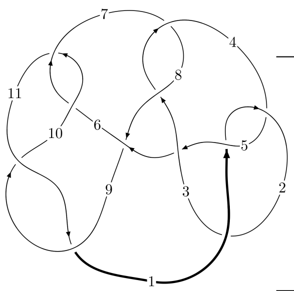
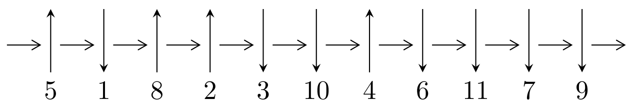
$11a_1$ ($K11a_1$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 4u^{68} + 5u^{67} + \cdots + 2b + 3u,\ 4u^{68} + 8u^{67} + \cdots + a + 2,\ u^{69} + 3u^{68} + \cdots + 2u + 1\rangle$$
$$I_2^u = \langle -u^2 b + b^2 + bu - u + 1,\ a,\ u^3 - u^2 + 1\rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 75 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.

$$I_1^u = \langle 4u^{68}+5u^{67}+\cdots+2b+3u,\ 4u^{68}+8u^{67}+\cdots+a+2,\ u^{69}+3u^{68}+\cdots+2u+1\rangle$$

(i) Arc colorings

$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} -4u^{68} - 8u^{67} + \cdots - 6u - 2 \\ -2u^{68} - \frac{5}{2}u^{67} + \cdots - \frac{3}{2}u^3 - \frac{3}{2}u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u^{18} - 3u^{16} + \cdots + 4u + 1 \\ -\frac{1}{2}u^{67} - u^{66} + \cdots - 3u^2 + \frac{1}{2}u \end{pmatrix}$$

