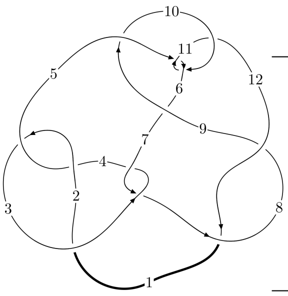
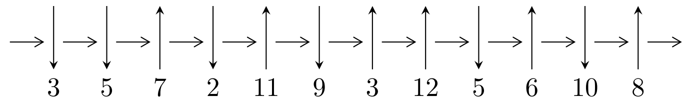
$12n_{0198}$ ($K12n_{0198}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -u^{21} - u^{20} + \cdots + b - u,\ -u^{21} - u^{20} + \cdots - 3u^3 + a,\ u^{23} + 2u^{22} + \cdots + 2u + 1 \rangle$$
$$I_2^u = \langle b + 1,\ -u^3 + u^2 + a,\ u^4 + u^2 + u + 1 \rangle$$
$$I_3^u = \langle b + 1,\ -u^3 + a - u + 1,\ u^6 - u^5 + 2u^4 - 2u^3 + 2u^2 - 2u + 1 \rangle$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 33 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.

$$\boldsymbol{I_1^u = \langle -u^{21} - u^{20} + \cdots + b - u,\ -u^{21} - u^{20} + \cdots - 3u^3 + a,\ u^{23} + 2u^{22} + \cdots + 2u + 1\rangle}$$

(i) Arc colorings

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

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

$$a_3 = \begin{pmatrix} u^{21} + u^{20} + \cdots + u^4 + 3u^3 \\ u^{21} + u^{20} + \cdots + u^2 + u \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} 2u^{21} + 2u^{20} + \cdots + u^2 + u \\ u^{21} + u^{20} + \cdots + u^2 + u \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^{19} + 4u^{17} + 8u^{15} + 8u^{13} + 3u^{11} - 2u^9 - 2u^7 + u^3 \\ -u^{21} - 5u^{19} + \cdots - u^3 - u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 3u^{21} + 3u^{20} + \cdots + 3u + 1 \\ u^{21} + u^{20} + \cdots + u^2 + 2u \end{pmatrix}$$

