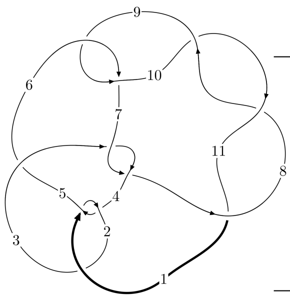
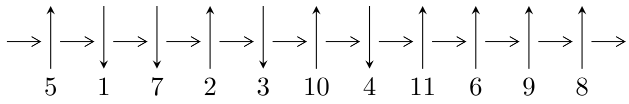
$11a_4$ ($K11a_4$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -6u^{53} + 25u^{52} + \cdots + 4b + 7,\ 7u^{53} - 14u^{52} + \cdots + 4a + 17,\ u^{54} - 4u^{53} + \cdots - 5u + 1 \rangle$$
$$I_2^u = \langle -au + b,\ a^3 + a^2u + a^2 + 2au - 1,\ u^2 + u + 1 \rangle$$

* 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. $I_1^u = \langle -6u^{53}+25u^{52}+\cdots+4b+7,\ 7u^{53}-14u^{52}+\cdots+4a+17,\ u^{54}-4u^{53}+\cdots-5u+1\rangle$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

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

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

$$a_4 = \begin{pmatrix} -u \\ u^3+u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -\frac{7}{4}u^{53}+\frac{7}{2}u^{52}+\cdots+\frac{35}{4}u-\frac{17}{4} \\ \frac{3}{2}u^{53}-\frac{25}{4}u^{52}+\cdots+12u-\frac{7}{4} \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -\frac{9}{4}u^{53}+\frac{19}{2}u^{52}+\cdots-\frac{43}{4}u+\frac{1}{4} \\ -\frac{1}{2}u^{53}+\frac{9}{4}u^{52}+\cdots+11u-\frac{9}{4} \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -\frac{1}{4}u^{53}+\frac{3}{4}u^{52}+\cdots+u^2-\frac{5}{4}u \\ \frac{1}{4}u^{53}-u^{52}+\cdots+\frac{9}{4}u-\frac{1}{4} \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 4u^{53}-16u^{52}+\cdots+17u-\frac{9}{2} \\ -\frac{5}{4}u^{53}+\frac{25}{4}u^{52}+\cdots-\frac{39}{4}u+\frac{5}{2} \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} \frac{15}{4}u^{53}-\frac{55}{4}u^{52}+\cdots+\frac{41}{4}u-3 \\ -\frac{5}{4}u^{53}+\frac{29}{4}u^{52}+\cdots-\frac{55}{4}u+\frac{7}{2} \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} \frac{15}{4}u^{53}-\frac{55}{4}u^{52}+\cdots+\frac{41}{4}u-3 \\ -\frac{5}{4}u^{53}+\frac{29}{4}u^{52}+\cdots-\frac{55}{4}u+\frac{7}{2} \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -5u^{53}+\frac{67}{2}u^{52}+\cdots-59u+16$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{54} + 4u^{53} + \cdots + 5u + 1$
c_2	$u^{54} + 28u^{53} + \cdots + 3u + 1$
c_3, c_7	$u^{54} + u^{53} + \cdots + 96u + 64$
c_5	$u^{54} - 4u^{53} + \cdots - 713u + 193$
c_6, c_9	$u^{54} - 3u^{53} + \cdots - 2u + 1$
c_8, c_{10}, c_{11}	$u^{54} - 13u^{53} + \cdots + 4u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{54} + 28y^{53} + \cdots + 3y + 1$
c_2	$y^{54} + 56y^{52} + \cdots + 27y + 1$
c_3, c_7	$y^{54} - 35y^{53} + \cdots - 54272y + 4096$
c_5	$y^{54} - 28y^{53} + \cdots + 214995y + 37249$
c_6, c_9	$y^{54} - 13y^{53} + \cdots + 4y + 1$
c_8, c_{10}, c_{11}	$y^{54} + 59y^{53} + \cdots - 84y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.379892+0.998863I$ $a=\ \ 1.103900+0.557020I$ $b=\ \ 0.102602+0.436031I$	$-1.03201-1.50079I$	0
