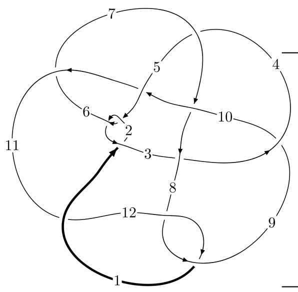
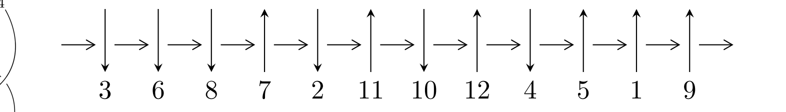
$12a_{0268}$ $(K12a_{0268})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 6u^{25} - 4u^{24} + \cdots + b - 2,\ -9u^{25} + 23u^{24} + \cdots + a + 31,\ u^{26} - 2u^{25} + \cdots - 4u + 1\rangle$$
$$I_2^u = \langle -u^2a + au + u^2 + b - u + 1,\ -u^2a + a^2 + 3au + u^2 - 2a - 3u + 2,\ u^3 - u^2 + 1\rangle$$
$$I_3^u = \langle -50a^5 + 47a^4 - 54a^3 + 71a^2 + 1503b - 998a + 328,\ a^6 + 2a^4 + 2a^3 + 6a^2 + 11a - 23,\ u + 1\rangle$$

* 3 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. $I^u_1 = \langle 6u^{25}-4u^{24}+\cdots+b-2,\ -9u^{25}+23u^{24}+\cdots+a+31,\ u^{26}-2u^{25}+\cdots-4u+1\rangle$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u \\ -u^3+u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 9u^{25}-23u^{24}+\cdots+69u-31 \\ -6u^{25}+4u^{24}+\cdots-8u+2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -4u^{25}+14u^{24}+\cdots-43u+27 \\ -u^{25}+u^{24}+\cdots+2u^2-4u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^3 \\ u^5-u^3+u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -32u^{25}+28u^{24}+\cdots-79u+9 \\ 10u^{25}-11u^{24}+\cdots+34u-10 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 15u^{25}-27u^{24}+\cdots+77u-33 \\ -6u^{25}+4u^{24}+\cdots-8u+2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 37u^{25}-38u^{24}+\cdots+103u-23 \\ -16u^{25}+5u^{24}+\cdots-19u+1 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 21u^{25}-12u^{24}+\cdots+25u+4 \\ -25u^{25}+29u^{24}+\cdots-80u+22 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 17u^{25}-37u^{24}+\cdots+107u-43 \\ -6u^{25}+12u^{24}+\cdots-29u+12 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 61u^{25}-54u^{24}-343u^{23}+372u^{22}+878u^{21}-898u^{20}-1579u^{19}+1127u^{18}+2535u^{17}-859u^{16}-3329u^{15}+282u^{14}+3349u^{13}+450u^{12}-2660u^{11}-969u^{10}+2067u^{9}+348u^{8}-518u^{7}-770u^{6}+524u^{5}+209u^{4}-85u^{3}-178u^{2}+111u-12$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{26} - 12u^{25} + \cdots - 6u + 1$
c_2, c_{12}	$u^{26} + 2u^{25} + \cdots + 4u + 1$
c_3	$u^{26} + 2u^{25} + \cdots - 2u^2 + 1$
c_4	$u^{26} - 3u^{24} + \cdots + 167u + 85$
c_5, c_8	$u^{26} - 2u^{25} + \cdots - 4u + 1$
c_6	$u^{26} - 2u^{25} + \cdots - 2u^2 + 1$
c_7	$u^{26} - 3u^{24} + \cdots - 167u + 85$
c_9	$u^{26} + u^{24} + \cdots + u^2 + 1$
c_{10}	$u^{26} + u^{24} + \cdots + u^2 + 1$
c_{11}	$u^{26} + 12u^{25} + \cdots + 6u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{11}	$y^{26} - 8y^{24} + \cdots + 22y + 1$
c_2, c_5, c_8 c_{12}	$y^{26} - 12y^{25} + \cdots - 6y + 1$
c_3, c_6	$y^{26} - 20y^{25} + \cdots - 4y + 1$
c_4, c_7	$y^{26} - 6y^{25} + \cdots + 51331y + 7225$
c_9, c_{10}	$y^{26} + 2y^{25} + \cdots + 2y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.461384 + 0.912562I$ $a = -0.080894 - 0.407248I$ $b = \ \ 0.575155 + 0.340795I$	$1.12657 + 3.32893I$	$5.69551 - 1.13200I$
$u = -0.461384 - 0.912562I$ $a = -0.080894 + 0.407248I$ $b = \ \ 0.575155 - 0.340795I$	$1.12657 - 3.32893I$	$5.69551 + 1.13200I$