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

$$a_{12} = \begin{pmatrix} -u^3 \\ u^5 + u^3 + u \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} u^8 + u^6 + u^4 + 1 \\ u^8 + 2u^6 + 2u^4 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u^{11} - 2u^9 - 2u^7 + u^3 \\ u^{13} + 3u^{11} + 5u^9 + 4u^7 + 2u^5 + u^3 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$= 4u^{22} + 12u^{21} + 34u^{20} + 68u^{19} + 118u^{18} + 192u^{17} + 251u^{16} + 335u^{15} + 353u^{14} + 392u^{13} + 355u^{12} + 316u^{11} + 243u^{10} + 163u^9 + 106u^8 + 46u^7 + 14u^6 + 11u^5 + 15u^4 + 30u^3 + 15u^2 + 13u + 6$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{23} + 47u^{22} + \cdots - 11u + 1$
c_2, c_4	$u^{23} - 11u^{22} + \cdots - 9u + 1$
c_3, c_7	$u^{23} - u^{22} + \cdots + 2048u + 1024$
c_5, c_{10}	$u^{23} - 2u^{22} + \cdots + 2u - 1$
c_6	$u^{23} - 10u^{22} + \cdots + 120u - 31$
c_8, c_{12}	$u^{23} + 24u^{21} + \cdots + 2u + 1$
c_9	$u^{23} + 2u^{22} + \cdots - 15u^2 - 8$
c_{11}	$u^{23} + 12u^{22} + \cdots - 2u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{23} - 211y^{22} + \cdots - 215y - 1$
c_2, c_4	$y^{23} - 47y^{22} + \cdots - 11y - 1$
c_3, c_7	$y^{23} + 63y^{22} + \cdots + 8912896y - 1048576$
c_5, c_{10}	$y^{23} + 12y^{22} + \cdots - 2y - 1$
c_6	$y^{23} - 12y^{22} + \cdots - 6122y - 961$
c_8, c_{12}	$y^{23} + 48y^{22} + \cdots - 2y - 1$
c_9	$y^{23} - 12y^{22} + \cdots - 240y - 64$
c_{11}	$y^{23} + 24y^{21} + \cdots + 2y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.695674 + 0.794301I$ $a = -0.38303 + 1.50526I$ $b = 2.14604 - 0.04602I$	$-15.4705 + 2.6332I$	$-1.74115 - 2.82837I$
$u = 0.695674 - 0.794301I$ $a = -0.38303 - 1.50526I$ $b = 2.14604 + 0.04602I$	$-15.4705 - 2.6332I$	$-1.74115 + 2.82837I$
$u = -0.851428 + 0.257921I$ $a = 0.102425 + 0.901741I$ $b = 2.23097 - 0.23648I$	$-18.5278 + 5.0308I$	$-2.42173 - 1.77619I$
$u = -0.851428 - 0.257921I$ $a = 0.102425 - 0.901741I$ $b = 2.23097 + 0.23648I$	$-18.5278 - 5.0308I$	$-2.42173 + 1.77619I$
$u = -0.483954 + 1.020520I$ $a = 0.825387 - 0.274069I$ $b = 0.223453 + 0.115878I$	$-0.56646 - 3.01940I$	$3.36749 + 3.11832I$
$u = -0.483954 - 1.020520I$ $a = 0.825387 + 0.274069I$ $b = 0.223453 - 0.115878I$	$-0.56646 + 3.01940I$	$3.36749 - 3.11832I$
$u = 0.364715 + 1.105530I$ $a = 0.392472 - 0.466255I$ $b = -0.334457 - 0.705017I$	$-3.74014 + 1.10612I$	$-5.73854 - 0.32981I$
$u = 0.364715 - 1.105530I$ $a = 0.392472 + 0.466255I$ $b = -0.334457 + 0.705017I$	$-3.74014 - 1.10612I$	$-5.73854 + 0.32981I$
$u = 0.518947 + 1.123690I$ $a = -0.425430 + 0.139303I$ $b = 0.028115 + 0.688429I$	$-2.62716 + 6.50806I$	$-2.44317 - 6.43144I$
$u = 0.518947 - 1.123690I$ $a = -0.425430 - 0.139303I$ $b = 0.028115 - 0.688429I$	$-2.62716 - 6.50806I$	$-2.44317 + 6.43144I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.213623 + 0.731187I$ $a = -0.66221 - 1.37892I$ $b = -0.994946 + 0.319082I$	$-2.09274 + 1.02920I$	$-5.56905 - 0.54720I$
$u = 0.213623 - 0.731187I$ $a = -0.66221 + 1.37892I$ $b = -0.994946 - 0.319082I$	$-2.09274 - 1.02920I$	$-5.56905 + 0.54720I$
$u = -0.449726 + 1.155180I$ $a = -2.55174 + 1.46474I$ $b = -1.68340 - 0.16500I$	$-6.16024 - 4.07736I$	$-6.51340 + 3.55333I$
$u = -0.449726 - 1.155180I$ $a = -2.55174 - 1.46474I$ $b = -1.68340 + 0.16500I$	$-6.16024 + 4.07736I$	$-6.51340 - 3.55333I$
$u = -0.490965 + 0.550455I$ $a = 0.503661 + 0.280792I$ $b = 0.106838 - 0.230098I$	$0.861404 - 1.022110I$	$5.67905 + 4.33251I$
$u = -0.490965 - 0.550455I$ $a = 0.503661 - 0.280792I$ $b = 0.106838 + 0.230098I$	$0.861404 + 1.022110I$	$5.67905 - 4.33251I$
$u = -0.276568 + 1.232250I$ $a = 2.87251 - 0.51904I$ $b = 2.32781 - 0.18898I$	$16.1704 + 1.4493I$	$-7.34390 + 0.38241I$
$u = -0.276568 - 1.232250I$ $a = 2.87251 + 0.51904I$ $b = 2.32781 + 0.18898I$	$16.1704 - 1.4493I$	$-7.34390 - 0.38241I$
$u = 0.653892 + 0.258897I$ $a = 0.330772 + 0.501247I$ $b = -0.038798 - 0.528699I$	$-0.16241 - 1.94681I$	$1.33418 + 3.65595I$
$u = 0.653892 - 0.258897I$ $a = 0.330772 - 0.501247I$ $b = -0.038798 + 0.528699I$	$-0.16241 + 1.94681I$	$1.33418 - 3.65595I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.568317 + 1.180040I$ $a = 2.01303 - 2.60561I$ $b = 2.23769 + 0.30194I$	$18.1942 - 10.2590I$	$-5.29878 + 5.24355I$
$u = -0.568317 - 1.180040I$ $a = 2.01303 + 2.60561I$ $b = 2.23769 - 0.30194I$	$18.1942 + 10.2590I$	$-5.29878 - 5.24355I$
$u = -0.651787$ $a = -1.03569$ $b = -1.49862$	-3.01079	-2.62200

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 3u^3-4u^2-u-2$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.547424 + 0.585652I$ $a = 0.442547 + 0.966840I$ $b = -1.00000$	$-0.66484 - 1.39709I$	$-0.08162 + 2.95607I$
$u = -0.547424 - 0.585652I$ $a = 0.442547 - 0.966840I$ $b = -1.00000$	$-0.66484 + 1.39709I$	$-0.08162 - 2.95607I$
$u = 0.547424 + 1.120870I$ $a = -0.94255 - 1.62772I$ $b = -1.00000$	$-4.26996 + 7.64338I$	$-4.41838 - 7.23121I$
$u = 0.547424 - 1.120870I$ $a = -0.94255 + 1.62772I$ $b = -1.00000$	$-4.26996 - 7.64338I$	$-4.41838 + 7.23121I$

