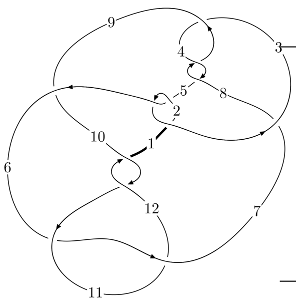
$12n_{0341}$ ($K12n_{0341}$)



A knot diagram[1]

Linearized knot diagam

3 6 9 8 2 11 3 4 6 12 7 10

Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & 7214350820u^{41} + 14261840536u^{40} + \cdots + 246149221861b + 13897246666, \\
& -286630329392u^{41} + 403439047669u^{40} + \cdots + 147689531166a - 913761324969, \\
& u^{42} - 2u^{41} + \cdots + 3u - 3 \rangle \\
I_2^u = \langle & b - 1,\ a^2 + 2au + 3u^2 - 2a - 6u + 3,\ u^3 - u^2 + 1 \rangle \\
I_3^u = \langle & b + 1,\ a + u + 1,\ u^3 + u^2 - 1 \rangle
\end{aligned}$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 51 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.

$\boldsymbol{I_1^u = \langle 7.21\times 10^{9}u^{41}+1.43\times 10^{10}u^{40}+\cdots+2.46\times 10^{10}b+1.39\times 10^{10},\ -2.87\times 10^{11}u^{41}+4.03\times 10^{11}u^{40}+\cdots+1.48\times 10^{11}a-9.14\times 10^{11},\ u^{42}-2u^{41}+\cdots+3u-3\rangle}$

