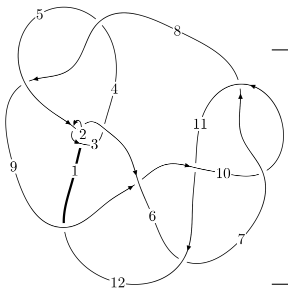
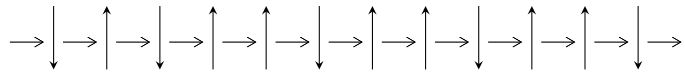
$12n_{0038}$ ($K12n_{0038}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I^u_1 = \langle 132u^{44} + 811u^{43} + \cdots + 32b + 15,\ -275u^{44} - 1867u^{43} + \cdots + 32a + 615,\ u^{45} + 7u^{44} + \cdots - 5u - 1\rangle$$
$$I^u_2 = \langle -au + 3b + 2a,\ a^6 - a^5u - a^5 - 3a^4u + 12a^3u - 6a^3 - 9au + 18a - 27,\ u^2 - u + 1\rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 57 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. $\boldsymbol{I_1^u = \langle 132u^{44} + 811u^{43} + \cdots + 32b + 15,\ -275u^{44} - 1867u^{43} + \cdots + 32a + 615,\ u^{45} + 7u^{44} + \cdots - 5u - 1\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^3 \\ u^5 + u^3 + u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 8.59375u^{44} + 58.3438u^{43} + \cdots - 80.9688u - 19.2188 \\ -4.12500u^{44} - 25.3438u^{43} + \cdots + 14.5625u - 0.468750 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 4.46875u^{44} + 33u^{43} + \cdots - 66.4063u - 19.6875 \\ -4.12500u^{44} - 25.3438u^{43} + \cdots + 14.5625u - 0.468750 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 5.59375u^{44} + 40.8125u^{43} + \cdots - 67.9063u - 17.5000 \\ -5.06250u^{44} - 32.0313u^{43} + \cdots + 15.3750u - 0.531250 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -u^3 \\ u^3 + u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} \frac{1}{32}u^{43} + \frac{3}{16}u^{42} + \cdots - \frac{17}{8}u + \frac{31}{32} \\ -0.0312500u^{44} - 0.218750u^{43} + \cdots + 0.156250u + 0.0312500 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -0.468750u^{44} - 3.31250u^{43} + \cdots + 2.71875u + 1.56250 \\ 0.468750u^{44} + 2.84375u^{43} + \cdots - 0.656250u - 0.0312500 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0.812500u^{44} + 5.40625u^{43} + \cdots - 4.25000u - 0.593750 \\ -0.468750u^{44} - 2.90625u^{43} + \cdots + 1.90625u + 0.0937500 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{177}{16}u^{44} - \frac{1121}{16}u^{43} + \cdots + \frac{1137}{16}u + \frac{95}{8}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{45} + 9u^{44} + \cdots - 9u - 1$
c_2, c_5	$u^{45} + 7u^{44} + \cdots - 5u - 1$
c_3	$u^{45} - 7u^{44} + \cdots - 877615u - 93361$
c_4, c_8	$u^{45} - u^{44} + \cdots + 8192u - 4096$
c_6	$u^{45} - 9u^{44} + \cdots + 203u - 37$
c_7, c_{10}	$u^{45} - 3u^{44} + \cdots + 3u - 1$
c_9	$u^{45} + 3u^{44} + \cdots + 2181u - 1201$
c_{11}	$u^{45} - 23u^{44} + \cdots + 3u - 1$
