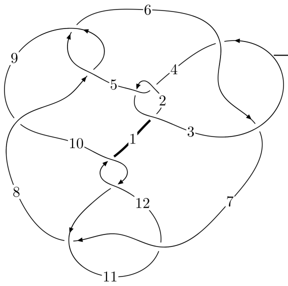
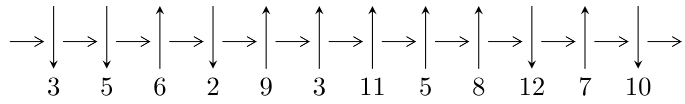
$12n_{0097}$ ($K12n_{0097}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -1.08330 \times 10^{15} u^{28} + 2.63231 \times 10^{15} u^{27} + \cdots + 2.88806 \times 10^{15} b - 3.18100 \times 10^{15},$$
$$- 1.08330 \times 10^{15} u^{28} + 2.63231 \times 10^{15} u^{27} + \cdots + 2.88806 \times 10^{15} a - 3.18100 \times 10^{15},\ u^{29} - 2u^{28} + \cdots + u -$$
$$I_2^u = \langle -u^8 - u^7 + 2u^6 + 3u^5 - u^4 - 3u^3 - 2u^2 + b + u + 1,\ -u^8 - u^7 + 2u^6 + 3u^5 - u^4 - 3u^3 - 2u^2 + a + 1,$$
$$u^9 + u^8 - 2u^7 - 3u^6 + u^5 + 3u^4 + 2u^3 - u - 1\rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 38 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.

$\boldsymbol{I_1^u = \langle -1.08\times 10^{15}u^{28}+2.63\times 10^{15}u^{27}+\cdots+2.89\times 10^{15}b-3.18\times 10^{15},\ -1.08\times 10^{15}u^{28}+2.63\times 10^{15}u^{27}+\cdots+2.89\times 10^{15}a-3.18\times 10^{15},\ u^{29}-2u^{28}+\cdots+u-1\rangle}$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u \\ -u^3+u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 0.375096u^{28} - 0.911447u^{27} + \cdots - 0.238354u + 1.10143 \\ 0.375096u^{28} - 0.911447u^{27} + \cdots + 0.761646u + 1.10143 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -u^2+1 \\ -u^2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 0.375096u^{28} - 0.911447u^{27} + \cdots - 0.238354u + 1.10143 \\ 0.240332u^{28} - 0.538132u^{27} + \cdots + 0.225295u + 1.26269 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 0.360721u^{28} - 0.778371u^{27} + \cdots - 0.736984u + 0.338038 \\ 0.0965394u^{28} - 0.0157569u^{27} + \cdots - 0.674515u + 0.641092 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0.259382u^{28} - 0.660563u^{27} + \cdots + 0.000197369u + 0.997644 \\ 0.264728u^{28} - 0.644578u^{27} + \cdots + 1.13537u + 0.978187 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -0.0381007u^{28} + 0.244861u^{27} + \cdots - 0.549804u + 0.530085 \\ -0.153814u^{28} + 0.495745u^{27} + \cdots - 0.311253u + 0.426298 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0.00860430u^{28} - 0.157377u^{27} + \cdots + 0.318117u - 0.890976 \\ -0.00366395u^{28} - 0.0860215u^{27} + \cdots + 0.240983u - 1.25230 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -0.264182u^{28} + 0.762614u^{27} + \cdots + 0.0624682u + 0.303054 \\ -0.148468u^{28} + 0.511730u^{27} + \cdots - 0.176083u + 0.406841 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$$= \frac{16119990594582668}{2888060083449331}u^{28} - \frac{28126461598340071}{2888060083449331}u^{27} + \cdots + \frac{17982394285452960}{2888060083449331}u + \frac{11832001216098990}{2888060083449331}$$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{29} + 48u^{28} + \cdots + 79u + 1$
