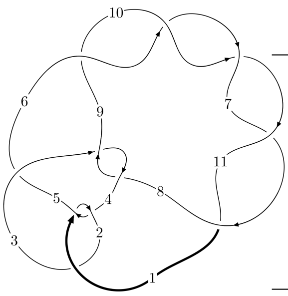
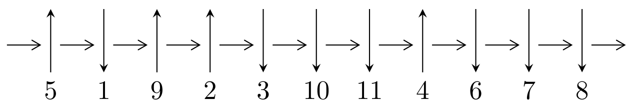
$11a_9$ $(K11a_9)$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle u^{35} + u^{34} + \cdots + 2b - 1,\ 3u^{35} + 4u^{34} + \cdots + 2a - 2,\ u^{36} + 3u^{35} + \cdots - 3u^2 - 1\rangle$$
$$I_2^u = \langle -au + b,\ a^2 + a + 1,\ u^2 - u - 1\rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 40 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.

$$\boldsymbol{I_1^u = \langle u^{35}+u^{34}+\cdots+2b-1,\ 3u^{35}+4u^{34}+\cdots+2a-2,\ u^{36}+3u^{35}+\cdots-3u^2-1\rangle}$$

(i) Arc colorings

$$a_7 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_8 = \begin{pmatrix}-u\\-u^3+u\end{pmatrix}$$
$$a_1 = \begin{pmatrix}-u^2+1\\-u^4+2u^2\end{pmatrix}$$
$$a_3 = \begin{pmatrix}-\frac{3}{2}u^{35}-2u^{34}+\cdots-\frac{5}{2}u+1\\-\frac{1}{2}u^{35}-\frac{1}{2}u^{34}+\cdots+4u^2+\frac{1}{2}\end{pmatrix}$$
$$a_2 = \begin{pmatrix}5u^{35}+\frac{13}{2}u^{34}+\cdots+\frac{1}{2}u-\frac{5}{2}\\8u^{35}+10u^{34}+\cdots+3u-5\end{pmatrix}$$
$$a_6 = \begin{pmatrix}u\\u\end{pmatrix}$$
$$a_5 = \begin{pmatrix}-\frac{1}{2}u^{35}-u^{34}+\cdots+\frac{11}{2}u+1\\-\frac{1}{2}u^{35}-\frac{1}{2}u^{34}+\cdots-2u^2+\frac{1}{2}\end{pmatrix}$$
$$a_9 = \begin{pmatrix}-u^2+1\\-u^2\end{pmatrix}$$
$$a_4 = \begin{pmatrix}\frac{11}{2}u^{35}+7u^{34}+\cdots-\frac{1}{2}u-3\\\frac{19}{2}u^{35}+\frac{23}{2}u^{34}+\cdots+3u-\frac{11}{2}\end{pmatrix}$$
$$a_4 = \begin{pmatrix}\frac{11}{2}u^{35}+7u^{34}+\cdots-\frac{1}{2}u-3\\\frac{19}{2}u^{35}+\frac{23}{2}u^{34}+\cdots+3u-\frac{11}{2}\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{5}{2}u^{35}-3u^{34}+\cdots+\frac{23}{2}u^2+\frac{5}{2}u$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{36} + 3u^{35} + \cdots + 2u + 1$
c_2	$u^{36} + 19u^{35} + \cdots + 2u + 1$
c_3, c_8	$u^{36} + u^{35} + \cdots - 32u - 16$
c_5	$u^{36} - 3u^{35} + \cdots - 156u + 41$
c_6, c_7, c_9 c_{10}, c_{11}	$u^{36} + 3u^{35} + \cdots - 3u^2 - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{36} + 19y^{35} + \cdots + 2y + 1$
c_2	$y^{36} - y^{35} + \cdots - 46y + 1$
c_3, c_8	$y^{36} + 25y^{35} + \cdots + 896y + 256$
c_5	$y^{36} - 21y^{35} + \cdots + 12482y + 1681$
c_6, c_7, c_9 c_{10}, c_{11}	$y^{36} - 49y^{35} + \cdots + 6y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.025520 + 0.116463I$ $a = -1.031170 + 0.432608I$ $b = -2.09741 + 0.72386I$	$-4.16025 + 3.63915I$	$-10.15018 - 4.27650I$
$u = -1.025520 - 0.116463I$ $a = -1.031170 - 0.432608I$ $b = -2.09741 - 0.72386I$	$-4.16025 - 3.63915I$	$-10.15018 + 4.27650I$
$u = 0.917325 + 0.063901I$ $a = -0.133059 - 1.056750I$ $b = 0.317589 + 0.408768I$	$-2.00047 - 2.57631I$	$-10.63302 + 4.45192I$
