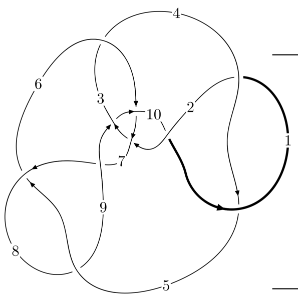
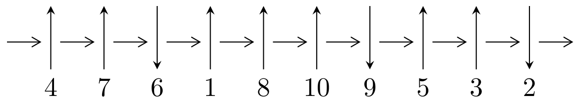
10_{89} $(K10a_{21})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle b + u,\ u^8 + 2u^7 + 3u^6 + 2u^5 + u^4 + a - 1,\ u^9 + 2u^8 + 4u^7 + 4u^6 + 5u^5 + 4u^4 + 4u^3 + 2u^2 + u - 1\rangle$$

$$I_2^u = \langle -2.54158 \times 10^{21} u^{39} + 3.72578 \times 10^{21} u^{38} + \cdots + 1.43109 \times 10^{22} b - 1.56356 \times 10^{21},$$
$$- 3.70291 \times 10^{21} u^{39} + 3.38172 \times 10^{21} u^{38} + \cdots + 1.43109 \times 10^{22} a - 2.35738 \times 10^{22},\ u^{40} - u^{39} + \cdots - 4u +$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 49 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. $\boldsymbol{I^u_1 = \langle b + u,\ u^8 + 2u^7 + 3u^6 + 2u^5 + u^4 + a - 1,\ u^9 + 2u^8 + \cdots + u - 1\rangle}$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

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

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

$$a_9 = \begin{pmatrix} -u^8 - 2u^7 - 3u^6 - 2u^5 - u^4 + 1 \\ -u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u^8 - 2u^7 - 3u^6 - 2u^5 - u^4 + u + 1 \\ -u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} u^7 + 2u^6 + 4u^5 + 4u^4 + 4u^3 + 3u^2 + 2u \\ -u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} u^7 + 3u^6 + 7u^5 + 8u^4 + 7u^3 + 4u^2 + u \\ u^7 + u^6 + 2u^5 + u^4 + u^3 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u^6 + 2u^5 + 3u^4 + 2u^3 + 2u^2 + 1 \\ -u^3 - u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u^3 \\ u^5 + u^3 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^8 - 4u^7 - 8u^6 - 4u^5 - 4u^4 + 4u^3 + 8u^2 + 8u + 6$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4, c_5 c_8	$u^9 + 2u^8 + 4u^7 + 4u^6 + 5u^5 + 4u^4 + 4u^3 + 2u^2 + u - 1$
c_2	$u^9 - 13u^8 + \cdots + 152u - 32$
c_3	$u^9 - 13u^8 + \cdots + 208u - 32$
c_6, c_9	$u^9 - 2u^6 + 5u^5 + 4u^3 - 6u^2 + 3u - 1$
c_7, c_{10}	$u^9 + 4u^8 + 10u^7 + 16u^6 + 19u^5 + 20u^4 + 18u^3 + 12u^2 + 5u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_5 c_8	$y^9 + 4y^8 + 10y^7 + 16y^6 + 19y^5 + 20y^4 + 18y^3 + 12y^2 + 5y - 1$
c_2	$y^9 - 25y^8 + \cdots - 192y - 1024$
c_3	$y^9 - 23y^8 + \cdots + 8960y - 1024$
c_6, c_9	$y^9 + 10y^7 + 4y^6 + 31y^5 + 16y^4 + 42y^3 - 12y^2 - 3y - 1$
c_7, c_{10}	$y^9 + 4y^8 + 10y^7 - 5y^5 + 8y^4 + 66y^3 + 76y^2 + 49y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.870256 + 0.574591I$ $a = 1.51055 - 0.27719I$ $b = 0.870256 - 0.574591I$	$4.84938 + 3.79988I$	$8.45408 - 1.48636I$
$u = -0.870256 - 0.574591I$ $a = 1.51055 + 0.27719I$ $b = 0.870256 + 0.574591I$	$4.84938 - 3.79988I$	$8.45408 + 1.48636I$
$u = 0.547196 + 0.894013I$ $a = -4.54039 + 0.41851I$ $b = -0.547196 - 0.894013I$	$0.19748 + 4.39098I$	$-9.5886 + 15.7654I$
$u = 0.547196 - 0.894013I$ $a = -4.54039 - 0.41851I$ $b = -0.547196 + 0.894013I$	$0.19748 - 4.39098I$	$-9.5886 - 15.7654I$
$u = -0.168491 + 1.118820I$ $a = 1.00104 + 1.15340I$ $b = 0.168491 - 1.118820I$	$-6.19752 + 0.38154I$	$-4.67885 - 0.54411I$
$u = -0.168491 - 1.118820I$ $a = 1.00104 - 1.15340I$ $b = 0.168491 + 1.118820I$	$-6.19752 - 0.38154I$	$-4.67885 + 0.54411I$
$u = -0.695984 + 1.121930I$ $a = 2.05153 + 0.69357I$ $b = 0.695984 - 1.121930I$	$1.4591 - 15.5661I$	$3.71332 + 9.69859I$
$u = -0.695984 - 1.121930I$ $a = 2.05153 - 0.69357I$ $b = 0.695984 + 1.121930I$	$1.4591 + 15.5661I$	$3.71332 - 9.69859I$
$u = 0.375070$ $a = 0.954532$ $b = -0.375070$	1.02805	10.2000

