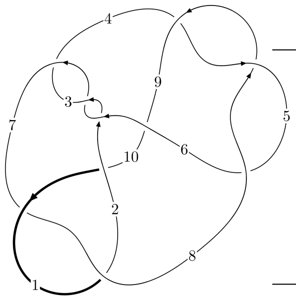
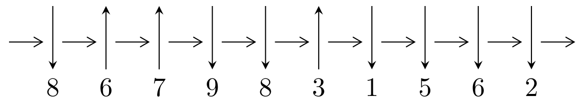
10_{140} $(K10n_{29})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & 2u^6 - 7u^5 - 14u^4 + 39u^3 + 32u^2 + 29b - 47u + 4, \\
& -25u^6 + 44u^5 + 146u^4 - 183u^3 - 255u^2 + 174a + 167u - 108, \\
& u^7 - 2u^6 - 5u^5 + 9u^4 + 9u^3 - 14u^2 + 3u + 3\rangle \\
I_2^u = \langle & b - 1,\ a^2 + 2,\ u - 1\rangle \\
I_3^u = \langle & b + 1,\ a,\ u + 1\rangle
\end{aligned}$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 10 representations.

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[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. $I_1^u = \langle 2u^6 - 7u^5 + \cdots + 29b + 4,\ -25u^6 + 44u^5 + \cdots + 174a - 108,\ u^7 - 2u^6 - 5u^5 + 9u^4 + 9u^3 - 14u^2 + 3u + 3\rangle$

(i) Arc colorings

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

$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} 0.143678u^6 - 0.252874u^5 + \cdots - 0.959770u + 0.620690 \\ -0.0689655u^6 + 0.241379u^5 + \cdots + 1.62069u - 0.137931 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.0804598u^6 - 0.281609u^5 + \cdots - 1.55747u + 1.32759 \\ 0.103448u^6 + 0.137931u^5 + \cdots + 0.0689655u - 0.793103 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 0.0632184u^6 + 0.0287356u^5 + \cdots - 0.402299u - 0.706897 \\ 0.120690u^6 - 0.172414u^5 + \cdots + 0.913793u + 0.241379 \end{pmatrix}$$

