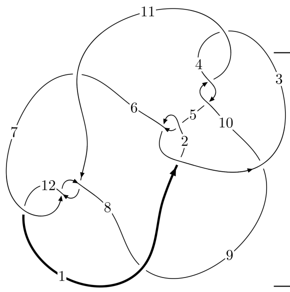
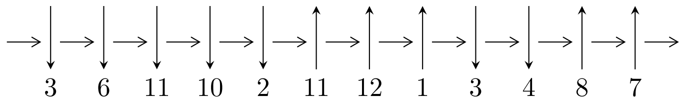
$12n_{0478}$ ($K12n_{0478}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

$$8,11 \xrightarrow[c_{11}]{} 4,12 \xrightarrow[c_3]{} 3 \xrightarrow[c_7]{} 7 \xrightarrow[c_{12}]{} 1 \xrightarrow[c_6]{} 6 \xrightarrow[c_2]{} 2 \xrightarrow[c_5]{} 5 \xrightarrow[c_{10}]{} 10 \xrightarrow[c_9]{} 9 \twoheadrightarrow c_1, c_4, c_8$$

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

$$I_1^u = \langle -271083u^{22} + 222451u^{21} + \cdots + 3670918b - 2822596,$$
$$4443679u^{22} - 7680194u^{21} + \cdots + 11012754a - 1652360,\ u^{23} - 2u^{22} + \cdots + u + 3\rangle$$
$$I_2^u = \langle b,\ -u^2 + a - 1,\ u^3 - u^2 + 2u - 1\rangle$$
$$I_3^u = \langle -u^2a - 2au - 3u^2 + 5b + a - u - 2,\ -2u^2a + a^2 + 9u^2 - 2a + 7u + 18,\ u^3 + u^2 + 2u + 1\rangle$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 32 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.

$\boldsymbol{I_1^u = \langle -2.71 \times 10^5 u^{22} + 2.22 \times 10^5 u^{21} + \cdots + 3.67 \times 10^6 b - 2.82 \times 10^6,\ 4.44 \times 10^6 u^{22} - 7.68 \times 10^6 u^{21} + \cdots + 1.10 \times 10^7 a - 1.65 \times 10^6,\ u^{23} - 2u^{22} + \cdots + u + 3 \rangle}$

