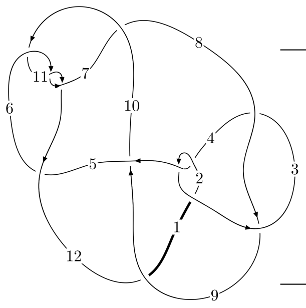
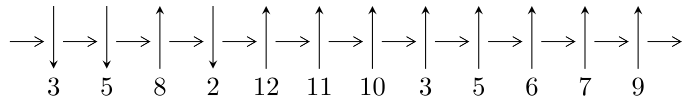
$12n_{0239}$ ($K12n_{0239}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -u^{28} - u^{27} + \cdots + b + u,\ 3u^{28} + 3u^{27} + \cdots + a + 1,\ u^{29} + 2u^{28} + \cdots - u + 1\rangle$$
$$I_2^u = \langle -u^3 + b + u + 1,\ -u^6 + 3u^4 + u^3 - 2u^2 + a - u - 2,\ u^8 - u^7 - 3u^6 + 2u^5 + 3u^4 - 2u - 1\rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 37 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.

$$\boldsymbol{I_1^u = \langle -u^{28}-u^{27}+\cdots+b+u,\ 3u^{28}+3u^{27}+\cdots+a+1,\ u^{29}+2u^{28}+\cdots-u+1\rangle}$$

(i) Arc colorings

$$a_6 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_7 = \begin{pmatrix}1\\-u^2\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}u\\-u^3+u\end{pmatrix}$$
$$a_3 = \begin{pmatrix}-3u^{28}-3u^{27}+\cdots-u-1\\u^{28}+u^{27}+\cdots+6u^2-u\end{pmatrix}$$
$$a_5 = \begin{pmatrix}-u^4+u^2+1\\u^6-2u^4+u^2\end{pmatrix}$$
$$a_2 = \begin{pmatrix}-2u^{28}-2u^{27}+\cdots-3u-1\\u^{28}+u^{27}+\cdots+5u^2-u\end{pmatrix}$$
$$a_1 = \begin{pmatrix}-u^{21}+8u^{19}+\cdots-6u^3-u\\u^{23}-9u^{21}+\cdots+4u^3-u\end{pmatrix}$$
$$a_4 = \begin{pmatrix}-u^{28}-u^{27}+\cdots-5u^2-3u\\u^{28}+u^{27}+\cdots+8u^3+5u^2\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}-u\\u\end{pmatrix}$$
$$a_8 = \begin{pmatrix}-u^4+u^2+1\\u^4-2u^2\end{pmatrix}$$
$$a_9 = \begin{pmatrix}u^{11}-4u^9+4u^7+2u^5-3u^3-2u\\-u^{13}+5u^{11}-9u^9+6u^7-u^3+u\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= -5u^{28}-4u^{27}+53u^{26}+33u^{25}-247u^{24}-102u^{23}+634u^{22}+96u^{21}-879u^{20}+214u^{19}+362u^{18}-658u^{17}+771u^{16}+486u^{15}-1175u^{14}+371u^{13}+217u^{12}-670u^{11}+671u^{10}-12u^9-364u^8+380u^7-164u^6-26u^5+109u^4-112u^3+24u^2-15u-1$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{29} + 45u^{28} + \cdots + 63u + 1$
c_2, c_4	$u^{29} - 9u^{28} + \cdots - 15u + 1$
c_3, c_8	$u^{29} + u^{28} + \cdots - 640u + 256$
c_5, c_7	$u^{29} + 6u^{28} + \cdots - 27u - 7$
c_6, c_{10}, c_{11}	$u^{29} - 2u^{28} + \cdots - u - 1$
c_9	$u^{29} + 2u^{28} + \cdots + 847u - 505$
c_{12}	$u^{29} + 30u^{27} + \cdots - u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{29} - 113y^{28} + \cdots + 3195y - 1$
c_2, c_4	$y^{29} - 45y^{28} + \cdots + 63y - 1$
c_3, c_8	$y^{29} + 51y^{28} + \cdots + 835584y - 65536$
c_5, c_7	$y^{29} + 24y^{28} + \cdots + 239y - 49$
