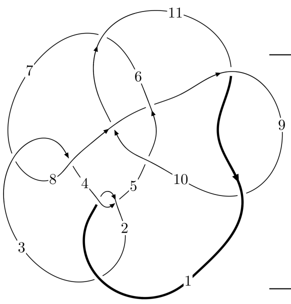
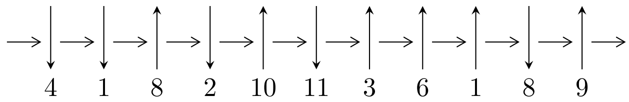
$11n_{42}$ ($K11n_{42}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & -u^{10} - 9u^9 - 29u^8 - 28u^7 + 45u^6 + 98u^5 - 16u^4 - 100u^3 + 18u^2 + 16b + 23u - 17, \\
& -17u^{10} - 169u^9 + \cdots + 16a - 209, \\
& u^{11} + 10u^{10} + 38u^9 + 57u^8 - 17u^7 - 143u^6 - 82u^5 + 116u^4 + 82u^3 - 41u^2 + 10u + 1\rangle \\
I_2^u = \langle & b - 1,\ -u^5 - u^4 + u^3 + 2u^2 + a,\ u^6 + u^5 - u^4 - 2u^3 + u + 1\rangle \\
I_3^u = \langle & b - a + 1,\ a^5 - 4a^4 + 4a^3 + a^2 - 2a - 1,\ u - 1\rangle
\end{aligned}$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 22 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. $I_1^u = \langle -u^{10} - 9u^9 + \cdots + 16b - 17,\ -17u^{10} - 169u^9 + \cdots + 16a - 209,\ u^{11} + 10u^{10} + \cdots + 10u + 1\rangle$

