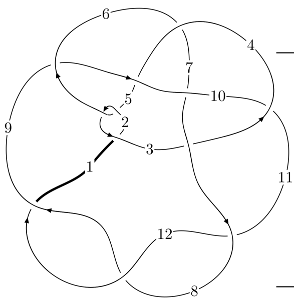
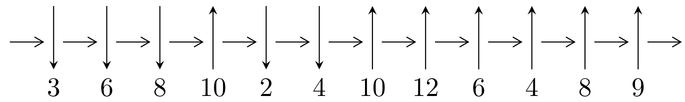
$12n_{0318}$ ($K12n_{0318}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & -46u^9 + 96u^8 - 471u^7 + 631u^6 - 1426u^5 + 1075u^4 - 1285u^3 + 249u^2 + 61b - 157u - 203, \\
& -3u^9 + 5u^8 - 28u^7 + 29u^6 - 74u^5 + 37u^4 - 51u^3 + u^2 + a - 5u - 8, \\
& u^{10} - 2u^9 + 10u^8 - 13u^7 + 29u^6 - 22u^5 + 24u^4 - 8u^3 + 3u^2 + 2u - 1 \rangle \\
I_2^u = \langle & 4u^9 - 38u^8 + 23u^7 - 323u^6 + 100u^5 - 821u^4 + 395u^3 - 595u^2 + 185b + 617u - 243, \\
& -439u^9 - 177u^8 - 3588u^7 - 117u^6 - 9310u^5 + 2461u^4 - 8895u^3 + 5315u^2 + 185a - 3937u + 1278, \\
& u^{10} + 8u^8 - 3u^7 + 21u^6 - 14u^5 + 22u^4 - 20u^3 + 13u^2 - 6u + 1 \rangle
\end{aligned}$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 20 representations.

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[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. $I^u_1 = \langle -46u^9+96u^8+\cdots+61b-203,\ -3u^9+5u^8+\cdots+a-8,\ u^{10}-2u^9+\cdots+2u-1\rangle$

(i) Arc colorings

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

$$a_{10} = \begin{pmatrix}0\\u\end{pmatrix}$$

$$a_4 = \begin{pmatrix}1\\u^2\end{pmatrix}$$

$$a_8 = \begin{pmatrix}3u^9-5u^8+28u^7-29u^6+74u^5-37u^4+51u^3-u^2+5u+8\\0.754098u^9-1.57377u^8+\cdots+2.57377u+3.32787\end{pmatrix}$$

$$a_{11} = \begin{pmatrix}u\\u^3+u\end{pmatrix}$$

$$a_{12} = \begin{pmatrix}7.27869u^9-12.0164u^8+\cdots+22.0164u+22.2951\\3.27869u^9-5.01639u^8+\cdots+9.01639u+8.29508\end{pmatrix}$$

$$a_3 = \begin{pmatrix}-7.70492u^9+12.6885u^8+\cdots-21.6885u-22.3934\\-3.40984u^9+5.37705u^8+\cdots-8.37705u-8.78689\end{pmatrix}$$

$$a_7 = \begin{pmatrix}3u^9-5u^8+28u^7-29u^6+74u^5-37u^4+51u^3-u^2+5u+8\\0.754098u^9-1.57377u^8+\cdots+3.57377u+4.32787\end{pmatrix}$$

$$a_6 = \begin{pmatrix}3.75410u^9-6.57377u^8+\cdots+7.57377u+11.3279\\0.803279u^9-1.45902u^8+\cdots+4.45902u+4.26230\end{pmatrix}$$

$$a_2 = \begin{pmatrix}1.26230u^9-1.72131u^8+\cdots+2.72131u+3.98361\\0.983607u^9-1.70492u^8+\cdots+0.704918u+1.68852\end{pmatrix}$$

$$a_1 = \begin{pmatrix}51.8033u^9-86.4590u^8+\cdots+129.459u+150.262\\19.7377u^9-31.2787u^8+\cdots+54.2787u+58.0164\end{pmatrix}$$