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

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

$$a_2 = \begin{pmatrix} -\frac{3}{2}u^{68} - 3u^{67} + \cdots - 3u - \frac{1}{2} \\ -\frac{3}{2}u^{68} - 5u^{67} + \cdots - 3u - 3 \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} u^{66} + u^{65} + \cdots + 12u^3 - 2u \\ -u^{68} - \frac{11}{2}u^{67} + \cdots - \frac{7}{2}u - 4 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} u^{66} + u^{65} + \cdots + 12u^3 - 2u \\ -u^{68} - \frac{11}{2}u^{67} + \cdots - \frac{7}{2}u - 4 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{15}{2}u^{68} - 16u^{67} + \cdots - 12u - \frac{17}{2}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{69} + 4u^{68} + \cdots - 3u - 1$
c_2	$u^{69} + 34u^{68} + \cdots - 3u - 1$
c_3, c_7	$u^{69} - u^{68} + \cdots + 224u + 64$
c_5	$u^{69} - 4u^{68} + \cdots + 5265u - 1153$
c_6, c_{10}	$u^{69} + 3u^{68} + \cdots + 2u + 1$
c_8	$u^{69} - 3u^{68} + \cdots - 7540u + 937$
c_9, c_{11}	$u^{69} + 23u^{68} + \cdots - 4u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{69} + 34y^{68} + \cdots - 3y - 1$
c_2	$y^{69} + 6y^{68} + \cdots + 29y - 1$
c_3, c_7	$y^{69} + 35y^{68} + \cdots - 44032y - 4096$
c_5	$y^{69} - 22y^{68} + \cdots + 5956197y - 1329409$
c_6, c_{10}	$y^{69} - 23y^{68} + \cdots - 4y - 1$
c_8	$y^{69} - 11y^{68} + \cdots + 10500084y - 877969$
c_9, c_{11}	$y^{69} + 49y^{68} + \cdots - 4y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.620084 + 0.792709I$ $a = -0.74143 - 1.28998I$ $b = 0.57525 - 1.64676I$	$-3.30752 - 1.68121I$	0
$u = -0.620084 - 0.792709I$ $a = -0.74143 + 1.28998I$ $b = 0.57525 + 1.64676I$	$-3.30752 + 1.68121I$	0
$u = 0.684134 + 0.748318I$ $a = 0.36010 + 2.15851I$ $b = 2.88057 + 0.64719I$	$1.42174 + 3.69530I$	0
$u = 0.684134 - 0.748318I$ $a = 0.36010 - 2.15851I$ $b = 2.88057 - 0.64719I$	$1.42174 - 3.69530I$	0
$u = -1.018820 + 0.054091I$ $a = -2.12560 + 0.70969I$ $b = -1.080890 + 0.121563I$	$-4.13213 + 3.64791I$	$-10.05983 + 0.I$
$u = -1.018820 - 0.054091I$ $a = -2.12560 - 0.70969I$ $b = -1.080890 - 0.121563I$	$-4.13213 - 3.64791I$	$-10.05983 + 0.I$
$u = 0.757016 + 0.607386I$ $a = -0.61533 + 1.53607I$ $b = 1.55783 + 1.59883I$	$-0.06717 - 3.13357I$	$-4.80388 + 4.92855I$
$u = 0.757016 - 0.607386I$ $a = -0.61533 - 1.53607I$ $b = 1.55783 - 1.59883I$	$-0.06717 + 3.13357I$	$-4.80388 - 4.92855I$
$u = -0.753436 + 0.711663I$ $a = 0.189133 - 0.672774I$ $b = -0.509996 - 0.067709I$	$2.48833 + 3.11204I$	0
$u = -0.753436 - 0.711663I$ $a = 0.189133 + 0.672774I$ $b = -0.509996 + 0.067709I$	$2.48833 - 3.11204I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.721710+0.747525I$ $a=-0.163681+0.945744I$ $b=-0.148711-0.025106I$	$3.30960-2.06237I$	0
$u=-0.721710-0.747525I$ $a=-0.163681-0.945744I$ $b=-0.148711+0.025106I$	$3.30960+2.06237I$	0
$u=\ \ 0.957145+0.038173I$ $a=\ \ 0.164596+0.280788I$ $b=\ \ 0.40893+1.40875I$	$-2.00723-2.55767I$	$-10.61202+4.63475I$
$u=\ \ 0.957145-0.038173I$ $a=\ \ 0.164596-0.280788I$ $b=\ \ 0.40893-1.40875I$	$-2.00723+2.55767I$	$-10.61202-4.63475I$
