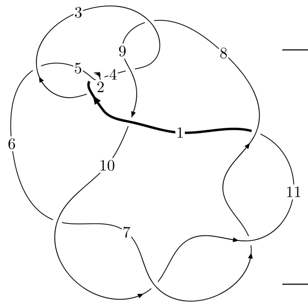
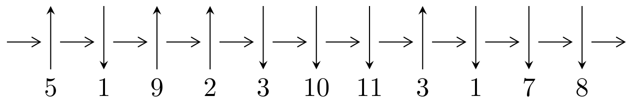
$11n_{15}$ ($K11n_{15}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 3u^{20} - 5u^{19} + \cdots + 2b + 1,\ 4u^{20} - 7u^{19} + \cdots + 2a + 1,\ u^{21} - 3u^{20} + \cdots - u - 1\rangle$$
$$I_2^u = \langle au + b - a,\ a^2 + au + a + u + 2,\ u^2 + u - 1\rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 25 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.

$$I_1^u = \langle 3u^{20} - 5u^{19} + \cdots + 2b + 1,\ 4u^{20} - 7u^{19} + \cdots + 2a + 1,\ u^{21} - 3u^{20} + \cdots - u - 1\rangle$$

(i) Arc colorings

$$a_7 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -2u^{20} + \frac{7}{2}u^{19} + \cdots - 4u - \frac{1}{2} \\ -\frac{3}{2}u^{20} + \frac{5}{2}u^{19} + \cdots - \frac{3}{2}u - \frac{1}{2} \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -\frac{3}{2}u^{20} + 2u^{19} + \cdots + 2u^2 - \frac{7}{2}u \\ -\frac{5}{2}u^{20} + 4u^{19} + \cdots - \frac{3}{2}u - 1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u \\ u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -u^2 + 1 \\ -u^2 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} \frac{1}{2}u^{19} - u^{18} + \cdots + 3u + \frac{1}{2} \\ \frac{1}{2}u^{20} - \frac{1}{2}u^{19} + \cdots + \frac{3}{2}u + \frac{1}{2} \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -4u^{20} + \frac{11}{2}u^{19} + \cdots - 3u - \frac{7}{2} \\ -\frac{13}{2}u^{20} + \frac{21}{2}u^{19} + \cdots - \frac{15}{2}u - \frac{9}{2} \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u^5 + 2u^3 + u \\ -u^7 + 3u^5 - 2u^3 + u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u^5 + 2u^3 + u \\ -u^7 + 3u^5 - 2u^3 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$= \frac{13}{2}u^{20} - 11u^{19} - 57u^{18} + 87u^{17} + 209u^{16} - \frac{459}{2}u^{15} - 462u^{14} + \frac{319}{2}u^{13} + \frac{1465}{2}u^{12} + 258u^{11} - 713u^{10} - \frac{1001}{2}u^9 + 174u^8 + 353u^7 + 160u^6 - 101u^5 + \frac{9}{2}u^4 - 77u^3 + 13u^2 - \frac{1}{2}u + 4$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{21} + 3u^{20} + \cdots - u - 1$
c_2	$u^{21} + 5u^{20} + \cdots - 13u - 1$
c_3, c_8	$u^{21} - u^{20} + \cdots + 16u + 16$
c_5	$u^{21} - 3u^{20} + \cdots - 517u - 241$
c_6, c_7, c_{10} c_{11}	$u^{21} + 3u^{20} + \cdots - u + 1$
c_9	$u^{21} - u^{20} + \cdots + 3u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{21} + 5y^{20} + \cdots - 13y - 1$
c_2	$y^{21} + 25y^{20} + \cdots + 31y - 1$
c_3, c_8	$y^{21} - 25y^{20} + \cdots + 1408y - 256$
c_5	$y^{21} + 45y^{20} + \cdots - 1228357y - 58081$
c_6, c_7, c_{10} c_{11}	$y^{21} - 23y^{20} + \cdots - y - 1$
c_9	$y^{21} + 37y^{20} + \cdots - y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.586384 + 0.784633I$ $a = -0.273404 - 1.248180I$ $b = 0.731733 + 0.893746I$	$9.06037 + 6.00997I$	$-1.49297 - 4.91702I$
$u = -0.586384 - 0.784633I$ $a = -0.273404 + 1.248180I$ $b = 0.731733 - 0.893746I$	$9.06037 - 6.00997I$	$-1.49297 + 4.91702I$
$u = -0.502427 + 0.810890I$ $a = 0.300534 + 0.922223I$ $b = -1.209200 - 0.664376I$	$9.31347 - 0.73158I$	$-0.878702 - 0.143829I$
$u = -0.502427 - 0.810890I$ $a = 0.300534 - 0.922223I$ $b = -1.209200 + 0.664376I$	$9.31347 + 0.73158I$	$-0.878702 + 0.143829I$
$u = 1.30058$ $a = -0.779544$ $b = -0.0623998$	-2.53925	-3.24500
$u = 0.650843 + 0.188135I$ $a = -0.679014 - 0.497949I$ $b = 0.257058 + 0.102289I$	$-1.259870 - 0.426532I$	$-8.18330 + 0.83082I$
$u = 0.650843 - 0.188135I$ $a = -0.679014 + 0.497949I$ $b = 0.257058 - 0.102289I$	$-1.259870 + 0.426532I$	$-8.18330 - 0.83082I$
$u = -1.349430 + 0.063463I$ $a = 0.17958 - 2.26263I$ $b = -0.08959 - 2.87750I$	$-3.34560 + 2.92064I$	$-6.05745 - 2.89789I$
$u = -1.349430 - 0.063463I$ $a = 0.17958 + 2.26263I$ $b = -0.08959 + 2.87750I$	$-3.34560 - 2.92064I$	$-6.05745 + 2.89789I$
$u = 1.45264 + 0.09803I$ $a = 0.354434 - 0.632200I$ $b = -0.288153 - 1.061360I$	$-6.20743 - 3.92323I$	$-7.50265 + 3.86571I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.45264 - 0.09803I$ $a = 0.354434 + 0.632200I$ $b = -0.288153 + 1.061360I$	$-6.20743 + 3.92323I$	$-7.50265 - 3.86571I$
$u = 1.51579 + 0.30268I$ $a = -1.36198 + 1.35966I$ $b = -2.52269 + 1.32132I$	$2.78944 - 3.34833I$	$-3.65691 + 0.92294I$
$u = 1.51579 - 0.30268I$ $a = -1.36198 - 1.35966I$ $b = -2.52269 - 1.32132I$	$2.78944 + 3.34833I$	$-3.65691 - 0.92294I$
$u = 0.033690 + 0.433118I$ $a = -1.030760 - 0.710959I$ $b = -0.333491 + 0.730890I$	$0.87590 - 1.40870I$	$1.21226 + 3.90536I$
$u = 0.033690 - 0.433118I$ $a = -1.030760 + 0.710959I$ $b = -0.333491 - 0.730890I$	$0.87590 + 1.40870I$	$1.21226 - 3.90536I$
$u = 1.56509 + 0.27721I$ $a = 1.22824 - 1.65327I$ $b = 2.69420 - 2.24461I$	$2.01164 - 9.94805I$	$-4.72572 + 5.38300I$
$u = 1.56509 - 0.27721I$ $a = 1.22824 + 1.65327I$ $b = 2.69420 + 2.24461I$	$2.01164 + 9.94805I$	$-4.72572 - 5.38300I$
$u = -0.317530 + 0.257874I$ $a = 2.02998 - 0.42048I$ $b = 0.636210 - 0.403748I$	$-0.37325 + 2.55975I$	$0.64804 - 6.58188I$
$u = -0.317530 - 0.257874I$ $a = 2.02998 + 0.42048I$ $b = 0.636210 + 0.403748I$	$-0.37325 - 2.55975I$	$0.64804 + 6.58188I$
$u = -1.61257 + 0.03861I$ $a = 0.642150 - 0.779274I$ $b = 1.15512 - 1.57833I$	$-9.12765 + 1.23257I$	$-9.74011 + 3.00809I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.61257 - 0.03861I$ $a = 0.642150 + 0.779274I$ $b = 1.15512 + 1.57833I$	$-9.12765 - 1.23257I$	$-9.74011 - 3.00809I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -5au + 2a + u - 8$

