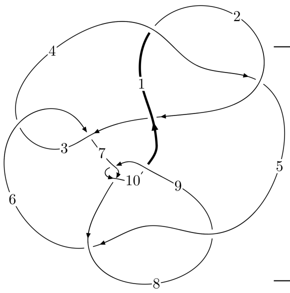
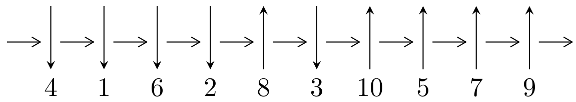
10_{81} $(K10a_7)$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I^u_1 = \langle -1.38501 \times 10^{15} u^{47} + 7.04930 \times 10^{15} u^{46} + \cdots + 1.31625 \times 10^{15} b + 3.65379 \times 10^{15},$$
$$1.00335 \times 10^{16} u^{47} - 3.95579 \times 10^{16} u^{46} + \cdots + 2.63249 \times 10^{15} a + 1.73053 \times 10^{16},\ u^{48} - 5u^{47} + \cdots + 10u +$$
$$I^u_2 = \langle b,\ -u^2 + a + 2u - 1,\ u^3 - u^2 + 1 \rangle$$
$$I^u_3 = \langle a^2 + b + 2a + 1,\ a^3 + 2a^2 + a + 1,\ u + 1 \rangle$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 54 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. $I^u_1 = \langle -1.39 \times 10^{15}u^{47} + 7.05 \times 10^{15}u^{46} + \cdots + 1.32 \times 10^{15}b + 3.65 \times 10^{15},\ 1.00 \times 10^{16}u^{47} - 3.96 \times 10^{16}u^{46} + \cdots + 2.63 \times 10^{15}a + 1.73 \times 10^{16},\ u^{48} - 5u^{47} + \cdots + 10u + 1 \rangle$

