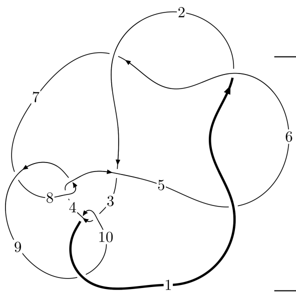
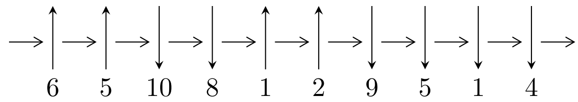
10_{141} $(K10n_{25})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle u^6 + u^5 - 3u^4 - u^3 + 3u^2 + b + 1,\ u^6 + u^5 - 4u^4 - u^3 + 6u^2 + 2a,\ u^7 + 3u^6 - 5u^4 + 4u^2 + 2u + 2\rangle$$
$$I_2^u = \langle b^2 - bu + u^2 - 1,\ u^2 + a - u - 2,\ u^3 - u^2 - 2u + 1\rangle$$
$$I_3^u = \langle b + 1,\ 2a - u + 2,\ u^2 - 2\rangle$$

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

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 16 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. $\boldsymbol{I_1^u = \langle u^6 + u^5 - 3u^4 - u^3 + 3u^2 + b + 1,\ u^6 + u^5 - 4u^4 - u^3 + 6u^2 + 2a,\ u^7 + 3u^6 - 5u^4 + 4u^2 + 2u + 2\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 2u^5 - 8u^3 + 6u$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5, c_6	$u^7 - 3u^6 + 5u^4 - 4u^2 + 2u - 2$
c_2	$u^7 + 9u^6 + 30u^5 + 45u^4 + 46u^3 + 32u^2 + 22u + 14$
c_3, c_4, c_8 c_{10}	$u^7 + u^6 - u^4 + 3u^3 + u^2 - 1$
c_7, c_9	$u^7 + u^6 + 8u^5 + 3u^4 + 13u^3 + 3u^2 + 2u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5, c_6	$y^7 - 9y^6 + 30y^5 - 45y^4 + 28y^3 + 4y^2 - 12y - 4$
c_2	$y^7 - 21y^6 + 182y^5 + 203y^4 + 304y^3 - 260y^2 - 412y - 196$
c_3, c_4, c_8 c_{10}	$y^7 - y^6 + 8y^5 - 3y^4 + 13y^3 - 3y^2 + 2y - 1$
c_7, c_9	$y^7 + 15y^6 + 84y^5 + 197y^4 + 181y^3 + 37y^2 - 2y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.050170 + 0.492398I$ $a = -1.369620 - 0.237150I$ $b = -0.828738 + 0.848640I$	$3.39904 + 5.13113I$	$0.70211 - 5.71003I$
$u = 1.050170 - 0.492398I$ $a = -1.369620 + 0.237150I$ $b = -0.828738 - 0.848640I$	$3.39904 - 5.13113I$	$0.70211 + 5.71003I$
$u = -1.33623$ $a = -0.889511$ $b = -0.610544$	3.10278	2.54950
$u = -0.122110 + 0.584395I$ $a = 1.254020 + 0.529753I$ $b = 0.441920 + 0.538118I$	$-0.192432 - 1.318890I$	$-1.84900 + 4.97200I$
$u = -0.122110 - 0.584395I$ $a = 1.254020 - 0.529753I$ $b = 0.441920 - 0.538118I$	$-0.192432 + 1.318890I$	$-1.84900 - 4.97200I$
$u = -1.75995 + 0.15485I$ $a = 1.060360 - 0.362677I$ $b = 1.19209 + 0.98985I$	$13.3363 - 7.9365I$	$0.87212 + 4.07397I$
$u = -1.75995 - 0.15485I$ $a = 1.060360 + 0.362677I$ $b = 1.19209 - 0.98985I$	$13.3363 + 7.9365I$	$0.87212 - 4.07397I$

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

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 2$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5, c_6	$(y^3 - 5y^2 + 6y - 1)^2$
c_2	$(y^3 - 17y^2 + 10y - 1)^2$
c_3, c_4, c_8 c_{10}	$y^6 - y^5 + 4y^4 - 10y^3 + 8y^2 - 4y + 1$
c_7, c_9	$y^6 + 7y^5 + 12y^4 - 42y^3 - 8y^2 + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.24698$ $a = -0.801938$ $b = -0.623490 + 0.407699I$	3.05488	2.00000
$u = -1.24698$ $a = -0.801938$ $b = -0.623490 - 0.407699I$	3.05488	2.00000
$u = 0.445042$ $a = 2.24698$ $b = 1.14526$	-2.58490	2.00000
$u = 0.445042$ $a = 2.24698$ $b = -0.700221$	-2.58490	2.00000
$u = 1.80194$ $a = 0.554958$ $b = 0.90097 + 1.19801I$	14.3344	2.00000
$u = 1.80194$ $a = 0.554958$ $b = 0.90097 - 1.19801I$	14.3344	2.00000

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.41421$ $a = -0.292893$ $b = -1.00000$	1.64493	-4.00000
$u = -1.41421$ $a = -1.70711$ $b = -1.00000$	1.64493	-4.00000

IV. $I_1^v = \langle a,\ b-1,\ v+1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = -1.00000$ $a = 0$ $b = 1.00000$	-3.28987	-12.0000

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_5, c_6	$u(u^2-2)(u^3+u^2-2u-1)^2(u^7-3u^6+5u^4-4u^2+2u-2)$
c_2	$u(u^2-2)(u^3-3u^2-4u-1)^2$ $\cdot(u^7+9u^6+30u^5+45u^4+46u^3+32u^2+22u+14)$
c_3, c_8	$((u-1)^2)(u+1)(u^6+u^5+\cdots+2u-1)(u^7+u^6+\cdots+u^2-1)$
c_4, c_{10}	$(u-1)(u+1)^2(u^6+u^5+\cdots+2u-1)(u^7+u^6+\cdots+u^2-1)$
c_7, c_9	$(u-1)^3(u^6+u^5+4u^4+10u^3+8u^2+4u+1)$ $\cdot(u^7+u^6+8u^5+3u^4+13u^3+3u^2+2u+1)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_5, c_6	$y(y-2)^2(y^3-5y^2+6y-1)^2$ $\cdot(y^7-9y^6+30y^5-45y^4+28y^3+4y^2-12y-4)$
c_2	$y(y-2)^2(y^3-17y^2+10y-1)^2$ $\cdot(y^7-21y^6+182y^5+203y^4+304y^3-260y^2-412y-196)$
c_3, c_4, c_8 c_{10}	$(y-1)^3(y^6-y^5+4y^4-10y^3+8y^2-4y+1)$ $\cdot(y^7-y^6+8y^5-3y^4+13y^3-3y^2+2y-1)$
c_7, c_9	$(y-1)^3(y^6+7y^5+12y^4-42y^3-8y^2+1)$ $\cdot(y^7+15y^6+84y^5+197y^4+181y^3+37y^2-2y-1)$