II.

$$\boldsymbol{I^u_2 = \langle -2.54\times10^{21}u^{39}+3.73\times10^{21}u^{38}+\cdots+1.43\times10^{22}b-1.56\times10^{21},\ -3.70\times10^{21}u^{39}+3.38\times10^{21}u^{38}+\cdots+1.43\times10^{22}a-2.36\times10^{22},\ u^{40}-u^{39}+\cdots-4u+1\rangle}$$

(i) Arc colorings

$$a_1 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_5 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_4 = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_2 = \begin{pmatrix}u\\u^3+u\end{pmatrix}$$
$$a_9 = \begin{pmatrix}0.258747u^{39} - 0.236304u^{38} + \cdots - 1.86737u + 1.64726\\0.177597u^{39} - 0.260346u^{38} + \cdots - 3.36976u + 0.109256\end{pmatrix}$$
$$a_8 = \begin{pmatrix}0.0811501u^{39} + 0.0240417u^{38} + \cdots + 1.50239u + 1.53800\\0.177597u^{39} - 0.260346u^{38} + \cdots - 3.36976u + 0.109256\end{pmatrix}$$
$$a_6 = \begin{pmatrix}-0.0521006u^{39} - 0.686202u^{38} + \cdots + 4.91261u + 0.428336\\0.110686u^{39} - 0.236069u^{38} + \cdots - 3.29989u + 1.06601\end{pmatrix}$$
$$a_3 = \begin{pmatrix}1.44465u^{39} - 1.15627u^{38} + \cdots + 1.62073u - 1.83432\\0.138363u^{39} + 0.574052u^{38} + \cdots + 2.22447u + 0.383801\end{pmatrix}$$
$$a_7 = \begin{pmatrix}-0.00240648u^{39} - 0.744206u^{38} + \cdots + 4.44922u + 0.596332\\0.0437786u^{39} - 0.281347u^{38} + \cdots - 3.16226u + 1.11303\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}u^3\\u^5+u^3+u\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{7240880437793028884842 4}{14310892564212518359243}u^{39} - \frac{7796861415980171965239 6}{14310892564212518359243}u^{38} + \cdots - \frac{868162249864229052688 0}{6222127201831529721 41}u + \frac{76038785248810355101710}{14310892564212518359243}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4, c_5 c_8	$u^{40} - u^{39} + \cdots - 4u + 1$
c_2	$(u^{20} + 6u^{19} + \cdots - 2u - 1)^2$
c_3	$(u^{20} + 5u^{19} + \cdots - 6u - 1)^2$
c_6, c_9	$u^{40} + 5u^{39} + \cdots + 4u + 1$
c_7, c_{10}	$u^{40} + 15u^{39} + \cdots + 120u^2 + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_5 c_8	$y^{40} + 15y^{39} + \cdots + 120y^2 + 1$
c_2	$(y^{20} - 16y^{19} + \cdots - 16y + 1)^2$
c_3	$(y^{20} - 7y^{19} + \cdots - 2y + 1)^2$
c_6, c_9	$y^{40} - 5y^{39} + \cdots - 8y + 1$
c_7, c_{10}	$y^{40} + 19y^{39} + \cdots + 240y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.548393 + 0.820650I$ $a = -1.93438 + 2.89472I$ $b = -0.548393 + 0.820650I$	0.434649	$-15.8981 + 0.I$
$u = 0.548393 - 0.820650I$ $a = -1.93438 - 2.89472I$ $b = -0.548393 - 0.820650I$	0.434649	$-15.8981 + 0.I$
$u = -0.632900 + 0.810710I$ $a = -0.713489 - 1.128410I$ $b = -1.003700 - 0.392952I$	$3.51067 - 0.70102I$	$13.30095 + 0.29053I$
$u = -0.632900 - 0.810710I$ $a = -0.713489 + 1.128410I$ $b = -1.003700 + 0.392952I$	$3.51067 + 0.70102I$	$13.30095 - 0.29053I$