(i) Arc colorings

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

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

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

$$a_1 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -u^3 \\ u^5 - u^3 + u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -3.81140u^{47} + 15.0268u^{46} + \cdots + 36.2869u - 6.57375 \\ 1.05225u^{47} - 5.35561u^{46} + \cdots - 25.7273u - 2.77592 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -4.86364u^{47} + 20.3824u^{46} + \cdots + 62.0142u - 3.79783 \\ 1.05225u^{47} - 5.35561u^{46} + \cdots - 25.7273u - 2.77592 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0.828554u^{47} - 0.00856335u^{46} + \cdots + 28.0123u - 1.38653 \\ -2.29509u^{47} + 7.50970u^{46} + \cdots + 3.57759u + 0.200750 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 2.99681u^{47} - 12.6887u^{46} + \cdots - 38.0813u + 3.39699 \\ 0.302246u^{47} - 0.355609u^{46} + \cdots + 8.52273u + 0.974080 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0.0322954u^{47} + 0.330979u^{46} + \cdots + 8.02219u - 3.03662 \\ -0.302246u^{47} + 0.355609u^{46} + \cdots - 8.52273u - 0.974080 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= \frac{2572719667737379}{1316245742897122}u^{47} - \frac{14240246736967463}{1316245742897122}u^{46} + \cdots - \frac{66418667522566225}{1316245742897122}u + \frac{3102450479488985}{658122871448561}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{48} - 5u^{47} + \cdots + 10u + 1$
c_2	$u^{48} + 23u^{47} + \cdots + 180u + 1$
c_3, c_6	$u^{48} - 2u^{47} + \cdots + 28u - 8$
c_5, c_8	$u^{48} + 2u^{47} + \cdots - 28u - 8$
c_7, c_9	$u^{48} + 5u^{47} + \cdots - 10u + 1$
c_{10}	$u^{48} - 23u^{47} + \cdots - 180u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_7 c_9	$y^{48} - 23y^{47} + \cdots - 180y + 1$
c_2, c_{10}	$y^{48} + 9y^{47} + \cdots - 29816y + 1$
c_3, c_5, c_6 c_8	$y^{48} + 24y^{47} + \cdots - 464y + 64$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.351537 + 0.949778I$ $a = 1.006580 + 0.754616I$ $b = 0.695127 + 1.130530I$	$2.54767 + 8.71683I$	$2.88659 - 5.91299I$
$u = 0.351537 - 0.949778I$ $a = 1.006580 - 0.754616I$ $b = 0.695127 - 1.130530I$	$2.54767 - 8.71683I$	$2.88659 + 5.91299I$
$u = 0.935499 + 0.280058I$ $a = 0.258750 + 0.692688I$ $b = -0.32474 - 1.42072I$	$-4.55335 + 1.97419I$	$-0.52111 + 3.87774I$
$u = 0.935499 - 0.280058I$ $a = 0.258750 - 0.692688I$ $b = -0.32474 + 1.42072I$	$-4.55335 - 1.97419I$	$-0.52111 - 3.87774I$
$u = -0.958701 + 0.411863I$ $a = -1.12181 + 1.17224I$ $b = -0.845547 + 0.386680I$	$2.50599I$	$0. - 3.68111I$
$u = -0.958701 - 0.411863I$ $a = -1.12181 - 1.17224I$ $b = -0.845547 - 0.386680I$	$- 2.50599I$	$0. + 3.68111I$
$u = 1.027890 + 0.366302I$ $a = -0.558001 - 0.681766I$ $b = 0.02906 + 1.43386I$	$-5.20077 - 4.17900I$	$-3.36906 + 7.53383I$
$u = 1.027890 - 0.366302I$ $a = -0.558001 + 0.681766I$ $b = 0.02906 - 1.43386I$	$-5.20077 + 4.17900I$	$-3.36906 - 7.53383I$
$u = -0.852801 + 0.288192I$ $a = -2.58191 + 1.66058I$ $b = -0.332500 - 0.567513I$	$0.675636 + 0.515505I$	$-2.57655 - 6.02720I$
$u = -0.852801 - 0.288192I$ $a = -2.58191 - 1.66058I$ $b = -0.332500 + 0.567513I$	$0.675636 - 0.515505I$	$-2.57655 + 6.02720I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.516978 + 0.722434I$ $a = 0.871888 - 0.224038I$ $b = 0.549420 + 0.862669I$	$4.87326 + 0.03227I$	$4.84666 - 0.67896I$
$u = 0.516978 - 0.722434I$ $a = 0.871888 + 0.224038I$ $b = 0.549420 - 0.862669I$	$4.87326 - 0.03227I$	$4.84666 + 0.67896I$
$u = 0.425885 + 0.773654I$ $a = 1.69830 + 0.13159I$ $b = 0.950582 - 0.574763I$	$4.33954 + 2.65713I$	$5.08315 - 1.96927I$
$u = 0.425885 - 0.773654I$ $a = 1.69830 - 0.13159I$ $b = 0.950582 + 0.574763I$	$4.33954 - 2.65713I$	$5.08315 + 1.96927I$
$u = 0.295606 + 0.828875I$ $a = -0.631610 - 0.587022I$ $b = -0.544625 - 1.084280I$	$3.47198I$	$0. - 2.47118I$