$u=-0.379892-0.998863I$ $a=\ \ 1.103900-0.557020I$ $b=\ \ 0.102602-0.436031I$	$-1.03201+1.50079I$	0
$u=-0.626212+0.684020I$ $a=-0.946934+0.601830I$ $b=\ \ 0.572857-0.492032I$	$1.52357-3.40391I$	$4.82806+9.13661I$
$u=-0.626212-0.684020I$ $a=-0.946934-0.601830I$ $b=\ \ 0.572857+0.492032I$	$1.52357+3.40391I$	$4.82806-9.13661I$
$u=\ \ 0.885029+0.254996I$ $a=-0.781886+1.060890I$ $b=\ \ 0.24815-1.64054I$	$-8.53853-8.83927I$	$-0.16984+5.18354I$
$u=\ \ 0.885029-0.254996I$ $a=-0.781886-1.060890I$ $b=\ \ 0.24815+1.64054I$	$-8.53853+8.83927I$	$-0.16984-5.18354I$
$u=-0.591212+0.904355I$ $a=\ \ 0.136029-0.965536I$ $b=\ \ 0.452763+0.325398I$	$0.88913-1.37469I$	0
$u=-0.591212-0.904355I$ $a=\ \ 0.136029+0.965536I$ $b=\ \ 0.452763-0.325398I$	$0.88913+1.37469I$	0
$u=\ \ 0.885260+0.230562I$ $a=\ \ 0.737527-0.964365I$ $b=-0.08283+1.52053I$	$-8.94569-2.41782I$	$-0.944300+0.387056I$
$u=\ \ 0.885260-0.230562I$ $a=\ \ 0.737527+0.964365I$ $b=-0.08283-1.52053I$	$-8.94569+2.41782I$	$-0.944300-0.387056I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.753157 + 0.805387I$ $a = -1.05816 + 1.16882I$ $b = 0.15061 - 1.52668I$	$-5.15771 - 5.91377I$	0
$u = -0.753157 - 0.805387I$ $a = -1.05816 - 1.16882I$ $b = 0.15061 + 1.52668I$	$-5.15771 + 5.91377I$	0
$u = -0.745011 + 0.831417I$ $a = 0.96483 - 1.25275I$ $b = 0.09191 + 1.50020I$	$-5.23505 + 0.31393I$	0
$u = -0.745011 - 0.831417I$ $a = 0.96483 + 1.25275I$ $b = 0.09191 - 1.50020I$	$-5.23505 - 0.31393I$	0
$u = -0.499017 + 1.041130I$ $a = -0.856626 - 1.113760I$ $b = 0.506001 - 0.649056I$	$-0.12306 - 4.76592I$	0
$u = -0.499017 - 1.041130I$ $a = -0.856626 + 1.113760I$ $b = 0.506001 + 0.649056I$	$-0.12306 + 4.76592I$	0
$u = -0.350126 + 0.758525I$ $a = 0.992379 - 0.143031I$ $b = -0.0959060 - 0.0489305I$	$-0.23114 - 1.44429I$	$-1.42255 + 4.98888I$
$u = -0.350126 - 0.758525I$ $a = 0.992379 + 0.143031I$ $b = -0.0959060 + 0.0489305I$	$-0.23114 + 1.44429I$	$-1.42255 - 4.98888I$
$u = 0.188104 + 0.813889I$ $a = 1.70541 + 0.20561I$ $b = 0.098016 - 1.198770I$	$-3.67271 - 1.63897I$	$-3.88431 + 4.27010I$
$u = 0.188104 - 0.813889I$ $a = 1.70541 - 0.20561I$ $b = 0.098016 + 1.198770I$	$-3.67271 + 1.63897I$	$-3.88431 - 4.27010I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.325799 + 1.118780I$ $a = 0.231756 + 0.233450I$ $b = 0.623088 - 1.028710I$	$-4.41304 - 1.91296I$	0
$u = 0.325799 - 1.118780I$ $a = 0.231756 - 0.233450I$ $b = 0.623088 + 1.028710I$	$-4.41304 + 1.91296I$	0
$u = 0.461228 + 1.103380I$ $a = -0.760887 + 0.869538I$ $b = 1.049960 - 0.133110I$	$-0.79930 + 3.68471I$	0
$u = 0.461228 - 1.103380I$ $a = -0.760887 - 0.869538I$ $b = 1.049960 + 0.133110I$	$-0.79930 - 3.68471I$	0
