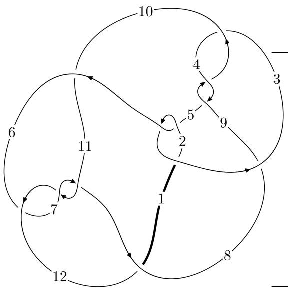
$12n_{0477}$ ($K12n_{0477}$)



A knot diagram[1]

Linearized knot diagam

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

Solving Sequence

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

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

$$\begin{aligned}
I_1^u &= \langle -2225017u^{29} + 4505754u^{28} + \cdots + 4816957b - 1955093, \\
&\quad -2648086u^{29} - 9433003u^{28} + \cdots + 28901742a + 37209631,\ u^{30} - 2u^{29} + \cdots + 5u - 3\rangle \\
I_2^u &= \langle b - 1,\ -2u^2a + a^2 - 2au + 4u^2 - 4a + 3u + 7,\ u^3 + u^2 + 2u + 1\rangle \\
I_3^u &= \langle b + 1,\ u^2 + a - u + 2,\ u^3 - u^2 + 2u - 1\rangle
\end{aligned}$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 39 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.

$$I^u_1 = \langle -2.23\times10^6 u^{29} + 4.51\times10^6 u^{28} + \cdots + 4.82\times10^6 b - 1.96\times10^6,\ -2.65\times10^6 u^{29} - 9.43\times10^6 u^{28} + \cdots + 2.89\times10^7 a + 3.72\times10^7,\ u^{30} - 2u^{29} + \cdots + 5u - 3\rangle$$

(i) Arc colorings

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

$$a_{12} = \begin{pmatrix}0\\u\end{pmatrix}$$

$$a_3 = \begin{pmatrix}0.0916238u^{29} + 0.326382u^{28} + \cdots - 0.0897393u - 1.28745\\0.461913u^{29} - 0.935394u^{28} + \cdots + 0.0723297u + 0.405877\end{pmatrix}$$

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

$$a_2 = \begin{pmatrix}0.553537u^{29} - 0.609012u^{28} + \cdots - 0.0174096u - 0.881576\\0.461913u^{29} - 0.935394u^{28} + \cdots + 0.0723297u + 0.405877\end{pmatrix}$$

$$a_1 = \begin{pmatrix}-u^5 - 2u^3 - u\\-u^7 - 3u^5 - 2u^3 + u\end{pmatrix}$$

$$a_5 = \begin{pmatrix}0.847386u^{29} - 1.24384u^{28} + \cdots - 1.07511u + 1.57925\\0.551237u^{29} - 1.21563u^{28} + \cdots - 1.81025u + 0.917412\end{pmatrix}$$

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

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

$$a_{10} = \begin{pmatrix}u^3 + 2u\\u^3 + u\end{pmatrix}$$

$$a_4 = \begin{pmatrix}-0.0573861u^{29} + 0.274952u^{28} + \cdots + 0.731599u - 2.38174\\0.0837160u^{29} - 0.147522u^{28} + \cdots + 1.77910u - 0.712657\end{pmatrix}$$

