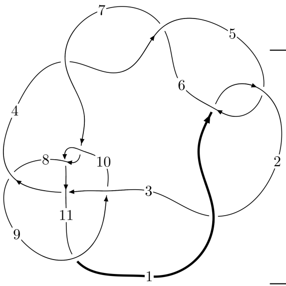
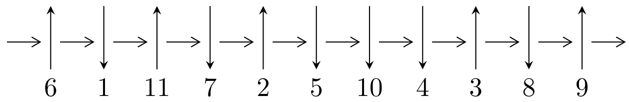
$11a_{167}$ ($K11a_{167}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned} I_1^u = \langle & -9.20331 \times 10^{18} u^{57} - 1.37199 \times 10^{19} u^{56} + \cdots + 3.39537 \times 10^{18} b - 4.21028 \times 10^{18}, \\ & 7.03039 \times 10^{18} u^{57} + 1.85492 \times 10^{19} u^{56} + \cdots + 3.39537 \times 10^{18} a + 2.49612 \times 10^{19},\ u^{58} + 2u^{57} + \cdots - u + 1 \rangle \\ I_2^u = \langle & b - u,\ a + u + 1,\ u^2 + u + 1 \rangle \end{aligned}$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 60 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.

$\boldsymbol{I_1^u = \langle -9.20\times10^{18}u^{57} - 1.37\times10^{19}u^{56} + \cdots + 3.40\times10^{18}b - 4.21\times10^{18},\ 7.03\times10^{18}u^{57} + 1.85\times10^{19}u^{56} + \cdots + 3.40\times10^{18}a + 2.50\times10^{19},\ u^{58} + 2u^{57} + \cdots - u + 1\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_6 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_1 = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_3 = \begin{pmatrix}u^2+1\\u^4\end{pmatrix}$$
$$a_9 = \begin{pmatrix}-2.07058u^{57} - 5.46309u^{56} + \cdots + 8.71905u - 7.35155\\2.71055u^{57} + 4.04078u^{56} + \cdots + 2.87153u + 1.24001\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}0.0678518u^{57} - 1.33180u^{56} + \cdots + 7.13402u - 4.56590\\2.17215u^{57} + 3.03451u^{56} + \cdots + 4.72602u + 0.0399380\end{pmatrix}$$
$$a_5 = \begin{pmatrix}-u\\u\end{pmatrix}$$
$$a_7 = \begin{pmatrix}-u^3\\u^3+u\end{pmatrix}$$
$$a_4 = \begin{pmatrix}-u^5-u\\u^5+u^3+u\end{pmatrix}$$
$$a_8 = \begin{pmatrix}-0.236838u^{57} - 1.43795u^{56} + \cdots + 5.04652u - 4.51898\\2.07684u^{57} + 2.44455u^{56} + \cdots + 6.07889u - 0.359956\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-1.42519u^{57} - 1.02253u^{56} + \cdots - 3.40758u - 0.311267\\0.425182u^{57} - 1.40266u^{56} + \cdots + 2.31128u - 1.00001\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-1.42519u^{57} - 1.02253u^{56} + \cdots - 3.40758u - 0.311267\\0.425182u^{57} - 1.40266u^{56} + \cdots + 2.31128u - 1.00001\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{14190392272677106611}{3395365732110338209}u^{57} - \frac{62198624286930003489}{3395365732110338209}u^{56} + \cdots + \frac{13293878922061199422 9}{3395365732110338209}u - \frac{85221440426712296632}{3395365732110338209}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5	$u^{58} - 2u^{57} + \cdots + u + 1$
c_2, c_4, c_6	$u^{58} + 14u^{57} + \cdots + 5u + 1$
c_3	$u^{58} + 4u^{57} + \cdots + u + 1$
c_7, c_{10}	$u^{58} - 3u^{57} + \cdots - 10u + 1$
c_8	$u^{58} - 4u^{57} + \cdots - 21u + 1$
c_9	$u^{58} - 2u^{57} + \cdots + 403u + 77$
c_{11}	$u^{58} + 9u^{57} + \cdots + 12u + 4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5	$y^{58} + 14y^{57} + \cdots + 5y + 1$
c_2, c_4, c_6	$y^{58} + 62y^{57} + \cdots + 53y + 1$
c_3	$y^{58} + 10y^{57} + \cdots + 5y + 1$
c_7, c_{10}	$y^{58} - 33y^{57} + \cdots + 122y + 1$
c_8	$y^{58} - 46y^{57} + \cdots + 117y + 1$
c_9	$y^{58} - 58y^{57} + \cdots - 89259y + 5929$
c_{11}	$y^{58} - 15y^{57} + \cdots - 168y + 16$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.440912 + 0.897881I$ $a = 1.28479 - 1.51068I$ $b = -0.655511 + 0.976043I$	$0.81208 + 5.75126I$	$0. - 9.28589I$