(i) Arc colorings

$$a_6 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_3 = \begin{pmatrix}1.94076u^{41}-2.73167u^{40}+\cdots-1.14974u+6.18704\\-0.293089u^{41}-0.579398u^{40}+\cdots+3.28574u-0.564586\end{pmatrix}$$
$$a_7 = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_8 = \begin{pmatrix}-1.42423u^{41}+1.18705u^{40}+\cdots+4.86301u+0.704689\\-1.16806u^{41}+1.78911u^{40}+\cdots-1.38926u-3.49408\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}-u\\-u^3+u\end{pmatrix}$$
$$a_2 = \begin{pmatrix}1.64767u^{41}-3.31107u^{40}+\cdots+2.13601u+5.62246\\-0.293089u^{41}-0.579398u^{40}+\cdots+3.28574u-0.564586\end{pmatrix}$$
$$a_1 = \begin{pmatrix}-u^5-u\\-u^7+u^5-2u^3+u\end{pmatrix}$$
$$a_5 = \begin{pmatrix}-1.90746u^{41}+4.07002u^{40}+\cdots-4.13107u-3.28175\\0.164081u^{41}+0.812895u^{40}+\cdots-2.16751u+0.836225\end{pmatrix}$$
$$a_4 = \begin{pmatrix}1.43869u^{41}-0.929160u^{40}+\cdots-3.24612u+9.35450\\-0.222585u^{41}+0.354594u^{40}+\cdots+1.79645u+0.987097\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}u^3\\u^5-u^3+u\end{pmatrix}$$
$$a_9 = \begin{pmatrix}u^5+u\\u^5-u^3+u\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= -\frac{47220782375}{24614921861}u^{41} - \frac{499793100}{24614921861}u^{40} + \cdots + \frac{450722117512}{24614921861}u - \frac{698025687495}{24614921861}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{42} + 50u^{41} + \cdots - 190u + 1$
c_2, c_5	$u^{42} + 4u^{41} + \cdots + 12u - 1$
c_3, c_4, c_8	$u^{42} + u^{41} + \cdots + 16u + 8$
c_6, c_{11}	$u^{42} - 2u^{41} + \cdots + 3u - 3$
c_7	$u^{42} - u^{41} + \cdots + 64u + 8$
c_9	$u^{42} + 2u^{41} + \cdots + 15u - 3$
c_{10}, c_{12}	$u^{42} + 16u^{41} + \cdots + 147u + 9$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{42} - 106y^{41} + \cdots + 9510y + 1$
c_2, c_5	$y^{42} - 50y^{41} + \cdots + 190y + 1$
c_3, c_4, c_8	$y^{42} + 35y^{41} + \cdots + 128y + 64$
c_6, c_{11}	$y^{42} - 16y^{41} + \cdots - 147y + 9$
c_7	$y^{42} - 49y^{41} + \cdots + 1536y + 64$
c_9	$y^{42} - 48y^{41} + \cdots - 3y + 9$
c_{10}, c_{12}	$y^{42} + 24y^{41} + \cdots - 2367y + 81$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.493349+0.873287I$ $a=\ \ 0.358491-0.000809I$ $b=\ \ 1.62688+0.12135I$	$-7.72387-2.08243I$	$-13.63208+0.61844I$
$u=-0.493349-0.873287I$ $a=\ \ 0.358491+0.000809I$ $b=\ \ 1.62688-0.12135I$	$-7.72387+2.08243I$	$-13.63208-0.61844I$
$u=-0.857671+0.547734I$ $a=\ \ 2.39738+0.56265I$ $b=\ \ 1.297890+0.093808I$	$3.74220+2.19658I$	$-11.88073-3.02970I$
$u=-0.857671-0.547734I$ $a=\ \ 2.39738-0.56265I$ $b=\ \ 1.297890-0.093808I$	$3.74220-2.19658I$	$-11.88073+3.02970I$
$u=-1.042580+0.004634I$ $a=\ \ 1.183060+0.451877I$ $b=\ \ 0.711272+0.677400I$	$-1.44341-2.30270I$	$-14.7058+3.7232I$
$u=-1.042580-0.004634I$ $a=\ \ 1.183060-0.451877I$ $b=\ \ 0.711272-0.677400I$	$-1.44341+2.30270I$	$-14.7058-3.7232I$
$u=\ \ 0.586636+0.736989I$ $a=-0.267637+0.708323I$ $b=\ \ 0.487231-0.786141I$	$3.87323+3.15388I$	$-7.00575-3.01303I$
$u=\ \ 0.586636-0.736989I$ $a=-0.267637-0.708323I$ $b=\ \ 0.487231+0.786141I$	$3.87323-3.15388I$	$-7.00575+3.01303I$
$u=\ \ 0.587628+0.887835I$ $a=-0.300671-0.305913I$ $b=-1.57989+0.27896I$	$-3.00105+7.12424I$	$-10.18276-2.97506I$
$u=\ \ 0.587628-0.887835I$ $a=-0.300671+0.305913I$ $b=-1.57989-0.27896I$	$-3.00105-7.12424I$	$-10.18276+2.97506I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.893636 + 0.236079I$ $a = -1.66259 + 0.50310I$ $b = -1.141660 + 0.275387I$	$-3.22132 - 0.72709I$	$-17.2502 + 5.7568I$
$u = 0.893636 - 0.236079I$ $a = -1.66259 - 0.50310I$ $b = -1.141660 - 0.275387I$	$-3.22132 + 0.72709I$	$-17.2502 - 5.7568I$