$u = 0.917325 - 0.063901I$ $a = -0.133059 + 1.056750I$ $b = 0.317589 - 0.408768I$	$-2.00047 + 2.57631I$	$-10.63302 - 4.45192I$
$u = 1.065990 + 0.299185I$ $a = 0.322094 - 0.440855I$ $b = 1.56593 - 0.19350I$	$-5.13782 - 4.39791I$	$-8.11131 + 3.98843I$
$u = 1.065990 - 0.299185I$ $a = 0.322094 + 0.440855I$ $b = 1.56593 + 0.19350I$	$-5.13782 + 4.39791I$	$-8.11131 - 3.98843I$
$u = 1.082360 + 0.370781I$ $a = -0.558691 + 0.183985I$ $b = -2.00888 + 0.15748I$	$-8.00799 - 9.41273I$	$-10.73207 + 7.33022I$
$u = 1.082360 - 0.370781I$ $a = -0.558691 - 0.183985I$ $b = -2.00888 - 0.15748I$	$-8.00799 + 9.41273I$	$-10.73207 - 7.33022I$
$u = -0.852163$ $a = 0.572389$ $b = 1.20255$	-1.51344	-5.97070
$u = 1.178870 + 0.253014I$ $a = -0.540902 + 0.868497I$ $b = -1.39570 + 0.91291I$	$-9.53106 - 0.77090I$	$-13.03537 + 0.66876I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.178870 - 0.253014I$ $a = -0.540902 - 0.868497I$ $b = -1.39570 - 0.91291I$	$-9.53106 + 0.77090I$	$-13.03537 - 0.66876I$
$u = -0.465838 + 0.569982I$ $a = -0.135891 - 0.713585I$ $b = 0.582474 + 0.680739I$	$-4.25762 - 2.03075I$	$-9.39588 + 0.30706I$
$u = -0.465838 - 0.569982I$ $a = -0.135891 + 0.713585I$ $b = 0.582474 - 0.680739I$	$-4.25762 + 2.03075I$	$-9.39588 - 0.30706I$
$u = -0.680312 + 0.218264I$ $a = 0.215818 - 0.256120I$ $b = 0.392517 - 0.767490I$	$-1.43730 + 0.46103I$	$-9.15571 - 0.89205I$
$u = -0.680312 - 0.218264I$ $a = 0.215818 + 0.256120I$ $b = 0.392517 + 0.767490I$	$-1.43730 - 0.46103I$	$-9.15571 + 0.89205I$
$u = -0.294050 + 0.635512I$ $a = -0.93728 - 1.18603I$ $b = 0.435962 + 0.264963I$	$-3.72424 + 5.98943I$	$-7.50022 - 6.65502I$
$u = -0.294050 - 0.635512I$ $a = -0.93728 + 1.18603I$ $b = 0.435962 - 0.264963I$	$-3.72424 - 5.98943I$	$-7.50022 + 6.65502I$
$u = -0.300828 + 0.511616I$ $a = 0.900271 + 0.580279I$ $b = -0.322840 - 0.451012I$	$-0.88449 + 1.61128I$	$-3.96504 - 4.05315I$
$u = -0.300828 - 0.511616I$ $a = 0.900271 - 0.580279I$ $b = -0.322840 + 0.451012I$	$-0.88449 - 1.61128I$	$-3.96504 + 4.05315I$
$u = 1.60354 + 0.03866I$ $a = -0.577687 - 1.062600I$ $b = -0.73772 - 1.35775I$	$-9.29333 - 1.36083I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.60354 - 0.03866I$ $a = -0.577687 + 1.062600I$ $b = -0.73772 + 1.35775I$	$-9.29333 + 1.36083I$	0
$u = 0.003501 + 0.334247I$ $a = 2.06412 - 0.29075I$ $b = -0.222553 - 0.457483I$	$0.57956 + 1.37320I$	$1.27470 - 4.45868I$
$u = 0.003501 - 0.334247I$ $a = 2.06412 + 0.29075I$ $b = -0.222553 + 0.457483I$	$0.57956 - 1.37320I$	$1.27470 + 4.45868I$
$u = 0.220883 + 0.210533I$ $a = -2.72148 + 0.23613I$ $b = 0.536583 + 0.437480I$	$-0.27564 - 2.47765I$	$1.24066 + 5.09366I$
$u = 0.220883 - 0.210533I$ $a = -2.72148 - 0.23613I$ $b = 0.536583 - 0.437480I$	$-0.27564 + 2.47765I$	$1.24066 - 5.09366I$
