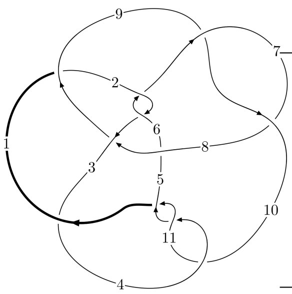
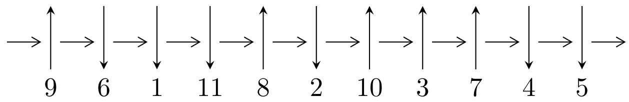
$11a_{316}$ $(K11a_{316})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

$$4,10 \xrightarrow[c_{10}]{} 11 \xrightarrow[c_4]{} 5,8 \xrightarrow[c_5]{} 6 \xrightarrow[c_{11}]{} 1 \xrightarrow[c_3]{} 3 \xrightarrow[c_2]{} 2 \xrightarrow[c_7]{} 7 \xrightarrow[c_9]{} 9 \twoheadrightarrow c_1, c_6, c_8$$

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

$$I_1^u = \langle 1.80623 \times 10^{32} u^{61} - 5.14761 \times 10^{32} u^{60} + \cdots + 4.61017 \times 10^{32} b - 1.10416 \times 10^{32},$$
$$- 6.91332 \times 10^{32} u^{61} - 7.53652 \times 10^{32} u^{60} + \cdots + 2.30509 \times 10^{33} a - 2.31132 \times 10^{33},\ u^{62} - 2u^{61} + \cdots + 3u -$$
$$I_2^u = \langle b - 1,\ 5a + u - 2,\ u^2 + u - 1 \rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 64 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.

$$\boldsymbol{I_1^u = \langle 1.81\times 10^{32}u^{61} - 5.15\times 10^{32}u^{60} + \cdots + 4.61\times 10^{32}b - 1.10\times 10^{32},\ -6.91\times 10^{32}u^{61} - 7.54\times 10^{32}u^{60} + \cdots + 2.31\times 10^{33}a - 2.31\times 10^{33},\ u^{62} - 2u^{61} + \cdots + 3u + 1\rangle}$$

