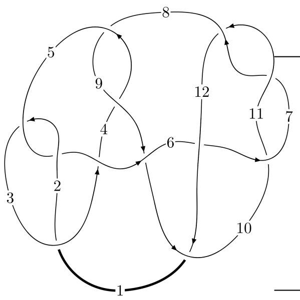
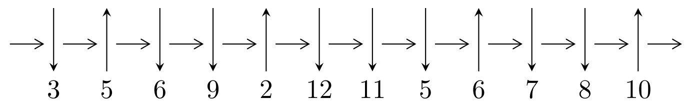
$12n_{0042}$ ($K12n_{0042}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 18u^{38} + 107u^{37} + \cdots + 16b - 35,\ -35u^{38} - 228u^{37} + \cdots + 16a - 167,\ u^{39} + 6u^{38} + \cdots + 6u + 1\rangle$$
$$I_2^u = \langle -au + b,\ a^5 + a^4u - a^4 - 2a^3u + a^2 + au - a - u,\ u^2 - u + 1\rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 49 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. $\boldsymbol{I_1^u = \langle 18u^{38} + 107u^{37} + \cdots + 16b - 35,\ -35u^{38} - 228u^{37} + \cdots + 16a - 167,\ u^{39} + 6u^{38} + \cdots + 6u + 1\rangle}$

