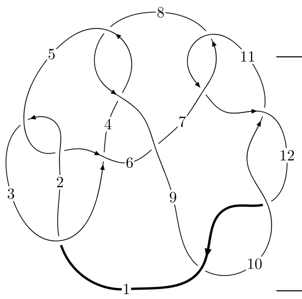
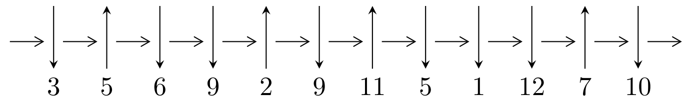
$12n_{0012}$ ($K12n_{0012}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -39u^{46} + 220u^{45} + \cdots + 8b - 74,\ -3u^{46} + 13u^{45} + \cdots + 8a - 17,\ u^{47} - 5u^{46} + \cdots + 2u - 1 \rangle$$
$$I_2^u = \langle au + b - a,\ a^4 + a^3u - 3a^2u - 3a^2 + 2a + u,\ u^2 + u + 1 \rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 55 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. $\boldsymbol{I_1^u = \langle -39u^{46} + 220u^{45} + \cdots + 8b - 74,\ -3u^{46} + 13u^{45} + \cdots + 8a - 17,\ u^{47} - 5u^{46} + \cdots + 2u - 1\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^2+1 \\ -u^4 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} \frac{3}{8}u^{46} - \frac{13}{8}u^{45} + \cdots - \frac{25}{4}u + \frac{17}{8} \\ \frac{39}{8}u^{46} - \frac{55}{2}u^{45} + \cdots - \frac{155}{8}u + \frac{37}{4} \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -\frac{9}{4}u^{46} + \frac{39}{4}u^{45} + \cdots - 5u + \frac{11}{4} \\ \frac{5}{4}u^{46} - \frac{89}{8}u^{45} + \cdots - \frac{105}{8}u + \frac{55}{8} \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u^2 - 1 \\ -\frac{1}{8}u^{46} + \frac{5}{8}u^{45} + \cdots + \frac{9}{4}u - \frac{1}{8} \end{pmatrix}$$
$$a_4 = \begin{pmatrix} u^4 + u^2 + 1 \\ u^4 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} \frac{1}{8}u^{46} - \frac{1}{2}u^{45} + \cdots + \frac{7}{8}u + 2 \\ \frac{1}{4}u^{46} - \frac{9}{8}u^{45} + \cdots - \frac{11}{8}u + \frac{1}{8} \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} \frac{7}{4}u^{46} - \frac{31}{4}u^{45} + \cdots - \frac{9}{2}u + \frac{5}{2} \\ -2u^{46} + \frac{145}{8}u^{45} + \cdots + \frac{121}{8}u - \frac{93}{8} \end{pmatrix}$$
$$a_8 = \begin{pmatrix} \frac{9}{4}u^{46} - \frac{39}{4}u^{45} + \cdots + 5u - \frac{11}{4} \\ \frac{1}{2}u^{46} + \frac{41}{8}u^{45} + \cdots + \frac{111}{8}u - \frac{67}{8} \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{3}{8}u^{46} + 6u^{45} + \cdots + \frac{335}{8}u - \frac{31}{2}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{47} + 27u^{46} + \cdots - 40u - 1$
c_2, c_5	$u^{47} + 5u^{46} + \cdots + 2u + 1$
c_3	$u^{47} - 5u^{46} + \cdots - 12u + 1$
c_4, c_8	$u^{47} + u^{46} + \cdots + 640u + 256$
c_6	$u^{47} - 3u^{46} + \cdots - 4u + 1$
c_7, c_{11}	$u^{47} - 3u^{46} + \cdots - 2u + 1$
c_9, c_{10}, c_{12}	$u^{47} + 13u^{46} + \cdots - 16u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{47} - 9y^{46} + \cdots + 512y - 1$
c_2, c_5	$y^{47} + 27y^{46} + \cdots - 40y - 1$
c_3	$y^{47} - 45y^{46} + \cdots - 152y - 1$
c_4, c_8	$y^{47} - 45y^{46} + \cdots + 638976y - 65536$
c_6	$y^{47} - 55y^{46} + \cdots - 16y - 1$
c_7, c_{11}	$y^{47} + 13y^{46} + \cdots - 16y - 1$
