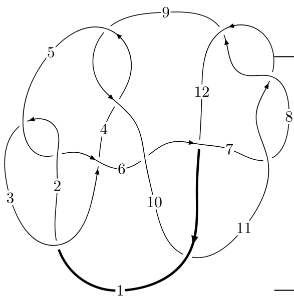
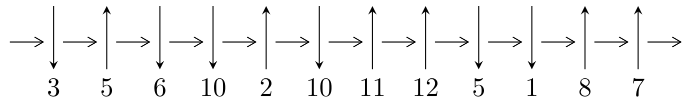
$12n_{0043}$ ($K12n_{0043}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 15u^{49} - 122u^{48} + \cdots + 16b - 5,\ 6u^{49} - 51u^{48} + \cdots + 8a - 7,\ u^{50} - 6u^{49} + \cdots - 3u + 1\rangle$$
$$I_2^u = \langle b^5 - b^4u - b^4 + 2b^3u + b^2 - bu - b + u,\ a,\ u^2 + u + 1\rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 60 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. $I_1^u = \langle 15u^{49} - 122u^{48} + \cdots + 16b - 5,\ 6u^{49} - 51u^{48} + \cdots + 8a - 7,\ u^{50} - 6u^{49} + \cdots - 3u + 1 \rangle$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

$$a_6 = \begin{pmatrix} u \\ u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -\frac{3}{4}u^{49} + \frac{51}{8}u^{48} + \cdots - \frac{3}{2}u + \frac{7}{8} \\ -0.937500u^{49} + 7.62500u^{48} + \cdots - 1.68750u + 0.312500 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^2 - 1 \\ -0.0625000u^{48} + 0.312500u^{47} + \cdots + 2.12500u - 0.0625000 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^2 + 1 \\ -u^4 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -2.81250u^{49} + 17.4375u^{48} + \cdots - 6.56250u + 2.75000 \\ -3.75000u^{49} + 23.4375u^{48} + \cdots - 6.50000u + 1.18750 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} u^4 + u^2 + 1 \\ u^4 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -\frac{3}{4}u^{49} + \frac{51}{8}u^{48} + \cdots - \frac{3}{2}u + \frac{7}{8} \\ -1.81250u^{49} + 14.8750u^{48} + \cdots - 8.06250u + 2.18750 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} \frac{1}{16}u^{49} - \frac{3}{8}u^{48} + \cdots - \frac{29}{16}u + \frac{15}{16} \\ \frac{5}{8}u^{49} - \frac{19}{8}u^{48} + \cdots - \frac{9}{8}u + \frac{7}{8} \end{pmatrix}$$

$$a_8 = \begin{pmatrix} \frac{1}{2}u^{49} - \frac{53}{16}u^{48} + \cdots + \frac{25}{4}u - \frac{13}{16} \\ -0.187500u^{49} - 0.687500u^{48} + \cdots + 4.43750u - 1.75000 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{235}{16}u^{49} + \frac{1341}{16}u^{48} + \cdots - \frac{101}{16}u - \frac{1}{2}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{50} + 30u^{49} + \cdots + 9u + 1$
c_2, c_5	$u^{50} + 6u^{49} + \cdots + 3u + 1$
c_3	$u^{50} - 6u^{49} + \cdots - 5u + 2$
c_4, c_9	$u^{50} - u^{49} + \cdots + 1024u + 1024$
c_6	$u^{50} + 3u^{49} + \cdots + 9u^2 + 1$
c_7, c_8, c_{11}	$u^{50} - 3u^{49} + \cdots + 9u^2 + 1$
c_{10}	$u^{50} - 13u^{49} + \cdots - 146u - 7$
c_{12}	$u^{50} + 9u^{49} + \cdots + 227u + 32$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{50} - 14y^{49} + \cdots + 9y + 1$
c_2, c_5	$y^{50} + 30y^{49} + \cdots + 9y + 1$
c_3	$y^{50} - 58y^{49} + \cdots + 63y + 4$
c_4, c_9	$y^{50} - 55y^{49} + \cdots - 12582912y + 1048576$
c_6	$y^{50} - 61y^{49} + \cdots + 18y + 1$
c_7, c_8, c_{11}	$y^{50} - 45y^{49} + \cdots + 18y + 1$
c_{10}	$y^{50} - y^{49} + \cdots - 19146y + 49$
