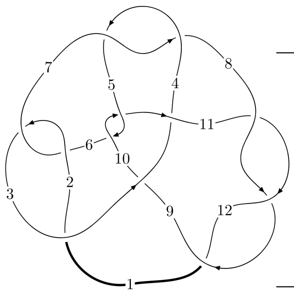
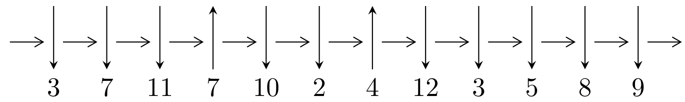
$12n_{0590}$ $(K12n_{0590})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 24558310627155u^{21} + 76226351773367u^{20} + \cdots + 8269899437976 23b - 264882167921191,$$
$$-1.11442 \times 10^{15}u^{21} - 1.96283 \times 10^{15}u^{20} + \cdots + 5.78893 \times 10^{15}a + 1.82405 \times 10^{14},\ u^{22} + u^{21} + \cdots - 12u -$$
$$I_2^u = \langle -u^7 + 5u^5 + u^4 - 7u^3 - 2u^2 + b + 2u,\ u^{10} - 8u^8 + 23u^6 - u^5 - 29u^4 + 4u^3 + 15u^2 + a - 4u - 1,$$
$$u^{11} - 8u^9 - u^8 + 23u^7 + 5u^6 - 28u^5 - 7u^4 + 13u^3 + 2u^2 - 2u - 1\rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 33 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.

$\boldsymbol{I_1^u = \langle 2.46\times10^{13}u^{21}+7.62\times10^{13}u^{20}+\cdots+8.27\times10^{14}b-2.65\times10^{14},\ -1.11\times10^{15}u^{21}-1.96\times10^{15}u^{20}+\cdots+5.79\times10^{15}a+1.82\times10^{14},\ u^{22}+u^{21}+\cdots-12u+7\rangle}$

(i) Arc colorings

$$a_8 = \begin{pmatrix}0\\u\end{pmatrix}$$

$$a_{11} = \begin{pmatrix}1\\0\end{pmatrix}$$

$$a_{12} = \begin{pmatrix}1\\u^2\end{pmatrix}$$

$$a_9 = \begin{pmatrix}-u\\-u^3+u\end{pmatrix}$$

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

$$a_4 = \begin{pmatrix}0.192509u^{21}+0.339065u^{20}+\cdots+1.66279u-0.0315092\\-0.0296960u^{21}-0.0921733u^{20}+\cdots-0.726566u+0.320297\end{pmatrix}$$

$$a_3 = \begin{pmatrix}0.162813u^{21}+0.246892u^{20}+\cdots+0.936221u+0.288788\\-0.0296960u^{21}-0.0921733u^{20}+\cdots-0.726566u+0.320297\end{pmatrix}$$

$$a_7 = \begin{pmatrix}-0.308808u^{21}-0.423908u^{20}+\cdots-4.90570u+3.29659\\-0.0596766u^{21}-0.0810654u^{20}+\cdots+1.56726u+0.227107\end{pmatrix}$$

$$a_5 = \begin{pmatrix}-0.193496u^{21}-0.277468u^{20}+\cdots+1.30428u+0.534875\\0.117215u^{21}+0.139319u^{20}+\cdots-0.863885u-0.561596\end{pmatrix}$$

$$a_2 = \begin{pmatrix}-0.340275u^{21}-0.520418u^{20}+\cdots-1.11925u+4.17997\\-0.0351453u^{21}-0.0475187u^{20}+\cdots-0.171350u-0.289676\end{pmatrix}$$

$$a_6 = \begin{pmatrix}0.285354u^{21}+0.292486u^{20}+\cdots-3.40992u-0.148449\\-0.0727430u^{21}-0.200381u^{20}+\cdots+1.21818u+0.857957\end{pmatrix}$$