c_9, c_{10}, c_{12}	$y^{47} + 45y^{46} + \cdots - 8y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.026441 + 0.959622I$ $a = -0.602286 + 0.667947I$ $b = -0.28964 + 2.11687I$	$-1.66847 + 2.07597I$	$-8.19599 - 3.58729I$
$u = 0.026441 - 0.959622I$ $a = -0.602286 - 0.667947I$ $b = -0.28964 - 2.11687I$	$-1.66847 - 2.07597I$	$-8.19599 + 3.58729I$
$u = 0.925280 + 0.194352I$ $a = -1.48851 + 2.82129I$ $b = 0.86927 - 1.38303I$	$0.19889 - 8.32605I$	$-2.17091 + 5.11912I$
$u = 0.925280 - 0.194352I$ $a = -1.48851 - 2.82129I$ $b = 0.86927 + 1.38303I$	$0.19889 + 8.32605I$	$-2.17091 - 5.11912I$
$u = 0.933825 + 0.065187I$ $a = 0.120868 + 1.140740I$ $b = -0.501416 - 0.737782I$	$-6.55195 - 3.23257I$	$-7.12321 + 3.54877I$
$u = 0.933825 - 0.065187I$ $a = 0.120868 - 1.140740I$ $b = -0.501416 + 0.737782I$	$-6.55195 + 3.23257I$	$-7.12321 - 3.54877I$
$u = -0.733010 + 0.802557I$ $a = -2.03414 - 2.16959I$ $b = -0.82061 - 2.32750I$	$4.57748 + 0.17561I$	$-4.00000 + 0.I$
$u = -0.733010 - 0.802557I$ $a = -2.03414 + 2.16959I$ $b = -0.82061 + 2.32750I$	$4.57748 - 0.17561I$	$-4.00000 + 0.I$
$u = -0.580519 + 0.922395I$ $a = 1.018240 - 0.170806I$ $b = 1.221000 - 0.367778I$	$-0.75821 - 2.95186I$	$-10.26739 + 0.I$
$u = -0.580519 - 0.922395I$ $a = 1.018240 + 0.170806I$ $b = 1.221000 + 0.367778I$	$-0.75821 + 2.95186I$	$-10.26739 + 0.I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.886435 + 0.192716I$ $a = 1.79497 - 2.22924I$ $b = -0.835270 + 0.957471I$	$0.91039 - 2.22540I$	$-1.015220 + 0.333993I$
$u = 0.886435 - 0.192716I$ $a = 1.79497 + 2.22924I$ $b = -0.835270 - 0.957471I$	$0.91039 + 2.22540I$	$-1.015220 - 0.333993I$
$u = -0.232117 + 1.073970I$ $a = -0.764740 + 0.107154I$ $b = -0.930392 - 0.122544I$	$-3.32956 - 2.69471I$	$-11.16965 + 4.64357I$
$u = -0.232117 - 1.073970I$ $a = -0.764740 - 0.107154I$ $b = -0.930392 + 0.122544I$	$-3.32956 + 2.69471I$	$-11.16965 - 4.64357I$
$u = -0.732051 + 0.844151I$ $a = 2.53321 + 1.61725I$ $b = 1.64457 + 2.36743I$	$4.45822 - 5.68770I$	$0. + 5.85551I$
$u = -0.732051 - 0.844151I$ $a = 2.53321 - 1.61725I$ $b = 1.64457 - 2.36743I$	$4.45822 + 5.68770I$	$0. - 5.85551I$
$u = 0.278391 + 0.834871I$ $a = 0.195597 - 0.017136I$ $b = 2.04050 + 2.00587I$	$6.29656 + 4.54704I$	$-5.32988 - 0.19475I$
$u = 0.278391 - 0.834871I$ $a = 0.195597 + 0.017136I$ $b = 2.04050 - 2.00587I$	$6.29656 - 4.54704I$	$-5.32988 + 0.19475I$
$u = -0.468535 + 0.741736I$ $a = 0.169080 - 0.871234I$ $b = -0.179453 - 0.614868I$	$-0.10080 - 1.41741I$	$-3.72542 + 5.86093I$
$u = -0.468535 - 0.741736I$ $a = 0.169080 + 0.871234I$ $b = -0.179453 + 0.614868I$	$-0.10080 + 1.41741I$	$-3.72542 - 5.86093I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.856224$ $a = 0.798257$ $b = 0.0288409$	-3.24343	-1.24520
