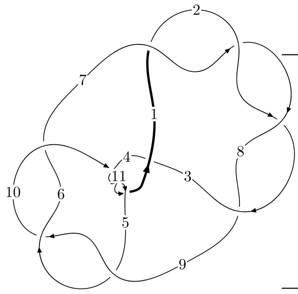
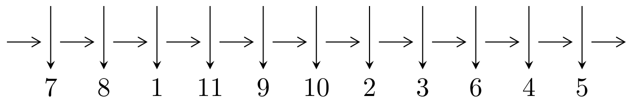
$11a_{338}$ ($K11a_{338}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$
\begin{aligned}
I_1^u &= \langle b-u,\ u^{14}+u^{13}-7u^{12}-6u^{11}+18u^{10}+11u^9-18u^8-u^7+u^6-12u^5+5u^4+2u^2+2a+7u, \\
&\quad u^{15}+u^{14}-8u^{13}-7u^{12}+25u^{11}+17u^{10}-36u^9-12u^8+19u^7-11u^6+4u^5+12u^4-3u^3+5u^2-2u-1\rangle \\
I_2^u &= \langle 4397u^{21}+2494u^{20}+\cdots+8689b-8433,\ -13086u^{21}-11183u^{20}+\cdots+8689a+43189, \\
&\quad u^{22}+u^{21}+\cdots-4u+1\rangle \\
I_3^u &= \langle b-1,\ a^2-2,\ u+1\rangle \\
I_4^u &= \langle b+1,\ a,\ u-1\rangle
\end{aligned}
$$

* 4 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. $\boldsymbol{I_1^u = \langle b - u,\ u^{14} + u^{13} + \cdots + 2a + 7u,\ u^{15} + u^{14} + \cdots - 2u - 1\rangle}$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -\frac{1}{2}u^{14} - \frac{1}{2}u^{13} + \cdots - u^2 - \frac{7}{2}u \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -\frac{1}{2}u^{14} + 4u^{12} + \cdots - \frac{3}{2}u + \frac{1}{2} \\ \frac{1}{2}u^{13} + \frac{1}{2}u^{12} + \cdots + u + \frac{1}{2} \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u^5 - 2u^3 + u \\ u^7 - 3u^5 + 2u^3 + u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -\frac{1}{2}u^{14} - \frac{1}{2}u^{13} + \cdots - u^2 - \frac{5}{2}u \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} \frac{1}{2}u^{13} + \frac{1}{2}u^{12} + \cdots + u + \frac{3}{2} \\ -u^2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} \frac{1}{2}u^{13} + \frac{1}{2}u^{12} + \cdots + u + \frac{3}{2} \\ -\frac{1}{2}u^{13} + \frac{1}{2}u^{12} + \cdots - u - \frac{1}{2} \end{pmatrix}$$
$$a_8 = \begin{pmatrix} \frac{1}{2}u^{13} + \frac{1}{2}u^{12} + \cdots + u + \frac{3}{2} \\ -\frac{1}{2}u^{13} + \frac{1}{2}u^{12} + \cdots - u - \frac{1}{2} \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= u^{14}+u^{13}-9u^{12}-6u^{11}+32u^{10}+9u^9-56u^8+11u^7+45u^6-38u^5-3u^4+20u^3-16u^2+7u-16$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_7 c_8	$u^{15} + 3u^{14} + \cdots + 2u + 2$
c_3	$u^{15} - 3u^{14} + \cdots + 16u + 16$
c_4, c_5, c_6 c_9, c_{10}, c_{11}	$u^{15} + u^{14} + \cdots - 2u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_7 c_8	$y^{15} - 17y^{14} + \cdots + 36y - 4$
c_3	$y^{15} - y^{14} + \cdots + 5376y - 256$
c_4, c_5, c_6 c_9, c_{10}, c_{11}	$y^{15} - 17y^{14} + \cdots + 14y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.279761 + 0.693754I$ $a = -0.39605 - 1.71486I$ $b = 0.279761 + 0.693754I$	$-5.13135 - 3.51735I$	$-12.62019 + 4.61757I$