$u = 0.440912 - 0.897881I$ $a = 1.28479 + 1.51068I$ $b = -0.655511 - 0.976043I$	$0.81208 - 5.75126I$	$0. + 9.28589I$
$u = 0.051144 + 1.040470I$ $a = 0.694306 - 0.600130I$ $b = 0.0941538 - 0.0407924I$	$-5.22394 - 4.97791I$	$-7.03726 + 5.31540I$
$u = 0.051144 - 1.040470I$ $a = 0.694306 + 0.600130I$ $b = 0.0941538 + 0.0407924I$	$-5.22394 + 4.97791I$	$-7.03726 - 5.31540I$
$u = 0.332519 + 0.864557I$ $a = 1.019630 + 0.147782I$ $b = 0.137567 - 0.696892I$	$-3.63287 + 3.82995I$	$-8.64205 - 8.99135I$
$u = 0.332519 - 0.864557I$ $a = 1.019630 - 0.147782I$ $b = 0.137567 + 0.696892I$	$-3.63287 - 3.82995I$	$-8.64205 + 8.99135I$
$u = -0.336157 + 1.024860I$ $a = -0.225338 + 0.792429I$ $b = 0.112078 - 0.426502I$	$-1.05261 - 3.13615I$	$0. + 8.50381I$
$u = -0.336157 - 1.024860I$ $a = -0.225338 - 0.792429I$ $b = 0.112078 + 0.426502I$	$-1.05261 + 3.13615I$	$0. - 8.50381I$
$u = 0.434758 + 1.011700I$ $a = -1.05107 + 1.46627I$ $b = 0.635292 - 1.236510I$	$-2.95190 + 11.16430I$	$0. - 9.61832I$
$u = 0.434758 - 1.011700I$ $a = -1.05107 - 1.46627I$ $b = 0.635292 + 1.236510I$	$-2.95190 - 11.16430I$	$0. + 9.61832I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.769063+0.455452I$ $a=-0.930791+0.294716I$ $b=\ \ 0.667321+0.337766I$	$0.20150-3.82733I$	$2.45119+7.09206I$
$u=-0.769063-0.455452I$ $a=-0.930791-0.294716I$ $b=\ \ 0.667321-0.337766I$	$0.20150+3.82733I$	$2.45119-7.09206I$
$u=-0.440330+0.759700I$ $a=-1.066630-0.436456I$ $b=\ \ 0.384922+0.669695I$	$0.01176-1.74270I$	$0.45658+3.63727I$
$u=-0.440330-0.759700I$ $a=-1.066630+0.436456I$ $b=\ \ 0.384922-0.669695I$	$0.01176+1.74270I$	$0.45658-3.63727I$
$u=\ \ 0.225458+0.825902I$ $a=-1.06368+2.01364I$ $b=\ \ 1.09293-1.05099I$	$-4.22808+0.48675I$	$-11.22027-2.03951I$
$u=\ \ 0.225458-0.825902I$ $a=-1.06368-2.01364I$ $b=\ \ 1.09293+1.05099I$	$-4.22808-0.48675I$	$-11.22027+2.03951I$
$u=-0.340458+0.770916I$ $a=\ \ 2.47350-3.28718I$ $b=-3.16149+0.03944I$	$-1.98107-1.64703I$	$6.1662-29.1207I$
$u=-0.340458-0.770916I$ $a=\ \ 2.47350+3.28718I$ $b=-3.16149-0.03944I$	$-1.98107+1.64703I$	$6.1662+29.1207I$
$u=-0.568190+1.020440I$ $a=\ \ 0.267371-0.661740I$ $b=-0.379130+0.546655I$	$-1.55389-1.10217I$	0
$u=-0.568190-1.020440I$ $a=\ \ 0.267371+0.661740I$ $b=-0.379130-0.546655I$	$-1.55389+1.10217I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.741876 + 0.285613I$ $a = -1.143890 + 0.651964I$ $b = 0.222922 - 0.926797I$	$-0.59272 - 6.92978I$	$1.28521 + 5.28654I$
$u = 0.741876 - 0.285613I$ $a = -1.143890 - 0.651964I$ $b = 0.222922 + 0.926797I$	$-0.59272 + 6.92978I$	$1.28521 - 5.28654I$
$u = -0.843359 + 0.871287I$ $a = -1.58053 + 0.99032I$ $b = 2.04212 + 0.61200I$	$3.51042 + 0.65934I$	0
$u = -0.843359 - 0.871287I$ $a = -1.58053 - 0.99032I$ $b = 2.04212 - 0.61200I$	$3.51042 - 0.65934I$	0
$u = 0.895121 + 0.818579I$ $a = 0.892761 - 0.255381I$ $b = -0.50150 + 1.65644I$	$7.18623 - 1.43763I$	0
$u = 0.895121 - 0.818579I$ $a = 0.892761 + 0.255381I$ $b = -0.50150 - 1.65644I$	$7.18623 + 1.43763I$	0
$u = -0.817614 + 0.900250I$ $a = -2.55651 - 1.15874I$ $b = 0.38714 + 3.85396I$	$1.70109 - 3.05742I$	0
$u = -0.817614 - 0.900250I$ $a = -2.55651 + 1.15874I$ $b = 0.38714 - 3.85396I$	$1.70109 + 3.05742I$	0
$u = -0.010811 + 0.780206I$ $a = -1.13083 + 1.06637I$ $b = 0.336641 + 0.147588I$	$-1.43717 - 1.52858I$	$-5.32481 + 4.46151I$