$u = 0.739810 + 0.258344I$ $a = -1.28681 + 0.82591I$ $b = 0.734944 - 0.813229I$	$-0.37627 - 5.01917I$	$3.74598 + 6.24423I$
$u = 0.739810 - 0.258344I$ $a = -1.28681 - 0.82591I$ $b = 0.734944 + 0.813229I$	$-0.37627 + 5.01917I$	$3.74598 - 6.24423I$
$u = 0.263878 + 0.734727I$ $a = -2.05477 - 0.12446I$ $b = 0.313156 + 1.353580I$	$-3.33199 + 3.97385I$	$-2.23953 - 0.35907I$
$u = 0.263878 - 0.734727I$ $a = -2.05477 + 0.12446I$ $b = 0.313156 - 1.353580I$	$-3.33199 - 3.97385I$	$-2.23953 + 0.35907I$
$u = 0.389551 + 1.166930I$ $a = 0.368785 - 0.096490I$ $b = -0.342003 + 0.642138I$	$-6.05420 + 2.70137I$	0
$u = 0.389551 - 1.166930I$ $a = 0.368785 + 0.096490I$ $b = -0.342003 - 0.642138I$	$-6.05420 - 2.70137I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.438089+1.158700I$ $a=\ \ 1.57252+1.18680I$ $b=\ \ 0.03942+1.53460I$	$-7.79249-0.92626I$	0
$u=-0.438089-1.158700I$ $a=\ \ 1.57252-1.18680I$ $b=\ \ 0.03942-1.53460I$	$-7.79249+0.92626I$	0
$u=-0.459497+1.157950I$ $a=-1.51732-1.29201I$ $b=\ \ 0.16035-1.58211I$	$-7.64003-7.27340I$	0
$u=-0.459497-1.157950I$ $a=-1.51732+1.29201I$ $b=\ \ 0.16035+1.58211I$	$-7.64003+7.27340I$	0
$u=\ \ 0.727484+0.127692I$ $a=\ \ 1.178260-0.411070I$ $b=-0.306147+0.433369I$	$-2.35286-1.07266I$	$-1.50878+0.45563I$
$u=\ \ 0.727484-0.127692I$ $a=\ \ 1.178260+0.411070I$ $b=-0.306147-0.433369I$	$-2.35286+1.07266I$	$-1.50878-0.45563I$
$u=\ \ 0.533177+1.145480I$ $a=-1.55151+0.68284I$ $b=\ \ 0.838073+0.873836I$	$-2.97092+9.82935I$	0
$u=\ \ 0.533177-1.145480I$ $a=-1.55151-0.68284I$ $b=\ \ 0.838073-0.873836I$	$-2.97092-9.82935I$	0
$u=\ \ 0.493294+1.165470I$ $a=\ \ 1.239930-0.400909I$ $b=-0.458261-0.419014I$	$-5.33044+5.62043I$	0
$u=\ \ 0.493294-1.165470I$ $a=\ \ 1.239930+0.400909I$ $b=-0.458261+0.419014I$	$-5.33044-5.62043I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.272316 + 1.258420I$ $a = 0.301237 - 0.770778I$ $b = 0.18966 - 1.67412I$	$-13.4813 - 5.1046I$	0
$u = 0.272316 - 1.258420I$ $a = 0.301237 + 0.770778I$ $b = 0.18966 + 1.67412I$	$-13.4813 + 5.1046I$	0
$u = 0.292425 + 1.259690I$ $a = -0.162036 + 0.763414I$ $b = -0.05529 + 1.59185I$	$-13.77420 + 1.43522I$	0
$u = 0.292425 - 1.259690I$ $a = -0.162036 - 0.763414I$ $b = -0.05529 - 1.59185I$	$-13.77420 - 1.43522I$	0
$u = 0.575070 + 1.194170I$ $a = -2.04207 + 0.34417I$ $b = 0.27962 + 1.66807I$	$-11.3710 + 14.1846I$	0
$u = 0.575070 - 1.194170I$ $a = -2.04207 - 0.34417I$ $b = 0.27962 - 1.66807I$	$-11.3710 - 14.1846I$	0
$u = 0.564569 + 1.201030I$ $a = 1.96539 - 0.25795I$ $b = -0.13428 - 1.52301I$	$-11.8740 + 7.7158I$	0
$u = 0.564569 - 1.201030I$ $a = 1.96539 + 0.25795I$ $b = -0.13428 + 1.52301I$	$-11.8740 - 7.7158I$	0