$u = 0.277747 + 0.799964I$ $a = -0.031950 + 0.201535I$ $b = -1.99709 - 1.62792I$	$6.39944 - 1.84713I$	$-4.44776 + 5.17555I$
$u = 0.277747 - 0.799964I$ $a = -0.031950 - 0.201535I$ $b = -1.99709 + 1.62792I$	$6.39944 + 1.84713I$	$-4.44776 - 5.17555I$
$u = -0.215715 + 0.766929I$ $a = 0.623937 - 0.580705I$ $b = -0.040575 - 0.820520I$	$-0.273553 - 1.319440I$	$-1.87412 + 4.02854I$
$u = -0.215715 - 0.766929I$ $a = 0.623937 + 0.580705I$ $b = -0.040575 + 0.820520I$	$-0.273553 + 1.319440I$	$-1.87412 - 4.02854I$
$u = -0.443222 + 1.123720I$ $a = -0.306235 - 0.216455I$ $b = -1.89659 - 0.62970I$	$2.20908 - 1.05804I$	0
$u = -0.443222 - 1.123720I$ $a = -0.306235 + 0.216455I$ $b = -1.89659 + 0.62970I$	$2.20908 + 1.05804I$	0
$u = -0.403667 + 1.155110I$ $a = 0.258478 - 0.232515I$ $b = 2.08868 - 0.64022I$	$1.85423 - 6.77428I$	0
$u = -0.403667 - 1.155110I$ $a = 0.258478 + 0.232515I$ $b = 2.08868 + 0.64022I$	$1.85423 + 6.77428I$	0
$u = 0.348879 + 1.251500I$ $a = 0.68603 + 1.45153I$ $b = 2.92026 + 3.49905I$	$-3.64593 + 1.84085I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.348879 - 1.251500I$ $a = 0.68603 - 1.45153I$ $b = 2.92026 - 3.49905I$	$-3.64593 - 1.84085I$	0
$u = 0.467749 + 1.244070I$ $a = -0.178953 + 0.487783I$ $b = -0.489450 + 0.885522I$	$-6.97041 + 4.72417I$	0
$u = 0.467749 - 1.244070I$ $a = -0.178953 - 0.487783I$ $b = -0.489450 - 0.885522I$	$-6.97041 - 4.72417I$	0
$u = 0.339549 + 1.291160I$ $a = -1.09098 - 1.58824I$ $b = -4.42832 - 3.64735I$	$-4.58314 - 4.07496I$	0
$u = 0.339549 - 1.291160I$ $a = -1.09098 + 1.58824I$ $b = -4.42832 + 3.64735I$	$-4.58314 + 4.07496I$	0
$u = 0.552325 + 1.220220I$ $a = -1.88083 + 0.66995I$ $b = -4.90066 + 2.68102I$	$-2.19262 + 7.48494I$	0
$u = 0.552325 - 1.220220I$ $a = -1.88083 - 0.66995I$ $b = -4.90066 - 2.68102I$	$-2.19262 - 7.48494I$	0
$u = -0.643389 + 0.042276I$ $a = 0.307917 + 0.399006I$ $b = -0.124452 - 1.032220I$	$5.17223 - 2.96380I$	$1.27670 + 2.94526I$
$u = -0.643389 - 0.042276I$ $a = 0.307917 - 0.399006I$ $b = -0.124452 + 1.032220I$	$5.17223 + 2.96380I$	$1.27670 - 2.94526I$
$u = 0.564900 + 1.232880I$ $a = 2.21676 - 0.36369I$ $b = 6.02517 - 2.25245I$	$-2.95715 + 13.73810I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.564900 - 1.232880I$ $a = 2.21676 + 0.36369I$ $b = 6.02517 + 2.25245I$	$-2.95715 - 13.73810I$	0
$u = 0.435963 + 1.291860I$ $a = -0.743213 - 0.242847I$ $b = -2.18896 + 0.57747I$	$-10.77840 + 1.57100I$	0
$u = 0.435963 - 1.291860I$ $a = -0.743213 + 0.242847I$ $b = -2.18896 - 0.57747I$	$-10.77840 - 1.57100I$	0
$u = 0.509079 + 1.270360I$ $a = 0.692225 + 0.316516I$ $b = 2.63689 + 1.02049I$	$-10.24110 + 8.40839I$	0
$u = 0.509079 - 1.270360I$ $a = 0.692225 - 0.316516I$ $b = 2.63689 - 1.02049I$	$-10.24110 - 8.40839I$	0