c_6, c_{10}, c_{11}	$y^{29} - 24y^{28} + \cdots - y - 1$
c_9	$y^{29} + 24y^{28} + \cdots - 2572161y - 255025$
c_{12}	$y^{29} + 60y^{28} + \cdots - y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.116211 + 0.866176I$ $a = 0.518979 - 0.390879I$ $b = 0.83718 - 3.00348I$	$-18.1545 + 6.4457I$	$-0.28264 - 3.13315I$
$u = 0.116211 - 0.866176I$ $a = 0.518979 + 0.390879I$ $b = 0.83718 + 3.00348I$	$-18.1545 - 6.4457I$	$-0.28264 + 3.13315I$
$u = 0.025688 + 0.825088I$ $a = -0.594569 + 0.459352I$ $b = -0.23014 + 2.32002I$	$-6.93251 + 1.75256I$	$-0.94314 - 1.34488I$
$u = 0.025688 - 0.825088I$ $a = -0.594569 - 0.459352I$ $b = -0.23014 - 2.32002I$	$-6.93251 - 1.75256I$	$-0.94314 + 1.34488I$
$u = 1.19941$ $a = 2.02803$ $b = -1.96066$	0.978770	8.30090
$u = 1.149060 + 0.431164I$ $a = -2.80477 - 0.74741I$ $b = 1.17842 + 2.47370I$	$-14.9885 - 1.7991I$	$2.59660 - 0.52377I$
$u = 1.149060 - 0.431164I$ $a = -2.80477 + 0.74741I$ $b = 1.17842 - 2.47370I$	$-14.9885 + 1.7991I$	$2.59660 + 0.52377I$
$u = -0.078085 + 0.755576I$ $a = 0.230600 - 0.278548I$ $b = -0.073065 - 0.703159I$	$-2.53613 - 2.06791I$	$5.52324 + 3.00073I$
$u = -0.078085 - 0.755576I$ $a = 0.230600 + 0.278548I$ $b = -0.073065 + 0.703159I$	$-2.53613 + 2.06791I$	$5.52324 - 3.00073I$
$u = -1.215610 + 0.296484I$ $a = 0.992404 - 0.146386I$ $b = -0.306342 + 0.431513I$	$0.91968 - 1.73508I$	$8.51016 + 0.61510I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.215610-0.296484I$ $a=\ 0.992404+0.146386I$ $b=-0.306342-0.431513I$	$0.91968+1.73508I$	$8.51016-0.61510I$
$u=\ 0.497421+0.544735I$ $a=-1.52270+0.49021I$ $b=\ 0.327073-0.572505I$	$-12.40890+1.96182I$	$2.44090-3.22875I$
$u=\ 0.497421-0.544735I$ $a=-1.52270-0.49021I$ $b=\ 0.327073+0.572505I$	$-12.40890-1.96182I$	$2.44090+3.22875I$
$u=-1.274370+0.082675I$ $a=\ 0.269484+1.345140I$ $b=\ 0.022151-0.326489I$	$2.70011-2.01756I$	$7.88389+3.97312I$
$u=-1.274370-0.082675I$ $a=\ 0.269484-1.345140I$ $b=\ 0.022151+0.326489I$	$2.70011+2.01756I$	$7.88389-3.97312I$
$u=\ 1.248070+0.369947I$ $a=\ 1.89588+1.19040I$ $b=-0.78649-2.39370I$	$-3.15292+2.54446I$	$2.89231-2.35754I$
$u=\ 1.248070-0.369947I$ $a=\ 1.89588-1.19040I$ $b=-0.78649+2.39370I$	$-3.15292-2.54446I$	$2.89231+2.35754I$
$u=-1.289030+0.369909I$ $a=-2.15007+1.65647I$ $b=\ 0.23955-2.15882I$	$-2.83662-6.04967I$	$3.35930+4.53104I$