(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, c_9	$(u^2 + u - 1)^2$
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^u_2	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.618034$ $a = -0.80902 + 1.40126I$ $b = -0.309017 + 0.535233I$	$-0.98696 + 2.02988I$	$-6.50000 - 1.52761I$
$u = 0.618034$ $a = -0.80902 - 1.40126I$ $b = -0.309017 - 0.535233I$	$-0.98696 - 2.02988I$	$-6.50000 + 1.52761I$
$u = -1.61803$ $a = 0.309017 + 0.535233I$ $b = 0.80902 + 1.40126I$	$-8.88264 - 2.02988I$	$-6.50000 + 5.40059I$
$u = -1.61803$ $a = 0.309017 - 0.535233I$ $b = 0.80902 - 1.40126I$	$-8.88264 + 2.02988I$	$-6.50000 - 5.40059I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^2+u+1)^2)(u^{21}+3u^{20}+\cdots-u-1)$
c_2	$((u^2+u+1)^2)(u^{21}+5u^{20}+\cdots-13u-1)$
c_3, c_8	$u^4(u^{21}-u^{20}+\cdots+16u+16)$
c_4	$((u^2-u+1)^2)(u^{21}+3u^{20}+\cdots-u-1)$
c_5	$((u^2+u+1)^2)(u^{21}-3u^{20}+\cdots-517u-241)$
c_6, c_7	$((u^2+u-1)^2)(u^{21}+3u^{20}+\cdots-u+1)$
c_9	$((u^2+u-1)^2)(u^{21}-u^{20}+\cdots+3u+1)$
c_{10}, c_{11}	$((u^2-u-1)^2)(u^{21}+3u^{20}+\cdots-u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4	$((y^2+y+1)^2)(y^{21}+5y^{20}+\cdots-13y-1)$
c_2	$((y^2+y+1)^2)(y^{21}+25y^{20}+\cdots+31y-1)$
c_3, c_8	$y^4(y^{21}-25y^{20}+\cdots+1408y-256)$
c_5	$((y^2+y+1)^2)(y^{21}+45y^{20}+\cdots-1228357y-58081)$
c_6, c_7, c_{10} c_{11}	$((y^2-3y+1)^2)(y^{21}-23y^{20}+\cdots-y-1)$
c_9	$((y^2-3y+1)^2)(y^{21}+37y^{20}+\cdots-y-1)$