$u = 0.364728 + 0.832070I$ $a = -0.385710 + 0.359680I$ $b = -1.59824 - 0.07981I$	$-4.34661 - 3.12224I$	$-10.84272 + 2.92675I$
$u = 0.364728 - 0.832070I$ $a = -0.385710 - 0.359680I$ $b = -1.59824 + 0.07981I$	$-4.34661 + 3.12224I$	$-10.84272 - 2.92675I$
$u = 0.878925 + 0.694557I$ $a = 0.310415 - 0.409583I$ $b = 0.590948 - 0.108791I$	$2.08568 - 2.67535I$	$-4.92251 + 2.20937I$
$u = 0.878925 - 0.694557I$ $a = 0.310415 + 0.409583I$ $b = 0.590948 + 0.108791I$	$2.08568 + 2.67535I$	$-4.92251 - 2.20937I$
$u = 0.949655 + 0.594867I$ $a = -0.255068 - 0.352987I$ $b = 0.662783 - 0.635045I$	$2.08502 - 3.11024I$	$-10.10897 + 3.32337I$
$u = 0.949655 - 0.594867I$ $a = -0.255068 + 0.352987I$ $b = 0.662783 + 0.635045I$	$2.08502 + 3.11024I$	$-10.10897 - 3.32337I$
$u = -0.967079 + 0.570637I$ $a = -1.10245 - 1.08422I$ $b = -0.758887 + 0.665919I$	$-1.15338 + 4.42053I$	$-14.9758 - 5.6521I$
$u = -0.967079 - 0.570637I$ $a = -1.10245 + 1.08422I$ $b = -0.758887 - 0.665919I$	$-1.15338 - 4.42053I$	$-14.9758 + 5.6521I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.739578 + 0.450680I$ $a = 0.34684 - 1.84376I$ $b = 0.854538 + 0.412162I$	$2.96029 - 1.36479I$	$-9.90879 + 4.47886I$
$u = 0.739578 - 0.450680I$ $a = 0.34684 + 1.84376I$ $b = 0.854538 - 0.412162I$	$2.96029 + 1.36479I$	$-9.90879 - 4.47886I$
$u = -0.870477 + 0.749362I$ $a = -0.989419 + 0.125741I$ $b = 0.0326402 - 0.0700810I$	$7.96823 + 2.83809I$	$-2.44683 - 2.99950I$
$u = -0.870477 - 0.749362I$ $a = -0.989419 - 0.125741I$ $b = 0.0326402 + 0.0700810I$	$7.96823 - 2.83809I$	$-2.44683 + 2.99950I$
$u = -0.667718 + 0.509431I$ $a = 0.526984 + 0.298925I$ $b = -0.455324 - 0.527591I$	$-0.215927 + 0.057739I$	$-12.86905 + 0.99724I$
$u = -0.667718 - 0.509431I$ $a = 0.526984 - 0.298925I$ $b = -0.455324 + 0.527591I$	$-0.215927 - 0.057739I$	$-12.86905 - 0.99724I$
$u = -1.192640 + 0.084412I$ $a = -2.72686 - 0.35998I$ $b = -1.68766 + 0.19280I$	$-9.82219 + 5.69889I$	$-16.0238 - 3.4541I$
$u = -1.192640 - 0.084412I$ $a = -2.72686 + 0.35998I$ $b = -1.68766 - 0.19280I$	$-9.82219 - 5.69889I$	$-16.0238 + 3.4541I$
$u = 1.20918$ $a = 2.73290$ $b = 1.73917$	-13.9658	-18.7010
$u = -0.893982 + 0.823604I$ $a = 0.017481 - 0.836922I$ $b = -1.322530 + 0.004918I$	$3.39487 + 3.06804I$	$-10.44365 - 2.87354I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.893982-0.823604I$ $a=\ 0.017481+0.836922I$ $b=-1.322530-0.004918I$	$3.39487-3.06804I$	$-10.44365+2.87354I$
$u=\ 1.029980+0.651441I$ $a=\ 1.19267-0.82522I$ $b=\ 0.548001+0.888471I$	$2.56002-8.46686I$	$-9.68679+7.74880I$
$u=\ 1.029980-0.651441I$ $a=\ 1.19267+0.82522I$ $b=\ 0.548001-0.888471I$	$2.56002+8.46686I$	$-9.68679-7.74880I$
$u=\ 1.106730+0.589792I$ $a=-1.63532+1.44131I$ $b=-1.67176-0.00321I$	$-6.57334-2.08658I$	$-13.90990+1.57056I$
$u=\ 1.106730-0.589792I$ $a=-1.63532-1.44131I$ $b=-1.67176+0.00321I$	$-6.57334+2.08658I$	$-13.90990-1.57056I$
$u=-1.107090+0.662634I$ $a=\ 1.51861+1.67496I$ $b=\ 1.68068-0.19305I$	$-9.58882+7.76603I$	$-15.5418-5.0561I$
$u=-1.107090-0.662634I$ $a=\ 1.51861-1.67496I$ $b=\ 1.68068+0.19305I$	$-9.58882-7.76603I$	$-15.5418+5.0561I$
$u=\ 1.084910+0.710010I$ $a=-1.42076+1.88196I$ $b=-1.60580-0.32883I$	$-4.52539-13.04420I$	$-12.00000+7.21592I$
$u=\ 1.084910-0.710010I$ $a=-1.42076-1.88196I$ $b=-1.60580+0.32883I$	$-4.52539+13.04420I$	$-12.00000-7.21592I$
$u=\ 0.451064+0.481038I$ $a=-0.346528-1.234360I$ $b=\ 0.610635+0.462564I$	$3.08466-1.37137I$	$-7.10497+4.42267I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.451064 - 0.481038I$ $a = -0.346528 + 1.234360I$ $b = 0.610635 - 0.462564I$	$3.08466 + 1.37137I$	$-7.10497 - 4.42267I$
$u = -0.370951$ $a = 0.749235$ $b = -0.302638$	-0.594790	-16.5260