$u = 0.602510 + 0.849943I$ $a = 0.252963 - 0.117129I$ $b = -0.232545 - 0.154995I$	$0.59509 + 2.36716I$	$1.43169 - 3.69296I$
$u = 0.602510 - 0.849943I$ $a = 0.252963 + 0.117129I$ $b = -0.232545 + 0.154995I$	$0.59509 - 2.36716I$	$1.43169 + 3.69296I$
$u = 0.378614 + 0.869397I$ $a = 1.02843 - 2.36154I$ $b = -0.378614 + 0.869397I$	-0.714628	$8.43291 + 0.I$
$u = 0.378614 - 0.869397I$ $a = 1.02843 + 2.36154I$ $b = -0.378614 - 0.869397I$	-0.714628	$8.43291 + 0.I$
$u = -0.932276 + 0.516877I$ $a = 1.277650 + 0.549417I$ $b = 0.693643 + 1.075960I$	$3.31734 + 9.59937I$	$6.13875 - 5.98964I$
$u = -0.932276 - 0.516877I$ $a = 1.277650 - 0.549417I$ $b = 0.693643 - 1.075960I$	$3.31734 - 9.59937I$	$6.13875 + 5.98964I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.592803+0.720077I$ $a=-0.714830-0.969785I$ $b=-0.783556-1.064140I$	$1.83047+2.21575I$	$9.27050-4.60917I$
$u=-0.592803-0.720077I$ $a=-0.714830+0.969785I$ $b=-0.783556+1.064140I$	$1.83047-2.21575I$	$9.27050+4.60917I$
$u=-0.630140+0.869793I$ $a=-1.50017-0.30493I$ $b=-1.009240+0.568343I$	$3.33020-4.24448I$	$12.4039+6.8707I$
$u=-0.630140-0.869793I$ $a=-1.50017+0.30493I$ $b=-1.009240-0.568343I$	$3.33020+4.24448I$	$12.4039-6.8707I$
$u=\ 1.003700+0.392952I$ $a=\ 1.226320-0.344870I$ $b=\ 0.632900-0.810710I$	$3.51067-0.70102I$	$13.30095+0.29053I$
$u=\ 1.003700-0.392952I$ $a=\ 1.226320+0.344870I$ $b=\ 0.632900+0.810710I$	$3.51067+0.70102I$	$13.30095-0.29053I$
$u=-0.604828+0.939285I$ $a=-2.13314-0.62294I$ $b=-0.729702+1.179840I$	$1.15558-6.98661I$	$6.87126+10.77467I$
$u=-0.604828-0.939285I$ $a=-2.13314+0.62294I$ $b=-0.729702-1.179840I$	$1.15558+6.98661I$	$6.87126-10.77467I$
$u=\ 0.124209+1.127990I$ $a=\ 0.383349+0.300461I$ $b=\ 0.592384-0.373525I$	$-1.87648+2.61466I$	$1.96705-3.93297I$
$u=\ 0.124209-1.127990I$ $a=\ 0.383349-0.300461I$ $b=\ 0.592384+0.373525I$	$-1.87648-2.61466I$	$1.96705+3.93297I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.402129 + 1.083400I$ $a = 0.297918 + 0.759573I$ $b = 0.116121 - 0.708920I$	$-1.51323 + 2.73094I$	$0.60746 - 4.99024I$
$u = 0.402129 - 1.083400I$ $a = 0.297918 - 0.759573I$ $b = 0.116121 + 0.708920I$	$-1.51323 - 2.73094I$	$0.60746 + 4.99024I$
$u = 1.009240 + 0.568343I$ $a = 1.38205 + 0.32422I$ $b = 0.630140 + 0.869793I$	$3.33020 + 4.24448I$	$12.4039 - 6.8707I$
$u = 1.009240 - 0.568343I$ $a = 1.38205 - 0.32422I$ $b = 0.630140 - 0.869793I$	$3.33020 - 4.24448I$	$12.4039 + 6.8707I$
$u = -0.575991 + 1.044940I$ $a = -1.005200 - 0.537066I$ $b = -0.056488 + 1.295430I$	$-3.62992 - 7.26942I$	$-0.25897 + 8.20898I$
$u = -0.575991 - 1.044940I$ $a = -1.005200 + 0.537066I$ $b = -0.056488 - 1.295430I$	$-3.62992 + 7.26942I$	$-0.25897 - 8.20898I$
$u = -0.693643 + 1.075960I$ $a = 0.527058 + 1.031180I$ $b = 0.932276 + 0.516877I$	$3.31734 - 9.59937I$	$6.13875 + 5.98964I$