c_2, c_4	$u^{29} - 10u^{28} + \cdots + 19u - 1$
c_3, c_6	$u^{29} + 5u^{28} + \cdots + 1536u - 512$
c_5, c_8	$u^{29} - 2u^{28} + \cdots + u - 1$
c_7, c_{11}	$u^{29} + 2u^{28} + \cdots - u - 1$
c_9	$u^{29} + 30u^{27} + \cdots - u - 1$
c_{10}, c_{12}	$u^{29} + 12u^{28} + \cdots - u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{29} - 124y^{28} + \cdots - 7313y - 1$
c_2, c_4	$y^{29} - 48y^{28} + \cdots + 79y - 1$
c_3, c_6	$y^{29} + 57y^{28} + \cdots + 3932160y - 262144$
c_5, c_8	$y^{29} + 30y^{27} + \cdots - y - 1$
c_7, c_{11}	$y^{29} + 12y^{28} + \cdots - y - 1$
c_9	$y^{29} + 60y^{28} + \cdots - 5y - 1$
c_{10}, c_{12}	$y^{29} + 12y^{28} + \cdots + 19y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.365827 + 0.867755I$ $a = -0.58586 - 1.71900I$ $b = -0.220028 - 0.851246I$	$-3.76536 + 5.51790I$	$-3.77377 - 7.24287I$
$u = 0.365827 - 0.867755I$ $a = -0.58586 + 1.71900I$ $b = -0.220028 + 0.851246I$	$-3.76536 - 5.51790I$	$-3.77377 + 7.24287I$
$u = 1.038780 + 0.399171I$ $a = -0.532542 - 0.137121I$ $b = 0.506240 + 0.262051I$	$3.61222 + 0.74335I$	$9.35759 + 0.47912I$
$u = 1.038780 - 0.399171I$ $a = -0.532542 + 0.137121I$ $b = 0.506240 - 0.262051I$	$3.61222 - 0.74335I$	$9.35759 - 0.47912I$
$u = 0.149316 + 0.856366I$ $a = -0.21482 - 2.05855I$ $b = -0.065503 - 1.202180I$	$-4.88663 - 0.95031I$	$-6.59475 + 1.19001I$
$u = 0.149316 - 0.856366I$ $a = -0.21482 + 2.05855I$ $b = -0.065503 + 1.202180I$	$-4.88663 + 0.95031I$	$-6.59475 - 1.19001I$
$u = -1.024520 + 0.534163I$ $a = 0.624645 - 0.175606I$ $b = -0.399874 + 0.358557I$	$2.77162 - 6.24281I$	$6.28797 + 4.80418I$
$u = -1.024520 - 0.534163I$ $a = 0.624645 + 0.175606I$ $b = -0.399874 - 0.358557I$	$2.77162 + 6.24281I$	$6.28797 - 4.80418I$
$u = -0.350587 + 0.709669I$ $a = 0.21366 - 1.51930I$ $b = -0.136928 - 0.809633I$	$-1.85641 - 1.40408I$	$-0.21276 + 2.68754I$
$u = -0.350587 - 0.709669I$ $a = 0.21366 + 1.51930I$ $b = -0.136928 + 0.809633I$	$-1.85641 + 1.40408I$	$-0.21276 - 2.68754I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.563294+0.524681I$ $a=0.170413-0.678152I$ $b=-0.392881-0.153472I$	$-1.43698-1.52178I$	$-1.26786+4.70761I$
$u=-0.563294-0.524681I$ $a=0.170413+0.678152I$ $b=-0.392881+0.153472I$	$-1.43698+1.52178I$	$-1.26786-4.70761I$
$u=0.702050$ $a=-0.244600$ $b=0.457450$	0.941539	11.3890
$u=-0.121762+0.604163I$ $a=-0.084430+0.174292I$ $b=-0.206192+0.778455I$	$0.47173+2.34023I$	$2.64159-2.77169I$
$u=-0.121762-0.604163I$ $a=-0.084430-0.174292I$ $b=-0.206192-0.778455I$	$0.47173-2.34023I$	$2.64159+2.77169I$