c_{12}	$y^{50} + 7y^{49} + \cdots + 13303y + 1024$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.973341 + 0.149524I$ $a = -1.68794 - 0.12351I$ $b = 0.066174 - 0.254632I$	$-1.48997 - 8.27576I$	$2.25055 + 4.63368I$
$u = 0.973341 - 0.149524I$ $a = -1.68794 + 0.12351I$ $b = 0.066174 + 0.254632I$	$-1.48997 + 8.27576I$	$2.25055 - 4.63368I$
$u = 0.973094 + 0.107852I$ $a = 1.69811 + 0.08847I$ $b = -0.056748 + 0.182641I$	$-6.65156 - 4.37591I$	$-2.22838 + 3.56988I$
$u = 0.973094 - 0.107852I$ $a = 1.69811 - 0.08847I$ $b = -0.056748 - 0.182641I$	$-6.65156 + 4.37591I$	$-2.22838 - 3.56988I$
$u = -0.677365 + 0.699027I$ $a = -0.322440 - 0.902269I$ $b = -0.498316 - 0.530339I$	$4.64833 + 0.74609I$	$3.29001 + 0.I$
$u = -0.677365 - 0.699027I$ $a = -0.322440 + 0.902269I$ $b = -0.498316 + 0.530339I$	$4.64833 - 0.74609I$	$3.29001 + 0.I$
$u = 0.957021 + 0.043611I$ $a = -1.69470 - 0.03418I$ $b = 0.0746266 - 0.0721643I$	$-4.57488 - 0.26600I$	$-60.10 - 1.059498I$
$u = 0.957021 - 0.043611I$ $a = -1.69470 + 0.03418I$ $b = 0.0746266 + 0.0721643I$	$-4.57488 + 0.26600I$	$-60.10 + 1.059498I$
$u = 0.236301 + 0.909169I$ $a = -0.572242 + 0.629406I$ $b = 0.72257 + 1.84188I$	$5.03527 + 5.79377I$	$-0.60515 - 2.37720I$
$u = 0.236301 - 0.909169I$ $a = -0.572242 - 0.629406I$ $b = 0.72257 - 1.84188I$	$5.03527 - 5.79377I$	$-0.60515 + 2.37720I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.161591 + 0.918734I$ $a = 0.626446 - 0.670903I$ $b = -0.48442 - 1.64182I$	$-0.70904 + 2.61756I$	$-4.03413 - 3.04976I$
$u = 0.161591 - 0.918734I$ $a = 0.626446 + 0.670903I$ $b = -0.48442 + 1.64182I$	$-0.70904 - 2.61756I$	$-4.03413 + 3.04976I$
$u = -0.502925 + 0.747274I$ $a = -0.018799 + 0.638607I$ $b = 0.247387 + 0.438501I$	$0.02112 - 1.45050I$	$-2.86693 + 5.13818I$
$u = -0.502925 - 0.747274I$ $a = -0.018799 - 0.638607I$ $b = 0.247387 - 0.438501I$	$0.02112 + 1.45050I$	$-2.86693 - 5.13818I$
$u = -0.609640 + 0.928743I$ $a = -0.602842 - 0.340623I$ $b = -0.607870 - 0.045415I$	$-0.64445 - 3.09089I$	0
$u = -0.609640 - 0.928743I$ $a = -0.602842 + 0.340623I$ $b = -0.607870 + 0.045415I$	$-0.64445 + 3.09089I$	0
$u = -0.115719 + 1.106410I$ $a = -0.816238 + 0.672347I$ $b = -0.366736 + 1.302780I$	$-0.489731 + 0.237177I$	0
$u = -0.115719 - 1.106410I$ $a = -0.816238 - 0.672347I$ $b = -0.366736 - 1.302780I$	$-0.489731 - 0.237177I$	0
$u = -0.686560 + 0.915627I$ $a = 0.693027 + 0.536546I$ $b = 0.731923 + 0.193983I$	$4.03197 - 5.98158I$	0
$u = -0.686560 - 0.915627I$ $a = 0.693027 - 0.536546I$ $b = 0.731923 - 0.193983I$	$4.03197 + 5.98158I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.243021+1.135140I$ $a=\ 0.892386-0.542794I$ $b=\ 0.566389-1.069200I$	$-3.49782-3.09462I$	0
$u=-0.243021-1.135140I$ $a=\ 0.892386+0.542794I$ $b=\ 0.566389+1.069200I$	$-3.49782+3.09462I$	0
$u=-0.538980+1.033550I$ $a=\ 0.798066+0.043574I$ $b=\ 0.699077-0.292935I$	$2.94116-0.76505I$	0
$u=-0.538980-1.033550I$ $a=\ 0.798066-0.043574I$ $b=\ 0.699077+0.292935I$	$2.94116+0.76505I$	0