$$a_{10} = \begin{pmatrix}-0.115641u^{21}-0.306721u^{20}+\cdots-4.96241u+2.03078\\0.148193u^{21}+0.158198u^{20}+\cdots+1.75028u-0.764596\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$= -\frac{5642994687059}{826989943797623}u^{21}+\frac{135118301910616}{826989943797623}u^{20}+\cdots+\frac{9106726180669764}{826989943797623}u-\frac{9982429531246890}{826989943797623}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{22} + 44u^{21} + \cdots + 111391u + 14641$
c_2, c_6	$u^{22} - 22u^{20} + \cdots - 95u - 121$
c_3	$u^{22} + 3u^{21} + \cdots - 13u - 5$
c_4, c_7	$u^{22} + 5u^{21} + \cdots + 2u + 1$
c_5, c_{10}	$u^{22} - u^{21} + \cdots - 123u - 173$
c_8, c_{11}, c_{12}	$u^{22} + u^{21} + \cdots - 12u + 7$
c_9	$u^{22} - 6u^{21} + \cdots - 66255u - 6691$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{22} - 140y^{21} + \cdots - 15971954947y + 214358881$
c_2, c_6	$y^{22} - 44y^{21} + \cdots - 111391y + 14641$
c_3	$y^{22} - 3y^{21} + \cdots - 319y + 25$
c_4, c_7	$y^{22} + 21y^{21} + \cdots - 40y + 1$
c_5, c_{10}	$y^{22} - 9y^{21} + \cdots - 332065y + 29929$
c_8, c_{11}, c_{12}	$y^{22} - 37y^{21} + \cdots - 186y + 49$
c_9	$y^{22} - 122y^{21} + \cdots - 1381946559y + 44769481$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.813375 + 0.695520I$ $a = -0.621272 + 0.888438I$ $b = 0.930849 - 0.474906I$	$-3.57261 + 1.24203I$	$-13.51654 - 2.69011I$
$u = -0.813375 - 0.695520I$ $a = -0.621272 - 0.888438I$ $b = 0.930849 + 0.474906I$	$-3.57261 - 1.24203I$	$-13.51654 + 2.69011I$
$u = 1.14577$ $a = -1.21118$ $b = -0.786013$	-5.50697	-18.3200
$u = 0.689625 + 0.112216I$ $a = 0.60149 + 2.27758I$ $b = 0.783398 - 0.626729I$	$-2.94663 + 3.18256I$	$-14.1931 - 4.5682I$
$u = 0.689625 - 0.112216I$ $a = 0.60149 - 2.27758I$ $b = 0.783398 + 0.626729I$	$-2.94663 - 3.18256I$	$-14.1931 + 4.5682I$
$u = -1.42854 + 0.12438I$ $a = -0.118525 + 0.124764I$ $b = -0.515254 - 0.715646I$	$-3.21068 - 1.94100I$	$-8.44193 + 4.49457I$
$u = -1.42854 - 0.12438I$ $a = -0.118525 - 0.124764I$ $b = -0.515254 + 0.715646I$	$-3.21068 + 1.94100I$	$-8.44193 - 4.49457I$
$u = 0.439809 + 0.342493I$ $a = 0.658925 - 0.629517I$ $b = 0.104940 + 1.110730I$	$2.79807 - 1.24078I$	$-2.39806 + 5.78935I$
$u = 0.439809 - 0.342493I$ $a = 0.658925 + 0.629517I$ $b = 0.104940 - 1.110730I$	$2.79807 + 1.24078I$	$-2.39806 - 5.78935I$
$u = -1.47818 + 0.29462I$ $a = -0.196203 + 1.126150I$ $b = -0.95775 - 1.05246I$	$-10.23510 - 1.31699I$	$-13.69750 + 1.12150I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.47818-0.29462I$ $a=-0.196203-1.126150I$ $b=-0.95775+1.05246I$	$-10.23510+1.31699I$	$-13.69750-1.12150I$
$u=-0.389548$ $a=\ \ 0.489094$ $b=\ \ 0.423427$	-0.651086	-15.1770
$u=\ \ 0.055531+0.375870I$ $a=\ \ 3.27936-0.40059I$ $b=-0.735830+0.136693I$	$-1.05201+2.37866I$	$-7.37484+0.30199I$
$u=\ \ 0.055531-0.375870I$ $a=\ \ 3.27936+0.40059I$ $b=-0.735830-0.136693I$	$-1.05201-2.37866I$	$-7.37484-0.30199I$
$u=\ \ 1.54618+0.54222I$ $a=\ \ 0.045294+0.967197I$ $b=-1.17072-0.88115I$	$-11.07800-6.11809I$	$-13.7689+3.7652I$
$u=\ \ 1.54618-0.54222I$ $a=\ \ 0.045294-0.967197I$ $b=-1.17072+0.88115I$	$-11.07800+6.11809I$	$-13.7689-3.7652I$
$u=-1.78595$ $a=\ \ 1.55694$ $b=\ \ 0.706857$	-16.3042	-23.6750
$u=\ \ 1.92376+0.13131I$ $a=-0.017132+0.779055I$ $b=\ \ 1.13005-1.28185I$	$16.3680-1.4414I$	$-13.10276+0.15786I$
$u=\ \ 1.92376-0.13131I$ $a=-0.017132-0.779055I$ $b=\ \ 1.13005+1.28185I$	$16.3680+1.4414I$	$-13.10276-0.15786I$
$u=-1.92464+0.18067I$ $a=\ \ 0.224483+0.973602I$ $b=\ \ 1.24119-1.08462I$	$15.7619+10.2221I$	$-12.91781-4.03002I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.92464 - 0.18067I$ $a = 0.224483 - 0.973602I$ $b = 1.24119 + 1.08462I$	$15.7619 - 10.2221I$	$-12.91781 + 4.03002I$
$u = 2.00938$ $a = -0.119138$ $b = 1.03398$	-17.7473	-16.0060

