7 + 98y^6 - 283y^5 + 381y^4 - 191y^3 - 45y^2 - 10y + 1$
c_8	$y^8 - 60y^7 + \cdots - 190y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.251300 + 0.394571I$ $a = 0.381129 - 0.818334I$ $b = 1.066800 - 0.340674I$	$-1.14011 - 1.32248I$	$-11.15537 + 1.48485I$
$u = 1.251300 - 0.394571I$ $a = 0.381129 + 0.818334I$ $b = 1.066800 + 0.340674I$	$-1.14011 + 1.32248I$	$-11.15537 - 1.48485I$
$u = -0.202560 + 0.429200I$ $a = -0.93266 + 1.25163I$ $b = 1.031990 + 0.436432I$	$2.74105 - 2.12062I$	$-5.41411 + 2.85603I$
$u = -0.202560 - 0.429200I$ $a = -0.93266 - 1.25163I$ $b = 1.031990 - 0.436432I$	$2.74105 + 2.12062I$	$-5.41411 - 2.85603I$
$u = 0.266855$ $a = 1.86561$ $b = -0.260126$	-0.675825	-14.7130
$u = -2.08865 + 0.23775I$ $a = 1.276340 - 0.114214I$ $b = 2.96514 - 1.78943I$	$-14.2177 + 5.8605I$	$-11.51154 - 2.72065I$
$u = -2.08865 - 0.23775I$ $a = 1.276340 + 0.114214I$ $b = 2.96514 + 1.78943I$	$-14.2177 - 5.8605I$	$-11.51154 + 2.72065I$
$u = -2.18705$ $a = -1.31522$ $b = -3.86773$	-18.5039	-14.1250

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= b^2 + 3b - 13$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.00000$ $a = 0$ $b = 0.877439 + 0.744862I$	$1.37919 - 2.82812I$	$-10.15260 + 3.54173I$
$u = 1.00000$ $a = 0$ $b = 0.877439 - 0.744862I$	$1.37919 + 2.82812I$	$-10.15260 - 3.54173I$
$u = 1.00000$ $a = 0$ $b = -0.754878$	-2.75839	-14.6950

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_3	$(u^3+u^2-1)(u^8+2u^7-7u^6-12u^5+7u^4+2u^3-2u^2-3u-1)$
c_2	$(u^3-u^2+2u-1)(u^8-2u^7+5u^6-6u^5+7u^4-6u^3+2u^2-u-1)$
c_4, c_9	$u^3(u^8-u^7-10u^6+7u^5+19u^4+23u^3+12u+8)$
c_5, c_6	$(u^3+u^2+2u+1)(u^8-2u^7+5u^6-6u^5+7u^4-6u^3+2u^2-u-1)$
c_7	$(u-1)^3(u^8-4u^7+13u^5-3u^4-15u^3+3u^2-2u-1)$
c_8	$(u+1)^3$ $\cdot(u^8+16u^7+98u^6+283u^5+381u^4+191u^3-45u^2+10u+1)$
c_{10}	$(u+1)^3(u^8-4u^7+13u^5-3u^4-15u^3+3u^2-2u-1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_3	$(y^3 - y^2 + 2y - 1)$ $\cdot (y^8 - 18y^7 + 111y^6 - 254y^5 + 135y^4 - 90y^3 + 2y^2 - 5y + 1)$
c_2, c_5, c_6	$(y^3 + 3y^2 + 2y - 1)$ $\cdot (y^8 + 6y^7 + 15y^6 + 14y^5 - 9y^4 - 30y^3 - 22y^2 - 5y + 1)$
c_4, c_9	$y^3(y^8 - 21y^7 + \cdots - 144y + 64)$
c_7, c_{10}	$(y-1)^3$ $\cdot (y^8 - 16y^7 + 98y^6 - 283y^5 + 381y^4 - 191y^3 - 45y^2 - 10y + 1)$
c_8	$((y-1)^3)(y^8 - 60y^7 + \cdots - 190y + 1)$