$u=\ \ 0.739249+0.744320I$ $a=-0.36989-1.54589I$ $b=-2.02675-0.23487I$	$3.53880-0.84616I$	0
$u=\ \ 0.739249-0.744320I$ $a=-0.36989+1.54589I$ $b=-2.02675+0.23487I$	$3.53880+0.84616I$	0
$u=-0.669660+0.814511I$ $a=\ \ 0.21586+1.69058I$ $b=-1.55340+0.94507I$	$1.48274-4.64133I$	0
$u=-0.669660-0.814511I$ $a=\ \ 0.21586-1.69058I$ $b=-1.55340-0.94507I$	$1.48274+4.64133I$	0
$u=-0.663443+0.838478I$ $a=-0.32742-2.04165I$ $b=\ \ 2.14814-1.38487I$	$-0.95244-9.80543I$	0
$u=-0.663443-0.838478I$ $a=-0.32742+2.04165I$ $b=\ \ 2.14814+1.38487I$	$-0.95244+9.80543I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.069640 + 0.121587I$ $a = 1.383900 + 0.064655I$ $b = 1.011640 + 0.155727I$	$-4.92005 - 4.43213I$	0
$u = 1.069640 - 0.121587I$ $a = 1.383900 - 0.064655I$ $b = 1.011640 - 0.155727I$	$-4.92005 + 4.43213I$	0
$u = -0.910624$ $a = 1.15059$ $b = 0.724599$	-1.54956	-5.79310
$u = 1.096170 + 0.077778I$ $a = -1.187760 + 0.693218I$ $b = -0.508671 - 0.071320I$	$-9.42165 - 0.97729I$	0
$u = 1.096170 - 0.077778I$ $a = -1.187760 - 0.693218I$ $b = -0.508671 + 0.071320I$	$-9.42165 + 0.97729I$	0
$u = 1.096180 + 0.140788I$ $a = -1.90353 - 0.09913I$ $b = -1.124720 + 0.210315I$	$-7.64943 - 9.45868I$	0
$u = 1.096180 - 0.140788I$ $a = -1.90353 + 0.09913I$ $b = -1.124720 - 0.210315I$	$-7.64943 + 9.45868I$	0
$u = -0.970729 + 0.528704I$ $a = -0.639720 - 0.025923I$ $b = -0.97663 - 1.40719I$	$-2.57806 + 1.76748I$	0
$u = -0.970729 - 0.528704I$ $a = -0.639720 + 0.025923I$ $b = -0.97663 + 1.40719I$	$-2.57806 - 1.76748I$	0
$u = -1.012390 + 0.483692I$ $a = 1.203180 + 0.248675I$ $b = 0.94688 + 2.11622I$	$-5.59193 - 2.78605I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.012390-0.483692I$ $a=\ \ 1.203180-0.248675I$ $b=\ \ 0.94688-2.11622I$	$-5.59193+2.78605I$	0
$u=\ \ 0.817402+0.784634I$ $a=-0.522773-0.578493I$ $b=-0.589673+0.434002I$	$4.09856-2.01146I$	0
$u=\ \ 0.817402-0.784634I$ $a=-0.522773+0.578493I$ $b=-0.589673-0.434002I$	$4.09856+2.01146I$	0
$u=-0.835392+0.165049I$ $a=\ \ 0.471504-0.753519I$ $b=\ \ 0.448734-0.560979I$	$-1.57618+0.35138I$	$-8.53058-0.76832I$
$u=-0.835392-0.165049I$ $a=\ \ 0.471504+0.753519I$ $b=\ \ 0.448734+0.560979I$	$-1.57618-0.35138I$	$-8.53058+0.76832I$
$u=\ \ 0.958278+0.638119I$ $a=\ \ 1.79930-0.63520I$ $b=\ \ 0.60710-3.04859I$	$-0.73989-1.80119I$	0
$u=\ \ 0.958278-0.638119I$ $a=\ \ 1.79930+0.63520I$ $b=\ \ 0.60710+3.04859I$	$-0.73989+1.80119I$	0
$u=-1.021490+0.565890I$ $a=\ \ 0.705105-0.650077I$ $b=\ \ 1.78899+1.10656I$	$-6.45549+5.60193I$	0
$u=-1.021490-0.565890I$ $a=\ \ 0.705105+0.650077I$ $b=\ \ 1.78899-1.10656I$	$-6.45549-5.60193I$	0
$u=-0.954179+0.682947I$ $a=\ \ 0.475159-0.057085I$ $b=\ \ 0.520320-0.735924I$	$1.87091+2.24800I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.954179 - 0.682947I$ $a = 0.475159 + 0.057085I$ $b = 0.520320 + 0.735924I$	$1.87091 - 2.24800I$	0
$u = 0.851035 + 0.816929I$ $a = 0.494489 + 0.078024I$ $b = -0.423380 - 0.437237I$	$2.44272 - 6.15643I$	0
$u = 0.851035 - 0.816929I$ $a = 0.494489 - 0.078024I$ $b = -0.423380 + 0.437237I$	$2.44272 + 6.15643I$	0