c_{12}	$u^{45} - u^{44} + \cdots + 3u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{45} + 61y^{44} + \cdots - 29y - 1$
c_2, c_5	$y^{45} + 9y^{44} + \cdots - 9y - 1$
c_3	$y^{45} + 113y^{44} + \cdots - 304227830897y - 8716276321$
c_4, c_8	$y^{45} - 65y^{44} + \cdots + 33554432y - 16777216$
c_6	$y^{45} + 21y^{44} + \cdots + 14347y - 1369$
c_7, c_{10}	$y^{45} - 23y^{44} + \cdots + 3y - 1$
c_9	$y^{45} + 17y^{44} + \cdots + 9246099y - 1442401$
c_{11}	$y^{45} + y^{44} + \cdots + 11y - 1$
c_{12}	$y^{45} + 77y^{44} + \cdots + 3y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.865449 + 0.454219I$ $a = 0.319220 + 0.531227I$ $b = -0.36863 - 1.46260I$	$4.73623 - 2.35998I$	$8.35847 + 1.71921I$
$u = 0.865449 - 0.454219I$ $a = 0.319220 - 0.531227I$ $b = -0.36863 + 1.46260I$	$4.73623 + 2.35998I$	$8.35847 - 1.71921I$
$u = 0.330564 + 0.971277I$ $a = -1.35737 - 1.01368I$ $b = 0.526140 + 0.066430I$	$-1.15352 + 2.68830I$	$-0.34175 - 6.47696I$
$u = 0.330564 - 0.971277I$ $a = -1.35737 + 1.01368I$ $b = 0.526140 - 0.066430I$	$-1.15352 - 2.68830I$	$-0.34175 + 6.47696I$
$u = 0.622281 + 0.846945I$ $a = -0.079868 + 0.698124I$ $b = -0.493189 - 0.089540I$	$0.80407 + 2.44032I$	$0.39786 - 3.53339I$
$u = 0.622281 - 0.846945I$ $a = -0.079868 - 0.698124I$ $b = -0.493189 + 0.089540I$	$0.80407 - 2.44032I$	$0.39786 + 3.53339I$
$u = 0.755037 + 0.558570I$ $a = -0.0783721 - 0.0338596I$ $b = -0.107622 + 0.976039I$	$1.57242 + 1.53241I$	$4.30562 - 2.68000I$
$u = 0.755037 - 0.558570I$ $a = -0.0783721 + 0.0338596I$ $b = -0.107622 - 0.976039I$	$1.57242 - 1.53241I$	$4.30562 + 2.68000I$
$u = 0.867507 + 0.624607I$ $a = -0.382914 + 0.278991I$ $b = 0.56116 - 1.43284I$	$4.57167 + 5.62351I$	$7.47380 - 5.91915I$
$u = 0.867507 - 0.624607I$ $a = -0.382914 - 0.278991I$ $b = 0.56116 + 1.43284I$	$4.57167 - 5.62351I$	$7.47380 + 5.91915I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.180988 + 0.903067I$ $a = 0.74445 + 1.99166I$ $b = -0.201660 - 0.527398I$	$0.112526 - 1.116170I$	$0.739301 + 0.318022I$
$u = 0.180988 - 0.903067I$ $a = 0.74445 - 1.99166I$ $b = -0.201660 + 0.527398I$	$0.112526 + 1.116170I$	$0.739301 - 0.318022I$
$u = 0.482106 + 1.053890I$ $a = -1.78297 + 0.42437I$ $b = 0.516649 - 0.731743I$	$-0.20453 + 3.20330I$	$0. - 3.29559I$
$u = 0.482106 - 1.053890I$ $a = -1.78297 - 0.42437I$ $b = 0.516649 + 0.731743I$	$-0.20453 - 3.20330I$	$0. + 3.29559I$
$u = 0.601778 + 1.060200I$ $a = 1.28241 - 1.47156I$ $b = 0.110511 + 1.232230I$	$3.02293 - 0.08785I$	0
$u = 0.601778 - 1.060200I$ $a = 1.28241 + 1.47156I$ $b = 0.110511 - 1.232230I$	$3.02293 + 0.08785I$	0