$u = -0.010811 - 0.780206I$ $a = -1.13083 - 1.06637I$ $b = 0.336641 - 0.147588I$	$-1.43717 + 1.52858I$	$-5.32481 - 4.46151I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.848099 + 0.894531I$ $a = 1.07319 - 1.36400I$ $b = 1.65226 + 1.13672I$	$5.05665 + 2.36415I$	0
$u = 0.848099 - 0.894531I$ $a = 1.07319 + 1.36400I$ $b = 1.65226 - 1.13672I$	$5.05665 - 2.36415I$	0
$u = -0.910971 + 0.834834I$ $a = -1.39520 - 0.83245I$ $b = -0.16453 + 2.92280I$	$5.95099 + 9.03935I$	0
$u = -0.910971 - 0.834834I$ $a = -1.39520 + 0.83245I$ $b = -0.16453 - 2.92280I$	$5.95099 - 9.03935I$	0
$u = -0.885584 + 0.866640I$ $a = 1.50974 + 1.18822I$ $b = 0.37841 - 3.18031I$	$9.19750 + 2.53947I$	0
$u = -0.885584 - 0.866640I$ $a = 1.50974 - 1.18822I$ $b = 0.37841 + 3.18031I$	$9.19750 - 2.53947I$	0
$u = -0.823065 + 0.934173I$ $a = 0.54799 - 1.61489I$ $b = -1.96451 + 1.14977I$	$3.31523 - 6.86856I$	0
$u = -0.823065 - 0.934173I$ $a = 0.54799 + 1.61489I$ $b = -1.96451 - 1.14977I$	$3.31523 + 6.86856I$	0
$u = 0.838722 + 0.920465I$ $a = 0.561004 + 0.957597I$ $b = -1.93336 + 1.29288I$	$4.97538 + 3.90988I$	0
$u = 0.838722 - 0.920465I$ $a = 0.561004 - 0.957597I$ $b = -1.93336 - 1.29288I$	$4.97538 - 3.90988I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.897894 + 0.891847I$ $a = -1.155740 + 0.290111I$ $b = 0.41707 - 1.99877I$	$8.46147 + 2.78521I$	0
$u = 0.897894 - 0.891847I$ $a = -1.155740 - 0.290111I$ $b = 0.41707 + 1.99877I$	$8.46147 - 2.78521I$	0
$u = 0.590155 + 0.416456I$ $a = 0.964716 - 0.975316I$ $b = -0.411626 + 0.943907I$	$2.32246 - 1.88820I$	$5.25997 + 2.06026I$
$u = 0.590155 - 0.416456I$ $a = 0.964716 + 0.975316I$ $b = -0.411626 - 0.943907I$	$2.32246 + 1.88820I$	$5.25997 - 2.06026I$
$u = -0.845331 + 0.960143I$ $a = 2.46844 + 0.68770I$ $b = -0.88375 - 3.17281I$	$8.90043 - 8.94791I$	0
$u = -0.845331 - 0.960143I$ $a = 2.46844 - 0.68770I$ $b = -0.88375 + 3.17281I$	$8.90043 + 8.94791I$	0
$u = 0.867514 + 0.951168I$ $a = -1.31254 + 0.69248I$ $b = -0.09282 - 2.05203I$	$8.26855 + 3.73272I$	0
$u = 0.867514 - 0.951168I$ $a = -1.31254 - 0.69248I$ $b = -0.09282 + 2.05203I$	$8.26855 - 3.73272I$	0
$u = 0.823019 + 0.992908I$ $a = 1.17187 - 0.87639I$ $b = 0.13038 + 1.73093I$	$6.63609 + 7.79931I$	0
$u = 0.823019 - 0.992908I$ $a = 1.17187 + 0.87639I$ $b = 0.13038 - 1.73093I$	$6.63609 - 7.79931I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.839643 + 0.992004I$ $a = -2.25810 - 0.80518I$ $b = 0.57202 + 3.02731I$	$5.4499 - 15.5032I$	0
$u = -0.839643 - 0.992004I$ $a = -2.25810 + 0.80518I$ $b = 0.57202 - 3.02731I$	$5.4499 + 15.5032I$	0
$u = -0.310122 + 0.582175I$ $a = -1.49433 + 2.38673I$ $b = 1.265490 + 0.474592I$	$-1.39991 - 1.11754I$	$-8.74885 + 3.65436I$
$u = -0.310122 - 0.582175I$ $a = -1.49433 - 2.38673I$ $b = 1.265490 - 0.474592I$	$-1.39991 + 1.11754I$	$-8.74885 - 3.65436I$
$u = -0.587529 + 0.195087I$ $a = 0.575520 - 0.301118I$ $b = -0.685426 - 0.097381I$	$1.59378 - 0.29446I$	$6.92249 - 0.09350I$
$u = -0.587529 - 0.195087I$ $a = 0.575520 + 0.301118I$ $b = -0.685426 + 0.097381I$	$1.59378 + 0.29446I$	$6.92249 + 0.09350I$
$u = 0.341034 + 0.197878I$ $a = -2.63966 + 0.02210I$ $b = 0.304941 + 0.449084I$	$-1.92464 - 1.08312I$	$-1.72371 + 1.84781I$
$u = 0.341034 - 0.197878I$ $a = -2.63966 - 0.02210I$ $b = 0.304941 - 0.449084I$	$-1.92464 + 1.08312I$	$-1.72371 - 1.84781I$