$u = 0.965906 + 0.700019I$ $a = -1.50890 - 0.31337I$ $b = -2.06844 + 1.83162I$	$2.84817 - 4.66103I$	0
$u = 0.965906 - 0.700019I$ $a = -1.50890 + 0.31337I$ $b = -2.06844 - 1.83162I$	$2.84817 + 4.66103I$	0
$u = 0.929274 + 0.754481I$ $a = -0.504463 - 0.456421I$ $b = -1.276140 - 0.176378I$	$3.75509 - 3.78687I$	0
$u = 0.929274 - 0.754481I$ $a = -0.504463 + 0.456421I$ $b = -1.276140 + 0.176378I$	$3.75509 + 3.78687I$	0
$u = -0.977343 + 0.698293I$ $a = -0.773277 + 0.042094I$ $b = -1.143270 + 0.001207I$	$2.53315 + 7.57441I$	0
$u = -0.977343 - 0.698293I$ $a = -0.773277 - 0.042094I$ $b = -1.143270 - 0.001207I$	$2.53315 - 7.57441I$	0
$u = 0.996040 + 0.691361I$ $a = 2.09972 + 0.48052I$ $b = 2.83797 - 2.81894I$	$0.48440 - 9.18841I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.996040 - 0.691361I$ $a = 2.09972 - 0.48052I$ $b = 2.83797 + 2.81894I$	$0.48440 + 9.18841I$	0
$u = 0.915358 + 0.795783I$ $a = 0.055765 + 0.369318I$ $b = 0.341328 + 1.097470I$	$2.24452 + 0.13399I$	0
$u = 0.915358 - 0.795783I$ $a = 0.055765 - 0.369318I$ $b = 0.341328 - 1.097470I$	$2.24452 - 0.13399I$	0
$u = -0.363800 + 0.683750I$ $a = 0.159725 - 0.902915I$ $b = 1.194090 - 0.050123I$	$-4.64351 - 0.95645I$	$-6.95143 + 0.40009I$
$u = -0.363800 - 0.683750I$ $a = 0.159725 + 0.902915I$ $b = 1.194090 + 0.050123I$	$-4.64351 + 0.95645I$	$-6.95143 - 0.40009I$
$u = -1.031700 + 0.690591I$ $a = 1.31406 + 0.73889I$ $b = 0.12386 + 2.26773I$	$-4.53517 + 7.27554I$	0
$u = -1.031700 - 0.690591I$ $a = 1.31406 - 0.73889I$ $b = 0.12386 - 2.26773I$	$-4.53517 - 7.27554I$	0
$u = -1.022320 + 0.715446I$ $a = -1.59446 - 0.20723I$ $b = -1.63571 - 2.33602I$	$0.41311 + 10.39030I$	0
$u = -1.022320 - 0.715446I$ $a = -1.59446 + 0.20723I$ $b = -1.63571 + 2.33602I$	$0.41311 - 10.39030I$	0
$u = -1.033670 + 0.722916I$ $a = 1.93233 + 0.24814I$ $b = 1.87661 + 3.18870I$	$-2.0811 + 15.6439I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.033670 - 0.722916I$ $a = 1.93233 - 0.24814I$ $b = 1.87661 - 3.18870I$	$-2.0811 - 15.6439I$	0
$u = -0.222610 + 0.700574I$ $a = -1.01534 - 1.68362I$ $b = 0.425358 - 1.228400I$	$-3.29307 + 6.95572I$	$-4.27136 - 6.38165I$
$u = -0.222610 - 0.700574I$ $a = -1.01534 + 1.68362I$ $b = 0.425358 + 1.228400I$	$-3.29307 - 6.95572I$	$-4.27136 + 6.38165I$
$u = -0.237379 + 0.619505I$ $a = 0.999266 + 0.903446I$ $b = -0.257184 + 0.499151I$	$-0.72685 + 2.26761I$	$-0.99875 - 3.18261I$
$u = -0.237379 - 0.619505I$ $a = 0.999266 - 0.903446I$ $b = -0.257184 - 0.499151I$	$-0.72685 - 2.26761I$	$-0.99875 + 3.18261I$
$u = 0.262483 + 0.300390I$ $a = -2.06293 + 0.91307I$ $b = 0.607715 + 1.007860I$	$-0.30141 - 2.59969I$	$1.01042 + 4.25911I$
$u = 0.262483 - 0.300390I$ $a = -2.06293 - 0.91307I$ $b = 0.607715 - 1.007860I$	$-0.30141 + 2.59969I$	$1.01042 - 4.25911I$
$u = -0.009849 + 0.393003I$ $a = 1.95800 - 0.60378I$ $b = 0.159962 - 0.526209I$	$0.74701 + 1.37700I$	$2.48134 - 4.28508I$
$u = -0.009849 - 0.393003I$ $a = 1.95800 + 0.60378I$ $b = 0.159962 + 0.526209I$	$0.74701 - 1.37700I$	$2.48134 + 4.28508I$