$u = 0.503909 + 1.128940I$ $a = 2.43305 - 0.92945I$ $b = -0.80290 + 1.19457I$	$2.36444 + 7.52477I$	0
$u = 0.503909 - 1.128940I$ $a = 2.43305 + 0.92945I$ $b = -0.80290 - 1.19457I$	$2.36444 - 7.52477I$	0
$u = -0.084493 + 0.713012I$ $a = -1.01316 + 2.46838I$ $b = 0.821961 - 0.446891I$	$-0.81007 + 4.73637I$	$-1.24888 - 6.79408I$
$u = -0.084493 - 0.713012I$ $a = -1.01316 - 2.46838I$ $b = 0.821961 + 0.446891I$	$-0.81007 - 4.73637I$	$-1.24888 + 6.79408I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.921571 + 0.928254I$ $a = 0.300181 - 0.167382I$ $b = 0.141408 - 0.815178I$	$7.46078 - 0.75691I$	0
$u = -0.921571 - 0.928254I$ $a = 0.300181 + 0.167382I$ $b = 0.141408 + 0.815178I$	$7.46078 + 0.75691I$	0
$u = -0.904820 + 0.965905I$ $a = -0.790239 + 0.408383I$ $b = 0.376118 + 0.820565I$	$7.34035 - 5.98505I$	0
$u = -0.904820 - 0.965905I$ $a = -0.790239 - 0.408383I$ $b = 0.376118 - 0.820565I$	$7.34035 + 5.98505I$	0
$u = -1.009740 + 0.883218I$ $a = -0.377537 + 0.824899I$ $b = 1.22594 - 1.41286I$	$10.71020 + 1.37563I$	0
$u = -1.009740 - 0.883218I$ $a = -0.377537 - 0.824899I$ $b = 1.22594 + 1.41286I$	$10.71020 - 1.37563I$	0
$u = -1.034420 + 0.865842I$ $a = 0.664407 - 1.034480I$ $b = -1.61121 + 1.49060I$	$13.5421 + 6.5266I$	0
$u = -1.034420 - 0.865842I$ $a = 0.664407 + 1.034480I$ $b = -1.61121 - 1.49060I$	$13.5421 - 6.5266I$	0
$u = -0.387424 + 0.500589I$ $a = -1.93597 + 1.18940I$ $b = 1.225780 + 0.662919I$	$0.14562 - 6.62336I$	$2.53824 + 3.24872I$
$u = -0.387424 - 0.500589I$ $a = -1.93597 - 1.18940I$ $b = 1.225780 - 0.662919I$	$0.14562 + 6.62336I$	$2.53824 - 3.24872I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.024940 + 0.925322I$ $a = -0.086100 - 1.156550I$ $b = -0.91727 + 1.93981I$	$15.3464 - 2.2779I$	0
$u = -1.024940 - 0.925322I$ $a = -0.086100 + 1.156550I$ $b = -0.91727 - 1.93981I$	$15.3464 + 2.2779I$	0
$u = -0.128241 + 0.602764I$ $a = 1.33735 - 2.06079I$ $b = -0.899761 + 0.098160I$	$-2.43287 + 0.11880I$	$-4.07087 - 1.28262I$
$u = -0.128241 - 0.602764I$ $a = 1.33735 + 2.06079I$ $b = -0.899761 - 0.098160I$	$-2.43287 - 0.11880I$	$-4.07087 + 1.28262I$
$u = -0.911280 + 1.044170I$ $a = -1.97485 + 0.39149I$ $b = 1.36520 + 1.26824I$	$10.17040 - 8.40766I$	0
$u = -0.911280 - 1.044170I$ $a = -1.97485 - 0.39149I$ $b = 1.36520 - 1.26824I$	$10.17040 + 8.40766I$	0
$u = -0.907943 + 1.066410I$ $a = 2.33785 - 0.47875I$ $b = -1.69979 - 1.31179I$	$12.8666 - 13.6205I$	0
$u = -0.907943 - 1.066410I$ $a = 2.33785 + 0.47875I$ $b = -1.69979 + 1.31179I$	$12.8666 + 13.6205I$	0