$u = \ \ 0.849370 + 0.605420I$ $a = -1.25013 - 1.25835I$ $b = -0.14769 - 1.58072I$	$3.52283 - 2.38934I$	$15.7660 + 2.5226I$
$u = \ \ 0.849370 - 0.605420I$ $a = -1.25013 + 1.25835I$ $b = -0.14769 + 1.58072I$	$3.52283 + 2.38934I$	$15.7660 - 2.5226I$
$u = -0.762938 + 0.732586I$ $a = -0.154380 + 0.405636I$ $b = \ \ 0.965729 + 0.259552I$	$5.79972I$	$0. - 8.96426I$
$u = -0.762938 - 0.732586I$ $a = -0.154380 - 0.405636I$ $b = \ \ 0.965729 - 0.259552I$	$-\ 5.79972I$	$0. + 8.96426I$
$u = \ \ 0.998814 + 0.491144I$ $a = \ \ 0.29293 + 2.27648I$ $b = -1.11561 + 0.93756I$	$-2.06063 - 7.20438I$	$-4.87470 + 7.46295I$
$u = \ \ 0.998814 - 0.491144I$ $a = \ \ 0.29293 - 2.27648I$ $b = -1.11561 - 0.93756I$	$-2.06063 + 7.20438I$	$-4.87470 - 7.46295I$
$u = \ \ 0.742293 + 0.445659I$ $a = \ \ 0.246099 - 0.102462I$ $b = \ \ 1.28686 + 0.76250I$	$-1.12657 + 3.32893I$	$-5.69551 - 1.13200I$
$u = \ \ 0.742293 - 0.445659I$ $a = \ \ 0.246099 + 0.102462I$ $b = \ \ 1.28686 - 0.76250I$	$-1.12657 - 3.32893I$	$-5.69551 + 1.13200I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.316384 + 0.759790I$ $a = 0.202465 + 1.071890I$ $b = -0.525339 - 0.441494I$	$2.06063 + 7.20438I$	$4.87470 - 7.46295I$
$u = -0.316384 - 0.759790I$ $a = 0.202465 - 1.071890I$ $b = -0.525339 + 0.441494I$	$2.06063 - 7.20438I$	$4.87470 + 7.46295I$
$u = 1.081650 + 0.521444I$ $a = 0.05036 + 1.94989I$ $b = -0.811958 + 0.761507I$	$-1.82571 - 6.70629I$	$-2.75982 + 7.40474I$
$u = 1.081650 - 0.521444I$ $a = 0.05036 - 1.94989I$ $b = -0.811958 - 0.761507I$	$-1.82571 + 6.70629I$	$-2.75982 - 7.40474I$
$u = 0.516527 + 0.544349I$ $a = -0.92356 - 1.49397I$ $b = -0.655244 - 0.614530I$	$1.82571 + 6.70629I$	$2.75982 - 7.40474I$
$u = 0.516527 - 0.544349I$ $a = -0.92356 + 1.49397I$ $b = -0.655244 + 0.614530I$	$1.82571 - 6.70629I$	$2.75982 + 7.40474I$
$u = 1.089350 + 0.612332I$ $a = -0.17797 - 1.62097I$ $b = 0.581197 - 0.813763I$	$-11.5593I$	$0. + 10.56005I$
$u = 1.089350 - 0.612332I$ $a = -0.17797 + 1.62097I$ $b = 0.581197 + 0.813763I$	$11.5593I$	$0. - 10.56005I$
$u = -0.632233 + 0.402098I$ $a = 2.06829 - 1.29149I$ $b = -0.531949 - 0.961805I$	$2.02248 + 0.44868I$	$1.93644 - 3.28945I$
$u = -0.632233 - 0.402098I$ $a = 2.06829 + 1.29149I$ $b = -0.531949 + 0.961805I$	$2.02248 - 0.44868I$	$1.93644 + 3.28945I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.193370+0.413519I$ $a=-0.631044+0.511481I$ $b=-0.440341+0.796171I$	$-2.02248-0.44868I$	$-1.93644+3.28945I$
$u=-1.193370-0.413519I$ $a=-0.631044-0.511481I$ $b=-0.440341-0.796171I$	$-2.02248+0.44868I$	$-1.93644-3.28945I$
$u=\quad 0.583202+0.387797I$ $a=-0.56568+1.58491I$ $b=\quad 0.877784+0.479057I$	$2.72365I$	$0.-5.95098I$
$u=\quad 0.583202-0.387797I$ $a=-0.56568-1.58491I$ $b=\quad 0.877784-0.479057I$	$-2.72365I$	$0.+5.95098I$
$u=-1.49489+0.08893I$ $a=-0.076473+0.557618I$ $b=-0.058595+0.627148I$	$-3.52283+2.38934I$	$-15.7660-2.5226I$
$u=-1.49489-0.08893I$ $a=-0.076473-0.557618I$ $b=-0.058595-0.627148I$	$-3.52283-2.38934I$	$-15.7660+2.5226I$

II.