(i) Arc colorings

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

$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} 0.299916u^{61} + 0.326952u^{60} + \cdots - 3.67552u + 1.00270 \\ -0.391793u^{61} + 1.11658u^{60} + \cdots - 0.782541u + 0.239505 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -1.37364u^{61} + 0.955447u^{60} + \cdots + 15.8721u + 3.35880 \\ 0.226500u^{61} - 0.438184u^{60} + \cdots + 5.26406u + 0.574836 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} 0.403303u^{61} + 1.11034u^{60} + \cdots + 3.59385u - 1.62323 \\ 0.435823u^{61} - 0.0545467u^{60} + \cdots - 0.0437745u - 1.01330 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0.691708u^{61} - 0.789625u^{60} + \cdots - 2.89298u + 0.763197 \\ -0.391793u^{61} + 1.11658u^{60} + \cdots - 0.782541u + 0.239505 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.210043u^{61} + 0.259417u^{60} + \cdots - 3.20318u + 1.25041 \\ -0.348888u^{61} + 0.656606u^{60} + \cdots + 0.331553u + 0.825406 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.210043u^{61} + 0.259417u^{60} + \cdots - 3.20318u + 1.25041 \\ -0.348888u^{61} + 0.656606u^{60} + \cdots + 0.331553u + 0.825406 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 3.89183u^{61} - 9.68250u^{60} + \cdots - 4.68341u + 13.0328$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$5(5u^{62} + 7u^{61} + \cdots + 100038u - 28017)$
c_2, c_6	$u^{62} + 2u^{61} + \cdots - u + 1$
c_3	$u^{62} - 6u^{61} + \cdots + 795u - 117$
c_4, c_{10}, c_{11}	$u^{62} + 2u^{61} + \cdots - 3u + 1$
c_5	$5(5u^{62} - 14u^{61} + \cdots + 61755u + 8377)$
c_7, c_9	$u^{62} + 3u^{61} + \cdots + 214u - 25$
c_8	$u^{62} + u^{61} + \cdots + 280u - 100$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$25(25y^{62} - 1309y^{61} + \cdots - 1.54576 \times 10^{10}y + 7.84952 \times 10^{8})$
c_2, c_6	$y^{62} + 42y^{61} + \cdots - 25y + 1$
c_3	$y^{62} + 18y^{61} + \cdots - 440613y + 13689$
c_4, c_{10}, c_{11}	$y^{62} - 54y^{61} + \cdots - 25y + 1$
c_5	$25(25y^{62} - 286y^{61} + \cdots - 1.29244 \times 10^{9}y + 7.01741 \times 10^{7})$
c_7, c_9	$y^{62} - 49y^{61} + \cdots - 22596y + 625$
c_8	$y^{62} - 15y^{61} + \cdots - 413000y + 10000$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.887619+0.514849I$ $a=-0.168834-0.676664I$ $b=-1.351070-0.186432I$	$6.81266+5.56177I$	$4.66163-5.86539I$
$u=-0.887619-0.514849I$ $a=-0.168834+0.676664I$ $b=-1.351070+0.186432I$	$6.81266-5.56177I$	$4.66163+5.86539I$
$u=-0.956988+0.457534I$ $a=-0.411794-0.142908I$ $b=-1.44265+0.39962I$	$7.18631-7.01551I$	0
$u=-0.956988-0.457534I$ $a=-0.411794+0.142908I$ $b=-1.44265-0.39962I$	$7.18631+7.01551I$	0
$u=-0.268927+0.858943I$ $a=0.487450-0.791896I$ $b=-1.326860+0.042366I$	$8.77447-0.73219I$	$8.26642+0.24787I$
$u=-0.268927-0.858943I$ $a=0.487450+0.791896I$ $b=-1.326860-0.042366I$	$8.77447+0.73219I$	$8.26642-0.24787I$
$u=0.981110+0.511433I$ $a=-0.156001+0.318273I$ $b=-1.245360-0.167604I$	$2.26101+1.03760I$	0
$u=0.981110-0.511433I$ $a=-0.156001-0.318273I$ $b=-1.245360+0.167604I$	$2.26101-1.03760I$	0