$u = 0.295606 - 0.828875I$ $a = -0.631610 + 0.587022I$ $b = -0.544625 + 1.084280I$	$-3.47198I$	$0. + 2.47118I$
$u = -1.116730 + 0.138646I$ $a = 1.10500 - 1.07815I$ $b = 0.704022 + 0.224888I$	$-0.675636 - 0.515505I$	$2.57655 + 6.02720I$
$u = -1.116730 - 0.138646I$ $a = 1.10500 + 1.07815I$ $b = 0.704022 - 0.224888I$	$-0.675636 + 0.515505I$	$2.57655 - 6.02720I$
$u = 0.992673 + 0.539998I$ $a = -0.601343 - 0.631046I$ $b = -1.060630 - 0.166744I$	$0.88639 - 2.97344I$	$0. + 2.64448I$
$u = 0.992673 - 0.539998I$ $a = -0.601343 + 0.631046I$ $b = -1.060630 + 0.166744I$	$0.88639 + 2.97344I$	$0. - 2.64448I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.628205 + 0.596659I$ $a = -1.064010 - 0.397214I$ $b = -0.829653 + 0.427683I$	$2.00090 - 1.53468I$	$2.12390 + 3.90788I$
$u = 0.628205 - 0.596659I$ $a = -1.064010 + 0.397214I$ $b = -0.829653 - 0.427683I$	$2.00090 + 1.53468I$	$2.12390 - 3.90788I$
$u = -0.547224 + 0.659382I$ $a = -0.71785 + 1.52298I$ $b = -0.434204 + 1.035090I$	$-0.88639 - 2.97344I$	$-0.29359 + 2.64448I$
$u = -0.547224 - 0.659382I$ $a = -0.71785 - 1.52298I$ $b = -0.434204 - 1.035090I$	$-0.88639 + 2.97344I$	$-0.29359 - 2.64448I$
$u = 0.747136 + 0.877281I$ $a = 0.933943 - 0.476702I$ $b = 0.485002 - 0.768666I$	$5.20077 - 4.17900I$	$3.36906 + 7.53383I$
$u = 0.747136 - 0.877281I$ $a = 0.933943 + 0.476702I$ $b = 0.485002 + 0.768666I$	$5.20077 + 4.17900I$	$3.36906 - 7.53383I$
$u = -0.833904$ $a = 0.880190$ $b = 0.275054$	-1.20368	-8.97040
$u = -1.079990 + 0.482069I$ $a = 1.72018 - 0.33297I$ $b = 0.365280 + 1.116600I$	$-4.33954 + 2.65713I$	$-5.08315 + 0.I$
$u = -1.079990 - 0.482069I$ $a = 1.72018 + 0.33297I$ $b = 0.365280 - 1.116600I$	$-4.33954 - 2.65713I$	$-5.08315 + 0.I$
$u = -1.035420 + 0.586063I$ $a = -2.05065 + 0.08569I$ $b = -0.591514 - 1.148530I$	$-2.34804 + 7.85171I$	$0. - 6.74189I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.035420 - 0.586063I$ $a = -2.05065 - 0.08569I$ $b = -0.591514 + 1.148530I$	$-2.34804 - 7.85171I$	$0. + 6.74189I$
$u = 1.046730 + 0.598380I$ $a = 1.36039 + 1.17731I$ $b = 0.378423 - 1.023550I$	$3.29646 - 5.08791I$	$0. + 5.66025I$
$u = 1.046730 - 0.598380I$ $a = 1.36039 - 1.17731I$ $b = 0.378423 + 1.023550I$	$3.29646 + 5.08791I$	$0. - 5.66025I$
$u = 0.964917 + 0.798665I$ $a = -0.046037 + 0.723287I$ $b = 0.325521 + 0.665488I$	$4.55335 - 1.97419I$	0
$u = 0.964917 - 0.798665I$ $a = -0.046037 - 0.723287I$ $b = 0.325521 - 0.665488I$	$4.55335 + 1.97419I$	0
$u = 1.098250 + 0.602404I$ $a = 0.575750 + 0.805276I$ $b = 1.111730 + 0.493637I$	$2.34804 - 7.85171I$	0
$u = 1.098250 - 0.602404I$ $a = 0.575750 - 0.805276I$ $b = 1.111730 - 0.493637I$	$2.34804 + 7.85171I$	0
$u = -1.249240 + 0.262371I$ $a = 0.509018 - 0.507195I$ $b = -0.233338 + 1.114770I$	$-4.87326 - 0.03227I$	0
$u = -1.249240 - 0.262371I$ $a = 0.509018 + 0.507195I$ $b = -0.233338 - 1.114770I$	$-4.87326 + 0.03227I$	0
$u = 1.158620 + 0.585509I$ $a = -1.46782 - 0.64788I$ $b = -0.576415 + 1.261620I$	$-2.54767 - 8.71683I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.158620 - 0.585509I$ $a = -1.46782 + 0.64788I$ $b = -0.576415 - 1.261620I$	$-2.54767 + 8.71683I$	0
$u = -1.332740 + 0.180321I$ $a = -0.022960 + 0.366381I$ $b = 0.509355 - 1.133010I$	$-3.29646 - 5.08791I$	0
$u = -1.332740 - 0.180321I$ $a = -0.022960 - 0.366381I$ $b = 0.509355 + 1.133010I$	$-3.29646 + 5.08791I$	0
$u = 1.187100 + 0.637571I$ $a = 1.69469 + 0.56994I$ $b = 0.73411 - 1.22507I$	$-14.4927I$	0
$u = 1.187100 - 0.637571I$ $a = 1.69469 - 0.56994I$ $b = 0.73411 + 1.22507I$	$14.4927I$	0
$u = -0.249189 + 0.602859I$ $a = 0.538717 - 1.292580I$ $b = 0.050010 - 1.026510I$	$-2.00090 + 1.53468I$	$-2.12390 - 3.90788I$
$u = -0.249189 - 0.602859I$ $a = 0.538717 + 1.292580I$ $b = 0.050010 + 1.026510I$	$-2.00090 - 1.53468I$	$-2.12390 + 3.90788I$
$u = -0.0760954$ $a = -9.69862$ $b = -0.503995$	1.20368	8.97040