$u = -0.948740 + 1.039640I$ $a = 1.92604 + 0.22525I$ $b = -1.11708 - 1.78219I$	$14.9563 - 4.9353I$	0
$u = -0.948740 - 1.039640I$ $a = 1.92604 - 0.22525I$ $b = -1.11708 + 1.78219I$	$14.9563 + 4.9353I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.306772 + 0.492284I$ $a = 1.74185 - 1.46922I$ $b = -1.089070 - 0.461342I$	$-1.91688 - 1.75082I$	$-1.56719 - 0.68553I$
$u = -0.306772 - 0.492284I$ $a = 1.74185 + 1.46922I$ $b = -1.089070 + 0.461342I$	$-1.91688 + 1.75082I$	$-1.56719 + 0.68553I$
$u = 0.455358$ $a = -1.30613$ $b = 0.610269$	1.30638	7.75970
$u = -0.366917 + 0.266389I$ $a = -1.07439 + 1.09771I$ $b = 0.632186 + 0.840901I$	$2.23991 + 0.49049I$	$6.10667 - 1.43657I$
$u = -0.366917 - 0.266389I$ $a = -1.07439 - 1.09771I$ $b = 0.632186 - 0.840901I$	$2.23991 - 0.49049I$	$6.10667 + 1.43657I$

II. $I_2^u = \langle -au+3b+2a,\ -a^5u-3a^4u+\cdots+18a-27,\ u^2-u+1\rangle$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ u-1 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u \\ u-1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} a \\ \frac{1}{3}au-\frac{2}{3}a \end{pmatrix}$$
$$a_9 = \begin{pmatrix} \frac{1}{3}au+\frac{1}{3}a \\ \frac{1}{3}au-\frac{2}{3}a \end{pmatrix}$$
$$a_8 = \begin{pmatrix} \frac{1}{3}au+\frac{1}{3}a \\ \frac{1}{3}au-\frac{2}{3}a \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ u-1 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -\frac{1}{3}a^2-1 \\ -\frac{1}{3}a^2u+\frac{1}{3}a^2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} \frac{1}{9}a^4u+\frac{1}{3}a^2u+\cdots-\frac{1}{3}a^2+1 \\ -\frac{1}{9}a^4u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} \frac{2}{9}a^4u-\frac{1}{3}a^2u+\cdots+\frac{1}{3}a^2-1 \\ -\frac{1}{9}a^4u \end{pmatrix}$$

(ii) Obstruction class $=1$

(iii) Cusp Shapes
$= \frac{2}{27}a^5u-\frac{1}{27}a^5-\frac{4}{9}a^4u-\frac{2}{9}a^3u+\frac{4}{9}a^3+a^2u-\frac{5}{3}a^2-2au+2a-3u+6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_3 c_5	$(y^2 + y + 1)^6$
c_4, c_8	y^{12}
c_6, c_{11}	$(y^6 + y^5 + 5y^4 + 6y^2 + 3y + 1)^2$
c_7, c_9, c_{10} c_{12}	$(y^6 - 3y^5 + 5y^4 - 4y^3 + 2y^2 - y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.500000 + 0.866025I$ $a = 0.066864 + 1.367670I$ $b = -0.428243 - 0.664531I$	$1.89061 + 1.10558I$	$3.50232 - 2.57477I$
$u = 0.500000 + 0.866025I$ $a = 1.217870 - 0.625927I$ $b = -0.428243 + 0.664531I$	$1.89061 + 2.95419I$	$7.01188 - 5.05114I$
$u = 0.500000 + 0.866025I$ $a = -1.24734 - 1.31124I$ $b = 1.002190 + 0.295542I$	$-1.89061 + 1.10558I$	$0.06995 - 2.75005I$
