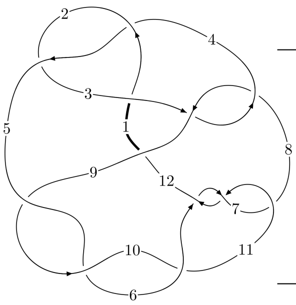
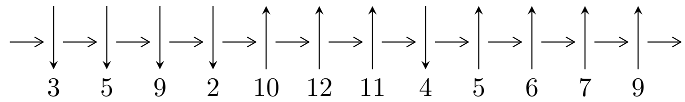
$12n_{0238}$ ($K12n_{0238}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned} I_1^u = \langle &-404722938u^{20} - 1078466313u^{19} + \cdots + 5499202867b - 58406387, \\ &4406297082u^{20} + 8871000551u^{19} + \cdots + 5499202867a + 15450577476,\ u^{21} + 2u^{20} + \cdots + 3u + 1\rangle \\ I_2^u = \langle &b,\ -u^5 + u^4 + 3u^3 - 2u^2 + a - 2u - 1,\ u^6 - u^5 - 3u^4 + 2u^3 + 2u^2 + u - 1\rangle \end{aligned}$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 27 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.
$\boldsymbol{I_1^u = \langle -4.05\times 10^8 u^{20} - 1.08\times 10^9 u^{19} + \cdots + 5.50\times 10^9 b - 5.84\times 10^7,\ 4.41\times 10^9 u^{20} + 8.87\times 10^9 u^{19} + \cdots + 5.50\times 10^9 a + 1.55\times 10^{10},\ u^{21} + 2u^{20} + \cdots + 3u + 1\rangle}$