(i) Arc colorings

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

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

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

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

$$a_{10} = \begin{pmatrix} 1.06250u^{10} + 10.5625u^9 + \cdots - 42.4375u + 13.0625 \\ 0.0625000u^{10} + 0.562500u^9 + \cdots - 1.43750u + 1.06250 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -1.18750u^{10} - 11.8125u^9 + \cdots + 54.3125u - 17.3125 \\ -\frac{1}{8}u^9 - u^8 + \cdots + 6u - \frac{9}{8} \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u^{10} + 10u^9 + \cdots - 41u + 12 \\ 0.0625000u^{10} + 0.562500u^9 + \cdots - 1.43750u + 1.06250 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} \frac{1}{4}u^{10} + \frac{5}{2}u^9 + \cdots - \frac{29}{4}u + 3 \\ -\frac{1}{4}u^8 - \frac{5}{4}u^7 + \cdots - \frac{3}{4}u + \frac{1}{4} \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} 1.18750u^{10} + 11.6875u^9 + \cdots - 45.3125u + 15.1875 \\ -\frac{1}{8}u^{10} - u^9 + \cdots - \frac{33}{8}u + 1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -\frac{5}{4}u^{10} - \frac{19}{2}u^9 + \cdots + \frac{17}{4}u - 3 \\ u^{10} + \frac{27}{4}u^9 + \cdots - \frac{31}{4}u^2 + \frac{13}{4}u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -\frac{5}{4}u^{10} - \frac{19}{2}u^9 + \cdots + \frac{17}{4}u - 3 \\ u^{10} + \frac{27}{4}u^9 + \cdots - \frac{31}{4}u^2 + \frac{13}{4}u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= \frac{1}{4}u^{10} + \frac{21}{8}u^9 + 11u^8 + \frac{165}{8}u^7 + \frac{55}{8}u^6 - \frac{137}{4}u^5 - \frac{83}{2}u^4 + \frac{15}{2}u^3 + \frac{55}{2}u^2 + \frac{13}{2}u + \frac{23}{8}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{11} - 10u^{10} + \cdots + 10u - 1$
c_2	$u^{11} + 24u^{10} + \cdots + 182u + 1$
c_3, c_7	$u^{11} + u^{10} + \cdots + 96u - 32$
c_5	$u^{11} - 2u^{10} + \cdots + 136u - 1357$
c_6	$u^{11} + 13u^9 + \cdots + 66u - 101$
c_8	$u^{11} + 2u^{10} + 2u^9 + 6u^7 + 12u^6 + 12u^5 + u^3 + 2u^2 + 2u + 1$
c_9, c_{11}	$u^{11} + 11u^{10} + \cdots - u - 1$
c_{10}	$u^{11} - u^{10} + \cdots - 192u - 64$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{11} - 24y^{10} + \cdots + 182y - 1$
c_2	$y^{11} - 36y^{10} + \cdots + 32578y - 1$
c_3, c_7	$y^{11} + 21y^{10} + \cdots + 7680y - 1024$
c_5	$y^{11} - 30y^{10} + \cdots - 15893686y - 1841449$
c_6	$y^{11} + 26y^{10} + \cdots - 108562y - 10201$
c_8	$y^{11} + 16y^9 + 86y^7 + 160y^5 + 25y^3 - 1$
c_9, c_{11}	$y^{11} - 27y^{10} + \cdots - 171y - 1$
c_{10}	$y^{11} + 27y^{10} + \cdots + 4096y - 4096$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.002510 + 0.212279I$ $a = 1.032960 + 0.097456I$ $b = -0.0123536 - 0.1046970I$	$-1.88779 - 0.79699I$	$-5.15274 - 0.95060I$
$u = 1.002510 - 0.212279I$ $a = 1.032960 - 0.097456I$ $b = -0.0123536 + 0.1046970I$	$-1.88779 + 0.79699I$	$-5.15274 + 0.95060I$
$u = 0.224257 + 0.244726I$ $a = 0.53554 + 1.90709I$ $b = 0.570873 - 0.314013I$	$0.69226 - 1.35881I$	$4.43349 + 4.96761I$
$u = 0.224257 - 0.244726I$ $a = 0.53554 - 1.90709I$ $b = 0.570873 + 0.314013I$	$0.69226 + 1.35881I$	$4.43349 - 4.96761I$
$u = -0.0743419$ $a = 16.6120$ $b = 1.16062$	2.30902	2.53950
$u = -1.90293 + 1.00229I$ $a = 0.419077 - 0.884818I$ $b = -1.99230 - 1.10149I$	$-17.0622 + 11.2191I$	$1.86536 - 4.34062I$
$u = -1.90293 - 1.00229I$ $a = 0.419077 + 0.884818I$ $b = -1.99230 + 1.10149I$	$-17.0622 - 11.2191I$	$1.86536 + 4.34062I$
$u = -1.98831 + 0.89173I$ $a = 0.303205 - 0.818713I$ $b = -2.11551 - 1.00650I$	$-17.0176 + 3.4378I$	$1.85943 - 0.49918I$
$u = -1.98831 - 0.89173I$ $a = 0.303205 + 0.818713I$ $b = -2.11551 + 1.00650I$	$-17.0176 - 3.4378I$	$1.85943 + 0.49918I$
$u = -2.29836 + 0.10169I$ $a = -0.0967724 - 0.1007040I$ $b = -2.53102 - 0.11992I$	$2.86702 + 4.05320I$	$1.72472 - 1.91622I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-2.29836-0.10169I$ $a=-0.0967724+0.1007040I$ $b=-2.53102+0.11992I$	$2.86702-4.05320I$	$1.72472+1.91622I$

