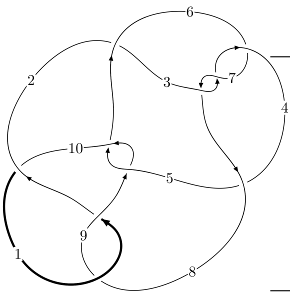
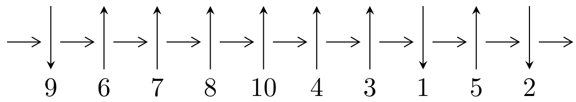
10_{51} $(K10a_{16})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle u^{35} + 2u^{34} + \cdots + b - 1,\ -2u^{35} - 2u^{34} + \cdots + a + 1,\ u^{36} + 2u^{35} + \cdots - u - 1\rangle$$
$$I_2^u = \langle b,\ -u^2 + a - 1,\ u^3 - u^2 + 2u - 1\rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 39 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.

$$\boldsymbol{I_1^u = \langle u^{35}+2u^{34}+\cdots+b-1,\ -2u^{35}-2u^{34}+\cdots+a+1,\ u^{36}+2u^{35}+\cdots-u-1\rangle}$$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} u^2 + 1 \\ -u^4 - 2u^2 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -u^3 - 2u \\ u^3 + u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 2u^{35} + 2u^{34} + \cdots - 4u - 1 \\ -u^{35} - 2u^{34} + \cdots + 7u^2 + 1 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u^5 + 2u^3 + u \\ -u^7 - 3u^5 - 2u^3 + u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u^{23} + 10u^{21} + \cdots + 6u^2 - 4u \\ u^{35} + 2u^{34} + \cdots - u - 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^{35} + u^{34} + \cdots + 5u^2 - 5u \\ -u^{24} - 10u^{22} + \cdots - 6u^3 + 4u^2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -u^{35} - 2u^{34} - 12u^{33} - 22u^{32} - 54u^{31} - 93u^{30} - 72u^{29} - 137u^{28} + 303u^{27} + 296u^{26} + 1632u^{25} + 1737u^{24} + 3476u^{23} + 3488u^{22} + 3688u^{21} + 3414u^{20} + 1095u^{19} + 880u^{18} - 1598u^{17} - 1475u^{16} - 1414u^{15} - 1484u^{14} + 24u^{13} - 396u^{12} + 150u^{11} + 124u^{10} - 166u^9 + 148u^8 + 30u^7 + 48u^6 + 66u^5 - 17u^3 + 24u^2 + 14u + 1$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_8	$u^{36} - 4u^{35} + \cdots + 8u - 1$
c_2, c_4	$u^{36} - 2u^{35} + \cdots + 19u - 17$
c_3, c_6, c_7	$u^{36} + 2u^{35} + \cdots - u - 1$
c_5, c_9	$u^{36} + u^{35} + \cdots + 12u + 8$
c_{10}	$u^{36} + 16u^{35} + \cdots + 24u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_8	$y^{36} - 16y^{35} + \cdots - 24y + 1$
c_2, c_4	$y^{36} - 26y^{35} + \cdots + 2461y + 289$
c_3, c_6, c_7	$y^{36} + 30y^{35} + \cdots + 5y + 1$
c_5, c_9	$y^{36} - 21y^{35} + \cdots - 784y + 64$
c_{10}	$y^{36} + 12y^{35} + \cdots - 516y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.836039 + 0.127083I$ $a = -2.32698 - 0.33462I$ $b = 1.30605 - 0.59694I$	$5.69474 - 8.30646I$	$7.90156 + 6.05994I$
$u = -0.836039 - 0.127083I$ $a = -2.32698 + 0.33462I$ $b = 1.30605 + 0.59694I$	$5.69474 + 8.30646I$	$7.90156 - 6.05994I$
$u = -0.837370 + 0.074490I$ $a = 2.44021 + 0.21899I$ $b = -1.346470 + 0.353306I$	$7.51295 - 2.38075I$	$10.48437 + 1.26314I$
$u = -0.837370 - 0.074490I$ $a = 2.44021 - 0.21899I$ $b = -1.346470 - 0.353306I$	$7.51295 + 2.38075I$	$10.48437 - 1.26314I$
$u = -0.393001 + 1.122730I$ $a = 0.839814 + 0.387760I$ $b = -1.315580 - 0.506223I$	$2.65006 + 3.86936I$	$5.24553 - 2.32285I$
$u = -0.393001 - 1.122730I$ $a = 0.839814 - 0.387760I$ $b = -1.315580 + 0.506223I$	$2.65006 - 3.86936I$	$5.24553 + 2.32285I$
$u = 0.773363 + 0.051034I$ $a = -0.111470 + 0.916399I$ $b = 0.224431 - 1.065040I$	$2.25781 + 2.29689I$	$7.21657 - 3.23152I$
$u = 0.773363 - 0.051034I$ $a = -0.111470 - 0.916399I$ $b = 0.224431 + 1.065040I$	$2.25781 - 2.29689I$	$7.21657 + 3.23152I$
$u = -0.388829 + 1.191850I$ $a = -1.062240 - 0.642876I$ $b = 1.360160 + 0.242055I$	$4.08196 - 2.02960I$	$7.16240 + 2.61607I$