$u=0.216176+0.854810I$ $a=0.879762+0.839368I$ $b=-1.284170+0.305083I$	$4.62237-5.84398I$	$3.48358+6.22366I$
$u=0.216176-0.854810I$ $a=0.879762-0.839368I$ $b=-1.284170-0.305083I$	$4.62237+5.84398I$	$3.48358-6.22366I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.222629+0.830394I$ $a=\quad 0.97517-1.10506I$ $b=-1.47365-0.48988I$	$9.4690+11.6120I$	$5.02297-7.15875I$
$u=-0.222629-0.830394I$ $a=\quad 0.97517+1.10506I$ $b=-1.47365+0.48988I$	$9.4690-11.6120I$	$5.02297+7.15875I$
$u=-1.133930+0.168026I$ $a=\quad 1.26618-0.92935I$ $b=\quad 0.586572-1.058950I$	$1.22471-2.22328I$	0
$u=-1.133930-0.168026I$ $a=\quad 1.26618+0.92935I$ $b=\quad 0.586572+1.058950I$	$1.22471+2.22328I$	0
$u=\quad 1.233700+0.140829I$ $a=\quad 1.11356+0.95442I$ $b=\quad 0.498573+0.517622I$	$-2.34840-0.48442I$	0
$u=\quad 1.233700-0.140829I$ $a=\quad 1.11356-0.95442I$ $b=\quad 0.498573-0.517622I$	$-2.34840+0.48442I$	0
$u=\quad 1.228560+0.275128I$ $a=\quad 1.155710-0.633770I$ $b=\quad 1.77170+0.45104I$	$4.49072-1.35832I$	0
$u=\quad 1.228560-0.275128I$ $a=\quad 1.155710+0.633770I$ $b=\quad 1.77170-0.45104I$	$4.49072+1.35832I$	0
$u=-0.154976+0.717888I$ $a=-0.542160+0.195736I$ $b=\quad 0.278710+1.257500I$	$3.96361+5.62230I$	$4.59110-7.16807I$
$u=-0.154976-0.717888I$ $a=-0.542160-0.195736I$ $b=\quad 0.278710-1.257500I$	$3.96361-5.62230I$	$4.59110+7.16807I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.046542 + 0.724748I$ $a = -1.208990 - 0.366912I$ $b = 1.66460 - 0.64188I$	$8.09797 - 2.26515I$	$10.09980 + 3.27421I$
$u = 0.046542 - 0.724748I$ $a = -1.208990 + 0.366912I$ $b = 1.66460 + 0.64188I$	$8.09797 + 2.26515I$	$10.09980 - 3.27421I$
$u = -1.263000 + 0.236260I$ $a = -0.487348 + 0.065309I$ $b = 1.210290 - 0.144045I$	$-0.11388 + 2.17095I$	0
$u = -1.263000 - 0.236260I$ $a = -0.487348 - 0.065309I$ $b = 1.210290 + 0.144045I$	$-0.11388 - 2.17095I$	0
$u = -1.288710 + 0.185153I$ $a = 2.28058 - 2.74209I$ $b = 0.864085 + 0.005366I$	$0.03983 + 2.79266I$	0
$u = -1.288710 - 0.185153I$ $a = 2.28058 + 2.74209I$ $b = 0.864085 - 0.005366I$	$0.03983 - 2.79266I$	0
$u = 0.179463 + 0.661396I$ $a = -0.055951 - 0.244113I$ $b = 0.050410 - 0.678849I$	$0.49280 - 2.22863I$	$-1.88873 + 4.27642I$
$u = 0.179463 - 0.661396I$ $a = -0.055951 + 0.244113I$ $b = 0.050410 + 0.678849I$	$0.49280 + 2.22863I$	$-1.88873 - 4.27642I$
$u = -1.293980 + 0.298379I$ $a = 0.30932 + 2.31869I$ $b = 1.60267 + 0.81560I$	$3.91657 + 5.96640I$	0
$u = -1.293980 - 0.298379I$ $a = 0.30932 - 2.31869I$ $b = 1.60267 - 0.81560I$	$3.91657 - 5.96640I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.301670 + 0.265672I$ $a = -0.14106 - 2.23111I$ $b = 1.118260 - 0.376395I$	$-0.57816 - 4.41700I$	0
$u = 1.301670 - 0.265672I$ $a = -0.14106 + 2.23111I$ $b = 1.118260 + 0.376395I$	$-0.57816 + 4.41700I$	0
$u = -0.042843 + 0.662429I$ $a = -1.81923 + 1.14582I$ $b = 1.139070 + 0.251694I$	$3.63336 + 1.04794I$	$2.34672 - 0.35139I$
$u = -0.042843 - 0.662429I$ $a = -1.81923 - 1.14582I$ $b = 1.139070 - 0.251694I$	$3.63336 - 1.04794I$	$2.34672 + 0.35139I$
$u = 1.334310 + 0.246440I$ $a = 1.069770 - 0.893080I$ $b = 0.231740 - 0.094385I$	$-1.00664 - 2.96825I$	0