$$a_9 = \begin{pmatrix}-20.5410u^9+33.7377u^8+\cdots-52.7377u-58.2787\\-8.31148u^9+14.6066u^8+\cdots-18.6066u-23.9180\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$$= -\tfrac{62}{61}u^9+\tfrac{201}{61}u^8-\tfrac{725}{61}u^7+\tfrac{1487}{61}u^6-\tfrac{2349}{61}u^5+\tfrac{3080}{61}u^4-\tfrac{2090}{61}u^3+\tfrac{1667}{61}u^2-\tfrac{445}{61}u+\tfrac{103}{61}$$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{10} + 22u^9 + \cdots + 5917u + 49$
c_2, c_5	$u^{10} + 2u^9 + \cdots - 59u + 7$
c_3	$u^{10} + 3u^9 + \cdots + 12u - 13$
c_4, c_{10}	$u^{10} + 2u^9 + 10u^8 + 13u^7 + 29u^6 + 22u^5 + 24u^4 + 8u^3 + 3u^2 - 2u - 1$
c_6	$u^{10} - 3u^9 + \cdots + 110u - 25$
c_7	$u^{10} + 3u^9 - 20u^7 - 41u^6 + 294u^5 - 405u^4 + 219u^3 + 58u^2 - 33u - 9$
c_8, c_{11}, c_{12}	$u^{10} - 3u^9 + \cdots + 37u - 29$
c_9	$u^{10} + u^9 + \cdots - 25u - 167$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{10} - 34y^9 + \cdots - 33340185y + 2401$
c_2, c_5	$y^{10} - 22y^9 + \cdots - 5917y + 49$
c_3	$y^{10} - 19y^9 + \cdots - 2666y + 169$
c_4, c_{10}	$y^{10} + 16y^9 + \cdots - 10y + 1$
c_6	$y^{10} - 27y^9 + \cdots - 23900y + 625$
c_7	$y^{10} - 9y^9 + \cdots - 2133y + 81$
c_8, c_{11}, c_{12}	$y^{10} - 21y^9 + \cdots + 3097y + 841$
c_9	$y^{10} - 17y^9 + \cdots - 55401y + 27889$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.058067 + 0.959343I$ $a = -1.02272 + 1.68359I$ $b = -0.56593 - 1.71994I$	$2.74627 + 1.52551I$	$1.61031 - 1.19705I$
$u = 0.058067 - 0.959343I$ $a = -1.02272 - 1.68359I$ $b = -0.56593 + 1.71994I$	$2.74627 - 1.52551I$	$1.61031 + 1.19705I$
$u = 0.369407 + 0.683035I$ $a = 0.045927 - 0.332128I$ $b = 0.679565 + 0.238520I$	$-1.42142 - 0.67316I$	$-3.66351 + 1.21479I$
$u = 0.369407 - 0.683035I$ $a = 0.045927 + 0.332128I$ $b = 0.679565 - 0.238520I$	$-1.42142 + 0.67316I$	$-3.66351 - 1.21479I$
$u = -0.387852$ $a = 1.30915$ $b = -0.163807$	0.892115	12.2090
$u = 0.346316$ $a = 11.5322$ $b = 4.45406$	5.57991	1.58660
$u = 0.45233 + 1.77782I$ $a = -0.557671 + 0.304853I$ $b = -0.225028 - 1.028840I$	$-9.90958 + 3.92064I$	$1.45511 - 3.03765I$
$u = 0.45233 - 1.77782I$ $a = -0.557671 - 0.304853I$ $b = -0.225028 + 1.028840I$	$-9.90958 - 3.92064I$	$1.45511 + 3.03765I$
$u = 0.14096 + 1.98796I$ $a = 1.61376 - 0.88253I$ $b = -3.53373 + 2.38309I$	$15.2183 + 8.0662I$	$1.70029 - 2.38226I$
$u = 0.14096 - 1.98796I$ $a = 1.61376 + 0.88253I$ $b = -3.53373 - 2.38309I$	$15.2183 - 8.0662I$	$1.70029 + 2.38226I$