(i) Arc colorings

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

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^3 \\ u^5 + u^3 + u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 2.18750u^{38} + 14.2500u^{37} + \cdots + 54.5000u + 10.4375 \\ -1.12500u^{38} - 6.68750u^{37} + \cdots + 2.68750u + 2.18750 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 3.31250u^{38} + 20.9375u^{37} + \cdots + 51.8125u + 8.25000 \\ -1.12500u^{38} - 6.68750u^{37} + \cdots + 2.68750u + 2.18750 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u^3 \\ u^3 + u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 3.18750u^{38} + 21.3125u^{37} + \cdots + 64.1875u + 11.5000 \\ -3.12500u^{38} - 15.5625u^{37} + \cdots - 3.93750u + 1.06250 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -0.0625000u^{37} - 0.312500u^{36} + \cdots - 2.31250u + 0.937500 \\ 0.0625000u^{38} + 0.312500u^{37} + \cdots + 2.31250u^2 + 0.0625000u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0.875000u^{38} + 5.18750u^{37} + \cdots + 5.56250u + 1.93750 \\ 0.687500u^{37} + 3.43750u^{36} + \cdots + 3.93750u + 0.812500 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -\frac{3}{4}u^{38} - 4u^{37} + \cdots - \frac{17}{8}u - \frac{1}{4} \\ \frac{1}{8}u^{38} + \frac{1}{16}u^{37} + \cdots - \frac{35}{16}u - \frac{11}{16} \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{227}{16}u^{38} + \frac{1349}{16}u^{37} + \cdots + \frac{1989}{16}u + \frac{25}{2}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{39} + 8u^{38} + \cdots - 10u - 1$
c_2, c_5	$u^{39} + 6u^{38} + \cdots + 6u + 1$
c_3	$u^{39} - 6u^{38} + \cdots + 227832u + 23497$
c_4, c_8	$u^{39} + u^{38} + \cdots + 2048u + 1024$
c_6	$u^{39} - 9u^{38} + \cdots + 179u - 17$
c_7, c_{10}, c_{11}	$u^{39} + 3u^{38} + \cdots - 3u + 1$
c_9	$u^{39} - 3u^{38} + \cdots - 3u + 1$
c_{12}	$u^{39} + 11u^{38} + \cdots + 267u + 73$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{39} + 52y^{38} + \cdots + 58y - 1$
c_2, c_5	$y^{39} + 8y^{38} + \cdots - 10y - 1$
c_3	$y^{39} + 96y^{38} + \cdots - 14329729890y - 552109009$
c_4, c_8	$y^{39} + 55y^{38} + \cdots - 5242880y - 1048576$
c_6	$y^{39} + 9y^{38} + \cdots + 2665y - 289$
c_7, c_{10}, c_{11}	$y^{39} - 35y^{38} + \cdots - 3y - 1$
c_9	$y^{39} - 67y^{38} + \cdots - 3y - 1$
c_{12}	$y^{39} - 7y^{38} + \cdots - 292543y - 5329$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.217775 + 0.986965I$ $a = 0.478937 - 0.405328I$ $b = -0.504345 - 0.384424I$	$-5.08086 + 0.15570I$	$-9.83989 - 1.69370I$
$u = 0.217775 - 0.986965I$ $a = 0.478937 + 0.405328I$ $b = -0.504345 + 0.384424I$	$-5.08086 - 0.15570I$	$-9.83989 + 1.69370I$
$u = 0.795838 + 0.548145I$ $a = 0.160432 + 0.477438I$ $b = 0.134027 - 0.467904I$	$2.99441 + 1.56903I$	$2.04971 - 2.63058I$
$u = 0.795838 - 0.548145I$ $a = 0.160432 - 0.477438I$ $b = 0.134027 + 0.467904I$	$2.99441 - 1.56903I$	$2.04971 + 2.63058I$
$u = 0.395368 + 0.848396I$ $a = -0.328402 + 0.067571I$ $b = 0.187167 + 0.251900I$	$-0.32291 + 1.65676I$	$-2.57784 - 5.09388I$
$u = 0.395368 - 0.848396I$ $a = -0.328402 - 0.067571I$ $b = 0.187167 - 0.251900I$	$-0.32291 - 1.65676I$	$-2.57784 + 5.09388I$
$u = 0.835550 + 0.682012I$ $a = -0.122808 - 0.434535I$ $b = -0.193746 + 0.446832I$	$-1.08176 + 5.00495I$	$-4.00000 - 5.49460I$
$u = 0.835550 - 0.682012I$ $a = -0.122808 + 0.434535I$ $b = -0.193746 - 0.446832I$	$-1.08176 - 5.00495I$	$-4.00000 + 5.49460I$
$u = 0.820354 + 0.374203I$ $a = -0.141671 - 0.553737I$ $b = -0.090989 + 0.507274I$	$-0.79445 - 1.82967I$	$-2.60045 + 1.37386I$