$u = 0.279761 - 0.693754I$ $a = -0.39605 + 1.71486I$ $b = 0.279761 - 0.693754I$	$-5.13135 + 3.51735I$	$-12.62019 - 4.61757I$
$u = -0.103670 + 0.625168I$ $a = 0.16824 - 1.53722I$ $b = -0.103670 + 0.625168I$	$1.57961 + 1.61537I$	$-7.48885 - 5.36345I$
$u = -0.103670 - 0.625168I$ $a = 0.16824 + 1.53722I$ $b = -0.103670 - 0.625168I$	$1.57961 - 1.61537I$	$-7.48885 + 5.36345I$
$u = -1.395200 + 0.215840I$ $a = -0.96796 - 1.31763I$ $b = -1.395200 + 0.215840I$	$-6.90209 + 4.05844I$	$-16.6421 - 2.1211I$
$u = -1.395200 - 0.215840I$ $a = -0.96796 + 1.31763I$ $b = -1.395200 - 0.215840I$	$-6.90209 - 4.05844I$	$-16.6421 + 2.1211I$
$u = 1.409280 + 0.090877I$ $a = 1.33372 - 0.62354I$ $b = 1.409280 + 0.090877I$	$-11.36840 - 0.36520I$	$-21.3793 - 0.0972I$
$u = 1.409280 - 0.090877I$ $a = 1.33372 + 0.62354I$ $b = 1.409280 - 0.090877I$	$-11.36840 + 0.36520I$	$-21.3793 + 0.0972I$
$u = 0.549904$ $a = -2.12645$ $b = 0.549904$	-6.65878	-14.7970
$u = 1.42511 + 0.29485I$ $a = 0.56952 - 1.44587I$ $b = 1.42511 + 0.29485I$	$-8.40818 - 8.56529I$	$-18.2568 + 6.8115I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.42511 - 0.29485I$ $a = 0.56952 + 1.44587I$ $b = 1.42511 - 0.29485I$	$-8.40818 + 8.56529I$	$-18.2568 - 6.8115I$
$u = -1.46834 + 0.35221I$ $a = -0.29255 - 1.43453I$ $b = -1.46834 + 0.35221I$	$-16.3316 + 11.5420I$	$-20.2839 - 5.7615I$
$u = -1.46834 - 0.35221I$ $a = -0.29255 + 1.43453I$ $b = -1.46834 - 0.35221I$	$-16.3316 - 11.5420I$	$-20.2839 + 5.7615I$
$u = -1.57631$ $a = -0.547004$ $b = -1.57631$	18.0535	-22.5120
$u = -0.267461$ $a = 0.843597$ $b = -0.267461$	-0.517394	-19.3490

II. $I_2^u = \langle 4397u^{21} + 2494u^{20} + \cdots + 8689b - 8433,\ -13086u^{21} - 11183u^{20} + \cdots + 8689a + 43189,\ u^{22} + u^{21} + \cdots - 4u + 1\rangle$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 1.50604u^{21} + 1.28703u^{20} + \cdots + 2.95753u - 4.97054 \\ -0.506042u^{21} - 0.287030u^{20} + \cdots - 0.957533u + 0.970537 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 1.52630u^{21} + 1.89688u^{20} + \cdots + 2.92945u - 5.70986 \\ -0.338129u^{21} - 0.100817u^{20} + \cdots - 0.394867u + 1.34170 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u^5 - 2u^3 + u \\ u^7 - 3u^5 + 2u^3 + u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u^{21} + u^{20} + \cdots + 2u - 4 \\ -0.506042u^{21} - 0.287030u^{20} + \cdots - 0.957533u + 0.970537 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -0.970537u^{21} - 1.47658u^{20} + \cdots - 1.94994u + 3.92462 \\ 0.219013u^{21} + 0.156520u^{20} + \cdots - 1.05363u - 