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

$$a_{10} = \begin{pmatrix} 0.183908u^6 - 0.143678u^5 + \cdots - 1.48851u + 0.534483 \\ 0.103448u^6 + 0.137931u^5 + \cdots + 0.0689655u - 0.793103 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.183908u^6 - 0.143678u^5 + \cdots - 1.48851u + 0.534483 \\ -0.310345u^6 + 0.0862069u^5 + \cdots + 1.29310u - 0.120690 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} u^2 - 1 \\ -u^4 + 2u^2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{43}{29}u^6 + \frac{78}{29}u^5 + \frac{214}{29}u^4 - \frac{331}{29}u^3 - \frac{369}{29}u^2 + \frac{445}{29}u - \frac{144}{29}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_7	$u^7 + 2u^6 + 3u^5 + u^4 + 5u^3 - 2u^2 - u + 3$
c_2, c_3, c_6	$u^7 - 2u^6 - 5u^5 + 9u^4 + 9u^3 - 14u^2 + 3u + 3$
c_4, c_5, c_8	$u^7 - u^6 + 7u^5 - 3u^4 + 12u^3 + 2u^2 + 4u + 2$
c_9	$u^7 + 10u^6 + 70u^5 + 250u^4 + 410u^3 + 180u^2 + 56u + 16$
c_{10}	$u^7 - 2u^6 + 15u^5 - 35u^4 + 11u^3 + 20u^2 + 13u + 9$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_7	$y^7 + 2y^6 + 15y^5 + 35y^4 + 11y^3 - 20y^2 + 13y - 9$
c_2, c_3, c_6	$y^7 - 14y^6 + 79y^5 - 221y^4 + 315y^3 - 196y^2 + 93y - 9$
c_4, c_5, c_8	$y^7 + 13y^6 + 67y^5 + 171y^4 + 216y^3 + 104y^2 + 8y - 4$
c_9	$y^7 + 40y^6 + 720y^5 - 8588y^4 + 85620y^3 + 5520y^2 - 2624y - 256$
c_{10}	$y^7 + 26y^6 + 107y^5 - 789y^4 + 1947y^3 + 516y^2 - 191y - 81$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.673944 + 0.445187I$ $a = 0.544144 + 0.706219I$ $b = 0.593853 - 0.464339I$	$1.22231 + 1.45738I$	$0.50826 - 4.10370I$
$u = 0.673944 - 0.445187I$ $a = 0.544144 - 0.706219I$ $b = 0.593853 + 0.464339I$	$1.22231 - 1.45738I$	$0.50826 + 4.10370I$
$u = -0.350429$ $a = 1.08068$ $b = -0.777623$	-1.01758	-11.3200
$u = -1.61248 + 0.50127I$ $a = -0.519526 + 0.799826I$ $b = 0.227371 - 1.297870I$	$8.76077 + 1.03782I$	$1.54723 - 0.70964I$
$u = -1.61248 - 0.50127I$ $a = -0.519526 - 0.799826I$ $b = 0.227371 + 1.297870I$	$8.76077 - 1.03782I$	$1.54723 + 0.70964I$
$u = 2.11375 + 0.36632I$ $a = -0.064957 - 0.921422I$ $b = -1.43241 + 1.36324I$	$-17.6990 + 5.2126I$	$0.60442 - 1.93466I$
$u = 2.11375 - 0.36632I$ $a = -0.064957 + 0.921422I$ $b = -1.43241 - 1.36324I$	$-17.6990 - 5.2126I$	$0.60442 + 1.93466I$

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

(i) Arc colorings

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

$$a_6 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} a \\ 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -a + 1 \\ -1 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -2 \\ a + 1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -a \\ -1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -a \\ a - 1 \end{pmatrix}$$

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 0$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u		$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u =$	1.00000		
$a =$	$1.414210I$	4.93480	0
$b =$	1.00000		
$u =$	1.00000		
$a =$	$-1.414210I$	4.93480	0
$b =$	1.00000		

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 0$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = \quad 0$ $b = -1.00000$	0	0

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u-1)^2(u+1)(u^7+2u^6+3u^5+u^4+5u^3-2u^2-u+3)$
c_2, c_3	$(u-1)^2(u+1)(u^7-2u^6-5u^5+9u^4+9u^3-14u^2+3u+3)$
c_4, c_5, c_8	$u(u^2+2)(u^7-u^6+7u^5-3u^4+12u^3+2u^2+4u+2)$
c_6	$(u-1)(u+1)^2(u^7-2u^6-5u^5+9u^4+9u^3-14u^2+3u+3)$
c_7	$(u-1)(u+1)^2(u^7+2u^6+3u^5+u^4+5u^3-2u^2-u+3)$
c_9	$u(u^2+2)(u^7+10u^6+70u^5+250u^4+410u^3+180u^2+56u+16)$
c_{10}	$(u-1)^3(u^7-2u^6+15u^5-35u^4+11u^3+20u^2+13u+9)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_7	$(y-1)^3(y^7+2y^6+15y^5+35y^4+11y^3-20y^2+13y-9)$
c_2, c_3, c_6	$(y-1)^3(y^7-14y^6+79y^5-221y^4+315y^3-196y^2+93y-9)$
c_4, c_5, c_8	$y(y+2)^2(y^7+13y^6+67y^5+171y^4+216y^3+104y^2+8y-4)$
c_9	$y(y+2)^2$ $\cdot(y^7+40y^6+720y^5-8588y^4+85620y^3+5520y^2-2624y-256)$
c_{10}	$((y-1)^3)(y^7+26y^6+\cdots-191y-81)$