$u=-1.289030-0.369909I$ $a=-2.15007-1.65647I$ $b=\ 0.23955+2.15882I$	$-2.83662+6.04967I$	$3.35930-4.53104I$
$u=\ 1.35324$ $a=-0.560180$ $b=\ 0.713936$	5.98164	16.6760

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.321100 + 0.324348I$ $a = -0.492619 - 0.546231I$ $b = 0.144058 + 0.921802I$	$1.85790 + 5.97624I$	$10.99426 - 4.76972I$
$u = 1.321100 - 0.324348I$ $a = -0.492619 + 0.546231I$ $b = 0.144058 - 0.921802I$	$1.85790 - 5.97624I$	$10.99426 + 4.76972I$
$u = -1.350820 + 0.384218I$ $a = 1.84401 - 2.84917I$ $b = 0.46306 + 3.28611I$	$-13.5440 - 10.9372I$	$3.78628 + 5.28747I$
$u = -1.350820 - 0.384218I$ $a = 1.84401 + 2.84917I$ $b = 0.46306 - 3.28611I$	$-13.5440 + 10.9372I$	$3.78628 - 5.28747I$
$u = -1.41186 + 0.13721I$ $a = -0.04816 - 1.43092I$ $b = -0.645077 + 1.183340I$	$-6.30066 - 4.18073I$	$6.94767 + 2.86022I$
$u = -1.41186 - 0.13721I$ $a = -0.04816 + 1.43092I$ $b = -0.645077 - 1.183340I$	$-6.30066 + 4.18073I$	$6.94767 - 2.86022I$
$u = -0.378524$ $a = 0.615391$ $b = 0.176038$	0.641421	15.6290
$u = 0.175172 + 0.291603I$ $a = 0.31991 - 2.02255I$ $b = -0.635045 + 0.442420I$	$-1.62334 + 0.70173I$	$-1.51173 - 3.13517I$
$u = 0.175172 - 0.291603I$ $a = 0.31991 + 2.02255I$ $b = -0.635045 - 0.442420I$	$-1.62334 - 0.70173I$	$-1.51173 + 3.13517I$

II. $\boldsymbol{I_2^u =}$
$\boldsymbol{\langle -u^3+b+u+1,\ -u^6+3u^4+u^3-2u^2+a-u-2,\ u^8-u^7-3u^6+2u^5+3u^4-2u-1\rangle}$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u^6 - 3u^4 - u^3 + 2u^2 + u + 2 \\ u^3 - u - 1 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -u^4 + u^2 + 1 \\ u^6 - 2u^4 + u^2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} u^6 - 2u^4 - u^3 + u^2 + u + 1 \\ -u^6 + 2u^4 + u^3 - u^2 - u - 1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^4 - u^2 - 1 \\ -u^6 + 2u^4 - u^2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} u^6 - 3u^4 - u^3 + 2u^2 + u + 2 \\ u^3 - u - 1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u^4 + u^2 + 1 \\ u^4 - 2u^2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -u^4 + u^2 + 1 \\ u^4 - 2u^2 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= u^7 + 2u^6 - 2u^5 - 8u^4 - 3u^3 + 7u^2 + 8u + 7$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2	$(u-1)^8$
c_3, c_8	u^8
c_4	$(u+1)^8$
c_5, c_7	$u^8+3u^7+7u^6+10u^5+11u^4+10u^3+6u^2+4u+1$
c_6	$u^8-u^7-3u^6+2u^5+3u^4-2u-1$
c_9, c_{12}	$u^8-u^7-u^6+2u^5+u^4-2u^3+2u-1$