$u = 0.500000 + 0.866025I$ $a = -1.75924 - 0.42461I$ $b = 1.002190 - 0.295542I$	$-1.89061 + 2.95419I$	$-1.81693 - 4.43387I$
$u = 0.500000 + 0.866025I$ $a = 2.09482 + 0.09194I$ $b = -1.073950 + 0.558752I$	$-\ 3.66314I$	$4.13964 + 1.97785I$
$u = 0.500000 + 0.866025I$ $a = 1.12703 + 1.76820I$ $b = -1.073950 - 0.558752I$	$7.72290I$	$1.09315 - 9.68468I$
$u = 0.500000 - 0.866025I$ $a = 0.066864 - 1.367670I$ $b = -0.428243 + 0.664531I$	$1.89061 - 1.10558I$	$3.50232 + 2.57477I$
$u = 0.500000 - 0.866025I$ $a = 1.217870 + 0.625927I$ $b = -0.428243 - 0.664531I$	$1.89061 - 2.95419I$	$7.01188 + 5.05114I$
$u = 0.500000 - 0.866025I$ $a = -1.24734 + 1.31124I$ $b = 1.002190 - 0.295542I$	$-1.89061 - 1.10558I$	$0.06995 + 2.75005I$
$u = 0.500000 - 0.866025I$ $a = -1.75924 + 0.42461I$ $b = 1.002190 + 0.295542I$	$-1.89061 - 2.95419I$	$-1.81693 + 4.43387I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.500000 - 0.866025I$ $a = 2.09482 - 0.09194I$ $b = -1.073950 - 0.558752I$	$3.66314I$	$4.13964 - 1.97785I$
$u = 0.500000 - 0.866025I$ $a = 1.12703 - 1.76820I$ $b = -1.073950 + 0.558752I$	$-7.72290I$	$1.09315 + 9.68468I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^2-u+1)^6)(u^{45}+9u^{44}+\cdots-9u-1)$
c_2	$((u^2+u+1)^6)(u^{45}+7u^{44}+\cdots-5u-1)$
c_3	$((u^2-u+1)^6)(u^{45}-7u^{44}+\cdots-877615u-93361)$
c_4, c_8	$u^{12}(u^{45}-u^{44}+\cdots+8192u-4096)$
c_5	$((u^2-u+1)^6)(u^{45}+7u^{44}+\cdots-5u-1)$
c_6	$((u^6-3u^5+5u^4-4u^3+2u^2-u+1)^2)(u^{45}-9u^{44}+\cdots+203u-37)$
c_7	$((u^6-u^5-u^4+2u^3-u+1)^2)(u^{45}-3u^{44}+\cdots+3u-1)$
c_9	$((u^6-u^5-u^4+2u^3-u+1)^2)(u^{45}+3u^{44}+\cdots+2181u-1201)$
c_{10}	$((u^6+u^5-u^4-2u^3+u+1)^2)(u^{45}-3u^{44}+\cdots+3u-1)$
c_{11}	$((u^6-3u^5+5u^4-4u^3+2u^2-u+1)^2)(u^{45}-23u^{44}+\cdots+3u-1)$
c_{12}	$((u^6-u^5-u^4+2u^3-u+1)^2)(u^{45}-u^{44}+\cdots+3u-1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y^2+y+1)^6)(y^{45}+61y^{44}+\cdots-29y-1)$
c_2, c_5	$((y^2+y+1)^6)(y^{45}+9y^{44}+\cdots-9y-1)$
c_3	$((y^2+y+1)^6)(y^{45}+113y^{44}+\cdots-3.04228\times 10^{11}y-8.71628\times 10^{9})$
c_4, c_8	$y^{12}(y^{45}-65y^{44}+\cdots+3.35544\times 10^{7}y-1.67772\times 10^{7})$
c_6	$((y^6+y^5+5y^4+6y^2+3y+1)^2)(y^{45}+21y^{44}+\cdots+14347y-1369)$
c_7, c_{10}	$((y^6-3y^5+5y^4-4y^3+2y^2-y+1)^2)(y^{45}-23y^{44}+\cdots+3y-1)$
c_9	$(y^6-3y^5+5y^4-4y^3+2y^2-y+1)^2$ $\cdot(y^{45}+17y^{44}+\cdots+9246099y-1442401)$
c_{11}	$((y^6+y^5+5y^4+6y^2+3y+1)^2)(y^{45}+y^{44}+\cdots+11y-1)$
c_{12}	$((y^6-3y^5+5y^4-4y^3+2y^2-y+1)^2)(y^{45}+77y^{44}+\cdots+3y-1)$