0.493958 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -1.07538u^{21} - 1.10485u^{20} + \cdots - 0.327310u + 3.25147 \\ -0.270917u^{21} - 0.0317643u^{20} + \cdots - 0.124410u - 1.11152 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -1.07538u^{21} - 1.10485u^{20} + \cdots - 0.327310u + 3.25147 \\ -0.270917u^{21} - 0.0317643u^{20} + \cdots - 0.124410u - 1.11152 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{416}{8689}u^{21} + \frac{20424}{8689}u^{20} + \cdots + \frac{62616}{8689}u - \frac{136830}{8689}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_7 c_8	$(u^{11} - u^{10} - 6u^9 + 5u^8 + 12u^7 - 6u^6 - 10u^5 - u^4 + 5u^3 + u^2 - 1)^2$
c_3	$(u^{11} - 3u^{10} + 4u^9 - u^8 + 2u^7 - 8u^6 + 8u^5 + 5u^4 - 3u^3 - u^2 + 4u - 1)^2$
c_4, c_5, c_6 c_9, c_{10}, c_{11}	$u^{22} + u^{21} + \cdots - 4u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_7 c_8	$(y^{11} - 13y^{10} + \cdots + 2y - 1)^2$
c_3	$(y^{11} - y^{10} + \cdots + 14y - 1)^2$
c_4, c_5, c_6 c_9, c_{10}, c_{11}	$y^{22} - 17y^{21} + \cdots - 12y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.334370 + 0.901281I$ $a = 1.05362 + 1.24487I$ $b = -1.41545 - 0.26957I$	$-10.55470 - 7.02220I$	$-17.5005 + 4.8862I$
$u = 0.334370 - 0.901281I$ $a = 1.05362 - 1.24487I$ $b = -1.41545 + 0.26957I$	$-10.55470 + 7.02220I$	$-17.5005 - 4.8862I$
$u = -0.822913 + 0.425984I$ $a = -0.303790 + 0.400055I$ $b = 1.262170 + 0.096055I$	$-4.57983 - 0.45477I$	$-19.1951 + 1.3696I$
$u = -0.822913 - 0.425984I$ $a = -0.303790 - 0.400055I$ $b = 1.262170 - 0.096055I$	$-4.57983 + 0.45477I$	$-19.1951 - 1.3696I$
$u = 0.924302 + 0.651091I$ $a = 0.689229 + 0.359885I$ $b = -1.41233 + 0.14948I$	$-12.32850 + 1.64593I$	$-20.0499 - 0.2448I$
$u = 0.924302 - 0.651091I$ $a = 0.689229 - 0.359885I$ $b = -1.41233 - 0.14948I$	$-12.32850 - 1.64593I$	$-20.0499 + 0.2448I$
$u = -0.293652 + 0.759801I$ $a = -0.88260 + 1.38298I$ $b = 1.325160 - 0.237888I$	$-2.91318 + 4.75030I$	$-14.6411 - 6.7769I$
$u = -0.293652 - 0.759801I$ $a = -0.88260 - 1.38298I$ $b = 1.325160 + 0.237888I$	$-2.91318 - 4.75030I$	$-14.6411 + 6.7769I$
$u = 0.813623$ $a = -1.53185$ $b = 0.302775$	-6.67244	-14.1860
$u = -1.203660 + 0.173836I$ $a = 0.570025 + 0.642766I$ $b = 0.243800 - 0.525231I$	$-1.65360 + 1.27541I$	$-10.52055 - 0.80097I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.203660 - 0.173836I$ $a = 0.570025 - 0.642766I$ $b = 0.243800 + 0.525231I$	$-1.65360 - 1.27541I$	$-10.52055 + 0.80097I$
$u = 1.262170 + 0.096055I$ $a = 0.035190 - 0.366036I$ $b = -0.822913 + 0.425984I$	$-4.57983 - 0.45477I$	$-19.1951 + 1.3696I$
