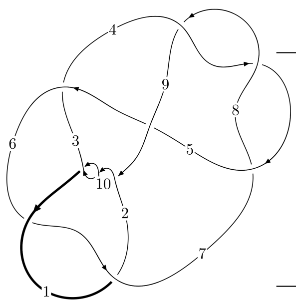
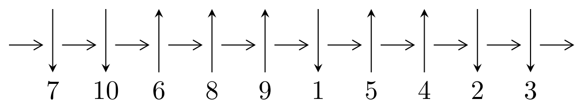
10_{52} $(K10a_{80})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 2u^{29} + u^{28} + \cdots + b - 1,\ u^{31} + 2u^{30} + \cdots + a - 3,\ u^{32} + 2u^{31} + \cdots - 5u - 1 \rangle$$
$$I_2^u = \langle b - 1,\ -u^2 + a + u - 2,\ u^3 - u^2 + 2u - 1 \rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 35 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.

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$$\boldsymbol{I_1^u = \langle 2u^{29}+u^{28}+\cdots+b-1,\ u^{31}+2u^{30}+\cdots+a-3,\ u^{32}+2u^{31}+\cdots-5u-1\rangle}$$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} u \\ u^3+u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u^3+2u \\ u^3+u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u^7-4u^5-4u^3 \\ -u^7-3u^5-2u^3+u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u^{31}-2u^{30}+\cdots+u+3 \\ -2u^{29}-u^{28}+\cdots+2u+1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u^2+1 \\ u^4+2u^2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -u^{31}-2u^{30}+\cdots+6u+4 \\ -u^{29}-u^{28}+\cdots+u+1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -u^{31}-2u^{30}+\cdots+4u+4 \\ -u^{29}-u^{28}+\cdots+2u+1 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$= u^{31}+2u^{30}+16u^{29}+30u^{28}+116u^{27}+201u^{26}+500u^{25}+783u^{24}+1406u^{23}+1926u^{22}+2640u^{21}+3005u^{20}+3188u^{19}+2713u^{18}+2078u^{17}+811u^{16}+52u^{15}-886u^{14}-904u^{13}-890u^{12}-388u^{11}-158u^{10}+98u^{9}-10u^{7}-104u^{6}-38u^{5}-21u^{4}+42u^{3}+21u^{2}+6u-9$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_6	$u^{32} - u^{31} + \cdots + 4u + 8$
c_2, c_9, c_{10}	$u^{32} - 4u^{31} + \cdots + 2u - 1$
c_3	$u^{32} + 6u^{31} + \cdots - 29u + 19$
c_4, c_7, c_8	$u^{32} + 2u^{31} + \cdots - 5u - 1$
c_5	$u^{32} - 2u^{31} + \cdots - 91u - 17$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_6	$y^{32} - 21y^{31} + \cdots - 400y + 64$
c_2, c_9, c_{10}	$y^{32} - 32y^{31} + \cdots + 10y + 1$
c_3	$y^{32} + 18y^{31} + \cdots - 14597y + 361$
c_4, c_7, c_8	$y^{32} + 30y^{31} + \cdots - 17y + 1$
c_5	$y^{32} + 6y^{31} + \cdots - 2025y + 289$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.533924 + 0.635384I$ $a = -1.44678 + 1.16510I$ $b = -0.03219 + 1.54133I$	$-8.33717 + 3.47045I$	$-6.19300 - 0.53804I$
$u = -0.533924 - 0.635384I$ $a = -1.44678 - 1.16510I$ $b = -0.03219 - 1.54133I$	$-8.33717 - 3.47045I$	$-6.19300 + 0.53804I$
$u = -0.737398 + 0.363177I$ $a = 1.39466 - 1.92116I$ $b = 0.33070 - 1.92317I$	$-7.36935 - 7.82848I$	$-4.18330 + 6.10894I$
$u = -0.737398 - 0.363177I$ $a = 1.39466 + 1.92116I$ $b = 0.33070 + 1.92317I$	$-7.36935 + 7.82848I$	$-4.18330 - 6.10894I$
$u = 0.121416 + 1.191480I$ $a = 0.222642 - 0.520130I$ $b = -0.646759 - 0.202123I$	$-1.84659 + 2.03195I$	$-0.06352 - 4.09496I$
$u = 0.121416 - 1.191480I$ $a = 0.222642 + 0.520130I$ $b = -0.646759 + 0.202123I$	$-1.84659 - 2.03195I$	$-0.06352 + 4.09496I$
$u = 0.772369$ $a = -0.383393$ $b = 0.296121$	-2.56303	-3.36180