III. $I_3^u = \langle b+1,\ -u^3+a-u+1,\ u^6-u^5+2u^4-2u^3+2u^2-2u+1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= u^4+3u^3+u^2+4u-5$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y-1)^6$
c_3, c_7	y^6
c_5, c_8, c_{10} c_{12}	$y^6+3y^5+4y^4+2y^3+1$
c_6, c_{11}	$y^6-y^5+4y^4-2y^3+8y^2+1$
c_9	$(y^3-y^2+2y-1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.498832+1.001300I$ $a=-0.122561+0.744862I$ $b=-1.00000$	$-1.91067-2.82812I$	$-4.05004+3.74291I$
$u=-0.498832-1.001300I$ $a=-0.122561-0.744862I$ $b=-1.00000$	$-1.91067+2.82812I$	$-4.05004-3.74291I$
$u=\ \ 0.284920+1.115140I$ $a=-1.75488$ $b=-1.00000$	-6.04826	$-7.19479+0.27335I$
$u=\ \ 0.284920-1.115140I$ $a=-1.75488$ $b=-1.00000$	-6.04826	$-7.19479-0.27335I$
$u=\ \ 0.713912+0.305839I$ $a=-0.122561+0.744862I$ $b=-1.00000$	$-1.91067-2.82812I$	$-1.25517+3.34054I$
$u=\ \ 0.713912-0.305839I$ $a=-0.122561-0.744862I$ $b=-1.00000$	$-1.91067+2.82812I$	$-1.25517-3.34054I$

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^{10})(u^{23}+47u^{22}+\cdots-11u+1)$
c_2	$((u-1)^{10})(u^{23}-11u^{22}+\cdots-9u+1)$
c_3, c_7	$u^{10}(u^{23}-u^{22}+\cdots+2048u+1024)$
c_4	$((u+1)^{10})(u^{23}-11u^{22}+\cdots-9u+1)$
c_5	$(u^4+u^2+u+1)(u^6-u^5+2u^4-2u^3+2u^2-2u+1)$ $\cdot(u^{23}-2u^{22}+\cdots+2u-1)$
c_6	$(u^4-2u^3+3u^2-u+1)(u^6-3u^5+4u^4-2u^3+1)$ $\cdot(u^{23}-10u^{22}+\cdots+120u-31)$
c_8	$(u^4+u^2+u+1)(u^6-u^5+2u^4-2u^3+2u^2-2u+1)$ $\cdot(u^{23}+24u^{21}+\cdots+2u+1)$
c_9	$((u^3+u^2-1)^2)(u^4-3u^3+\cdots-3u+2)(u^{23}+2u^{22}+\cdots-15u^2-8)$
c_{10}	$(u^4+u^2-u+1)(u^6+u^5+2u^4+2u^3+2u^2+2u+1)$ $\cdot(u^{23}-2u^{22}+\cdots+2u-1)$
c_{11}	$(u^4+2u^3+3u^2+u+1)(u^6+3u^5+4u^4+2u^3+1)$ $\cdot(u^{23}+12u^{22}+\cdots-2u-1)$
c_{12}	$(u^4+u^2-u+1)(u^6+u^5+2u^4+2u^3+2u^2+2u+1)$ $\cdot(u^{23}+24u^{21}+\cdots+2u+1)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^{10})(y^{23} - 211y^{22} + \cdots - 215y - 1)$
c_2, c_4	$((y-1)^{10})(y^{23} - 47y^{22} + \cdots - 11y - 1)$
c_3, c_7	$y^{10}(y^{23} + 63y^{22} + \cdots + 8912896y - 1048576)$
c_5, c_{10}	$(y^4 + 2y^3 + 3y^2 + y + 1)(y^6 + 3y^5 + 4y^4 + 2y^3 + 1)$ $\cdot (y^{23} + 12y^{22} + \cdots - 2y - 1)$
c_6	$(y^4 + 2y^3 + 7y^2 + 5y + 1)(y^6 - y^5 + 4y^4 - 2y^3 + 8y^2 + 1)$ $\cdot (y^{23} - 12y^{22} + \cdots - 6122y - 961)$
c_8, c_{12}	$(y^4 + 2y^3 + 3y^2 + y + 1)(y^6 + 3y^5 + 4y^4 + 2y^3 + 1)$ $\cdot (y^{23} + 48y^{22} + \cdots - 2y - 1)$
c_9	$(y^3 - y^2 + 2y - 1)^2(y^4 - y^3 + 2y^2 + 7y + 4)$ $\cdot (y^{23} - 12y^{22} + \cdots - 240y - 64)$
c_{11}	$(y^4 + 2y^3 + 7y^2 + 5y + 1)(y^6 - y^5 + 4y^4 - 2y^3 + 8y^2 + 1)$ $\cdot (y^{23} + 24y^{21} + \cdots + 2y - 1)$