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -10u^2a+17au+11u^2-14a-17u+18$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3	$(y^3 + 3y^2 + 2y - 1)^2$
c_2, c_5	$(y^3 - y^2 + 2y - 1)^2$
c_4	y^6
c_6, c_7	$y^6 + 3y^5 + 4y^4 - 3y^3 - 15y^2 - 14y + 1$
c_8, c_{11}, c_{12}	$(y - 1)^6$
c_9, c_{10}	$y^6 - 8y^5 + 20y^4 - 27y^3 + 20y^2 - 8y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.877439 + 0.744862I$ $a = 0.626026 + 0.207777I$ $b = -0.869124 - 0.347901I$	$4.66906 - 2.82812I$	$4.76162 + 1.20354I$
$u = 0.877439 + 0.744862I$ $a = -1.04326 - 1.13522I$ $b = 0.991685 - 0.396961I$	$4.66906 - 2.82812I$	$6.27312 + 3.54360I$
$u = 0.877439 - 0.744862I$ $a = 0.626026 - 0.207777I$ $b = -0.869124 + 0.347901I$	$4.66906 + 2.82812I$	$4.76162 - 1.20354I$
$u = 0.877439 - 0.744862I$ $a = -1.04326 + 1.13522I$ $b = 0.991685 + 0.396961I$	$4.66906 + 2.82812I$	$6.27312 - 3.54360I$
$u = -0.754878$ $a = 1.41297$ $b = -0.452937$	0.531480	-8.86450
$u = -0.754878$ $a = 3.42151$ $b = 2.20781$	0.531480	-74.2050

III.

$\boldsymbol{I_3^u = \langle -50a^5+1503b+\cdots-998a+328,\ a^6+2a^4+2a^3+6a^2+11a-23,\ u+1\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} a \\ 0.0332668a^5 - 0.0312708a^4 + \cdots + 0.664005a - 0.218230 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0.0312708a^5 + 0.0306055a^4 + \cdots + 0.584165a + 0.234864 \\ 0.0232868a^5 - 0.0552229a^4 + \cdots + 0.264804a + 0.713906 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -1 \\ -1 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 0.0372588a^5 + 0.178310a^4 + \cdots + 0.823686a + 1.20892 \\ 0.0312708a^5 + 0.0306055a^4 + \cdots + 0.584165a + 0.234864 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -0.0332668a^5 + 0.0312708a^4 + \cdots + 0.335995a + 0.218230 \\ 0.0332668a^5 - 0.0312708a^4 + \cdots + 0.664005a - 0.218230 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.0312708a^5 + 0.0306055a^4 + \cdots + 0.584165a + 0.234864 \\ 0.0232868a^5 - 0.0552229a^4 + \cdots + 0.264804a + 0.713906 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.0525615a^5 + 0.0372588a^4 + \cdots + 0.769128a + 0.401863 \\ 0.0113107a^5 - 0.0172987a^4 + \cdots + 0.785762a + 0.0991351 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 0.0332668a^5 - 0.0312708a^4 + \cdots + 0.664005a - 0.218230 \\ 0.0665336a^5 - 0.0625416a^4 + \cdots + 0.328011a - 0.436460 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -\frac{625}{1503}a^5 + \frac{2341}{1503}a^4 - \frac{1394}{501}a^3 + \frac{9655}{1503}a^2 - \frac{13978}{1503}a + \frac{20132}{1503}$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_5	$(y-1)^6$