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

(i) Arc colorings

$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 0 \\ b \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u \\ -u^2 + u + 1 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} u \\ -2u^2 + b + 2u + 1 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -u^2 + 1 \\ -u^2 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u \\ u^2 - u - 1 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} u^2b \\ bu + 2b \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0 \\ b \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0 \\ b \end{pmatrix}$$

(ii) Obstruction class $= 1$

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

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_5	$(u^2 + u + 1)^3$
c_3, c_7	u^6
c_4	$(u^2 - u + 1)^3$
c_6	$(u^3 + u^2 - 1)^2$
c_8, c_{11}	$(u^3 + u^2 + 2u + 1)^2$
c_9	$(u^3 - u^2 + 2u - 1)^2$
c_{10}	$(u^3 - u^2 + 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4 c_5	$(y^2 + y + 1)^3$
c_3, c_7	y^6
c_6, c_{10}	$(y^3 - y^2 + 2y - 1)^2$
c_8, c_9, c_{11}	$(y^3 + 3y^2 + 2y - 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.877439 + 0.744862I$ $a = 0$ $b = -0.818128 - 0.292480I$	$3.02413 - 4.85801I$	$-2.23639 + 5.66123I$
$u = 0.877439 + 0.744862I$ $a = 0$ $b = 0.155769 + 0.854759I$	$3.02413 - 0.79824I$	$-0.946254 + 0.677361I$
$u = 0.877439 - 0.744862I$ $a = 0$ $b = -0.818128 + 0.292480I$	$3.02413 + 4.85801I$	$-2.23639 - 5.66123I$
$u = 0.877439 - 0.744862I$ $a = 0$ $b = 0.155769 - 0.854759I$	$3.02413 + 0.79824I$	$-0.946254 - 0.677361I$
$u = -0.754878$ $a = 0$ $b = 0.662359 + 1.147240I$	$-1.11345 - 2.02988I$	$-5.31735 + 1.07831I$
$u = -0.754878$ $a = 0$ $b = 0.662359 - 1.147240I$	$-1.11345 + 2.02988I$	$-5.31735 - 1.07831I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^2+u+1)^3)(u^{69}+4u^{68}+\cdots-3u-1)$
c_2	$((u^2+u+1)^3)(u^{69}+34u^{68}+\cdots-3u-1)$
c_3, c_7	$u^6(u^{69}-u^{68}+\cdots+224u+64)$
c_4	$((u^2-u+1)^3)(u^{69}+4u^{68}+\cdots-3u-1)$
c_5	$((u^2+u+1)^3)(u^{69}-4u^{68}+\cdots+5265u-1153)$
c_6	$((u^3+u^2-1)^2)(u^{69}+3u^{68}+\cdots+2u+1)$
c_8	$((u^3+u^2+2u+1)^2)(u^{69}-3u^{68}+\cdots-7540u+937)$
c_9	$((u^3-u^2+2u-1)^2)(u^{69}+23u^{68}+\cdots-4u+1)$
c_{10}	$((u^3-u^2+1)^2)(u^{69}+3u^{68}+\cdots+2u+1)$
c_{11}	$((u^3+u^2+2u+1)^2)(u^{69}+23u^{68}+\cdots-4u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4	$((y^2+y+1)^3)(y^{69}+34y^{68}+\cdots-3y-1)$
c_2	$((y^2+y+1)^3)(y^{69}+6y^{68}+\cdots+29y-1)$
c_3, c_7	$y^6(y^{69}+35y^{68}+\cdots-44032y-4096)$
c_5	$((y^2+y+1)^3)(y^{69}-22y^{68}+\cdots+5956197y-1329409)$
c_6, c_{10}	$((y^3-y^2+2y-1)^2)(y^{69}-23y^{68}+\cdots-4y-1)$
c_8	$((y^3+3y^2+2y-1)^2)(y^{69}-11y^{68}+\cdots+1.05001\times 10^7 y-877969)$
c_9, c_{11}	$((y^3+3y^2+2y-1)^2)(y^{69}+49y^{68}+\cdots-4y-1)$