$u = 1.70560$ $a = -2.31988$ $b = -2.94838$	-10.7808	0
$u = -1.71389 + 0.01340I$ $a = -0.457517 + 0.775429I$ $b = -0.66586 + 1.78211I$	$-11.48460 + 2.85990I$	0
$u = -1.71389 - 0.01340I$ $a = -0.457517 - 0.775429I$ $b = -0.66586 - 1.78211I$	$-11.48460 - 2.85990I$	0
$u = 1.73373 + 0.02857I$ $a = 2.85868 + 0.56360I$ $b = 3.62671 + 0.70465I$	$-14.0947 - 4.2255I$	0
$u = 1.73373 - 0.02857I$ $a = 2.85868 - 0.56360I$ $b = 3.62671 - 0.70465I$	$-14.0947 + 4.2255I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.74040 + 0.07931I$ $a = -2.19385 - 0.26897I$ $b = -3.06657 + 0.17165I$	$-15.1592 + 5.9753I$	0
$u = -1.74040 - 0.07931I$ $a = -2.19385 + 0.26897I$ $b = -3.06657 - 0.17165I$	$-15.1592 - 5.9753I$	0
$u = -1.74533 + 0.09973I$ $a = 2.64626 + 0.43864I$ $b = 3.66599 + 0.11964I$	$-18.0669 + 11.3850I$	0
$u = -1.74533 - 0.09973I$ $a = 2.64626 - 0.43864I$ $b = 3.66599 - 0.11964I$	$-18.0669 - 11.3850I$	0
$u = -1.76676 + 0.06022I$ $a = 1.65403 + 0.87991I$ $b = 2.26669 + 0.61564I$	$19.3219 + 2.0938I$	0
$u = -1.76676 - 0.06022I$ $a = 1.65403 - 0.87991I$ $b = 2.26669 - 0.61564I$	$19.3219 - 2.0938I$	0

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -2au - 3a - u - 8$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_5	$(u^2+u+1)^2$
c_3, c_8	u^4
c_4	$(u^2-u+1)^2$
c_6, c_7	$(u^2+u-1)^2$
c_9, c_{10}, c_{11}	$(u^2-u-1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4 c_5	$(y^2 + y + 1)^2$
c_3, c_8	y^4
c_6, c_7, c_9 c_{10}, c_{11}	$(y^2 - 3y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.618034$ $a=-0.500000+0.866025I$ $b=\ \ 0.309017-0.535233I$	$-0.98696+2.02988I$	$-6.50000-1.52761I$
$u=-0.618034$ $a=-0.500000-0.866025I$ $b=\ \ 0.309017+0.535233I$	$-0.98696-2.02988I$	$-6.50000+1.52761I$
$u=\ \ 1.61803$ $a=-0.500000+0.866025I$ $b=-0.80902+1.40126I$	$-8.88264+2.02988I$	$-6.50000-5.40059I$
$u=\ \ 1.61803$ $a=-0.500000-0.866025I$ $b=-0.80902-1.40126I$	$-8.88264-2.02988I$	$-6.50000+5.40059I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^2+u+1)^2)(u^{36}+3u^{35}+\cdots+2u+1)$
c_2	$((u^2+u+1)^2)(u^{36}+19u^{35}+\cdots+2u+1)$
c_3, c_8	$u^4(u^{36}+u^{35}+\cdots-32u-16)$
c_4	$((u^2-u+1)^2)(u^{36}+3u^{35}+\cdots+2u+1)$
c_5	$((u^2+u+1)^2)(u^{36}-3u^{35}+\cdots-156u+41)$
c_6, c_7	$((u^2+u-1)^2)(u^{36}+3u^{35}+\cdots-3u^2-1)$
c_9, c_{10}, c_{11}	$((u^2-u-1)^2)(u^{36}+3u^{35}+\cdots-3u^2-1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4	$((y^2+y+1)^2)(y^{36}+19y^{35}+\cdots+2y+1)$
c_2	$((y^2+y+1)^2)(y^{36}-y^{35}+\cdots-46y+1)$
c_3, c_8	$y^4(y^{36}+25y^{35}+\cdots+896y+256)$
c_5	$((y^2+y+1)^2)(y^{36}-21y^{35}+\cdots+12482y+1681)$
c_6, c_7, c_9 c_{10}, c_{11}	$((y^2-3y+1)^2)(y^{36}-49y^{35}+\cdots+6y+1)$