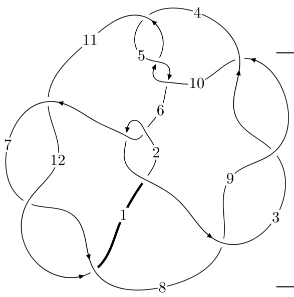
$12n_{0575}$ $(K12n_{0575})$



A knot diagram[1]

Linearized knot diagam

3 7 9 11 10 2 12 3 4 5 7 8

Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & u^9 + 3u^8 + 8u^7 + 13u^6 + 17u^5 + 16u^4 + 11u^3 + 4u^2 + b - 1, \\
& u^9 + 2u^8 + 6u^7 + 8u^6 + 11u^5 + 10u^4 + 6u^3 + 2u^2 + 2a - u - 2, \\
& u^{10} + 4u^9 + 12u^8 + 24u^7 + 37u^6 + 44u^5 + 40u^4 + 26u^3 + 11u^2 - 2\rangle \\
I_2^u = \langle & u^3 + u^2 + b + u + 2,\ u^3 + 3a + 3u,\ u^4 + 3u^2 + 3\rangle \\
I_3^u = \langle & u^3 - u^2 + b + u,\ u^3 + a + u,\ u^4 + u^2 - 1\rangle
\end{aligned}$$

$$I_1^v = \langle a,\ b - 1,\ v + 1\rangle$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 19 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.

$$\boldsymbol{I_1^u = \langle u^9 + 3u^8 + \cdots + b - 1,\ u^9 + 2u^8 + \cdots + 2a - 2,\ u^{10} + 4u^9 + \cdots + 11u^2 - 2\rangle}$$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_5 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -\frac{1}{2}u^9 - u^8 + \cdots + \frac{1}{2}u + 1 \\ -u^9 - 3u^8 - 8u^7 - 13u^6 - 17u^5 - 16u^4 - 11u^3 - 4u^2 + 1 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} \frac{1}{2}u^9 + 2u^8 + \cdots + \frac{3}{2}u - 2 \\ u^7 + 3u^6 + 5u^5 + 8u^4 + 6u^3 + 5u^2 + 2u - 1 \end{pmatrix}$$

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

$$a_9 = \begin{pmatrix} u^3 + 2u \\ u^3 + u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -u^6 - 3u^4 - 2u^2 + 1 \\ -u^6 - 2u^4 - u^2 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} \frac{1}{2}u^9 + 2u^8 + \cdots + \frac{3}{2}u - 1 \\ u^7 + 2u^6 + 5u^5 + 6u^4 + 6u^3 + 4u^2 + u - 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -\frac{27}{2}u^9 - 46u^8 + \cdots - \frac{25}{2}u + 24 \\ -8u^9 - 32u^8 + \cdots - 11u + 19 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} u^2 + 1 \\ u^4 + 2u^2 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u^9 - 4u^7 - 5u^5 + 3u \\ -u^9 - 3u^7 - 3u^5 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 2u^9 + 8u^8 + 22u^7 + 40u^6 + 52u^5 + 48u^4 + 28u^3 + 4u^2 - 8u - 20$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{10} - 10u^9 + \cdots + 22u + 1$
c_2, c_6, c_7 c_{11}, c_{12}	$u^{10} - 2u^9 + 7u^8 - 16u^7 + 54u^6 + 20u^5 - 38u^4 + 9u^2 - 2u - 1$
c_3, c_8, c_9	$u^{10} + 4u^9 + 4u^8 + 6u^7 + 47u^6 + 34u^5 - 96u^4 - 96u^3 - 9u^2 - 28u - 10$
c_4, c_5, c_{10}	$u^{10} - 4u^9 + 12u^8 - 24u^7 + 37u^6 - 44u^5 + 40u^4 - 26u^3 + 11u^2 - 2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{10} + 86y^9 + \cdots - 170y + 1$
c_2, c_6, c_7 c_{11}, c_{12}	$y^{10} + 10y^9 + \cdots - 22y + 1$
c_3, c_8, c_9	$y^{10} - 8y^9 + \cdots - 604y + 100$
c_4, c_5, c_{10}	$y^{10} + 8y^9 + \cdots - 44y + 4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.011370+0.549500I$ $a=-1.84526+1.65245I$ $b=-1.36179+0.92941I$	$5.53688+3.23949I$	$-14.4970-2.0733I$
$u=-1.011370-0.549500I$ $a=-1.84526-1.65245I$ $b=-1.36179-0.92941I$	$5.53688-3.23949I$	$-14.4970+2.0733I$
$u=-0.815135$ $a=\ 0.753180$ $b=\ 1.02757$	-5.74502	-15.7930
$u=\ 0.055441+1.195260I$ $a=-0.294506+0.301650I$ $b=-0.641589-0.278823I$	$2.90689-1.22324I$	$-8.89978+5.47255I$
$u=\ 0.055441-1.195260I$ $a=-0.294506-0.301650I$ $b=-0.641589+0.278823I$	$2.90689+1.22324I$	$-8.89978-5.47255I$
$u=-0.362503+1.267330I$ $a=-0.160758-0.440175I$ $b=-0.898467+0.647980I$	$-1.81239+4.23636I$	$-11.64407-4.22306I$
$u=-0.362503-1.267330I$ $a=-0.160758+0.440175I$ $b=-0.898467-0.647980I$	$-1.81239-4.23636I$	$-11.64407+4.22306I$
$u=-0.42007+1.54013I$ $a=\ 1.45657+0.91885I$ $b=\ 3.27708-0.06119I$	$12.1053+8.5018I$	$-12.65841-3.21110I$
$u=-0.42007-1.54013I$ $a=\ 1.45657-0.91885I$ $b=\ 3.27708+0.06119I$	$12.1053-8.5018I$	$-12.65841+3.21110I$
$u=\ 0.292134$ $a=\ 0.934719$ $b=\ 0.221971$	-0.474672	-20.8080