II. $\boldsymbol{I_2^u = \langle 4u^9 - 38u^8 + \cdots + 185b - 243,\ -439u^9 - 177u^8 + \cdots + 185a + 1278,\ u^{10} + 8u^8 + \cdots - 6u + 1\rangle}$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 2.37297u^9 + 0.956757u^8 + \cdots + 21.2811u - 6.90811 \\ -0.0216216u^9 + 0.205405u^8 + \cdots - 3.33514u + 1.31351 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 1.37297u^9 + 0.956757u^8 + \cdots + 9.28108u - 0.908108 \\ 0.432432u^9 - 0.108108u^8 + \cdots + 8.70270u - 2.27027 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -0.745946u^9 + 0.0864865u^8 + \cdots - 7.56216u + 3.81622 \\ 0.745946u^9 - 0.0864865u^8 + \cdots + 7.56216u - 1.81622 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 2.37297u^9 + 0.956757u^8 + \cdots + 21.2811u - 6.90811 \\ 0.389189u^9 + 0.302703u^8 + \cdots + 0.0324324u + 0.356757 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 2.35135u^9 + 1.16216u^8 + \cdots + 17.9459u - 5.59459 \\ 0.437838u^9 + 0.340541u^8 + \cdots + 1.28649u + 0.151351 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -3.11892u^9 - 0.870270u^8 + \cdots - 28.8432u + 9.72432 \\ 0.313514u^9 + 0.0216216u^8 + \cdots + 0.859459u - 0.545946 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -3.24324u^9 - 1.18919u^8 + \cdots - 29.2703u + 9.02703 \\ -0.702703u^9 - 0.324324u^8 + \cdots - 2.89189u + 0.189189 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -2.24324u^9 - 1.18919u^8 + \cdots - 17.2703u + 4.02703 \\ -1.14054u^9 - 0.664865u^8 + \cdots - 6.17838u + 2.03784 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes
$= \frac{1244}{185}u^9 + \frac{577}{185}u^8 + \frac{10113}{185}u^7 + \frac{927}{185}u^6 + \frac{5147}{37}u^5 - \frac{5396}{185}u^4 + \frac{4552}{37}u^3 - \frac{2673}{37}u^2 + \frac{7997}{185}u - \frac{1943}{185}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{10} - 10u^9 + \cdots - 13u + 1$
c_2	$u^{10} + 2u^9 - 3u^8 - 7u^7 + 4u^6 + 12u^5 - u^4 - 11u^3 - 2u^2 + 3u + 1$
c_3	$u^{10} + u^9 - u^8 - u^6 - 3u^5 + 3u^4 - u^3 + 5u^2 - 2u - 1$
c_4	$u^{10} + 8u^8 - 3u^7 + 21u^6 - 14u^5 + 22u^4 - 20u^3 + 13u^2 - 6u + 1$
c_5	$u^{10} - 2u^9 - 3u^8 + 7u^7 + 4u^6 - 12u^5 - u^4 + 11u^3 - 2u^2 - 3u + 1$
c_6	$u^{10} + 3u^9 + u^8 - 4u^7 - 8u^6 - 9u^5 + 11u^4 + 31u^3 + 24u^2 + 8u + 1$
c_7	$u^{10} + u^9 + 4u^8 + 4u^7 - 3u^6 - 8u^5 - 13u^4 - 21u^3 - 18u^2 - 7u - 1$
c_8	$u^{10} - 3u^9 + 9u^7 - 8u^6 - 7u^5 + 11u^4 - u^3 - 3u^2 + u - 1$
c_9	$u^{10} - u^9 + 2u^8 + u^7 - 11u^6 + 10u^5 - 7u^4 + 2u^3 + 4u^2 + u - 1$
c_{10}	$u^{10} + 8u^8 + 3u^7 + 21u^6 + 14u^5 + 22u^4 + 20u^3 + 13u^2 + 6u + 1$
c_{11}, c_{12}	$u^{10} + 3u^9 - 9u^7 - 8u^6 + 7u^5 + 11u^4 + u^3 - 3u^2 - u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{10} - 10y^9 + \cdots - 33y + 1$
c_2, c_5	$y^{10} - 10y^9 + \cdots - 13y + 1$
c_3	$y^{10} - 3y^9 - y^8 + 14y^7 + 7y^6 - 23y^5 - 5y^4 + 19y^3 + 15y^2 - 14y + 1$
c_4, c_{10}	$y^{10} + 16y^9 + \cdots - 10y + 1$
c_6	$y^{10} - 7y^9 + \cdots - 16y + 1$
c_7	$y^{10} + 7y^9 + \cdots - 13y + 1$
c_8, c_{11}, c_{12}	$y^{10} - 9y^9 + \cdots + 5y + 1$