(i) Arc colorings

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

$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -0.801261u^{20} - 1.61314u^{19} + \cdots + 8.20107u - 2.80960 \\ 0.0735967u^{20} + 0.196113u^{19} + \cdots + 1.83312u + 0.0106209 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -u^2 + 1 \\ u^4 - 2u^2 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.801261u^{20} - 1.61314u^{19} + \cdots + 8.20107u - 2.80960 \\ u \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.265288u^{20} + 0.496064u^{19} + \cdots + 3.71973u + 0.0807825 \\ -0.0710076u^{20} - 0.0622947u^{19} + \cdots - 1.04835u - 0.0356490 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -0.874858u^{20} - 1.80926u^{19} + \cdots + 6.36794u - 2.82022 \\ 0.0735967u^{20} + 0.196113u^{19} + \cdots + 1.83312u + 0.0106209 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.0356490u^{20} + 0.000290302u^{19} + \cdots - 0.113612u - 0.941407 \\ 0.0345127u^{20} - 0.0516588u^{19} + \cdots + 0.715083u + 0.265288 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0.0129414u^{20} + 0.219376u^{19} + \cdots - 0.396043u - 1.03717 \\ 0.329095u^{20} + 0.210059u^{19} + \cdots + 1.76622u + 0.634234 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 0.336296u^{20} + 0.558359u^{19} + \cdots + 4.76808u + 0.116432 \\ -0.0710076u^{20} - 0.0622947u^{19} + \cdots - 1.04835u - 0.0356490 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= -\frac{19796050041}{5499202867}u^{20} - \frac{34864711542}{5499202867}u^{19} + \cdots + \frac{105657040340}{5499202867}u - \frac{58195456402}{5499202867}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{21} - u^{20} + \cdots - 10u + 1$
c_2, c_4	$u^{21} - 7u^{20} + \cdots - 4u + 1$
c_3, c_8	$u^{21} - u^{20} + \cdots + 64u + 64$
c_5, c_9, c_{10}	$u^{21} + 2u^{20} + \cdots + 3u + 1$
c_6, c_7, c_{11}	$u^{21} - 2u^{20} + \cdots + u + 1$
c_{12}	$u^{21} - 8u^{20} + \cdots + 15665u - 2537$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{21}+53y^{20}+\cdots+14y-1$
c_2, c_4	$y^{21}+y^{20}+\cdots-10y-1$
c_3, c_8	$y^{21}+39y^{20}+\cdots+71680y^2-4096$
c_5, c_9, c_{10}	$y^{21}-32y^{20}+\cdots+29y-1$
c_6, c_7, c_{11}	$y^{21}+16y^{20}+\cdots+29y-1$
c_{12}	$y^{21}-116y^{20}+\cdots+451761953y-6436369$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.533638+0.732854I$ $a=-0.021350+0.475268I$ $b=-0.156517+0.629640I$	$-3.26941-2.37868I$	$2.23871+4.16638I$
$u=-0.533638-0.732854I$ $a=-0.021350-0.475268I$ $b=-0.156517-0.629640I$	$-3.26941+2.37868I$	$2.23871-4.16638I$
$u=\ \ 1.270070+0.160273I$ $a=-0.214865+0.848945I$ $b=\ \ 0.58338+1.42040I$	$4.18543-2.07978I$	$5.06109+1.69933I$
$u=\ \ 1.270070-0.160273I$ $a=-0.214865-0.848945I$ $b=\ \ 0.58338-1.42040I$	$4.18543+2.07978I$	$5.06109-1.69933I$
$u=\ \ 0.578863+0.221418I$ $a=\ \ 0.276951+0.590407I$ $b=\ \ 0.506741+0.461302I$	$1.037710+0.275110I$	$9.16776-1.72750I$
$u=\ \ 0.578863-0.221418I$ $a=\ \ 0.276951-0.590407I$ $b=\ \ 0.506741-0.461302I$	$1.037710-0.275110I$	$9.16776+1.72750I$
$u=-0.602512+0.112972I$ $a=-0.615716-1.104380I$ $b=-0.968514-0.190025I$	$-1.76723-2.46823I$	$2.72362+4.48751I$
$u=-0.602512-0.112972I$ $a=-0.615716+1.104380I$ $b=-0.968514+0.190025I$	$-1.76723+2.46823I$	$2.72362-4.48751I$
$u=-1.378270+0.285291I$ $a=\ \ 0.265526+0.752482I$ $b=-0.30372+1.44468I$	$7.49754-2.42009I$	$8.20075+2.52746I$
$u=-1.378270-0.285291I$ $a=\ \ 0.265526-0.752482I$ $b=-0.30372-1.44468I$	$7.49754+2.42009I$	$8.20075-2.52746I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.43377 + 0.44455I$ $a = -0.268209 + 0.659406I$ $b = 0.094833 + 1.327870I$	$3.10341 + 6.65319I$	$3.92005 - 5.62951I$
$u = 1.43377 - 0.44455I$ $a = -0.268209 - 0.659406I$ $b = 0.094833 - 1.327870I$	$3.10341 - 6.65319I$	$3.92005 + 5.62951I$
$u = 0.192099 + 0.306787I$ $a = 1.15825 - 2.94256I$ $b = 0.472659 + 0.611670I$	$-4.24122 + 1.01092I$	$0.113832 + 1.103661I$
$u = 0.192099 - 0.306787I$ $a = 1.15825 + 2.94256I$ $b = 0.472659 - 0.611670I$	$-4.24122 - 1.01092I$	$0.113832 - 1.103661I$
$u = -0.208424$ $a = -4.36014$ $b = -0.397831$	-1.31628	-11.0260
$u = -1.83563 + 0.08011I$ $a = 0.602185 + 0.714479I$ $b = 0.39971 + 2.30587I$	$15.7454 + 0.6574I$	$4.16491 - 0.88898I$
$u = -1.83563 - 0.08011I$ $a = 0.602185 - 0.714479I$ $b = 0.39971 - 2.30587I$	$15.7454 - 0.6574I$	$4.16491 + 0.88898I$
$u = 1.86695 + 0.09495I$ $a = -0.612105 + 0.689039I$ $b = -0.50531 + 2.27337I$	$19.6581 + 4.5242I$	$7.10782 - 2.01921I$
$u = 1.86695 - 0.09495I$ $a = -0.612105 - 0.689039I$ $b = -0.50531 - 2.27337I$	$19.6581 - 4.5242I$	$7.10782 + 2.01921I$
$u = -1.88749 + 0.12006I$ $a = 0.609399 + 0.663862I$ $b = 0.57565 + 2.19938I$	$15.4586 - 9.6359I$	$3.81453 + 4.73258I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.88749 - 0.12006I$ $a = 0.609399 - 0.663862I$ $b = 0.57565 - 2.19938I$	$15.4586 + 9.6359I$	$3.81453 - 4.73258I$