$$a_9 = \begin{pmatrix}0.348620u^{29} - 1.11181u^{28} + \cdots - 3.98425u + 2.17901\\0.0392597u^{29} - 0.428436u^{28} + \cdots - 1.44021u + 0.962791\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{4602334}{4816957}u^{29} + \frac{5525451}{4816957}u^{28} + \cdots - \frac{80618534}{4816957}u - \frac{73845258}{4816957}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{30} + 42u^{29} + \cdots + 4660u + 289$
c_2, c_5	$u^{30} + 4u^{29} + \cdots + 28u - 17$
c_3, c_4, c_9	$u^{30} - u^{29} + \cdots + 16u + 8$
c_6, c_7, c_{11}	$u^{30} + 2u^{29} + \cdots - 5u - 3$
c_8	$u^{30} + u^{29} + \cdots - 48u + 488$
c_{10}, c_{12}	$u^{30} - 2u^{29} + \cdots - 17u - 3$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{30} - 98y^{29} + \cdots - 20560756y + 83521$
c_2, c_5	$y^{30} - 42y^{29} + \cdots - 4660y + 289$
c_3, c_4, c_9	$y^{30} + 23y^{29} + \cdots - 2304y^2 + 64$
c_6, c_7, c_{11}	$y^{30} + 24y^{29} + \cdots - 121y + 9$
c_8	$y^{30} - 61y^{29} + \cdots + 989312y + 238144$
c_{10}, c_{12}	$y^{30} - 40y^{29} + \cdots - 265y + 9$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.999114$ $a=-2.25143$ $b=-1.90174$	-15.9829	-16.7010
$u=0.966560+0.100179I$ $a=2.26552-0.36955I$ $b=1.79997+0.26406I$	$-11.56980-6.42747I$	$-14.4599+3.2280I$
$u=0.966560-0.100179I$ $a=2.26552+0.36955I$ $b=1.79997-0.26406I$	$-11.56980+6.42747I$	$-14.4599-3.2280I$
$u=-0.067362+1.069610I$ $a=-0.93060+1.33467I$ $b=-1.167500-0.308385I$	$5.15569+0.50722I$	$-9.61314+0.41907I$
$u=-0.067362-1.069610I$ $a=-0.93060-1.33467I$ $b=-1.167500+0.308385I$	$5.15569-0.50722I$	$-9.61314-0.41907I$
$u=-0.293578+1.051070I$ $a=0.782550+1.067670I$ $b=1.113160-0.513139I$	$-0.78564+2.16545I$	$-13.74695-1.34185I$
$u=-0.293578-1.051070I$ $a=0.782550-1.067670I$ $b=1.113160+0.513139I$	$-0.78564-2.16545I$	$-13.74695+1.34185I$
$u=0.151469+1.144510I$ $a=-0.115008-0.375373I$ $b=-0.123274+0.591027I$	$2.57428-1.65013I$	$-8.15669+3.84589I$
$u=0.151469-1.144510I$ $a=-0.115008+0.375373I$ $b=-0.123274-0.591027I$	$2.57428+1.65013I$	$-8.15669-3.84589I$
$u=0.809755+0.043993I$ $a=-1.114310+0.426209I$ $b=-0.855875+0.695414I$	$-2.25326+2.17999I$	$-13.9404-3.4735I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.809755 - 0.043993I$ $a = -1.114310 - 0.426209I$ $b = -0.855875 - 0.695414I$	$-2.25326 - 2.17999I$	$-13.9404 + 3.4735I$
$u = -0.636663 + 0.315952I$ $a = 1.41716 + 0.84138I$ $b = 1.344600 + 0.179052I$	$-2.86347 + 1.34973I$	$-14.1130 - 4.7512I$
$u = -0.636663 - 0.315952I$ $a = 1.41716 - 0.84138I$ $b = 1.344600 - 0.179052I$	$-2.86347 - 1.34973I$	$-14.1130 + 4.7512I$
$u = 0.397857 + 1.242680I$ $a = -0.883299 + 0.876579I$ $b = -0.772590 - 0.869650I$	$1.43546 - 6.54686I$	$-9.76473 + 6.27179I$
$u = 0.397857 - 1.242680I$ $a = -0.883299 - 0.876579I$ $b = -0.772590 + 0.869650I$	$1.43546 + 6.54686I$	$-9.76473 - 6.27179I$
$u = 0.308606 + 1.287910I$ $a = 0.045483 + 0.304042I$ $b = -0.835858 + 0.482328I$	$1.90752 - 1.82850I$	$-9.06320 - 1.31557I$
$u = 0.308606 - 1.287910I$ $a = 0.045483 - 0.304042I$ $b = -0.835858 - 0.482328I$	$1.90752 + 1.82850I$	$-9.06320 + 1.31557I$
$u = -0.153332 + 1.323030I$ $a = 0.841526 - 0.802993I$ $b = -0.200009 + 0.363871I$	$8.24471 + 3.12382I$	$-2.39878 - 3.89363I$
$u = -0.153332 - 1.323030I$ $a = 0.841526 + 0.802993I$ $b = -0.200009 - 0.363871I$	$8.24471 - 3.12382I$	$-2.39878 + 3.89363I$
$u = 0.525666 + 1.225010I$ $a = 0.922843 - 0.837941I$ $b = 1.82392 - 0.14447I$	$-8.11797 + 1.14335I$	$-11.97314 - 0.02421I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.525666 - 1.225010I$ $a = 0.922843 + 0.837941I$ $b = 1.82392 + 0.14447I$	$-8.11797 - 1.14335I$	$-11.97314 + 0.02421I$
$u = -0.502067 + 1.320010I$ $a = -0.90661 - 1.20129I$ $b = -1.86679 + 0.13017I$	$-11.88350 + 5.33435I$	$-13.75533 - 3.00902I$
$u = -0.502067 - 1.320010I$ $a = -0.90661 + 1.20129I$ $b = -1.86679 - 0.13017I$	$-11.88350 - 5.33435I$	$-13.75533 + 3.00902I$
$u = -0.19285 + 1.42513I$ $a = -0.285158 + 0.831272I$ $b = 1.394710 + 0.010800I$	$2.84039 + 4.26517I$	$-9.12872 - 4.11003I$
$u = -0.19285 - 1.42513I$ $a = -0.285158 - 0.831272I$ $b = 1.394710 - 0.010800I$	$2.84039 - 4.26517I$	$-9.12872 + 4.11003I$
$u = 0.44395 + 1.37034I$ $a = 0.92880 - 1.52502I$ $b = 1.73382 + 0.33968I$	$-6.95106 - 11.46670I$	$-10.90832 + 5.56525I$
$u = 0.44395 - 1.37034I$ $a = 0.92880 + 1.52502I$ $b = 1.73382 - 0.33968I$	$-6.95106 + 11.46670I$	$-10.90832 - 5.56525I$
$u = -0.399508 + 0.267149I$ $a = 0.62991 - 1.27405I$ $b = -0.560771 + 0.285755I$	$3.37415 + 1.14100I$	$-8.01557 - 6.01383I$
$u = -0.399508 - 0.267149I$ $a = 0.62991 + 1.27405I$ $b = -0.560771 - 0.285755I$	$3.37415 - 1.14100I$	$-8.01557 + 6.01383I$
$u = 0.282112$ $a = -0.612831$ $b = 0.246723$	-0.514940	-19.2240