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

(i) Arc colorings

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

$$a_7 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -a-3u+4 \\ -u^2a+u^2+1 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} a+1 \\ 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -a \\ -1 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} u^2a+a-1 \\ u^2a-au-u^2-a+1 \end{pmatrix}$$

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

$$a_9 = \begin{pmatrix} -1 \\ -u^2 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4u-12$

(iv) u-Polynomials at the component

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

(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, c_7 c_8	$(y+2)^6$
c_6, c_{11}	$(y^3 - y^2 + 2y - 1)^2$
c_9, c_{10}, c_{12}	$(y^3 + 3y^2 + 2y - 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.877439 + 0.744862I$ $a = 1.175960 - 0.571534I$ $b = 1.00000$	$6.31400 - 2.82812I$	$-8.49024 + 2.97945I$
$u = 0.877439 + 0.744862I$ $a = -0.930832 - 0.918189I$ $b = 1.00000$	$6.31400 - 2.82812I$	$-8.49024 + 2.97945I$
$u = 0.877439 - 0.744862I$ $a = 1.175960 + 0.571534I$ $b = 1.00000$	$6.31400 + 2.82812I$	$-8.49024 - 2.97945I$
$u = 0.877439 - 0.744862I$ $a = -0.930832 + 0.918189I$ $b = 1.00000$	$6.31400 + 2.82812I$	$-8.49024 - 2.97945I$
$u = -0.754878$ $a = 1.75488 + 2.48177I$ $b = 1.00000$	2.17641	-15.0200
$u = -0.754878$ $a = 1.75488 - 2.48177I$ $b = 1.00000$	2.17641	-15.0200

III. $I_3^u = \langle b+1,\ a+u+1,\ u^3+u^2-1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4u^2 + 2u - 16$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.877439 + 0.744862I$ $a = -0.122561 - 0.744862I$ $b = -1.00000$	$1.37919 + 2.82812I$	$-16.8946 - 3.7388I$
$u = -0.877439 - 0.744862I$ $a = -0.122561 + 0.744862I$ $b = -1.00000$	$1.37919 - 2.82812I$	$-16.8946 + 3.7388I$
$u = 0.754878$ $a = -1.75488$ $b = -1.00000$	-2.75839	-12.2110

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^9)(u^{42}+50u^{41}+\cdots-190u+1)$
c_2	$((u-1)^3)(u+1)^6(u^{42}+4u^{41}+\cdots+12u-1)$
c_3, c_4, c_8	$u^3(u^2+2)^3(u^{42}+u^{41}+\cdots+16u+8)$
c_5	$((u-1)^6)(u+1)^3(u^{42}+4u^{41}+\cdots+12u-1)$
c_6	$((u^3-u^2+1)^2)(u^3+u^2-1)(u^{42}-2u^{41}+\cdots+3u-3)$
c_7	$u^3(u^2+2)^3(u^{42}-u^{41}+\cdots+64u+8)$
c_9	$((u^3-u^2+2u-1)^2)(u^3+u^2+2u+1)(u^{42}+2u^{41}+\cdots+15u-3)$
c_{10}	$((u^3-u^2+2u-1)^3)(u^{42}+16u^{41}+\cdots+147u+9)$
c_{11}	$(u^3-u^2+1)(u^3+u^2-1)^2(u^{42}-2u^{41}+\cdots+3u-3)$
c_{12}	$((u^3+u^2+2u+1)^3)(u^{42}+16u^{41}+\cdots+147u+9)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^9)(y^{42} - 106y^{41} + \cdots + 9510y + 1)$
c_2, c_5	$((y-1)^9)(y^{42} - 50y^{41} + \cdots + 190y + 1)$
c_3, c_4, c_8	$y^3(y+2)^6(y^{42} + 35y^{41} + \cdots + 128y + 64)$
c_6, c_{11}	$((y^3 - y^2 + 2y - 1)^3)(y^{42} - 16y^{41} + \cdots - 147y + 9)$
c_7	$y^3(y+2)^6(y^{42} - 49y^{41} + \cdots + 1536y + 64)$
c_9	$((y^3 + 3y^2 + 2y - 1)^3)(y^{42} - 48y^{41} + \cdots - 3y + 9)$
c_{10}, c_{12}	$((y^3 + 3y^2 + 2y - 1)^3)(y^{42} + 24y^{41} + \cdots - 2367y + 81)$