$u = -0.388829 - 1.191850I$ $a = -1.062240 + 0.642876I$ $b = 1.360160 - 0.242055I$	$4.08196 + 2.02960I$	$7.16240 - 2.61607I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.741018$ $a = -2.98588$ $b = 0.930463$	0.763718	8.86550
$u = 0.316713 + 1.230230I$ $a = 0.731009 - 0.280668I$ $b = -0.073467 - 1.041860I$	$-1.35734 + 1.63914I$	$3.47794 - 0.38359I$
$u = 0.316713 - 1.230230I$ $a = 0.731009 + 0.280668I$ $b = -0.073467 + 1.041860I$	$-1.35734 - 1.63914I$	$3.47794 + 0.38359I$
$u = 0.110839 + 1.278840I$ $a = 0.199304 - 0.779639I$ $b = -0.585175 - 0.509756I$	$-3.23258 + 1.97104I$	$3.37344 - 3.58123I$
$u = 0.110839 - 1.278840I$ $a = 0.199304 + 0.779639I$ $b = -0.585175 + 0.509756I$	$-3.23258 - 1.97104I$	$3.37344 + 3.58123I$
$u = 0.444529 + 0.543366I$ $a = 0.840105 - 0.882584I$ $b = -1.105770 - 0.324662I$	$0.90728 + 4.09703I$	$5.30644 - 6.77310I$
$u = 0.444529 - 0.543366I$ $a = 0.840105 + 0.882584I$ $b = -1.105770 + 0.324662I$	$0.90728 - 4.09703I$	$5.30644 + 6.77310I$
$u = -0.027017 + 1.315680I$ $a = -0.29010 + 1.42344I$ $b = 0.625122 + 0.681126I$	$-6.47860 - 1.16610I$	$-2.74685 + 0.24767I$
$u = -0.027017 - 1.315680I$ $a = -0.29010 - 1.42344I$ $b = 0.625122 - 0.681126I$	$-6.47860 + 1.16610I$	$-2.74685 - 0.24767I$
$u = -0.311343 + 1.279420I$ $a = 1.87121 + 1.06972I$ $b = -0.965876 + 0.174407I$	$-3.22138 - 3.79621I$	$3.52420 + 4.06401I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.311343 - 1.279420I$ $a = 1.87121 - 1.06972I$ $b = -0.965876 - 0.174407I$	$-3.22138 + 3.79621I$	$3.52420 - 4.06401I$
$u = 0.335799 + 1.303370I$ $a = -0.797336 + 0.066999I$ $b = -0.336766 + 1.094920I$	$-1.97731 + 6.30262I$	$2.30057 - 5.66674I$
$u = 0.335799 - 1.303370I$ $a = -0.797336 - 0.066999I$ $b = -0.336766 - 1.094920I$	$-1.97731 - 6.30262I$	$2.30057 + 5.66674I$
$u = 0.543094 + 0.361071I$ $a = -0.752914 + 0.836491I$ $b = 1.016680 - 0.106012I$	$1.46636 - 0.53351I$	$7.64819 - 0.27613I$
$u = 0.543094 - 0.361071I$ $a = -0.752914 - 0.836491I$ $b = 1.016680 + 0.106012I$	$1.46636 + 0.53351I$	$7.64819 + 0.27613I$
$u = -0.372314 + 1.319560I$ $a = -1.30924 - 1.37083I$ $b = 1.323430 - 0.441863I$	$3.14977 - 6.72875I$	$6.21840 + 3.94329I$
$u = -0.372314 - 1.319560I$ $a = -1.30924 + 1.37083I$ $b = 1.323430 + 0.441863I$	$3.14977 + 6.72875I$	$6.21840 - 3.94329I$
$u = 0.210596 + 1.368850I$ $a = -0.424656 - 0.451211I$ $b = -0.759926 + 0.135831I$	$-3.87079 + 2.11524I$	$4.29140 + 1.12167I$
$u = 0.210596 - 1.368850I$ $a = -0.424656 + 0.451211I$ $b = -0.759926 - 0.135831I$	$-3.87079 - 2.11524I$	$4.29140 - 1.12167I$
$u = -0.365320 + 1.351690I$ $a = 1.28028 + 1.56464I$ $b = -1.28411 + 0.65656I$	$1.04241 - 12.63140I$	$3.42125 + 8.03158I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.365320-1.351690I$ $a=\ 1.28028-1.56464I$ $b=-1.28411-0.65656I$	$1.04241+12.63140I$	$3.42125-8.03158I$
$u=\ 0.096201+1.407940I$ $a=\ 0.333081+1.018580I$ $b=\ 0.995297+0.496043I$	$-5.27687+5.74916I$	$0.-6.40491I$
$u=\ 0.096201-1.407940I$ $a=\ 0.333081-1.018580I$ $b=\ 0.995297-0.496043I$	$-5.27687-5.74916I$	$0.+6.40491I$
$u=\ 0.456356$ $a=-0.741212$ $b=\ 0.450302$	0.789103	12.7730
$u=-0.157570+0.278904I$ $a=\ 0.40346-1.83069I$ $b=-0.268417-0.538256I$	$-1.65748-0.63628I$	$-3.12504+1.61784I$
$u=-0.157570-0.278904I$ $a=\ 0.40346+1.83069I$ $b=-0.268417+0.538256I$	$-1.65748+0.63628I$	$-3.12504-1.61784I$