(i) Arc colorings

$$a_8 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -0.403503u^{22} + 0.697391u^{21} + \cdots - 2.67020u + 0.150041 \\ 0.0738461u^{22} - 0.0605982u^{21} + \cdots - 0.383893u + 0.768907 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -0.329657u^{22} + 0.636793u^{21} + \cdots - 3.05409u + 0.918948 \\ 0.0738461u^{22} - 0.0605982u^{21} + \cdots - 0.383893u + 0.768907 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^2 + 1 \\ -u^4 - 2u^2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -u^3 - 2u \\ u^3 + u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -0.366882u^{22} + 0.480327u^{21} + \cdots - 3.32904u + 0.381697 \\ 0.00183360u^{22} + 0.212168u^{21} + \cdots - 0.461364u + 0.884270 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -0.280544u^{22} + 0.210668u^{21} + \cdots + 0.417855u - 1.55795 \\ 0.0945336u^{22} + 0.274635u^{21} + \cdots + 0.828867u + 0.895667 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -0.302116u^{22} + 1.00913u^{21} + \cdots - 1.05470u + 1.52594 \\ 0.382872u^{22} - 0.834070u^{21} + \cdots + 1.92264u + 0.119951 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} u^5 + 2u^3 + u \\ -u^7 - 3u^5 - 2u^3 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{2296634}{1835459}u^{22} + \frac{2776211}{1835459}u^{21} + \cdots + \frac{26517006}{1835459}u - \frac{9454146}{1835459}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{23} + 28u^{21} + \cdots - 166u + 289$
c_2, c_5	$u^{23} + 4u^{22} + \cdots - 36u + 17$
c_3, c_4, c_{10}	$u^{23} + u^{22} + \cdots + 16u + 8$
c_6, c_8	$u^{23} + 2u^{22} + \cdots - 11u + 3$
c_7, c_{11}, c_{12}	$u^{23} - 2u^{22} + \cdots + u + 3$
c_9	$u^{23} - u^{22} + \cdots + 41840u + 16424$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{23} + 56y^{22} + \cdots + 17730y - 83521$
c_2, c_5	$y^{23} + 28y^{21} + \cdots - 166y - 289$
c_3, c_4, c_{10}	$y^{23} + 37y^{22} + \cdots - 384y - 64$
c_6, c_8	$y^{23} - 38y^{22} + \cdots + 235y - 9$
c_7, c_{11}, c_{12}	$y^{23} + 18y^{22} + \cdots + 91y - 9$
c_9	$y^{23} + 121y^{22} + \cdots - 5779227136y - 269747776$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.264719 + 0.995849I$ $a = 0.027236 + 0.839660I$ $b = 0.655248 - 0.393424I$	$-0.87049 + 1.94619I$	$-1.46427 - 4.12692I$
$u = 0.264719 - 0.995849I$ $a = 0.027236 - 0.839660I$ $b = 0.655248 + 0.393424I$	$-0.87049 - 1.94619I$	$-1.46427 + 4.12692I$
$u = 1.044080 + 0.096245I$ $a = -0.18594 - 4.05927I$ $b = -0.15025 + 1.91664I$	$-19.4801 + 4.8275I$	$2.71629 - 2.13422I$
$u = 1.044080 - 0.096245I$ $a = -0.18594 + 4.05927I$ $b = -0.15025 - 1.91664I$	$-19.4801 - 4.8275I$	$2.71629 + 2.13422I$
$u = -0.120294 + 0.936784I$ $a = -1.30367 + 2.24060I$ $b = -0.17471 - 1.45617I$	$1.85828 - 0.56096I$	$-1.43838 - 0.02221I$
$u = -0.120294 - 0.936784I$ $a = -1.30367 - 2.24060I$ $b = -0.17471 + 1.45617I$	$1.85828 + 0.56096I$	$-1.43838 + 0.02221I$
$u = -0.869378 + 0.140608I$ $a = 0.73050 - 3.00673I$ $b = -0.40991 + 1.42355I$	$7.57385 + 1.52871I$	$4.02521 - 0.99137I$
$u = -0.869378 - 0.140608I$ $a = 0.73050 + 3.00673I$ $b = -0.40991 - 1.42355I$	$7.57385 - 1.52871I$	$4.02521 + 0.99137I$
$u = -0.149742 + 1.181310I$ $a = -0.396431 - 1.221600I$ $b = -0.393766 + 0.448599I$	$-4.34222 - 1.67723I$	$-4.81280 - 1.55068I$
$u = -0.149742 - 1.181310I$ $a = -0.396431 + 1.221600I$ $b = -0.393766 - 0.448599I$	$-4.34222 + 1.67723I$	$-4.81280 + 1.55068I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.473129 + 1.217800I$ $a = 0.56482 - 2.13187I$ $b = 0.582006 + 1.271790I$	$4.27129 - 6.38038I$	$0.09560 + 5.13604I$
$u = -0.473129 - 1.217800I$ $a = 0.56482 + 2.13187I$ $b = 0.582006 - 1.271790I$	$4.27129 + 6.38038I$	$0.09560 - 5.13604I$
$u = 0.178779 + 1.353110I$ $a = -0.400421 - 0.046602I$ $b = -0.093563 + 0.525227I$	$-4.07440 + 3.45935I$	$-1.04248 - 6.69109I$
$u = 0.178779 - 1.353110I$ $a = -0.400421 + 0.046602I$ $b = -0.093563 - 0.525227I$	$-4.07440 - 3.45935I$	$-1.04248 + 6.69109I$
$u = 0.584239 + 1.282930I$ $a = -0.96792 - 2.83129I$ $b = 0.04217 + 1.93464I$	$16.3629 + 0.9230I$	$0.444071 - 0.918165I$
$u = 0.584239 - 1.282930I$ $a = -0.96792 + 2.83129I$ $b = 0.04217 - 1.93464I$	$16.3629 - 0.9230I$	$0.444071 + 0.918165I$
$u = -0.302901 + 1.377090I$ $a = -0.93784 + 1.52418I$ $b = 0.20153 - 1.48391I$	$2.69974 - 2.64776I$	$0.74921 + 1.92747I$
$u = -0.302901 - 1.377090I$ $a = -0.93784 - 1.52418I$ $b = 0.20153 + 1.48391I$	$2.69974 + 2.64776I$	$0.74921 - 1.92747I$
$u = 0.505836 + 0.270726I$ $a = 0.610789 + 0.807599I$ $b = -0.138145 - 0.624160I$	$0.99412 + 1.06305I$	$3.28669 - 4.14999I$
$u = 0.505836 - 0.270726I$ $a = 0.610789 - 0.807599I$ $b = -0.138145 + 0.624160I$	$0.99412 - 1.06305I$	$3.28669 + 4.14999I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.48292 + 1.39630I$ $a = 1.22794 + 2.66452I$ $b = 0.21259 - 1.84694I$	$15.3060 + 10.2657I$	$-0.43766 - 4.56567I$
$u = 0.48292 - 1.39630I$ $a = 1.22794 - 2.66452I$ $b = 0.21259 + 1.84694I$	$15.3060 - 10.2657I$	$-0.43766 + 4.56567I$
$u = -0.290242$ $a = 1.72852$ $b = 0.333618$	-1.11943	-12.2430