II. $\boldsymbol{I_2^u = \langle b-1,\ -2u^2a + a^2 - 2au + 4u^2 - 4a + 3u + 7,\ u^3 + u^2 + 2u + 1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

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

(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_8 c_9	$(u^2+2)^3$
c_6, c_7	$(u^3+u^2+2u+1)^2$
c_{10}, c_{12}	$(u^3+u^2-1)^2$
c_{11}	$(u^3-u^2+2u-1)^2$

(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_8 c_9	$(y+2)^6$
c_6, c_7, c_{11}	$(y^3+3y^2+2y-1)^2$
c_{10}, c_{12}	$(y^3-y^2+2y-1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.215080 + 1.307140I$ $a = 0.917744 - 0.191855I$ $b = 1.00000$	$6.31400 + 2.82812I$	$-8.49024 - 2.97945I$
$u = -0.215080 + 1.307140I$ $a = -0.67262 + 1.68158I$ $b = 1.00000$	$6.31400 + 2.82812I$	$-8.49024 - 2.97945I$
$u = -0.215080 - 1.307140I$ $a = 0.917744 + 0.191855I$ $b = 1.00000$	$6.31400 - 2.82812I$	$-8.49024 + 2.97945I$
$u = -0.215080 - 1.307140I$ $a = -0.67262 - 1.68158I$ $b = 1.00000$	$6.31400 - 2.82812I$	$-8.49024 + 2.97945I$
$u = -0.569840$ $a = 1.75488 + 1.87343I$ $b = 1.00000$	2.17641	-15.0200
$u = -0.569840$ $a = 1.75488 - 1.87343I$ $b = 1.00000$	2.17641	-15.0200

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

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

(iv) u-Polynomials at the component

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

(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_8 c_9	y^3
c_6, c_7, c_{11}	$y^3 + 3y^2 + 2y - 1$
c_{10}, c_{12}	$y^3 - y^2 + 2y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.215080 + 1.307140I$ $a = -0.122561 + 0.744862I$ $b = -1.00000$	$1.37919 - 2.82812I$	$-11.81496 + 4.10401I$
$u = 0.215080 - 1.307140I$ $a = -0.122561 - 0.744862I$ $b = -1.00000$	$1.37919 + 2.82812I$	$-11.81496 - 4.10401I$
$u = 0.569840$ $a = -1.75488$ $b = -1.00000$	-2.75839	-14.3700

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^9)(u^{30}+42u^{29}+\cdots+4660u+289)$
c_2	$((u-1)^3)(u+1)^6(u^{30}+4u^{29}+\cdots+28u-17)$
c_3, c_4, c_9	$u^3(u^2+2)^3(u^{30}-u^{29}+\cdots+16u+8)$
c_5	$((u-1)^6)(u+1)^3(u^{30}+4u^{29}+\cdots+28u-17)$
c_6, c_7	$(u^3-u^2+2u-1)(u^3+u^2+2u+1)^2(u^{30}+2u^{29}+\cdots-5u-3)$
c_8	$u^3(u^2+2)^3(u^{30}+u^{29}+\cdots-48u+488)$
c_{10}, c_{12}	$(u^3-u^2+1)(u^3+u^2-1)^2(u^{30}-2u^{29}+\cdots-17u-3)$
c_{11}	$((u^3-u^2+2u-1)^2)(u^3+u^2+2u+1)(u^{30}+2u^{29}+\cdots-5u-3)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^9)(y^{30} - 98y^{29} + \cdots - 2.05608 \times 10^7 y + 83521)$
c_2, c_5	$((y-1)^9)(y^{30} - 42y^{29} + \cdots - 4660y + 289)$
c_3, c_4, c_9	$y^3(y+2)^6(y^{30} + 23y^{29} + \cdots - 2304y^2 + 64)$
c_6, c_7, c_{11}	$((y^3 + 3y^2 + 2y - 1)^3)(y^{30} + 24y^{29} + \cdots - 121y + 9)$
c_8	$y^3(y+2)^6(y^{30} - 61y^{29} + \cdots + 989312y + 238144)$
c_{10}, c_{12}	$((y^3 - y^2 + 2y - 1)^3)(y^{30} - 40y^{29} + \cdots - 265y + 9)$