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

(i) Arc colorings

$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} u^2 + 1 \\ -u^2 + u - 1 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -u^2 - 1 \\ u^2 - u + 1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u^2 + 1 \\ 0 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u^2 + 1 \\ 0 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0 \\ u^2 - u + 1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 3u^2 - 4u + 4$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.215080 + 1.307140I$ $a = -0.662359 + 0.562280I$ $b = 0$	$-4.66906 + 2.82812I$	$-1.84740 - 3.54173I$
$u = 0.215080 - 1.307140I$ $a = -0.662359 - 0.562280I$ $b = 0$	$-4.66906 - 2.82812I$	$-1.84740 + 3.54173I$
$u = 0.569840$ $a = 1.32472$ $b = 0$	-0.531480	2.69480

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u+1)^3)(u^{36} - 4u^{35} + \cdots + 8u - 1)$
c_2, c_4	$(u^3 - u^2 + 1)(u^{36} - 2u^{35} + \cdots + 19u - 17)$
c_3	$(u^3 + u^2 + 2u + 1)(u^{36} + 2u^{35} + \cdots - u - 1)$
c_5, c_9	$u^3(u^{36} + u^{35} + \cdots + 12u + 8)$
c_6, c_7	$(u^3 - u^2 + 2u - 1)(u^{36} + 2u^{35} + \cdots - u - 1)$
c_8	$((u-1)^3)(u^{36} - 4u^{35} + \cdots + 8u - 1)$
c_{10}	$((u-1)^3)(u^{36} + 16u^{35} + \cdots + 24u + 1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_8	$((y-1)^3)(y^{36} - 16y^{35} + \cdots - 24y + 1)$
c_2, c_4	$(y^3 - y^2 + 2y - 1)(y^{36} - 26y^{35} + \cdots + 2461y + 289)$
c_3, c_6, c_7	$(y^3 + 3y^2 + 2y - 1)(y^{36} + 30y^{35} + \cdots + 5y + 1)$
c_5, c_9	$y^3(y^{36} - 21y^{35} + \cdots - 784y + 64)$
c_{10}	$((y-1)^3)(y^{36} + 12y^{35} + \cdots - 516y + 1)$