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

(i) Arc colorings

$$a_8 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} u^2 + 1 \\ 0 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} u^2 + 1 \\ 0 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u \\ u^2 - u + 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^2 + 1 \\ -u^2 + u - 1 \end{pmatrix}$$

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

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

$$a_5 = \begin{pmatrix} u^2 + 1 \\ 0 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 6u^2 - 4u + 4$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2	$(u-1)^3$
c_3, c_4, c_9 c_{10}	u^3
c_5	$(u+1)^3$
c_6, c_8	$u^3 - u^2 + 1$
c_7	$u^3 + u^2 + 2u + 1$
c_{11}, c_{12}	$u^3 - u^2 + 2u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_5	$(y-1)^3$
c_3, c_4, c_9 c_{10}	y^3
c_6, c_8	$y^3 - y^2 + 2y - 1$
c_7, c_{11}, c_{12}	$y^3 + 3y^2 + 2y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.215080 + 1.307140I$ $a = -0.662359 + 0.562280I$ $b = 0$	$-4.66906 + 2.82812I$	$-6.83447 - 1.85489I$
$u = 0.215080 - 1.307140I$ $a = -0.662359 - 0.562280I$ $b = 0$	$-4.66906 - 2.82812I$	$-6.83447 + 1.85489I$
$u = 0.569840$ $a = 1.32472$ $b = 0$	-0.531480	3.66890

III. $\boldsymbol{I_3^u = \langle -u^2a - 2au - 3u^2 + 5b + a - u - 2,\ -2u^2a + a^2 + 9u^2 - 2a + 7u + 18,\ u^3 + u^2 + 2u + 1\rangle}$

(i) Arc colorings

$$a_8 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} a \\ \frac{1}{5}u^2a + \frac{3}{5}u^2 + \cdots - \frac{1}{5}a + \frac{2}{5} \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} \frac{1}{5}u^2a + \frac{3}{5}u^2 + \cdots + \frac{4}{5}a + \frac{2}{5} \\ \frac{1}{5}u^2a + \frac{3}{5}u^2 + \cdots - \frac{1}{5}a + \frac{2}{5} \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u \\ -u^2 - u - 1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^2 + 1 \\ -u^2 - u - 1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u^2 + 1 \\ -u^2 - u - 1 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} \frac{1}{5}u^2a + \frac{8}{5}u^2 + \cdots + \frac{4}{5}a + \frac{7}{5} \\ \frac{1}{5}u^2a - \frac{2}{5}u^2 + \cdots - \frac{1}{5}a - \frac{3}{5} \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -\frac{1}{5}u^2a - \frac{3}{5}u^2 + \cdots - \frac{4}{5}a - \frac{2}{5} \\ -\frac{1}{5}u^2a - \frac{3}{5}u^2 + \cdots + \frac{1}{5}a - \frac{2}{5} \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} \frac{3}{5}u^2a - \frac{11}{5}u^2 + \cdots + \frac{2}{5}a - \frac{29}{5} \\ 2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