$u = 0.820354 - 0.374203I$ $a = -0.141671 + 0.553737I$ $b = -0.090989 - 0.507274I$	$-0.79445 + 1.82967I$	$-2.60045 - 1.37386I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.516539 + 1.059320I$ $a = 0.121118 - 0.354987I$ $b = -0.438608 + 0.055062I$	$1.18484 + 3.42225I$	$0. - 3.84715I$
$u = 0.516539 - 1.059320I$ $a = 0.121118 + 0.354987I$ $b = -0.438608 - 0.055062I$	$1.18484 - 3.42225I$	$0. + 3.84715I$
$u = 0.639199 + 1.006420I$ $a = -0.023637 + 0.351005I$ $b = 0.368368 - 0.200573I$	$-2.22349 + 0.53849I$	$-5.53531 + 1.24212I$
$u = 0.639199 - 1.006420I$ $a = -0.023637 - 0.351005I$ $b = 0.368368 + 0.200573I$	$-2.22349 - 0.53849I$	$-5.53531 - 1.24212I$
$u = 0.463738 + 1.131070I$ $a = -0.157364 + 0.415273I$ $b = 0.542679 - 0.014588I$	$-3.39936 + 6.68540I$	$-5.94355 - 5.90487I$
$u = 0.463738 - 1.131070I$ $a = -0.157364 - 0.415273I$ $b = 0.542679 + 0.014588I$	$-3.39936 - 6.68540I$	$-5.94355 + 5.90487I$
$u = -0.146263 + 0.696408I$ $a = 1.54768 - 0.36171I$ $b = -0.025530 - 1.130720I$	$-6.52633 + 3.36713I$	$-11.83061 - 4.84786I$
$u = -0.146263 - 0.696408I$ $a = 1.54768 + 0.36171I$ $b = -0.025530 + 1.130720I$	$-6.52633 - 3.36713I$	$-11.83061 + 4.84786I$
$u = -0.887416 + 0.936488I$ $a = -1.41323 - 1.17323I$ $b = -2.35284 + 0.28232I$	$2.09421 - 3.28881I$	0
$u = -0.887416 - 0.936488I$ $a = -1.41323 + 1.17323I$ $b = -2.35284 - 0.28232I$	$2.09421 + 3.28881I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.018770 + 0.851930I$ $a = 1.42653 + 0.88370I$ $b = 2.20615 - 0.31501I$	$7.27711 + 5.72796I$	0
$u = -1.018770 - 0.851930I$ $a = 1.42653 - 0.88370I$ $b = 2.20615 + 0.31501I$	$7.27711 - 5.72796I$	0
$u = -1.012200 + 0.890886I$ $a = -1.38271 - 0.92662I$ $b = -2.22509 + 0.29392I$	$12.39950 + 1.53189I$	0
$u = -1.012200 - 0.890886I$ $a = -1.38271 + 0.92662I$ $b = -2.22509 - 0.29392I$	$12.39950 - 1.53189I$	0
$u = -0.364738 + 0.539930I$ $a = -2.16669 - 0.02235I$ $b = -0.802344 + 1.161710I$	$-5.82107 - 5.39582I$	$-8.47886 + 1.18765I$
$u = -0.364738 - 0.539930I$ $a = -2.16669 + 0.02235I$ $b = -0.802344 - 1.161710I$	$-5.82107 + 5.39582I$	$-8.47886 - 1.18765I$
$u = -0.985908 + 0.935010I$ $a = 1.34032 + 0.99776I$ $b = 2.25434 - 0.26951I$	$10.13770 - 2.96345I$	0
$u = -0.985908 - 0.935010I$ $a = 1.34032 - 0.99776I$ $b = 2.25434 + 0.26951I$	$10.13770 + 2.96345I$	0
$u = -0.939008 + 1.004180I$ $a = 1.25206 + 1.11303I$ $b = 2.29337 - 0.21215I$	$9.89948 - 4.09070I$	0
$u = -0.939008 - 1.004180I$ $a = 1.25206 - 1.11303I$ $b = 2.29337 + 0.21215I$	$9.89948 + 4.09070I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.894077+1.060480I$ $a=\ 1.15539+1.20734I$ $b=\ 2.31337-0.14581I$	$6.5826-12.7219I$	0
$u=-0.894077-1.060480I$ $a=\ 1.15539-1.20734I$ $b=\ 2.31337+0.14581I$	$6.5826+12.7219I$	0
$u=-0.918184+1.042580I$ $a=-1.18777-1.16067I$ $b=-2.30068+0.17262I$	$11.8898-8.5952I$	0
$u=-0.918184-1.042580I$ $a=-1.18777+1.16067I$ $b=-2.30068-0.17262I$	$11.8898+8.5952I$	0
$u=-0.304253+0.441278I$ $a=\ 2.04672+0.15438I$ $b=\ 0.690845-0.856203I$	$-0.29697-2.23720I$	$-4.18982+2.52656I$
$u=-0.304253-0.441278I$ $a=\ 2.04672-0.15438I$ $b=\ 0.690845+0.856203I$	$-0.29697+2.23720I$	$-4.18982-2.52656I$
$u=-0.035517+0.529752I$ $a=-1.44264-0.17191I$ $b=-0.142307+0.758134I$	$-0.933124+0.964799I$	$-7.52834-5.01190I$
$u=-0.035517-0.529752I$ $a=-1.44264+0.17191I$ $b=-0.142307-0.758134I$	$-0.933124-0.964799I$	$-7.52834+5.01190I$
$u=-0.356068$ $a=-2.32453$ $b=-0.827691$	-1.93664	-5.10000