II. $I_2^u =$
$\langle -u^7+5u^5+u^4-7u^3-2u^2+b+2u,\ u^{10}-8u^8+\cdots+a-1,\ u^{11}-8u^9+\cdots-2u-1\rangle$

(i) Arc colorings

$$a_8 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u \\ -u^3+u \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} -u^{10}+8u^8-23u^6+u^5+29u^4-4u^3-15u^2+4u+1 \\ u^7-5u^5-u^4+7u^3+2u^2-2u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -u^{10}+8u^8+u^7-23u^6-4u^5+28u^4+3u^3-13u^2+2u+1 \\ u^7-5u^5-u^4+7u^3+2u^2-2u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^8-u^7+6u^6+6u^5-11u^4-10u^3+7u^2+4u-3 \\ -u^{10}+7u^8+u^7-17u^6-4u^5+17u^4+4u^3-7u^2+1 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u^{10}-8u^8-u^7+23u^6+5u^5-28u^4-6u^3+14u^2-3 \\ -u^{10}+7u^8+u^7-17u^6-4u^5+16u^4+4u^3-4u^2 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u^8+u^7-6u^6-5u^5+11u^4+7u^3-7u^2-2u+2 \\ u^7-5u^5-2u^4+7u^3+5u^2-2u-1 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} u^{10}-7u^8-u^7+18u^6+5u^5-20u^4-7u^3+9u^2+2u-2 \\ -u^7+5u^5+u^4-7u^3-3u^2+2u+1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u^9+u^8-6u^7-6u^6+11u^5+10u^4-7u^3-3u^2+3u \\ -u^3+2u+1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes
$= 2u^{10}-2u^9-17u^8+12u^7+54u^6-24u^5-73u^4+21u^3+35u^2-12u-17$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{11} - 11u^{10} + \cdots + 5u - 1$
c_2	$u^{11} - 3u^{10} - u^9 + 8u^8 - 2u^7 - 10u^6 + 5u^5 + 6u^4 - 5u^3 - 2u^2 + 3u - 1$
c_3	$u^{11} - 2u^{10} + 3u^9 - 2u^8 + u^7 + u^6 - u^5 + u^4 + 5u^3 - 4u^2 - u + 1$
c_4	$u^{11} + 3u^9 - 6u^8 + u^7 - 20u^6 - 4u^5 - 26u^4 - 6u^3 - 15u^2 - 4u - 3$
c_5	$u^{11} + 4u^9 - u^8 + 4u^7 - 4u^6 - u^5 - 5u^4 - 2u^3 - 3u^2 - u - 1$
c_6	$u^{11} + 3u^{10} - u^9 - 8u^8 - 2u^7 + 10u^6 + 5u^5 - 6u^4 - 5u^3 + 2u^2 + 3u + 1$
c_7	$u^{11} + 3u^9 + 6u^8 + u^7 + 20u^6 - 4u^5 + 26u^4 - 6u^3 + 15u^2 - 4u + 3$
c_8	$u^{11} - 8u^9 + u^8 + 23u^7 - 5u^6 - 28u^5 + 7u^4 + 13u^3 - 2u^2 - 2u + 1$
c_9	$u^{11} - 5u^{10} + \cdots + 5u - 1$