$u = -0.666189 + 0.031728I$ $a = -0.0922958 + 0.0482952I$ $b = 0.13196 + 1.49406I$	$-4.53071 + 3.08686I$	$1.77023 - 2.56143I$
$u = -0.666189 - 0.031728I$ $a = -0.0922958 - 0.0482952I$ $b = 0.13196 - 1.49406I$	$-4.53071 - 3.08686I$	$1.77023 + 2.56143I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.474195+0.404040I$ $a=-0.896122+0.464008I$ $b=\ \ 0.603365+0.428675I$	$1.67487+0.64549I$	$7.52215-2.21794I$
$u=-0.474195-0.404040I$ $a=-0.896122-0.464008I$ $b=\ \ 0.603365-0.428675I$	$1.67487-0.64549I$	$7.52215+2.21794I$
$u=\ \ 0.385602+0.286567I$ $a=-1.99051+0.52447I$ $b=\ \ 0.788212+0.173723I$	$1.57101+0.14808I$	$6.86906+0.36637I$
$u=\ \ 0.385602-0.286567I$ $a=-1.99051-0.52447I$ $b=\ \ 0.788212-0.173723I$	$1.57101-0.14808I$	$6.86906-0.36637I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -3a^2u-2a^2-3au+a+7u+10$

(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	$(u^3+u^2+2u+1)^2$
c_9	$(u^3+u^2-1)^2$
c_{10}, c_{11}	$(u^3-u^2+2u-1)^2$

(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_9	$(y^3 - y^2 + 2y - 1)^2$
c_8, c_{10}, 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
$u = -0.500000 + 0.866025I$ $a = -1.239560 + 0.467306I$ $b = 0.215080 - 1.307140I$	$-3.02413 + 0.79824I$	$2.23639 + 1.26697I$
$u = -0.500000 + 0.866025I$ $a = 1.024480 - 0.839835I$ $b = 0.215080 + 1.307140I$	$-3.02413 - 4.85801I$	$0.94625 + 7.60556I$
$u = -0.500000 + 0.866025I$ $a = -0.284920 - 0.493496I$ $b = 0.569840$	$1.11345 - 2.02988I$	$5.31735 + 5.84990I$
$u = -0.500000 - 0.866025I$ $a = 1.024480 + 0.839835I$ $b = 0.215080 - 1.307140I$	$-3.02413 - 0.79824I$	$2.23639 - 1.26697I$
$u = -0.500000 - 0.866025I$ $a = -1.239560 - 0.467306I$ $b = 0.215080 + 1.307140I$	$-3.02413 + 4.85801I$	$0.94625 - 7.60556I$
$u = -0.500000 - 0.866025I$ $a = -0.284920 + 0.493496I$ $b = 0.569840$	$1.11345 + 2.02988I$	$5.31735 - 5.84990I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^2+u+1)^3)(u^{54}+4u^{53}+\cdots+5u+1)$
c_2	$((u^2+u+1)^3)(u^{54}+28u^{53}+\cdots+3u+1)$
c_3, c_7	$u^6(u^{54}+u^{53}+\cdots+96u+64)$
c_4	$((u^2-u+1)^3)(u^{54}+4u^{53}+\cdots+5u+1)$
c_5	$((u^2+u+1)^3)(u^{54}-4u^{53}+\cdots-713u+193)$
c_6	$((u^3-u^2+1)^2)(u^{54}-3u^{53}+\cdots-2u+1)$
c_8	$((u^3+u^2+2u+1)^2)(u^{54}-13u^{53}+\cdots+4u+1)$
c_9	$((u^3+u^2-1)^2)(u^{54}-3u^{53}+\cdots-2u+1)$
c_{10}, c_{11}	$((u^3-u^2+2u-1)^2)(u^{54}-13u^{53}+\cdots+4u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4	$((y^2+y+1)^3)(y^{54}+28y^{53}+\cdots+3y+1)$
c_2	$((y^2+y+1)^3)(y^{54}+56y^{52}+\cdots+27y+1)$
c_3, c_7	$y^6(y^{54}-35y^{53}+\cdots-54272y+4096)$
c_5	$((y^2+y+1)^3)(y^{54}-28y^{53}+\cdots+214995y+37249)$
c_6, c_9	$((y^3-y^2+2y-1)^2)(y^{54}-13y^{53}+\cdots+4y+1)$
c_8, c_{10}, c_{11}	$((y^3+3y^2+2y-1)^2)(y^{54}+59y^{53}+\cdots-84y+1)$