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

(i) Arc colorings

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_5 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -\frac{1}{3}u^3 - u \\ -u^3 - u^2 - u - 2 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} \frac{1}{3}u^3 + u \\ u^3 + u^2 + 2u + 2 \end{pmatrix}$$

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

$$a_9 = \begin{pmatrix} u^3 + 2u \\ u^3 + u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} u^2 + 1 \\ -u^2 - 3 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} \frac{1}{3}u^3 + u^2 + u + 1 \\ u^3 + u - 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} \frac{1}{3}u^3 + u \\ u^3 + u^2 + u + 2 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} u^2 + 1 \\ -u^2 - 3 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4u^2 - 12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.340625 + 1.271230I$ $a = 0.196660 - 0.733945I$ $b = 0.771230 - 0.525400I$	$-3.28987 - 4.05977I$	$-18.0000 + 3.4641I$
$u = 0.340625 - 1.271230I$ $a = 0.196660 + 0.733945I$ $b = 0.771230 + 0.525400I$	$-3.28987 + 4.05977I$	$-18.0000 - 3.4641I$
$u = -0.340625 + 1.271230I$ $a = -0.196660 - 0.733945I$ $b = -1.77123 + 1.20665I$	$-3.28987 + 4.05977I$	$-18.0000 - 3.4641I$
$u = -0.340625 - 1.271230I$ $a = -0.196660 + 0.733945I$ $b = -1.77123 - 1.20665I$	$-3.28987 - 4.05977I$	$-18.0000 + 3.4641I$

III. $I_3^u = \langle u^3 - u^2 + b + u,\ u^3 + a + u,\ u^4 + u^2 - 1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4u^2 - 20$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.786151$ $a = -1.27202$ $b = -0.653986$	-7.23771	-22.4720
$u = -0.786151$ $a = 1.27202$ $b = 1.89005$	-7.23771	-22.4720
$u = 1.272020I$ $a = 0.786151I$ $b = -1.61803 + 0.78615I$	0.657974	-13.5280
$u = -1.272020I$ $a = -0.786151I$ $b = -1.61803 - 0.78615I$	0.657974	-13.5280

IV. $\boldsymbol{I_1^v = \langle a,\ b-1,\ v+1\rangle}$

(i) Arc colorings

$$a_4 = \begin{pmatrix}1\\0\end{pmatrix}$$

$$a_{11} = \begin{pmatrix}-1\\0\end{pmatrix}$$

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

$$a_7 = \begin{pmatrix}0\\1\end{pmatrix}$$

$$a_{12} = \begin{pmatrix}-1\\-1\end{pmatrix}$$

$$a_{10} = \begin{pmatrix}-1\\0\end{pmatrix}$$

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

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

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

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

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

$$a_8 = \begin{pmatrix}-1\\0\end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = -1.00000$ $a = \quad 0$ $b = \quad 1.00000$	-3.28987	-12.0000

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^9)(u^{10}-10u^9+\cdots+22u+1)$
c_2, c_7	$(u-1)^5(u+1)^4$ $\cdot(u^{10}-2u^9+7u^8-16u^7+54u^6+20u^5-38u^4+9u^2-2u-1)$
c_3, c_8, c_9	$u(u^4-3u^2+3)(u^4-u^2-1)$ $\cdot(u^{10}+4u^9+4u^8+6u^7+47u^6+34u^5-96u^4-96u^3-9u^2-28u-10)$
c_4, c_5, c_{10}	$u(u^4+u^2-1)(u^4+3u^2+3)$ $\cdot(u^{10}-4u^9+12u^8-24u^7+37u^6-44u^5+40u^4-26u^3+11u^2-2)$
c_6, c_{11}, c_{12}	$(u-1)^4(u+1)^5$ $\cdot(u^{10}-2u^9+7u^8-16u^7+54u^6+20u^5-38u^4+9u^2-2u-1)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^9)(y^{10}+86y^9+\cdots-170y+1)$
c_2, c_6, c_7 c_{11}, c_{12}	$((y-1)^9)(y^{10}+10y^9+\cdots-22y+1)$
c_3, c_8, c_9	$y(y^2-3y+3)^2(y^2-y-1)^2(y^{10}-8y^9+\cdots-604y+100)$
c_4, c_5, c_{10}	$y(y^2+y-1)^2(y^2+3y+3)^2(y^{10}+8y^9+\cdots-44y+4)$