c_{10}	$u^{11} + 4u^9 + u^8 + 4u^7 + 4u^6 - u^5 + 5u^4 - 2u^3 + 3u^2 - u + 1$
c_{11}, c_{12}	$u^{11} - 8u^9 - u^8 + 23u^7 + 5u^6 - 28u^5 - 7u^4 + 13u^3 + 2u^2 - 2u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{11} - 31y^{10} + \cdots - 19y - 1$
c_2, c_6	$y^{11} - 11y^{10} + \cdots + 5y - 1$
c_3	$y^{11} + 2y^{10} + \cdots + 9y - 1$
c_4, c_7	$y^{11} + 6y^{10} + \cdots - 74y - 9$
c_5, c_{10}	$y^{11} + 8y^{10} + \cdots - 5y - 1$
c_8, c_{11}, c_{12}	$y^{11} - 16y^{10} + \cdots + 8y - 1$
c_9	$y^{11} - 33y^{10} + \cdots - 11y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.137090 + 0.296275I$ $a = -0.112692 - 0.807373I$ $b = -0.583202 - 0.143276I$	$-4.14701 - 1.11671I$	$-15.2828 + 0.9622I$
$u = -1.137090 - 0.296275I$ $a = -0.112692 + 0.807373I$ $b = -0.583202 + 0.143276I$	$-4.14701 + 1.11671I$	$-15.2828 - 0.9622I$
$u = 0.592958 + 0.265544I$ $a = -0.648705 - 0.517226I$ $b = 0.224636 + 1.262620I$	$2.05237 - 0.90366I$	$-12.99258 + 0.59002I$
$u = 0.592958 - 0.265544I$ $a = -0.648705 + 0.517226I$ $b = 0.224636 - 1.262620I$	$2.05237 + 0.90366I$	$-12.99258 - 0.59002I$
$u = 1.52480 + 0.07903I$ $a = -0.465943 + 0.973368I$ $b = -1.133880 - 0.701740I$	$-7.77644 - 4.37367I$	$-13.16320 + 3.47973I$
$u = 1.52480 - 0.07903I$ $a = -0.465943 - 0.973368I$ $b = -1.133880 + 0.701740I$	$-7.77644 + 4.37367I$	$-13.16320 - 3.47973I$
$u = -1.59014 + 0.09758I$ $a = 0.004921 - 0.710560I$ $b = -0.62219 + 1.27817I$	$-5.52612 + 2.32410I$	$-12.39685 - 2.31746I$
$u = -1.59014 - 0.09758I$ $a = 0.004921 + 0.710560I$ $b = -0.62219 - 1.27817I$	$-5.52612 - 2.32410I$	$-12.39685 + 2.31746I$
$u = -0.300210 + 0.263166I$ $a = -1.31732 + 2.93205I$ $b = 0.867895 - 0.444411I$	$-1.38510 + 3.17083I$	$-10.45196 - 6.81024I$
$u = -0.300210 - 0.263166I$ $a = -1.31732 - 2.93205I$ $b = 0.867895 + 0.444411I$	$-1.38510 - 3.17083I$	$-10.45196 + 6.81024I$

Solutions to I_2^u		$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=$	1.81936		
$a=$	1.07948	−15.7834	−7.42530
$b=$	0.493485		