$u = 0.321817 + 1.204360I$ $a = -0.378231 + 0.177725I$ $b = 0.335766 + 0.398330I$	$-6.26853 + 3.96490I$	$-7.15642 - 4.13069I$
$u = 0.321817 - 1.204360I$ $a = -0.378231 - 0.177725I$ $b = 0.335766 - 0.398330I$	$-6.26853 - 3.96490I$	$-7.15642 + 4.13069I$
$u = -0.046033 + 1.276630I$ $a = 0.169895 + 1.097880I$ $b = 1.40941 - 0.16635I$	$-4.89788 - 1.11555I$	$-6.11098 - 0.26189I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.046033 - 1.276630I$ $a = 0.169895 - 1.097880I$ $b = 1.40941 + 0.16635I$	$-4.89788 + 1.11555I$	$-6.11098 + 0.26189I$
$u = -0.637579 + 0.336310I$ $a = -1.77319 + 1.89857I$ $b = -0.49204 + 1.80683I$	$-1.10997 - 4.05552I$	$-1.42840 + 6.80075I$
$u = -0.637579 - 0.336310I$ $a = -1.77319 - 1.89857I$ $b = -0.49204 - 1.80683I$	$-1.10997 + 4.05552I$	$-1.42840 - 6.80075I$
$u = 0.573185 + 0.380549I$ $a = -0.567444 - 0.158963I$ $b = 0.264757 + 0.307056I$	$-3.48280 + 1.78898I$	$-3.34736 - 3.66370I$
$u = 0.573185 - 0.380549I$ $a = -0.567444 + 0.158963I$ $b = 0.264757 - 0.307056I$	$-3.48280 - 1.78898I$	$-3.34736 + 3.66370I$
$u = 0.214793 + 1.351600I$ $a = 0.225799 + 0.123979I$ $b = 0.119070 - 0.331821I$	$-3.45767 + 3.36417I$	$0.37870 - 3.50479I$
$u = 0.214793 - 1.351600I$ $a = 0.225799 - 0.123979I$ $b = 0.119070 + 0.331821I$	$-3.45767 - 3.36417I$	$0.37870 + 3.50479I$
$u = -0.457656 + 0.423798I$ $a = 1.94595 - 1.20331I$ $b = 0.38062 - 1.37539I$	$-1.72217 + 0.51232I$	$-4.14141 + 0.14369I$
$u = -0.457656 - 0.423798I$ $a = 1.94595 + 1.20331I$ $b = 0.38062 + 1.37539I$	$-1.72217 - 0.51232I$	$-4.14141 - 0.14369I$
$u = 0.569557 + 0.125662I$ $a = 0.316122 + 0.218549I$ $b = -0.152586 - 0.164201I$	$1.244440 + 0.519638I$	$6.41959 - 1.56914I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.569557 - 0.125662I$ $a = 0.316122 - 0.218549I$ $b = -0.152586 + 0.164201I$	$1.244440 - 0.519638I$	$6.41959 + 1.56914I$
$u = -0.19027 + 1.43367I$ $a = 1.50108 + 0.51525I$ $b = 1.02431 - 2.05401I$	$-7.59173 - 1.96238I$	$-7.59391 + 0.I$
$u = -0.19027 - 1.43367I$ $a = 1.50108 - 0.51525I$ $b = 1.02431 + 2.05401I$	$-7.59173 + 1.96238I$	$-7.59391 + 0.I$
$u = -0.24454 + 1.43301I$ $a = -1.68707 - 0.19420I$ $b = -0.69085 + 2.37010I$	$-6.78693 - 7.28997I$	$-5.63030 + 6.08966I$
$u = -0.24454 - 1.43301I$ $a = -1.68707 + 0.19420I$ $b = -0.69085 - 2.37010I$	$-6.78693 + 7.28997I$	$-5.63030 - 6.08966I$
$u = 0.21981 + 1.44034I$ $a = -0.396703 - 0.147942I$ $b = -0.125890 + 0.603905I$	$-9.32026 + 4.72345I$	$-7.29654 - 3.13438I$
$u = 0.21981 - 1.44034I$ $a = -0.396703 + 0.147942I$ $b = -0.125890 - 0.603905I$	$-9.32026 - 4.72345I$	$-7.29654 + 3.13438I$
$u = -0.28148 + 1.45411I$ $a = 1.58198 - 0.01901I$ $b = 0.41766 - 2.30572I$	$-13.2076 - 11.5375I$	$-7.79347 + 6.25344I$
$u = -0.28148 - 1.45411I$ $a = 1.58198 + 0.01901I$ $b = 0.41766 + 2.30572I$	$-13.2076 + 11.5375I$	$-7.79347 - 6.25344I$
$u = -0.14244 + 1.49315I$ $a = -1.134180 - 0.397538I$ $b = -0.75514 + 1.63687I$	$-15.2480 + 1.1861I$	$-9.66994 + 0.I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.14244 - 1.49315I$ $a = -1.134180 + 0.397538I$ $b = -0.75514 - 1.63687I$	$-15.2480 - 1.1861I$	$-9.66994 + 0.I$
$u = -0.270853$ $a = 3.43431$ $b = 0.930194$	-1.22025	-10.0180