$u=\ 0.022608+0.789395I$ $a=-0.701358+0.689418I$ $b=\ 0.406014+1.098740I$	$-0.100668-0.941081I$	$-0.92280+4.24243I$
$u=\ 0.022608-0.789395I$ $a=-0.701358-0.689418I$ $b=\ 0.406014-1.098740I$	$-0.100668+0.941081I$	$-0.92280-4.24243I$
$u=-0.311220+1.172780I$ $a=-0.971626+0.461124I$ $b=-0.720591+0.967453I$	$1.10315-6.57415I$	0
$u=-0.311220-1.172780I$ $a=-0.971626-0.461124I$ $b=-0.720591-0.967453I$	$1.10315+6.57415I$	0
$u=\ 0.778276$ $a=\ 1.59204$ $b=-0.332020$	2.53130	4.52920
$u=\ 0.215175+0.693272I$ $a=\ 0.787829-0.545376I$ $b=-0.975052-0.975693I$	$5.65570-3.38770I$	$2.66671+5.35428I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.215175 - 0.693272I$ $a = 0.787829 + 0.545376I$ $b = -0.975052 + 0.975693I$	$5.65570 + 3.38770I$	$2.66671 - 5.35428I$
$u = 0.476948 + 1.225580I$ $a = -0.211170 + 1.154370I$ $b = -0.37574 + 2.70281I$	$-0.98640 + 4.59430I$	0
$u = 0.476948 - 1.225580I$ $a = -0.211170 - 1.154370I$ $b = -0.37574 - 2.70281I$	$-0.98640 - 4.59430I$	0
$u = 0.510209 + 1.283800I$ $a = 0.195449 - 1.284720I$ $b = 0.45463 - 2.70776I$	$-8.38002 + 5.49910I$	0
$u = 0.510209 - 1.283800I$ $a = 0.195449 + 1.284720I$ $b = 0.45463 + 2.70776I$	$-8.38002 - 5.49910I$	0
$u = -0.565504 + 0.246324I$ $a = 0.06152 - 1.46066I$ $b = -0.182316 - 0.730281I$	$4.93756 - 3.55579I$	$5.87055 + 4.25691I$
$u = -0.565504 - 0.246324I$ $a = 0.06152 + 1.46066I$ $b = -0.182316 + 0.730281I$	$4.93756 + 3.55579I$	$5.87055 - 4.25691I$
$u = 0.562121 + 1.266420I$ $a = 0.086370 - 1.295980I$ $b = 0.45752 - 2.75201I$	$-4.9120 + 13.8047I$	0
$u = 0.562121 - 1.266420I$ $a = 0.086370 + 1.295980I$ $b = 0.45752 + 2.75201I$	$-4.9120 - 13.8047I$	0
$u = 0.383593 + 1.332350I$ $a = 0.449050 - 1.266840I$ $b = 0.50380 - 2.53593I$	$-6.24884 - 3.57394I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.383593 - 1.332350I$ $a = 0.449050 + 1.266840I$ $b = 0.50380 + 2.53593I$	$-6.24884 + 3.57394I$	0
$u = 0.456861 + 1.311070I$ $a = 0.310827 - 1.289690I$ $b = 0.47402 - 2.64241I$	$-8.79559 + 4.74233I$	0
$u = 0.456861 - 1.311070I$ $a = 0.310827 + 1.289690I$ $b = 0.47402 + 2.64241I$	$-8.79559 - 4.74233I$	0
$u = 0.543755 + 1.278370I$ $a = -0.130234 + 1.302520I$ $b = -0.45971 + 2.73698I$	$-10.2434 + 9.8226I$	0
$u = 0.543755 - 1.278370I$ $a = -0.130234 - 1.302520I$ $b = -0.45971 - 2.73698I$	$-10.2434 - 9.8226I$	0
$u = 0.416925 + 1.327490I$ $a = -0.391023 + 1.285420I$ $b = -0.49447 + 2.58673I$	$-11.20260 + 0.48443I$	0
$u = 0.416925 - 1.327490I$ $a = -0.391023 - 1.285420I$ $b = -0.49447 - 2.58673I$	$-11.20260 - 0.48443I$	0
$u = -0.200172 + 0.291553I$ $a = -0.68081 + 1.49034I$ $b = 0.248384 + 0.528654I$	$0.027965 - 1.099060I$	$0.35978 + 6.01400I$
$u = -0.200172 - 0.291553I$ $a = -0.68081 - 1.49034I$ $b = 0.248384 - 0.528654I$	$0.027965 + 1.099060I$	$0.35978 - 6.01400I$
$u = 0.344852$ $a = 1.81264$ $b = -0.529057$	2.85126	2.12860

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