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^{11} - 11u^{10} + \cdots + 5u - 1)(u^{22} + 44u^{21} + \cdots + 111391u + 14641)$
c_2	$(u^{11} - 3u^{10} - u^9 + 8u^8 - 2u^7 - 10u^6 + 5u^5 + 6u^4 - 5u^3 - 2u^2 + 3u - 1)$ $\cdot (u^{22} - 22u^{20} + \cdots - 95u - 121)$
c_3	$(u^{11} - 2u^{10} + 3u^9 - 2u^8 + u^7 + u^6 - u^5 + u^4 + 5u^3 - 4u^2 - u + 1)$ $\cdot (u^{22} + 3u^{21} + \cdots - 13u - 5)$
c_4	$(u^{11} + 3u^9 - 6u^8 + u^7 - 20u^6 - 4u^5 - 26u^4 - 6u^3 - 15u^2 - 4u - 3)$ $\cdot (u^{22} + 5u^{21} + \cdots + 2u + 1)$
c_5	$(u^{11} + 4u^9 - u^8 + 4u^7 - 4u^6 - u^5 - 5u^4 - 2u^3 - 3u^2 - u - 1)$ $\cdot (u^{22} - u^{21} + \cdots - 123u - 173)$
c_6	$(u^{11} + 3u^{10} - u^9 - 8u^8 - 2u^7 + 10u^6 + 5u^5 - 6u^4 - 5u^3 + 2u^2 + 3u + 1)$ $\cdot (u^{22} - 22u^{20} + \cdots - 95u - 121)$
c_7	$(u^{11} + 3u^9 + 6u^8 + u^7 + 20u^6 - 4u^5 + 26u^4 - 6u^3 + 15u^2 - 4u + 3)$ $\cdot (u^{22} + 5u^{21} + \cdots + 2u + 1)$
c_8	$(u^{11} - 8u^9 + u^8 + 23u^7 - 5u^6 - 28u^5 + 7u^4 + 13u^3 - 2u^2 - 2u + 1)$ $\cdot (u^{22} + u^{21} + \cdots - 12u + 7)$
c_9	$(u^{11} - 5u^{10} + \cdots + 5u - 1)(u^{22} - 6u^{21} + \cdots - 66255u - 6691)$
c_{10}	$(u^{11} + 4u^9 + u^8 + 4u^7 + 4u^6 - u^5 + 5u^4 - 2u^3 + 3u^2 - u + 1)$ $\cdot (u^{22} - u^{21} + \cdots - 123u - 173)$
c_{11}, c_{12}	$(u^{11} - 8u^9 - u^8 + 23u^7 + 5u^6 - 28u^5 - 7u^4 + 13u^3 + 2u^2 - 2u - 1)$ $\cdot (u^{22} + u^{21} + \cdots - 12u + 7)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y^{11} - 31y^{10} + \cdots - 19y - 1)$ $\cdot\,(y^{22} - 140y^{21} + \cdots - 15971954947y + 214358881)$
c_2, c_6	$(y^{11} - 11y^{10} + \cdots + 5y - 1)(y^{22} - 44y^{21} + \cdots - 111391y + 14641)$
c_3	$(y^{11} + 2y^{10} + \cdots + 9y - 1)(y^{22} - 3y^{21} + \cdots - 319y + 25)$
c_4, c_7	$(y^{11} + 6y^{10} + \cdots - 74y - 9)(y^{22} + 21y^{21} + \cdots - 40y + 1)$
c_5, c_{10}	$(y^{11} + 8y^{10} + \cdots - 5y - 1)(y^{22} - 9y^{21} + \cdots - 332065y + 29929)$
c_8, c_{11}, c_{12}	$(y^{11} - 16y^{10} + \cdots + 8y - 1)(y^{22} - 37y^{21} + \cdots - 186y + 49)$
c_9	$(y^{11} - 33y^{10} + \cdots - 11y - 1)$ $\cdot\,(y^{22} - 122y^{21} + \cdots - 1381946559y + 44769481)$