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -u^2 + 8u - 4$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^3 - y^2 + 2y - 1$
c_2, c_3, c_6	$y^3 + 3y^2 + 2y - 1$
c_5, c_8	y^3
c_7, c_9, 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
$u = 0.877439 + 0.744862I$ $a = -0.539798 - 0.182582I$ $b = 0$	$4.66906 - 2.82812I$	$2.80443 + 4.65175I$
$u = 0.877439 - 0.744862I$ $a = -0.539798 + 0.182582I$ $b = 0$	$4.66906 + 2.82812I$	$2.80443 - 4.65175I$
$u = -0.754878$ $a = 3.07960$ $b = 0$	0.531480	-10.6090

III. $I_3^u = \langle a^2 + b + 2a + 1,\ a^3 + 2a^2 + a + 1,\ u + 1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= a^2 - 6a - 3$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = -0.122561 + 0.744862I$ $b = -0.215080 - 1.307140I$	$-4.66906 + 2.82812I$	$-2.80443 - 4.65175I$
$u = -1.00000$ $a = -0.122561 - 0.744862I$ $b = -0.215080 + 1.307140I$	$-4.66906 - 2.82812I$	$-2.80443 + 4.65175I$
$u = -1.00000$ $a = -1.75488$ $b = -0.569840$	-0.531480	10.6090

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^3)(u^3+u^2-1)(u^{48}-5u^{47}+\cdots+10u+1)$
c_2	$((u+1)^3)(u^3+u^2+2u+1)(u^{48}+23u^{47}+\cdots+180u+1)$
c_3	$u^3(u^3-u^2+2u-1)(u^{48}-2u^{47}+\cdots+28u-8)$
c_4	$((u+1)^3)(u^3-u^2+1)(u^{48}-5u^{47}+\cdots+10u+1)$
c_5	$u^3(u^3+u^2+2u+1)(u^{48}+2u^{47}+\cdots-28u-8)$
c_6	$u^3(u^3+u^2+2u+1)(u^{48}-2u^{47}+\cdots+28u-8)$
c_7	$((u+1)^3)(u^3-u^2+1)(u^{48}+5u^{47}+\cdots-10u+1)$
c_8	$u^3(u^3-u^2+2u-1)(u^{48}+2u^{47}+\cdots-28u-8)$
c_9	$((u-1)^3)(u^3+u^2-1)(u^{48}+5u^{47}+\cdots-10u+1)$
c_{10}	$((u-1)^3)(u^3-u^2+2u-1)(u^{48}-23u^{47}+\cdots-180u+1)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_7 c_9	$((y-1)^3)(y^3-y^2+2y-1)(y^{48}-23y^{47}+\cdots-180y+1)$
c_2, c_{10}	$((y-1)^3)(y^3+3y^2+2y-1)(y^{48}+9y^{47}+\cdots-29816y+1)$
c_3, c_5, c_6 c_8	$y^3(y^3+3y^2+2y-1)(y^{48}+24y^{47}+\cdots-464y+64)$