c_3, c_4	$y^6+3y^5+4y^4-3y^3-15y^2-14y+1$
c_6, c_{11}	$(y^3+3y^2+2y-1)^2$
c_7	y^6
c_8, c_{12}	$(y^3-y^2+2y-1)^2$
c_9, c_{10}	$y^6-8y^5+20y^4-27y^3+20y^2-8y+1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = 1.02278$ $b = 0.452937$	-0.531480	8.86450
$u = -1.00000$ $a = -1.63797$ $b = -2.20781$	-0.531480	74.2050
$u = -1.00000$ $a = -0.77661 + 1.70410I$ $b = -0.991685 + 0.396961I$	$-4.66906 + 2.82812I$	$-6.27312 - 3.54360I$
$u = -1.00000$ $a = -0.77661 - 1.70410I$ $b = -0.991685 - 0.396961I$	$-4.66906 - 2.82812I$	$-6.27312 + 3.54360I$
$u = -1.00000$ $a = 1.08420 + 1.65504I$ $b = 0.869124 + 0.347901I$	$-4.66906 + 2.82812I$	$-4.76162 - 1.20354I$
$u = -1.00000$ $a = 1.08420 - 1.65504I$ $b = 0.869124 - 0.347901I$	$-4.66906 - 2.82812I$	$-4.76162 + 1.20354I$

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^6)(u^3-u^2+2u-1)^2(u^{26}-12u^{25}+\cdots-6u+1)$
c_2, c_{12}	$((u-1)^6)(u^3+u^2-1)^2(u^{26}+2u^{25}+\cdots+4u+1)$
c_3	$(u^3-u^2+2u-1)^2(u^6-3u^5+6u^4-7u^3+5u^2-2u-1)$ $\cdot(u^{26}+2u^{25}+\cdots-2u^2+1)$
c_4	$u^6(u^6-3u^5+\cdots-2u-1)(u^{26}-3u^{24}+\cdots+167u+85)$
c_5, c_8	$((u+1)^6)(u^3-u^2+1)^2(u^{26}-2u^{25}+\cdots-4u+1)$
c_6	$(u^3+u^2+2u+1)^2(u^6+3u^5+6u^4+7u^3+5u^2+2u-1)$ $\cdot(u^{26}-2u^{25}+\cdots-2u^2+1)$
c_7	$u^6(u^6+3u^5+\cdots+2u-1)(u^{26}-3u^{24}+\cdots-167u+85)$
c_9	$(u^6-2u^5-2u^4+3u^3+2u^2-2u-1)$ $\cdot(u^6+2u^5+\cdots+2u-1)(u^{26}+u^{24}+\cdots+u^2+1)$
c_{10}	$(u^6-2u^5-2u^4+3u^3+2u^2-2u-1)$ $\cdot(u^6+2u^5+\cdots+2u-1)(u^{26}+u^{24}+\cdots+u^2+1)$
c_{11}	$((u+1)^6)(u^3+u^2+2u+1)^2(u^{26}+12u^{25}+\cdots+6u+1)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_{11}	$((y-1)^6)(y^3+3y^2+2y-1)^2(y^{26}-8y^{24}+\cdots+22y+1)$
c_2, c_5, c_8 c_{12}	$((y-1)^6)(y^3-y^2+2y-1)^2(y^{26}-12y^{25}+\cdots-6y+1)$
c_3, c_6	$(y^3+3y^2+2y-1)^2(y^6+3y^5+4y^4-3y^3-15y^2-14y+1)$ $\cdot(y^{26}-20y^{25}+\cdots-4y+1)$
c_4, c_7	$y^6(y^6+3y^5+4y^4-3y^3-15y^2-14y+1)$ $\cdot(y^{26}-6y^{25}+\cdots+51331y+7225)$
c_9, c_{10}	$((y^6-8y^5+\cdots-8y+1)^2)(y^{26}+2y^{25}+\cdots+2y+1)$