II.

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= u^5 - 8u^3 + 12u + 5$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y-1)^6$
c_3, c_8	y^6
c_5, c_9, c_{10} c_{12}	$y^6 - 7y^5 + 17y^4 - 16y^3 + 6y^2 - 5y + 1$
c_6, c_7, c_{11}	$y^6 + 5y^5 + 9y^4 + 4y^3 - 6y^2 - 5y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.493180 + 0.575288I$ $a = -0.858925 - 1.001920I$ $b = 0$	$-4.60518 - 1.97241I$	$-3.77811 + 4.83849I$
$u = -0.493180 - 0.575288I$ $a = -0.858925 + 1.001920I$ $b = 0$	$-4.60518 + 1.97241I$	$-3.77811 - 4.83849I$
$u = 0.483672$ $a = 2.06752$ $b = 0$	-0.906083	9.92530
$u = 1.52087 + 0.16310I$ $a = 0.650045 - 0.069710I$ $b = 0$	$2.05064 + 4.59213I$	$3.28527 - 2.79936I$
$u = 1.52087 - 0.16310I$ $a = 0.650045 + 0.069710I$ $b = 0$	$2.05064 - 4.59213I$	$3.28527 + 2.79936I$
$u = -1.53904$ $a = -0.649754$ $b = 0$	6.01515	7.06030

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^6)(u^{21}-u^{20}+\cdots-10u+1)$
c_2	$((u-1)^6)(u^{21}-7u^{20}+\cdots-4u+1)$
c_3, c_8	$u^6(u^{21}-u^{20}+\cdots+64u+64)$
c_4	$((u+1)^6)(u^{21}-7u^{20}+\cdots-4u+1)$
c_5	$(u^6+u^5-3u^4-2u^3+2u^2-u-1)(u^{21}+2u^{20}+\cdots+3u+1)$
c_6, c_7	$(u^6-u^5+3u^4-2u^3+2u^2-u-1)(u^{21}-2u^{20}+\cdots+u+1)$
c_9, c_{10}	$(u^6-u^5-3u^4+2u^3+2u^2+u-1)(u^{21}+2u^{20}+\cdots+3u+1)$
c_{11}	$(u^6+u^5+3u^4+2u^3+2u^2+u-1)(u^{21}-2u^{20}+\cdots+u+1)$
c_{12}	$(u^6-u^5-3u^4+2u^3+2u^2+u-1)(u^{21}-8u^{20}+\cdots+15665u-2537)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^6)(y^{21}+53y^{20}+\cdots+14y-1)$
c_2, c_4	$((y-1)^6)(y^{21}+y^{20}+\cdots-10y-1)$
c_3, c_8	$y^6(y^{21}+39y^{20}+\cdots+71680y^2-4096)$
c_5, c_9, c_{10}	$(y^6-7y^5+\cdots-5y+1)(y^{21}-32y^{20}+\cdots+29y-1)$
c_6, c_7, c_{11}	$(y^6+5y^5+\cdots-5y+1)(y^{21}+16y^{20}+\cdots+29y-1)$
c_{12}	$(y^6-7y^5+17y^4-16y^3+6y^2-5y+1)$ $\cdot(y^{21}-116y^{20}+\cdots+451761953y-6436369)$