(ii) Obstruction class $= 1$

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

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5	$(u-1)^6$
c_2	$(u+1)^6$
c_3, c_4, c_9 c_{10}	$(u^2+2)^3$
c_6, c_8	$(u^3+u^2-1)^2$
c_7	$(u^3-u^2+2u-1)^2$
c_{11}, c_{12}	$(u^3+u^2+2u+1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_5	$(y-1)^6$
c_3, c_4, c_9 c_{10}	$(y+2)^6$
c_6, c_8	$(y^3 - y^2 + 2y - 1)^2$
c_7, c_{11}, c_{12}	$(y^3 + 3y^2 + 2y - 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.215080 + 1.307140I$ $a = -1.71575 + 1.02526I$ $b = -1.414210I$	$0.26574 - 2.82812I$	$-3.50976 + 2.97945I$
$u = -0.215080 + 1.307140I$ $a = 0.39103 - 2.14982I$ $b = 1.414210I$	$0.26574 - 2.82812I$	$-3.50976 + 2.97945I$
$u = -0.215080 - 1.307140I$ $a = -1.71575 - 1.02526I$ $b = 1.414210I$	$0.26574 + 2.82812I$	$-3.50976 - 2.97945I$
$u = -0.215080 - 1.307140I$ $a = 0.39103 + 2.14982I$ $b = -1.414210I$	$0.26574 + 2.82812I$	$-3.50976 - 2.97945I$
$u = -0.569840$ $a = 1.32472 + 3.89599I$ $b = -1.414210I$	4.40332	3.01950
$u = -0.569840$ $a = 1.32472 - 3.89599I$ $b = 1.414210I$	4.40332	3.01950

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^9)(u^{23}+28u^{21}+\cdots-166u+289)$
c_2	$((u-1)^3)(u+1)^6(u^{23}+4u^{22}+\cdots-36u+17)$
c_3, c_4, c_{10}	$u^3(u^2+2)^3(u^{23}+u^{22}+\cdots+16u+8)$
c_5	$((u-1)^6)(u+1)^3(u^{23}+4u^{22}+\cdots-36u+17)$
c_6, c_8	$(u^3-u^2+1)(u^3+u^2-1)^2(u^{23}+2u^{22}+\cdots-11u+3)$
c_7	$((u^3-u^2+2u-1)^2)(u^3+u^2+2u+1)(u^{23}-2u^{22}+\cdots+u+3)$
c_9	$u^3(u^2+2)^3(u^{23}-u^{22}+\cdots+41840u+16424)$
c_{11}, c_{12}	$(u^3-u^2+2u-1)(u^3+u^2+2u+1)^2(u^{23}-2u^{22}+\cdots+u+3)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^9)(y^{23}+56y^{22}+\cdots+17730y-83521)$
c_2, c_5	$((y-1)^9)(y^{23}+28y^{21}+\cdots-166y-289)$
c_3, c_4, c_{10}	$y^3(y+2)^6(y^{23}+37y^{22}+\cdots-384y-64)$
c_6, c_8	$((y^3-y^2+2y-1)^3)(y^{23}-38y^{22}+\cdots+235y-9)$
c_7, c_{11}, c_{12}	$((y^3+3y^2+2y-1)^3)(y^{23}+18y^{22}+\cdots+91y-9)$
c_9	$y^3(y+2)^6(y^{23}+121y^{22}+\cdots-5.77923\times 10^9 y-2.69748\times 10^8)$