II. $\boldsymbol{I_2^u = \langle b-1,\ -u^5-u^4+u^3+2u^2+a,\ u^6+u^5-u^4-2u^3+u+1\rangle}$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -u \\ -u^3+u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u^5+u^4-u^3-2u^2 \\ 1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -u^5-u^4-2u \\ u^2+u-1 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} u^5+u^4-u^3-2u^2-1 \\ 1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u^4+u^2-1 \\ u^5+u^4-2u^3-u^2+u+1 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u^2+1 \\ u^2 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} u^5+u^4-u^3-2u^2 \\ 1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u \\ -u^3+u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u \\ -u^3+u \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -3u^5+u^4-u^3-2u^2-3u+5$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_7	$u^6 + u^5 - u^4 - 2u^3 + u + 1$
c_2	$u^6 + 3u^5 + 5u^4 + 4u^3 + 2u^2 + u + 1$
c_3, c_4	$u^6 - u^5 - u^4 + 2u^3 - u + 1$
c_5, c_6	$u^6 - u^5 + 2u^4 - 4u^3 + 5u^2 - 3u + 1$
c_8	$u^6 - 3u^5 + 5u^4 - 4u^3 + 2u^2 - u + 1$
c_9	$(u+1)^6$
c_{10}	u^6
c_{11}	$(u-1)^6$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3, c_4 c_7	$y^6 - 3y^5 + 5y^4 - 4y^3 + 2y^2 - y + 1$
c_2, c_8	$y^6 + y^5 + 5y^4 + 6y^2 + 3y + 1$
c_5, c_6	$y^6 + 3y^5 + 6y^4 + 5y^2 + y + 1$
c_9, c_{11}	$(y-1)^6$
c_{10}	y^6

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.002190 + 0.295542I$ $a = -1.91798 + 0.27071I$ $b = 1.00000$	$-0.245672 - 0.924305I$	$-0.60470 - 5.55069I$
$u = 1.002190 - 0.295542I$ $a = -1.91798 - 0.27071I$ $b = 1.00000$	$-0.245672 + 0.924305I$	$-0.60470 + 5.55069I$
$u = -0.428243 + 0.664531I$ $a = -0.314804 + 1.063260I$ $b = 1.00000$	$3.53554 - 0.92430I$	$6.31051 + 0.25702I$
$u = -0.428243 - 0.664531I$ $a = -0.314804 - 1.063260I$ $b = 1.00000$	$3.53554 + 0.92430I$	$6.31051 - 0.25702I$
$u = -1.073950 + 0.558752I$ $a = -0.267214 + 0.381252I$ $b = 1.00000$	$1.64493 + 5.69302I$	$0.29418 - 8.33058I$
$u = -1.073950 - 0.558752I$ $a = -0.267214 - 0.381252I$ $b = 1.00000$	$1.64493 - 5.69302I$	$0.29418 + 8.33058I$

III. $\boldsymbol{I_3^u = \langle b - a + 1,\ a^5 - 4a^4 + 4a^3 + a^2 - 2a - 1,\ u - 1\rangle}$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} a \\ a - 1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} a^2 - a - 1 \\ a^2 - 2a + 1 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ a - 1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 0 \\ a^4 - 5a^3 + 8a^2 - 3a - 2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} a \\ a^2 - 2a + 1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0 \\ a^4 - 5a^3 + 8a^2 - 3a - 2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0 \\ a^4 - 5a^3 + 8a^2 - 3a - 2 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -3a^4 + 13a^3 - 19a^2 + a + 13$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u-1)^5$
c_2, c_4	$(u+1)^5$
c_3, c_7	u^5
c_5, c_9	$u^5 - u^4 - 2u^3 + u^2 + u + 1$
c_6	$u^5 + u^4 + 2u^3 + u^2 + u + 1$
c_8	$u^5 - 3u^4 + 4u^3 - u^2 - u + 1$
c_{10}	$u^5 - u^4 + 2u^3 - u^2 + u - 1$
c_{11}	$u^5 + u^4 - 2u^3 - u^2 + u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y-1)^5$
c_3, c_7	y^5
c_5, c_9, c_{11}	$y^5 - 5y^4 + 8y^3 - 3y^2 - y - 1$
c_6, c_{10}	$y^5 + 3y^4 + 4y^3 + y^2 - y - 1$
c_8	$y^5 - y^4 + 8y^3 - 3y^2 + 3y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.00000$ $a = 1.30992 + 0.54991I$ $b = 0.309916 + 0.549911I$	$-1.31583 + 1.53058I$	$1.45754 - 4.40323I$
$u = 1.00000$ $a = 1.30992 - 0.54991I$ $b = 0.309916 - 0.549911I$	$-1.31583 - 1.53058I$	$1.45754 + 4.40323I$
$u = 1.00000$ $a = -0.418784 + 0.219165I$ $b = -1.41878 + 0.21917I$	$4.22763 - 4.40083I$	$10.04378 + 5.20937I$
$u = 1.00000$ $a = -0.418784 - 0.219165I$ $b = -1.41878 - 0.21917I$	$4.22763 + 4.40083I$	$10.04378 - 5.20937I$
$u = 1.00000$ $a = 2.21774$ $b = 1.21774$	0.756147	-9.00270