$u = 1.334310 - 0.246440I$ $a = 1.069770 + 0.893080I$ $b = 0.231740 + 0.094385I$	$-1.00664 + 2.96825I$	0
$u = -0.115133 + 0.619794I$ $a = 1.22726 + 1.09164I$ $b = 0.413434 - 0.098972I$	$3.55015 - 0.20409I$	$5.98628 - 1.19975I$
$u = -0.115133 - 0.619794I$ $a = 1.22726 - 1.09164I$ $b = 0.413434 + 0.098972I$	$3.55015 + 0.20409I$	$5.98628 + 1.19975I$
$u = 1.372160 + 0.035845I$ $a = 0.47764 + 1.70860I$ $b = -0.237289 + 0.862746I$	$-4.26849 + 2.33228I$	0
$u = 1.372160 - 0.035845I$ $a = 0.47764 - 1.70860I$ $b = -0.237289 - 0.862746I$	$-4.26849 - 2.33228I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.354390 + 0.299440I$ $a = -0.88402 - 1.77945I$ $b = 0.150670 - 1.364490I$	$-0.80126 - 9.32026I$	0
$u = 1.354390 - 0.299440I$ $a = -0.88402 + 1.77945I$ $b = 0.150670 + 1.364490I$	$-0.80126 + 9.32026I$	0
$u = -1.364120 + 0.277183I$ $a = -0.491592 + 1.171990I$ $b = -0.043760 + 0.847969I$	$-4.39333 + 5.67407I$	0
$u = -1.364120 - 0.277183I$ $a = -0.491592 - 1.171990I$ $b = -0.043760 - 0.847969I$	$-4.39333 - 5.67407I$	0
$u = -1.41802 + 0.08070I$ $a = -0.165441 - 1.216540I$ $b = -0.566676 - 0.567301I$	$-7.01139 + 2.01626I$	0
$u = -1.41802 - 0.08070I$ $a = -0.165441 + 1.216540I$ $b = -0.566676 + 0.567301I$	$-7.01139 - 2.01626I$	0
$u = 1.39937 + 0.34656I$ $a = -0.28769 + 2.13431I$ $b = -1.47028 + 0.55396I$	$4.3271 - 15.8582I$	0
$u = 1.39937 - 0.34656I$ $a = -0.28769 - 2.13431I$ $b = -1.47028 - 0.55396I$	$4.3271 + 15.8582I$	0
$u = -1.39672 + 0.35868I$ $a = -0.16352 - 1.69873I$ $b = -1.286260 - 0.404733I$	$-0.48145 + 10.21060I$	0
$u = -1.39672 - 0.35868I$ $a = -0.16352 + 1.69873I$ $b = -1.286260 + 0.404733I$	$-0.48145 - 10.21060I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.463287 + 0.297906I$ $a = 0.788454 + 0.539829I$ $b = -0.250407 + 0.311008I$	$-1.008560 - 0.666322I$	$-7.37810 + 3.95165I$
$u = 0.463287 - 0.297906I$ $a = 0.788454 - 0.539829I$ $b = -0.250407 - 0.311008I$	$-1.008560 + 0.666322I$	$-7.37810 - 3.95165I$
$u = -0.550158 + 0.016824I$ $a = 1.33228 + 1.00368I$ $b = 0.256229 + 0.735207I$	$1.45921 + 2.58594I$	$-1.55168 - 3.98149I$
$u = -0.550158 - 0.016824I$ $a = 1.33228 - 1.00368I$ $b = 0.256229 - 0.735207I$	$1.45921 - 2.58594I$	$-1.55168 + 3.98149I$
$u = 1.42814 + 0.36734I$ $a = -0.564087 + 1.146080I$ $b = -1.270380 + 0.067319I$	$3.38499 - 3.70672I$	0
$u = 1.42814 - 0.36734I$ $a = -0.564087 - 1.146080I$ $b = -1.270380 - 0.067319I$	$3.38499 + 3.70672I$	0
$u = 1.50001 + 0.04160I$ $a = -1.29195 + 0.81714I$ $b = -1.205330 + 0.382950I$	$-1.16526 - 6.77623I$	0
$u = 1.50001 - 0.04160I$ $a = -1.29195 - 0.81714I$ $b = -1.205330 - 0.382950I$	$-1.16526 + 6.77623I$	0
$u = 0.239018 + 0.279647I$ $a = 3.12607 - 0.97399I$ $b = 1.190070 - 0.194532I$	$4.30759 - 0.97665I$	$-0.516718 + 1.197110I$
$u = 0.239018 - 0.279647I$ $a = 3.12607 + 0.97399I$ $b = 1.190070 + 0.194532I$	$4.30759 + 0.97665I$	$-0.516718 - 1.197110I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.63921$ $a = -0.771484$ $b = -1.04713$	-7.12923	0
$u = -0.201088$ $a = 2.67242$ $b = 0.901231$	1.30954	9.93960