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

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

(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_8	u^{10}
c_6	$(u^5 - 3u^4 + 4u^3 - u^2 - u + 1)^2$
c_7	$(u^5 + u^4 - 2u^3 - u^2 + u - 1)^2$
c_9, c_{12}	$(u^5 + u^4 + 2u^3 + u^2 + u + 1)^2$
c_{10}, c_{11}	$(u^5 - u^4 - 2u^3 + u^2 + u + 1)^2$

(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_8	y^{10}
c_6	$(y^5-y^4+8y^3-3y^2+3y-1)^2$
c_7, c_{10}, c_{11}	$(y^5-5y^4+8y^3-3y^2-y-1)^2$
c_9, c_{12}	$(y^5+3y^4+4y^3+y^2-y-1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.500000 + 0.866025I$ $a = -0.881753 - 0.117510I$ $b = -0.339110 - 0.822375I$	$-0.329100 + 0.499304I$	$-2.53179 + 1.09027I$
$u = 0.500000 + 0.866025I$ $a = 0.542643 + 0.704866I$ $b = -0.339110 + 0.822375I$	$-0.32910 + 3.56046I$	$-5.04069 - 7.43801I$
$u = 0.500000 + 0.866025I$ $a = 0.383413 - 0.664091I$ $b = 0.766826$	$-2.40108 + 2.02988I$	$-6.62546 - 4.42764I$
$u = 0.500000 + 0.866025I$ $a = -0.811514 - 0.994721I$ $b = 0.455697 - 1.200150I$	$-5.87256 - 2.37095I$	$-6.60498 - 0.29447I$
$u = 0.500000 + 0.866025I$ $a = 1.267210 + 0.205431I$ $b = 0.455697 + 1.200150I$	$-5.87256 + 6.43072I$	$-9.19707 - 7.98272I$
$u = 0.500000 - 0.866025I$ $a = -0.881753 + 0.117510I$ $b = -0.339110 + 0.822375I$	$-0.329100 - 0.499304I$	$-2.53179 - 1.09027I$
$u = 0.500000 - 0.866025I$ $a = 0.542643 - 0.704866I$ $b = -0.339110 - 0.822375I$	$-0.32910 - 3.56046I$	$-5.04069 + 7.43801I$
$u = 0.500000 - 0.866025I$ $a = 0.383413 + 0.664091I$ $b = 0.766826$	$-2.40108 - 2.02988I$	$-6.62546 + 4.42764I$
$u = 0.500000 - 0.866025I$ $a = -0.811514 + 0.994721I$ $b = 0.455697 + 1.200150I$	$-5.87256 + 2.37095I$	$-6.60498 + 0.29447I$
$u = 0.500000 - 0.866025I$ $a = 1.267210 - 0.205431I$ $b = 0.455697 - 1.200150I$	$-5.87256 - 6.43072I$	$-9.19707 + 7.98272I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^2-u+1)^5)(u^{39}+8u^{38}+\cdots-10u-1)$
c_2	$((u^2+u+1)^5)(u^{39}+6u^{38}+\cdots+6u+1)$
c_3	$((u^2-u+1)^5)(u^{39}-6u^{38}+\cdots+227832u+23497)$
c_4, c_8	$u^{10}(u^{39}+u^{38}+\cdots+2048u+1024)$
c_5	$((u^2-u+1)^5)(u^{39}+6u^{38}+\cdots+6u+1)$
c_6	$((u^5-3u^4+4u^3-u^2-u+1)^2)(u^{39}-9u^{38}+\cdots+179u-17)$
c_7	$((u^5+u^4-2u^3-u^2+u-1)^2)(u^{39}+3u^{38}+\cdots-3u+1)$
c_9	$((u^5+u^4+2u^3+u^2+u+1)^2)(u^{39}-3u^{38}+\cdots-3u+1)$
c_{10}, c_{11}	$((u^5-u^4-2u^3+u^2+u+1)^2)(u^{39}+3u^{38}+\cdots-3u+1)$
c_{12}	$((u^5+u^4+2u^3+u^2+u+1)^2)(u^{39}+11u^{38}+\cdots+267u+73)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y^2+y+1)^5)(y^{39}+52y^{38}+\cdots+58y-1)$
c_2, c_5	$((y^2+y+1)^5)(y^{39}+8y^{38}+\cdots-10y-1)$
c_3	$((y^2+y+1)^5)(y^{39}+96y^{38}+\cdots-1.43297\times10^{10}y-5.52109\times10^8)$
c_4, c_8	$y^{10}(y^{39}+55y^{38}+\cdots-5242880y-1048576)$
c_6	$((y^5-y^4+8y^3-3y^2+3y-1)^2)(y^{39}+9y^{38}+\cdots+2665y-289)$
c_7, c_{10}, c_{11}	$((y^5-5y^4+8y^3-3y^2-y-1)^2)(y^{39}-35y^{38}+\cdots-3y-1)$
c_9	$((y^5+3y^4+4y^3+y^2-y-1)^2)(y^{39}-67y^{38}+\cdots-3y-1)$
c_{12}	$((y^5+3y^4+4y^3+y^2-y-1)^2)(y^{39}-7y^{38}+\cdots-292543y-5329)$