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1 \\ u+1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0 \\ b \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u \\ b^2u + u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u \\ -u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} bu + b \\ bu + 2b \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0 \\ b \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -b^2 - u \\ -b^4 - b^2 - u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -b^4u - b^4 + b^2 + u \\ -b^4u - 2b^4 + b^2 + u \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -b^4u - b^4 + 4b^3 - 3b^2u - 3b^2 + 5bu + b + 4u + 6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_3 c_5	$(y^2+y+1)^5$
c_4, c_9	y^{10}
c_6, c_{10}	$(y^5+3y^4+4y^3+y^2-y-1)^2$
c_7, c_8, c_{11}	$(y^5-5y^4+8y^3-3y^2-y-1)^2$
c_{12}	$(y^5-y^4+8y^3-3y^2+3y-1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.500000+0.866025I$ $a=0$ $b=-0.881753+0.117510I$	$0.32910-3.56046I$	$2.49844+7.77102I$
$u=-0.500000+0.866025I$ $a=0$ $b=0.542643-0.704866I$	$0.329100-0.499304I$	$-0.01046-1.42329I$
$u=-0.500000+0.866025I$ $a=0$ $b=0.383413+0.664091I$	$2.40108-2.02988I$	$0.33682+4.42764I$
$u=-0.500000+0.866025I$ $a=0$ $b=-0.811514+0.994721I$	$5.87256-6.43072I$	$6.88365+7.29164I$
$u=-0.500000+0.866025I$ $a=0$ $b=1.267210-0.205431I$	$5.87256+2.37095I$	$4.29156+0.98555I$
$u=-0.500000-0.866025I$ $a=0$ $b=-0.881753-0.117510I$	$0.32910+3.56046I$	$2.49844-7.77102I$
$u=-0.500000-0.866025I$ $a=0$ $b=0.542643+0.704866I$	$0.329100+0.499304I$	$-0.01046+1.42329I$
$u=-0.500000-0.866025I$ $a=0$ $b=0.383413-0.664091I$	$2.40108+2.02988I$	$0.33682-4.42764I$
$u=-0.500000-0.866025I$ $a=0$ $b=-0.811514-0.994721I$	$5.87256+6.43072I$	$6.88365-7.29164I$
$u=-0.500000-0.866025I$ $a=0$ $b=1.267210+0.205431I$	$5.87256-2.37095I$	$4.29156-0.98555I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^2-u+1)^5)(u^{50}+30u^{49}+\cdots+9u+1)$
c_2	$((u^2+u+1)^5)(u^{50}+6u^{49}+\cdots+3u+1)$
c_3	$((u^2-u+1)^5)(u^{50}-6u^{49}+\cdots-5u+2)$
c_4, c_9	$u^{10}(u^{50}-u^{49}+\cdots+1024u+1024)$
c_5	$((u^2-u+1)^5)(u^{50}+6u^{49}+\cdots+3u+1)$
c_6	$((u^5+u^4+2u^3+u^2+u+1)^2)(u^{50}+3u^{49}+\cdots+9u^2+1)$
c_7, c_8	$((u^5-u^4-2u^3+u^2+u+1)^2)(u^{50}-3u^{49}+\cdots+9u^2+1)$
c_{10}	$((u^5+u^4+2u^3+u^2+u+1)^2)(u^{50}-13u^{49}+\cdots-146u-7)$
c_{11}	$((u^5+u^4-2u^3-u^2+u-1)^2)(u^{50}-3u^{49}+\cdots+9u^2+1)$
c_{12}	$((u^5-3u^4+4u^3-u^2-u+1)^2)(u^{50}+9u^{49}+\cdots+227u+32)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y^2+y+1)^5)(y^{50}-14y^{49}+\cdots+9y+1)$
c_2, c_5	$((y^2+y+1)^5)(y^{50}+30y^{49}+\cdots+9y+1)$
c_3	$((y^2+y+1)^5)(y^{50}-58y^{49}+\cdots+63y+4)$
c_4, c_9	$y^{10}(y^{50}-55y^{49}+\cdots-1.25829\times 10^7 y+1048576)$
c_6	$((y^5+3y^4+4y^3+y^2-y-1)^2)(y^{50}-61y^{49}+\cdots+18y+1)$
c_7, c_8, c_{11}	$((y^5-5y^4+8y^3-3y^2-y-1)^2)(y^{50}-45y^{49}+\cdots+18y+1)$
c_{10}	$((y^5+3y^4+4y^3+y^2-y-1)^2)(y^{50}-y^{49}+\cdots-19146y+49)$
c_{12}	$((y^5-y^4+8y^3-3y^2+3y-1)^2)(y^{50}+7y^{49}+\cdots+13303y+1024)$