c_9	$y^{10} + 3y^9 + \cdots - 9y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.421587 + 1.150120I$ $a = -0.068626 + 0.779782I$ $b = 0.442051 + 0.121008I$	$-0.46461 + 1.98898I$	$-0.06537 - 3.20823I$
$u = -0.421587 - 1.150120I$ $a = -0.068626 - 0.779782I$ $b = 0.442051 - 0.121008I$	$-0.46461 - 1.98898I$	$-0.06537 + 3.20823I$
$u = 0.235261 + 0.587721I$ $a = -0.300901 + 0.648896I$ $b = 0.14149 - 1.45935I$	$5.08555 + 2.55932I$	$4.45408 - 5.37582I$
$u = 0.235261 - 0.587721I$ $a = -0.300901 - 0.648896I$ $b = 0.14149 + 1.45935I$	$5.08555 - 2.55932I$	$4.45408 + 5.37582I$
$u = 0.490498$ $a = 3.09930$ $b = 0.465102$	6.94382	10.5630
$u = 0.12366 + 1.64371I$ $a = -1.257140 - 0.128400I$ $b = 1.83592 + 0.29637I$	$-6.58180 + 1.84846I$	$1.62067 - 1.24709I$
$u = 0.12366 - 1.64371I$ $a = -1.257140 + 0.128400I$ $b = 1.83592 - 0.29637I$	$-6.58180 - 1.84846I$	$1.62067 + 1.24709I$
$u = 0.293026$ $a = -1.91458$ $b = 0.591313$	0.102739	-0.844670
$u = -0.32909 + 2.03714I$ $a = 0.534307 - 0.226160I$ $b = -1.44767 + 0.48227I$	$-11.43200 - 3.15494I$	$-2.86863 + 1.76027I$
$u = -0.32909 - 2.03714I$ $a = 0.534307 + 0.226160I$ $b = -1.44767 - 0.48227I$	$-11.43200 + 3.15494I$	$-2.86863 - 1.76027I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^{10}-10u^9+\cdots-13u+1)(u^{10}+22u^9+\cdots+5917u+49)$
c_2	$(u^{10}+2u^9+\cdots-59u+7)$ $\cdot(u^{10}+2u^9-3u^8-7u^7+4u^6+12u^5-u^4-11u^3-2u^2+3u+1)$
c_3	$(u^{10}+u^9-u^8-u^6-3u^5+3u^4-u^3+5u^2-2u-1)$ $\cdot(u^{10}+3u^9+\cdots+12u-13)$
c_4	$(u^{10}+8u^8-3u^7+21u^6-14u^5+22u^4-20u^3+13u^2-6u+1)$ $\cdot(u^{10}+2u^9+10u^8+13u^7+29u^6+22u^5+24u^4+8u^3+3u^2-2u-1)$
c_5	$(u^{10}-2u^9-3u^8+7u^7+4u^6-12u^5-u^4+11u^3-2u^2-3u+1)$ $\cdot(u^{10}+2u^9+\cdots-59u+7)$
c_6	$(u^{10}-3u^9+\cdots+110u-25)$ $\cdot(u^{10}+3u^9+u^8-4u^7-8u^6-9u^5+11u^4+31u^3+24u^2+8u+1)$
c_7	$(u^{10}+u^9+4u^8+4u^7-3u^6-8u^5-13u^4-21u^3-18u^2-7u-1)$ $\cdot(u^{10}+3u^9-20u^7-41u^6+294u^5-405u^4+219u^3+58u^2-33u-9)$
c_8	$(u^{10}-3u^9+9u^7-8u^6-7u^5+11u^4-u^3-3u^2+u-1)$ $\cdot(u^{10}-3u^9+\cdots+37u-29)$
c_9	$(u^{10}-u^9+2u^8+u^7-11u^6+10u^5-7u^4+2u^3+4u^2+u-1)$ $\cdot(u^{10}+u^9+\cdots-25u-167)$
c_{10}	$(u^{10}+8u^8+3u^7+21u^6+14u^5+22u^4+20u^3+13u^2+6u+1)$ $\cdot(u^{10}+2u^9+10u^8+13u^7+29u^6+22u^5+24u^4+8u^3+3u^2-2u-1)$
c_{11}, c_{12}	$(u^{10}-3u^9+\cdots+37u-29)$ $\cdot(u^{10}+3u^9-9u^7-8u^6+7u^5+11u^4+u^3-3u^2-u-1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y^{10} - 34y^9 + \cdots - 33340185y + 2401)(y^{10} - 10y^9 + \cdots - 33y + 1)$
c_2, c_5	$(y^{10} - 22y^9 + \cdots - 5917y + 49)(y^{10} - 10y^9 + \cdots - 13y + 1)$
c_3	$(y^{10} - 19y^9 + \cdots - 2666y + 169)$ $\cdot (y^{10} - 3y^9 - y^8 + 14y^7 + 7y^6 - 23y^5 - 5y^4 + 19y^3 + 15y^2 - 14y + 1)$
c_4, c_{10}	$(y^{10} + 16y^9 + \cdots - 10y + 1)(y^{10} + 16y^9 + \cdots - 10y + 1)$
c_6	$(y^{10} - 27y^9 + \cdots - 23900y + 625)(y^{10} - 7y^9 + \cdots - 16y + 1)$
c_7	$(y^{10} - 9y^9 + \cdots - 2133y + 81)(y^{10} + 7y^9 + \cdots - 13y + 1)$
c_8, c_{11}, c_{12}	$(y^{10} - 21y^9 + \cdots + 3097y + 841)(y^{10} - 9y^9 + \cdots + 5y + 1)$
c_9	$(y^{10} - 17y^9 + \cdots - 55401y + 27889)(y^{10} + 3y^9 + \cdots - 9y + 1)$