c_{10}, c_{11}	$u^8+u^7-3u^6-2u^5+3u^4+2u-1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y-1)^8$
c_3, c_8	y^8
c_5, c_7	$y^8 + 5y^7 + 11y^6 + 6y^5 - 17y^4 - 34y^3 - 22y^2 - 4y + 1$
c_6, c_{10}, c_{11}	$y^8 - 7y^7 + 19y^6 - 22y^5 + 3y^4 + 14y^3 - 6y^2 - 4y + 1$
c_9, c_{12}	$y^8 - 3y^7 + 7y^6 - 10y^5 + 11y^4 - 10y^3 + 6y^2 - 4y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.180120 + 0.268597I$ $a = 1.53392 - 0.14090I$ $b = -1.20799 + 0.83423I$	$-0.604279 - 1.131230I$	$3.90459 + 0.80511I$
$u = -1.180120 - 0.268597I$ $a = 1.53392 + 0.14090I$ $b = -1.20799 - 0.83423I$	$-0.604279 + 1.131230I$	$3.90459 - 0.80511I$
$u = -0.108090 + 0.747508I$ $a = -0.322641 + 0.144481I$ $b = -0.711982 - 1.138990I$	$-3.80435 - 2.57849I$	$-0.21961 + 3.88175I$
$u = -0.108090 - 0.747508I$ $a = -0.322641 - 0.144481I$ $b = -0.711982 + 1.138990I$	$-3.80435 + 2.57849I$	$-0.21961 - 3.88175I$
$u = 1.37100$ $a = 0.595007$ $b = 0.205997$	4.85780	7.82890
$u = 1.334530 + 0.318930I$ $a = -0.47742 - 1.64247I$ $b = -0.365014 + 1.352640I$	$0.73474 + 6.44354I$	$4.50908 - 6.04101I$
$u = 1.334530 - 0.318930I$ $a = -0.47742 + 1.64247I$ $b = -0.365014 - 1.352640I$	$0.73474 - 6.44354I$	$4.50908 + 6.04101I$
$u = -0.463640$ $a = 1.93726$ $b = -0.636025$	-0.799899	4.78300

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^8)(u^{29}+45u^{28}+\cdots+63u+1)$
c_2	$((u-1)^8)(u^{29}-9u^{28}+\cdots-15u+1)$
c_3, c_8	$u^8(u^{29}+u^{28}+\cdots-640u+256)$
c_4	$((u+1)^8)(u^{29}-9u^{28}+\cdots-15u+1)$
c_5, c_7	$(u^8+3u^7+7u^6+10u^5+11u^4+10u^3+6u^2+4u+1)$ $\cdot(u^{29}+6u^{28}+\cdots-27u-7)$
c_6	$(u^8-u^7-3u^6+2u^5+3u^4-2u-1)(u^{29}-2u^{28}+\cdots-u-1)$
c_9	$(u^8-u^7+\cdots+2u-1)(u^{29}+2u^{28}+\cdots+847u-505)$
c_{10}, c_{11}	$(u^8+u^7-3u^6-2u^5+3u^4+2u-1)(u^{29}-2u^{28}+\cdots-u-1)$
c_{12}	$(u^8-u^7+\cdots+2u-1)(u^{29}+30u^{27}+\cdots-u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^8)(y^{29}-113y^{28}+\cdots+3195y-1)$
c_2, c_4	$((y-1)^8)(y^{29}-45y^{28}+\cdots+63y-1)$
c_3, c_8	$y^8(y^{29}+51y^{28}+\cdots+835584y-65536)$
c_5, c_7	$(y^8+5y^7+11y^6+6y^5-17y^4-34y^3-22y^2-4y+1)$ $\cdot(y^{29}+24y^{28}+\cdots+239y-49)$
c_6, c_{10}, c_{11}	$(y^8-7y^7+19y^6-22y^5+3y^4+14y^3-6y^2-4y+1)$ $\cdot(y^{29}-24y^{28}+\cdots-y-1)$
c_9	$(y^8-3y^7+7y^6-10y^5+11y^4-10y^3+6y^2-4y+1)$ $\cdot(y^{29}+24y^{28}+\cdots-2572161y-255025)$
c_{12}	$(y^8-3y^7+7y^6-10y^5+11y^4-10y^3+6y^2-4y+1)$ $\cdot(y^{29}+60y^{28}+\cdots-y-1)$