$u = 1.262170 - 0.096055I$ $a = 0.035190 + 0.366036I$ $b = -0.822913 - 0.425984I$	$-4.57983 + 0.45477I$	$-19.1951 - 1.3696I$
$u = 1.325160 + 0.237888I$ $a = -0.437415 + 0.891040I$ $b = -0.293652 - 0.759801I$	$-2.91318 - 4.75030I$	$-14.6411 + 6.7769I$
$u = 1.325160 - 0.237888I$ $a = -0.437415 - 0.891040I$ $b = -0.293652 + 0.759801I$	$-2.91318 + 4.75030I$	$-14.6411 - 6.7769I$
$u = -1.41233 + 0.14948I$ $a = -0.224093 - 0.576984I$ $b = 0.924302 + 0.651091I$	$-12.32850 + 1.64593I$	$-20.0499 - 0.2448I$
$u = -1.41233 - 0.14948I$ $a = -0.224093 + 0.576984I$ $b = 0.924302 - 0.651091I$	$-12.32850 - 1.64593I$	$-20.0499 + 0.2448I$
$u = 0.243800 + 0.525231I$ $a = 0.47656 + 1.74026I$ $b = -1.203660 - 0.173836I$	$-1.65360 - 1.27541I$	$-10.52055 + 0.80097I$
$u = 0.243800 - 0.525231I$ $a = 0.47656 - 1.74026I$ $b = -1.203660 + 0.173836I$	$-1.65360 + 1.27541I$	$-10.52055 - 0.80097I$
$u = -1.41545 + 0.26957I$ $a = 0.347391 + 1.031120I$ $b = 0.334370 - 0.901281I$	$-10.55470 + 7.02220I$	$-17.5005 - 4.8862I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.41545 - 0.26957I$ $a = \quad 0.347391 - 1.031120I$ $b = \quad 0.334370 + 0.901281I$	$-10.55470 - 7.02220I$	$-17.5005 + 4.8862I$
$u = \quad 0.302775$ $a = -4.11640$ $b = \quad 0.813623$	-6.67244	-14.1860

III. $I^u_3 = \langle b-1,\ a^2-2,\ u+1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -20$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = \quad 1.41421$ $b = \quad 1.00000$	-8.22467	-20.0000
$u = -1.00000$ $a = -1.41421$ $b = \quad 1.00000$	-8.22467	-20.0000

IV. $\boldsymbol{I_4^u = \langle b+1,\ a,\ u-1 \rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_3 c_7, c_8	y
c_4, c_5, c_6 c_9, c_{10}, c_{11}	$y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.00000$ $a = 0$ $b = -1.00000$	-3.28987	-12.0000

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_2, c_7 c_8	$u(u^2-2)$ $\cdot\,(u^{11}-u^{10}-6u^9+5u^8+12u^7-6u^6-10u^5-u^4+5u^3+u^2-1)^2$ $\cdot\,(u^{15}+3u^{14}+\cdots+2u+2)$
c_3	$u^3(u^{11}-3u^{10}+4u^9-u^8+2u^7-8u^6+8u^5+5u^4-3u^3-u^2+4u-1)^2$ $\cdot\,(u^{15}-3u^{14}+\cdots+16u+16)$
c_4, c_9	$((u-1)^2)(u+1)(u^{15}+u^{14}+\cdots-2u-1)(u^{22}+u^{21}+\cdots-4u+1)$
c_5, c_6, c_{10} c_{11}	$(u-1)(u+1)^2(u^{15}+u^{14}+\cdots-2u-1)(u^{22}+u^{21}+\cdots-4u+1)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_7 c_8	$y(y-2)^2(y^{11}-13y^{10}+\cdots+2y-1)^2(y^{15}-17y^{14}+\cdots+36y-4)$
c_3	$y^3(y^{11}-y^{10}+\cdots+14y-1)^2(y^{15}-y^{14}+\cdots+5376y-256)$
c_4, c_5, c_6 c_9, c_{10}, c_{11}	$((y-1)^3)(y^{15}-17y^{14}+\cdots+14y-1)(y^{22}-17y^{21}+\cdots-12y+1)$