$u = -0.022449 + 0.247534I$ $a = 1.60540 - 1.10956I$ $b = -0.337887 - 0.386120I$	$-0.255033 - 1.107400I$	$-3.72059 + 6.13127I$
$u = -0.022449 - 0.247534I$ $a = 1.60540 + 1.10956I$ $b = -0.337887 + 0.386120I$	$-0.255033 + 1.107400I$	$-3.72059 - 6.13127I$

II. $\boldsymbol{I_2^u = \langle au + b - a,\ a^4 + a^3u - 3a^2u - 3a^2 + 2a + u,\ u^2 + u + 1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 2a^3u - 4a^3 - 5a^2u + 12au + 17a + 5u - 6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_3 c_5	$(y^2 + y + 1)^4$
c_4, c_8	y^8
c_6, c_9, c_{10} c_{12}	$(y^4 + 5y^3 + 7y^2 + 2y + 1)^2$
c_7, c_{11}	$(y^4 + y^3 + 3y^2 + 2y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.500000 + 0.866025I$ $a = -0.241378 - 0.595609I$ $b = -0.877879 - 0.684374I$	$-0.211005 - 0.614778I$	$-5.86133 - 2.84273I$
$u = -0.500000 + 0.866025I$ $a = 0.636501 - 0.088765I$ $b = 0.877879 - 0.684374I$	$-0.21101 - 3.44499I$	$-1.10064 + 8.92228I$
$u = -0.500000 + 0.866025I$ $a = -1.29206 - 0.86707I$ $b = -2.68899 - 0.18165I$	$6.79074 + 1.13408I$	$0.90087 + 2.75771I$
$u = -0.500000 + 0.866025I$ $a = 1.39694 + 0.68542I$ $b = 2.68899 - 0.18165I$	$6.79074 - 5.19385I$	$1.56110 + 7.61722I$
$u = -0.500000 - 0.866025I$ $a = -0.241378 + 0.595609I$ $b = -0.877879 + 0.684374I$	$-0.211005 + 0.614778I$	$-5.86133 + 2.84273I$
$u = -0.500000 - 0.866025I$ $a = 0.636501 + 0.088765I$ $b = 0.877879 + 0.684374I$	$-0.21101 + 3.44499I$	$-1.10064 - 8.92228I$
$u = -0.500000 - 0.866025I$ $a = -1.29206 + 0.86707I$ $b = -2.68899 + 0.18165I$	$6.79074 - 1.13408I$	$0.90087 - 2.75771I$
$u = -0.500000 - 0.866025I$ $a = 1.39694 - 0.68542I$ $b = 2.68899 + 0.18165I$	$6.79074 + 5.19385I$	$1.56110 - 7.61722I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^2-u+1)^4)(u^{47}+27u^{46}+\cdots-40u-1)$
c_2	$((u^2+u+1)^4)(u^{47}+5u^{46}+\cdots+2u+1)$
c_3	$((u^2-u+1)^4)(u^{47}-5u^{46}+\cdots-12u+1)$
c_4, c_8	$u^8(u^{47}+u^{46}+\cdots+640u+256)$
c_5	$((u^2-u+1)^4)(u^{47}+5u^{46}+\cdots+2u+1)$
c_6	$((u^4-u^3+3u^2-2u+1)^2)(u^{47}-3u^{46}+\cdots-4u+1)$
c_7	$((u^4-u^3+u^2+1)^2)(u^{47}-3u^{46}+\cdots-2u+1)$
c_9, c_{10}	$((u^4-u^3+3u^2-2u+1)^2)(u^{47}+13u^{46}+\cdots-16u-1)$
c_{11}	$((u^4+u^3+u^2+1)^2)(u^{47}-3u^{46}+\cdots-2u+1)$
c_{12}	$((u^4+u^3+3u^2+2u+1)^2)(u^{47}+13u^{46}+\cdots-16u-1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y^2+y+1)^4)(y^{47}-9y^{46}+\cdots+512y-1)$
c_2, c_5	$((y^2+y+1)^4)(y^{47}+27y^{46}+\cdots-40y-1)$
c_3	$((y^2+y+1)^4)(y^{47}-45y^{46}+\cdots-152y-1)$
c_4, c_8	$y^8(y^{47}-45y^{46}+\cdots+638976y-65536)$
c_6	$((y^4+5y^3+7y^2+2y+1)^2)(y^{47}-55y^{46}+\cdots-16y-1)$
c_7, c_{11}	$((y^4+y^3+3y^2+2y+1)^2)(y^{47}+13y^{46}+\cdots-16y-1)$
c_9, c_{10}, c_{12}	$((y^4+5y^3+7y^2+2y+1)^2)(y^{47}+45y^{46}+\cdots-8y-1)$