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^5)(u^6+u^5+\cdots+u+1)(u^{11}-10u^{10}+\cdots+10u-1)$
c_2	$(u+1)^5(u^6+3u^5+5u^4+4u^3+2u^2+u+1)$ $\cdot(u^{11}+24u^{10}+\cdots+182u+1)$
c_3	$u^5(u^6-u^5+\cdots-u+1)(u^{11}+u^{10}+\cdots+96u-32)$
c_4	$((u+1)^5)(u^6-u^5+\cdots-u+1)(u^{11}-10u^{10}+\cdots+10u-1)$
c_5	$(u^5-u^4-2u^3+u^2+u+1)(u^6-u^5+2u^4-4u^3+5u^2-3u+1)$ $\cdot(u^{11}-2u^{10}+\cdots+136u-1357)$
c_6	$(u^5+u^4+2u^3+u^2+u+1)(u^6-u^5+2u^4-4u^3+5u^2-3u+1)$ $\cdot(u^{11}+13u^9+\cdots+66u-101)$
c_7	$u^5(u^6+u^5+\cdots+u+1)(u^{11}+u^{10}+\cdots+96u-32)$
c_8	$(u^5-3u^4+4u^3-u^2-u+1)(u^6-3u^5+5u^4-4u^3+2u^2-u+1)$ $\cdot(u^{11}+2u^{10}+2u^9+6u^7+12u^6+12u^5+u^3+2u^2+2u+1)$
c_9	$((u+1)^6)(u^5-u^4+\cdots+u+1)(u^{11}+11u^{10}+\cdots-u-1)$
c_{10}	$u^6(u^5-u^4+\cdots+u-1)(u^{11}-u^{10}+\cdots-192u-64)$
c_{11}	$((u-1)^6)(u^5+u^4+\cdots+u-1)(u^{11}+11u^{10}+\cdots-u-1)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4	$(y-1)^5(y^6-3y^5+5y^4-4y^3+2y^2-y+1)$ $\cdot(y^{11}-24y^{10}+\cdots+182y-1)$
c_2	$((y-1)^5)(y^6+y^5+\cdots+3y+1)(y^{11}-36y^{10}+\cdots+32578y-1)$
c_3, c_7	$y^5(y^6-3y^5+5y^4-4y^3+2y^2-y+1)$ $\cdot(y^{11}+21y^{10}+\cdots+7680y-1024)$
c_5	$(y^5-5y^4+8y^3-3y^2-y-1)(y^6+3y^5+6y^4+5y^2+y+1)$ $\cdot(y^{11}-30y^{10}+\cdots-15893686y-1841449)$
c_6	$(y^5+3y^4+4y^3+y^2-y-1)(y^6+3y^5+6y^4+5y^2+y+1)$ $\cdot(y^{11}+26y^{10}+\cdots-108562y-10201)$
c_8	$(y^5-y^4+8y^3-3y^2+3y-1)(y^6+y^5+5y^4+6y^2+3y+1)$ $\cdot(y^{11}+16y^9+86y^7+160y^5+25y^3-1)$
c_9, c_{11}	$((y-1)^6)(y^5-5y^4+\cdots-y-1)(y^{11}-27y^{10}+\cdots-171y-1)$
c_{10}	$y^6(y^5+3y^4+\cdots-y-1)(y^{11}+27y^{10}+\cdots+4096y-4096)$