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

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

$$a_3 = \begin{pmatrix} -u \\ u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u-1 \\ u \end{pmatrix}$$

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

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

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

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4u - 1$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.500000 + 0.866025I$ $a = -0.500000 - 0.866025I$ $b = -0.500000 + 0.866025I$	$-1.64493 - 2.02988I$	$-3.00000 + 3.46410I$
$u = -0.500000 - 0.866025I$ $a = -0.500000 + 0.866025I$ $b = -0.500000 - 0.866025I$	$-1.64493 + 2.02988I$	$-3.00000 - 3.46410I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^2+u+1)(u^{58}-2u^{57}+\cdots+u+1)$
c_2, c_6	$(u^2+u+1)(u^{58}+14u^{57}+\cdots+5u+1)$
c_3	$(u^2+u+1)(u^{58}+4u^{57}+\cdots+u+1)$
c_4	$(u^2-u+1)(u^{58}+14u^{57}+\cdots+5u+1)$
c_5	$(u^2-u+1)(u^{58}-2u^{57}+\cdots+u+1)$
c_7	$((u-1)^2)(u^{58}-3u^{57}+\cdots-10u+1)$
c_8	$(u^2-u+1)(u^{58}-4u^{57}+\cdots-21u+1)$
c_9	$(u^2-u+1)(u^{58}-2u^{57}+\cdots+403u+77)$
c_{10}	$((u+1)^2)(u^{58}-3u^{57}+\cdots-10u+1)$
c_{11}	$u^2(u^{58}+9u^{57}+\cdots+12u+4)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_5	$(y^2+y+1)(y^{58}+14y^{57}+\cdots+5y+1)$
c_2, c_4, c_6	$(y^2+y+1)(y^{58}+62y^{57}+\cdots+53y+1)$
c_3	$(y^2+y+1)(y^{58}+10y^{57}+\cdots+5y+1)$
c_7, c_{10}	$((y-1)^2)(y^{58}-33y^{57}+\cdots+122y+1)$
c_8	$(y^2+y+1)(y^{58}-46y^{57}+\cdots+117y+1)$
c_9	$(y^2+y+1)(y^{58}-58y^{57}+\cdots-89259y+5929)$
c_{11}	$y^2(y^{58}-15y^{57}+\cdots-168y+16)$