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

(i) Arc colorings

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

$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

$$a_6 = \begin{pmatrix} u^2+1 \\ u^2-u+1 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

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

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

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

$$a_{10} = \begin{pmatrix} u^2-u+3 \\ 1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 5u^2-4u+4$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.215080 + 1.307140I$ $a = 0.122561 - 0.744862I$ $b = 1.00000$	$-4.66906 + 2.82812I$	$-5.17211 - 2.41717I$
$u = 0.215080 - 1.307140I$ $a = 0.122561 + 0.744862I$ $b = 1.00000$	$-4.66906 - 2.82812I$	$-5.17211 + 2.41717I$
$u = 0.569840$ $a = 1.75488$ $b = 1.00000$	-0.531480	3.34420

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_6	$u^3(u^{32} - u^{31} + \cdots + 4u + 8)$
c_2	$((u+1)^3)(u^{32} - 4u^{31} + \cdots + 2u - 1)$
c_3	$(u^3 - u^2 + 1)(u^{32} + 6u^{31} + \cdots - 29u + 19)$
c_4	$(u^3 + u^2 + 2u + 1)(u^{32} + 2u^{31} + \cdots - 5u - 1)$
c_5	$(u^3 - u^2 + 1)(u^{32} - 2u^{31} + \cdots - 91u - 17)$
c_7, c_8	$(u^3 - u^2 + 2u - 1)(u^{32} + 2u^{31} + \cdots - 5u - 1)$
c_9, c_{10}	$((u-1)^3)(u^{32} - 4u^{31} + \cdots + 2u - 1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_6	$y^3(y^{32} - 21y^{31} + \cdots - 400y + 64)$
c_2, c_9, c_{10}	$((y-1)^3)(y^{32} - 32y^{31} + \cdots + 10y + 1)$
c_3	$(y^3 - y^2 + 2y - 1)(y^{32} + 18y^{31} + \cdots - 14597y + 361)$
c_4, c_7, c_8	$(y^3 + 3y^2 + 2y - 1)(y^{32} + 30y^{31} + \cdots - 17y + 1)$
c_5	$(y^3 - y^2 + 2y - 1)(y^{32} + 6y^{31} + \cdots - 2025y + 289)$