II. $I_2^u = \langle b-1,\ 5a+u-2,\ u^2+u-1\rangle$

(i) Arc colorings

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

$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 1 \\ -u+1 \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} -\frac{1}{5}u+\frac{2}{5} \\ 1 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -u+\frac{1}{5} \\ -\frac{4}{5}u+\frac{8}{5} \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} 2u-1 \\ 3u-1 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} \frac{4}{5}u \\ \frac{3}{5}u-\frac{1}{5} \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -\frac{1}{5}u-\frac{3}{5} \\ 1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -\frac{1}{5}u+\frac{2}{5} \\ 1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -\frac{1}{5}u+\frac{2}{5} \\ 1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= \frac{72}{5}u - 13$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$5(5u^2-1)$
c_2, c_{10}, c_{11}	u^2+u-1
c_3	u^2+3u+1
c_4, c_6	u^2-u-1
c_5	$5(5u^2+5u+1)$
c_7	$(u+1)^2$
c_8	u^2
c_9	$(u-1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$25(5y-1)^2$
c_2, c_4, c_6 c_{10}, c_{11}	y^2-3y+1
c_3	y^2-7y+1
c_5	$25(25y^2-15y+1)$
c_7, c_9	$(y-1)^2$
c_8	y^2

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.618034$ $a = 0.276393$ $b = 1.00000$	0.657974	-4.10030
$u = -1.61803$ $a = 0.723607$ $b = 1.00000$	-7.23771	-36.3000

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$25(5u^2-1)(5u^{62}+7u^{61}+\cdots+100038u-28017)$
c_2	$(u^2+u-1)(u^{62}+2u^{61}+\cdots-u+1)$
c_3	$(u^2+3u+1)(u^{62}-6u^{61}+\cdots+795u-117)$
c_4	$(u^2-u-1)(u^{62}+2u^{61}+\cdots-3u+1)$
c_5	$25(5u^2+5u+1)(5u^{62}-14u^{61}+\cdots+61755u+8377)$
c_6	$(u^2-u-1)(u^{62}+2u^{61}+\cdots-u+1)$
c_7	$((u+1)^2)(u^{62}+3u^{61}+\cdots+214u-25)$
c_8	$u^2(u^{62}+u^{61}+\cdots+280u-100)$
c_9	$((u-1)^2)(u^{62}+3u^{61}+\cdots+214u-25)$
c_{10}, c_{11}	$(u^2+u-1)(u^{62}+2u^{61}+\cdots-3u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$625(5y-1)^2$ $\cdot(25y^{62}-1309y^{61}+\cdots-15457580352y+784952289)$
c_2, c_6	$(y^2-3y+1)(y^{62}+42y^{61}+\cdots-25y+1)$
c_3	$(y^2-7y+1)(y^{62}+18y^{61}+\cdots-440613y+13689)$
c_4, c_{10}, c_{11}	$(y^2-3y+1)(y^{62}-54y^{61}+\cdots-25y+1)$
c_5	$625(25y^2-15y+1)$ $\cdot(25y^{62}-286y^{61}+\cdots-1292437581y+70174129)$
c_7, c_9	$((y-1)^2)(y^{62}-49y^{61}+\cdots-22596y+625)$
c_8	$y^2(y^{62}-15y^{61}+\cdots-413000y+10000)$