$u=-0.444471+0.402241I$ $a=-0.957420-0.680211I$ $b=-1.40189-0.27797I$	$-1.17268-1.39986I$	$-2.59264+6.14012I$
$u=-0.444471-0.402241I$ $a=-0.957420+0.680211I$ $b=-1.40189+0.27797I$	$-1.17268+1.39986I$	$-2.59264-6.14012I$
$u=0.508912+0.193701I$ $a=1.88309-0.38641I$ $b=2.39201-0.19271I$	$-1.87493-2.49067I$	$4.89703-8.29090I$
$u=0.508912-0.193701I$ $a=1.88309+0.38641I$ $b=2.39201+0.19271I$	$-1.87493+2.49067I$	$4.89703+8.29090I$
$u=1.07631+1.11196I$ $a=-0.679049+1.085630I$ $b=0.39726+2.19758I$	$-14.1601+12.3738I$	$-0.83426-6.38685I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.07631 - 1.11196I$ $a = -0.679049 - 1.085630I$ $b = 0.39726 - 2.19758I$	$-14.1601 - 12.3738I$	$-0.83426 + 6.38685I$
$u = -1.08388 + 1.11855I$ $a = 0.705879 + 1.020200I$ $b = -0.37800 + 2.13875I$	$-12.19450 - 6.48359I$	$1.17949 + 2.27770I$
$u = -1.08388 - 1.11855I$ $a = 0.705879 - 1.020200I$ $b = -0.37800 - 2.13875I$	$-12.19450 + 6.48359I$	$1.17949 - 2.27770I$
$u = 1.09561 + 1.10785I$ $a = -0.847927 + 1.022520I$ $b = 0.24768 + 2.13037I$	$-18.7416 + 4.0694I$	$-3.78877 - 1.98533I$
$u = 1.09561 - 1.10785I$ $a = -0.847927 - 1.022520I$ $b = 0.24768 - 2.13037I$	$-18.7416 - 4.0694I$	$-3.78877 + 1.98533I$
$u = 1.11251 + 1.10380I$ $a = -0.923170 + 0.842832I$ $b = 0.18934 + 1.94663I$	$-14.0670 - 4.2413I$	$-1.00950 + 2.34740I$
$u = 1.11251 - 1.10380I$ $a = -0.923170 - 0.842832I$ $b = 0.18934 - 1.94663I$	$-14.0670 + 4.2413I$	$-1.00950 - 2.34740I$
$u = -1.10978 + 1.11274I$ $a = 0.849824 + 0.873104I$ $b = -0.25996 + 1.98584I$	$-12.12700 - 1.69249I$	$1.01629 + 1.84111I$
$u = -1.10978 - 1.11274I$ $a = 0.849824 - 0.873104I$ $b = -0.25996 - 1.98584I$	$-12.12700 + 1.69249I$	$1.01629 - 1.84111I$

II. $\boldsymbol{I_2^u = \langle -u^8 - u^7 + \cdots + b + 1,\ -u^8 - u^7 + \cdots + a + 1,\ u^9 + u^8 - 2u^7 - 3u^6 + u^5 + 3u^4 + 2u^3 - u - 1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

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

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2	$(u-1)^9$
c_3, c_6	u^9
c_4	$(u+1)^9$
c_5	$u^9 - u^8 - 2u^7 + 3u^6 + u^5 - 3u^4 + 2u^3 - u + 1$
c_7	$u^9 - u^8 + 2u^7 - u^6 + 3u^5 - u^4 + 2u^3 + u + 1$
c_8	$u^9 + u^8 - 2u^7 - 3u^6 + u^5 + 3u^4 + 2u^3 - u - 1$
c_9	$u^9 - 5u^8 + 12u^7 - 15u^6 + 9u^5 + u^4 - 4u^3 + 2u^2 + u - 1$
c_{10}	$u^9 - 3u^8 + 8u^7 - 13u^6 + 17u^5 - 17u^4 + 12u^3 - 6u^2 + u + 1$
c_{11}	$u^9 + u^8 + 2u^7 + u^6 + 3u^5 + u^4 + 2u^3 + u - 1$
c_{12}	$u^9 + 3u^8 + 8u^7 + 13u^6 + 17u^5 + 17u^4 + 12u^3 + 6u^2 + u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y-1)^9$
c_3, c_6	y^9
c_5, c_8	$y^9 - 5y^8 + 12y^7 - 15y^6 + 9y^5 + y^4 - 4y^3 + 2y^2 + y - 1$