$u = -0.693643 - 1.075960I$ $a = 0.527058 - 1.031180I$ $b = 0.932276 - 0.516877I$	$3.31734 + 9.59937I$	$6.13875 - 5.98964I$
$u = -0.116121 + 0.708920I$ $a = 1.021210 + 0.824545I$ $b = -0.402129 - 1.083400I$	$-1.51323 + 2.73094I$	$0.60746 - 4.99024I$
$u = -0.116121 - 0.708920I$ $a = 1.021210 - 0.824545I$ $b = -0.402129 + 1.083400I$	$-1.51323 - 2.73094I$	$0.60746 + 4.99024I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.056488 + 1.295430I$ $a = 0.609251 - 0.853594I$ $b = 0.575991 + 1.044940I$	$-3.62992 + 7.26942I$	$0. - 8.20898I$
$u = 0.056488 - 1.295430I$ $a = 0.609251 + 0.853594I$ $b = 0.575991 - 1.044940I$	$-3.62992 - 7.26942I$	$0. + 8.20898I$
$u = -0.592384 + 0.373525I$ $a = 0.709608 - 0.345516I$ $b = -0.124209 - 1.127990I$	$-1.87648 + 2.61466I$	$1.96705 - 3.93297I$
$u = -0.592384 - 0.373525I$ $a = 0.709608 + 0.345516I$ $b = -0.124209 + 1.127990I$	$-1.87648 - 2.61466I$	$1.96705 + 3.93297I$
$u = 0.783556 + 1.064140I$ $a = 0.540110 - 0.656742I$ $b = 0.592803 - 0.720077I$	$1.83047 + 2.21575I$	$9.27050 - 4.60917I$
$u = 0.783556 - 1.064140I$ $a = 0.540110 + 0.656742I$ $b = 0.592803 + 0.720077I$	$1.83047 - 2.21575I$	$9.27050 + 4.60917I$
$u = 0.729702 + 1.179840I$ $a = 1.70843 - 0.53284I$ $b = 0.604828 + 0.939285I$	$1.15558 + 6.98661I$	$0. - 10.77467I$
$u = 0.729702 - 1.179840I$ $a = 1.70843 + 0.53284I$ $b = 0.604828 - 0.939285I$	$1.15558 - 6.98661I$	$0. + 10.77467I$
$u = 0.232545 + 0.154995I$ $a = 1.036860 - 0.069991I$ $b = -0.602510 - 0.849943I$	$0.59509 + 2.36716I$	$1.43169 - 3.69296I$
$u = 0.232545 - 0.154995I$ $a = 1.036860 + 0.069991I$ $b = -0.602510 + 0.849943I$	$0.59509 - 2.36716I$	$1.43169 + 3.69296I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_4, c_5 c_8	$(u^9 + 2u^8 + 4u^7 + 4u^6 + 5u^5 + 4u^4 + 4u^3 + 2u^2 + u - 1)$ $\cdot (u^{40} - u^{39} + \cdots - 4u + 1)$
c_2	$(u^9 - 13u^8 + \cdots + 152u - 32)(u^{20} + 6u^{19} + \cdots - 2u - 1)^2$
c_3	$(u^9 - 13u^8 + \cdots + 208u - 32)(u^{20} + 5u^{19} + \cdots - 6u - 1)^2$
c_6, c_9	$(u^9 - 2u^6 + \cdots + 3u - 1)(u^{40} + 5u^{39} + \cdots + 4u + 1)$
c_7, c_{10}	$(u^9 + 4u^8 + 10u^7 + 16u^6 + 19u^5 + 20u^4 + 18u^3 + 12u^2 + 5u - 1)$ $\cdot (u^{40} + 15u^{39} + \cdots + 120u^2 + 1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_5 c_8	$(y^9 + 4y^8 + 10y^7 + 16y^6 + 19y^5 + 20y^4 + 18y^3 + 12y^2 + 5y - 1)$ $\cdot (y^{40} + 15y^{39} + \cdots + 120y^2 + 1)$
c_2	$(y^9 - 25y^8 + \cdots - 192y - 1024)(y^{20} - 16y^{19} + \cdots - 16y + 1)^2$
c_3	$(y^9 - 23y^8 + \cdots + 8960y - 1024)(y^{20} - 7y^{19} + \cdots - 2y + 1)^2$
c_6, c_9	$(y^9 + 10y^7 + 4y^6 + 31y^5 + 16y^4 + 42y^3 - 12y^2 - 3y - 1)$ $\cdot (y^{40} - 5y^{39} + \cdots - 8y + 1)$
c_7, c_{10}	$(y^9 + 4y^8 + 10y^7 - 5y^5 + 8y^4 + 66y^3 + 76y^2 + 49y - 1)$ $\cdot (y^{40} + 19y^{39} + \cdots + 240y + 1)$