c_7, c_{11}	$y^9 + 3y^8 + 8y^7 + 13y^6 + 17y^5 + 17y^4 + 12y^3 + 6y^2 + y - 1$
c_9	$y^9 - y^8 + 12y^7 - 7y^6 + 37y^5 + y^4 - 10y^2 + 5y - 1$
c_{10}, c_{12}	$y^9 + 7y^8 + 20y^7 + 25y^6 + 5y^5 - 15y^4 + 22y^2 + 13y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.772920+0.510351I$ $a=-0.900982-0.594909I$ $b=-0.128062-1.105260I$	$-3.42837-2.09337I$	$-3.06656+3.71284I$
$u=-0.772920-0.510351I$ $a=-0.900982+0.594909I$ $b=-0.128062+1.105260I$	$-3.42837+2.09337I$	$-3.06656-3.71284I$
$u=\ 0.825933$ $a=\ 1.21075$ $b=\ 0.384820$	-0.446489	2.03810
$u=\ 1.173910+0.391555I$ $a=\ 0.766570-0.255687I$ $b=-0.407341-0.647242I$	$2.72642+1.33617I$	$2.51011-2.54413I$
$u=\ 1.173910-0.391555I$ $a=\ 0.766570+0.255687I$ $b=-0.407341+0.647242I$	$2.72642-1.33617I$	$2.51011+2.54413I$
$u=-0.141484+0.739668I$ $a=-0.249476-1.304240I$ $b=-0.10799-2.04391I$	$-1.02799+2.45442I$	$-4.16828-1.00072I$
$u=-0.141484-0.739668I$ $a=-0.249476+1.304240I$ $b=-0.10799+2.04391I$	$-1.02799-2.45442I$	$-4.16828+1.00072I$
$u=-1.172470+0.500383I$ $a=-0.721488-0.307914I$ $b=\ 0.450985-0.808297I$	$1.95319-7.08493I$	$1.70570+8.17350I$
$u=-1.172470-0.500383I$ $a=-0.721488+0.307914I$ $b=\ 0.450985+0.808297I$	$1.95319+7.08493I$	$1.70570-8.17350I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^9)(u^{29}+48u^{28}+\cdots+79u+1)$
c_2	$((u-1)^9)(u^{29}-10u^{28}+\cdots+19u-1)$
c_3, c_6	$u^9(u^{29}+5u^{28}+\cdots+1536u-512)$
c_4	$((u+1)^9)(u^{29}-10u^{28}+\cdots+19u-1)$
c_5	$(u^9-u^8+\cdots-u+1)(u^{29}-2u^{28}+\cdots+u-1)$
c_7	$(u^9-u^8+\cdots+u+1)(u^{29}+2u^{28}+\cdots-u-1)$
c_8	$(u^9+u^8+\cdots-u-1)(u^{29}-2u^{28}+\cdots+u-1)$
c_9	$(u^9-5u^8+12u^7-15u^6+9u^5+u^4-4u^3+2u^2+u-1)$ $\cdot(u^{29}+30u^{27}+\cdots-u-1)$
c_{10}	$(u^9-3u^8+8u^7-13u^6+17u^5-17u^4+12u^3-6u^2+u+1)$ $\cdot(u^{29}+12u^{28}+\cdots-u-1)$
c_{11}	$(u^9+u^8+\cdots+u-1)(u^{29}+2u^{28}+\cdots-u-1)$
c_{12}	$(u^9+3u^8+8u^7+13u^6+17u^5+17u^4+12u^3+6u^2+u-1)$ $\cdot(u^{29}+12u^{28}+\cdots-u-1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^9)(y^{29} - 124y^{28} + \cdots - 7313y - 1)$
c_2, c_4	$((y-1)^9)(y^{29} - 48y^{28} + \cdots + 79y - 1)$
c_3, c_6	$y^9(y^{29} + 57y^{28} + \cdots + 3932160y - 262144)$
c_5, c_8	$(y^9 - 5y^8 + 12y^7 - 15y^6 + 9y^5 + y^4 - 4y^3 + 2y^2 + y - 1)$ $\cdot (y^{29} + 30y^{27} + \cdots - y - 1)$
c_7, c_{11}	$(y^9 + 3y^8 + 8y^7 + 13y^6 + 17y^5 + 17y^4 + 12y^3 + 6y^2 + y - 1)$ $\cdot (y^{29} + 12y^{28} + \cdots - y - 1)$
c_9	$(y^9 - y^8 + 12y^7 - 7y^6 + 37y^5 + y^4 - 10y^2 + 5y - 1)$ $\cdot (y^{29} + 60y^{28} + \cdots - 5y - 1)$
c_{10}, c_{12}	$(y^9 + 7y^8 + 20y^7 + 25y^6 + 5y^5 - 15y^4 + 22y^2 + 13y - 1)$ $\cdot (y^{29} + 12y^{28} + \cdots + 19y - 1)$