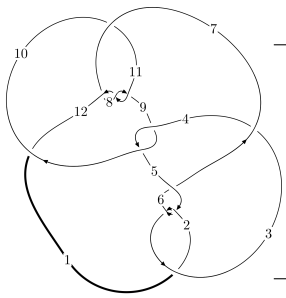
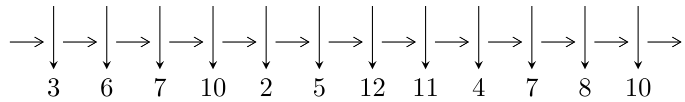
$12n_{0308}$ ($K12n_{0308}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 6u^{39} + 24u^{38} + \cdots + 4b - 9,\ 9u^{39} + 30u^{38} + \cdots + 4a - 24,\ u^{40} + 4u^{39} + \cdots - 2u - 1\rangle$$
$$I_2^u = \langle b + u,\ a + 1,\ u^3 - u^2 + 2u - 1\rangle$$
$$I_3^u = \langle -au + b,\ u^2a + a^2 - au + 3u^2 + a - u + 5,\ u^3 - u^2 + 2u - 1\rangle$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 49 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. $I^u_1 =$
$\langle 6u^{39}+24u^{38}+\cdots+4b-9,\ 9u^{39}+30u^{38}+\cdots+4a-24,\ u^{40}+4u^{39}+\cdots-2u-1\rangle$

(i) Arc colorings

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

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

$$a_4 = \begin{pmatrix} -\frac{9}{4}u^{39} - \frac{15}{2}u^{38} + \cdots - \frac{37}{4}u + 6 \\ -\frac{3}{2}u^{39} - 6u^{38} + \cdots - \frac{3}{2}u + \frac{9}{4} \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} -3.75000u^{39} - 13.5000u^{38} + \cdots - 10.7500u + 8.25000 \\ -\frac{3}{2}u^{39} - 6u^{38} + \cdots - \frac{3}{2}u + \frac{9}{4} \end{pmatrix}$$

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

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

$$a_5 = \begin{pmatrix} -\frac{11}{4}u^{39} - \frac{17}{2}u^{38} + \cdots - \frac{43}{4}u + 7 \\ -\frac{3}{2}u^{39} - 5u^{38} + \cdots - \frac{5}{2}u + \frac{11}{4} \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u^7 - 4u^5 - 4u^3 \\ -u^7 - 3u^5 - 2u^3 + u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} \frac{1}{2}u^{39} + \frac{7}{4}u^{38} + \cdots - \frac{21}{4}u + \frac{5}{4} \\ \frac{1}{4}u^{39} + u^{38} + \cdots - \frac{5}{4}u - \frac{1}{2} \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -\frac{3}{4}u^{39} - \frac{11}{4}u^{38} + \cdots + \frac{13}{2}u + \frac{1}{4} \\ -\frac{1}{4}u^{39} - u^{38} + \cdots + \frac{9}{4}u + \frac{1}{2} \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u^2 + 1 \\ u^4 + 2u^2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{9}{2}u^{39} - \frac{37}{2}u^{38} + \cdots - \frac{39}{2}u - \frac{7}{4}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_6	$u^{40} + 16u^{39} + \cdots + 14u + 1$
c_2, c_5	$u^{40} + 4u^{39} + \cdots - 6u - 1$
c_3	$u^{40} - 4u^{39} + \cdots + 7u^2 - 1$
c_4, c_9	$u^{40} - u^{39} + \cdots + 1536u + 512$
c_7, c_8, c_{11}	$u^{40} - 4u^{39} + \cdots + 2u - 1$
c_{10}	$u^{40} + 4u^{39} + \cdots + 7u - 2$
c_{12}	$u^{40} - 20u^{39} + \cdots - 2480u + 20513$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_6	$y^{40} + 20y^{39} + \cdots - 142y + 1$
c_2, c_5	$y^{40} - 16y^{39} + \cdots - 14y + 1$
c_3	$y^{40} - 64y^{39} + \cdots - 14y + 1$
c_4, c_9	$y^{40} - 49y^{39} + \cdots - 655360y + 262144$
c_7, c_8, c_{11}	$y^{40} + 32y^{39} + \cdots - 22y + 1$
c_{10}	$y^{40} - 48y^{39} + \cdots - 109y + 4$
c_{12}	$y^{40} - 76y^{39} + \cdots - 22287329974y + 420783169$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.965795$ $a = -2.34182$ $b = -2.26172$	-14.3054	-18.4760
$u = 0.139471 + 0.935681I$ $a = 0.435322 + 0.697825I$ $b = 0.592227 - 0.504649I$	$-0.336971 + 0.164971I$	$-14.2424 - 0.6515I$
$u = 0.139471 - 0.935681I$ $a = 0.435322 - 0.697825I$ $b = 0.592227 + 0.504649I$	$-0.336971 - 0.164971I$	$-14.2424 + 0.6515I$
$u = -0.938638 + 0.087954I$ $a = -2.38096 - 0.31083I$ $b = -2.26220 - 0.08234I$	$-9.79280 + 8.10641I$	$-15.5163 - 4.8945I$
$u = -0.938638 - 0.087954I$ $a = -2.38096 + 0.31083I$ $b = -2.26220 + 0.08234I$	$-9.79280 - 8.10641I$	$-15.5163 + 4.8945I$
$u = -0.916347 + 0.055169I$ $a = 2.49555 + 0.21808I$ $b = 2.29882 + 0.06216I$	$-7.85713 + 2.28541I$	$-13.64199 - 0.57988I$
$u = -0.916347 - 0.055169I$ $a = 2.49555 - 0.21808I$ $b = 2.29882 - 0.06216I$	$-7.85713 - 2.28541I$	$-13.64199 + 0.57988I$
$u = -0.119891 + 1.171300I$ $a = 1.32469 + 0.51665I$ $b = 0.76397 - 1.48966I$	$5.65080 + 4.37709I$	$-8.98534 - 1.57605I$
$u = -0.119891 - 1.171300I$ $a = 1.32469 - 0.51665I$ $b = 0.76397 + 1.48966I$	$5.65080 - 4.37709I$	$-8.98534 + 1.57605I$
$u = -0.075508 + 1.198880I$ $a = -1.212150 - 0.270191I$ $b = -0.41545 + 1.43282I$	$6.05510 - 1.44432I$	$-7.22921 + 3.78916I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.075508-1.198880I$ $a=-1.212150+0.270191I$ $b=-0.41545-1.43282I$	$6.05510+1.44432I$	$-7.22921-3.78916I$
$u=\ \ 0.182743+1.209970I$ $a=-0.361246-0.222448I$ $b=-0.203140+0.477747I$	$2.74721-2.07700I$	$-5.89369+3.03885I$
$u=\ \ 0.182743-1.209970I$ $a=-0.361246+0.222448I$ $b=-0.203140-0.477747I$	$2.74721+2.07700I$	$-5.89369-3.03885I$
$u=\ \ 0.359488+1.180450I$ $a=\ \ 0.169664+0.421096I$ $b=\ \ 0.436088-0.351658I$	$1.06997-5.73235I$	$-12.00000+6.50930I$
$u=\ \ 0.359488-1.180450I$ $a=\ \ 0.169664-0.421096I$ $b=\ \ 0.436088+0.351658I$	$1.06997+5.73235I$	$-12.00000-6.50930I$
$u=\ \ 0.758575+0.094110I$ $a=\ \ 0.049336-0.391801I$ $b=-0.074297+0.292567I$	$-2.22421+1.66592I$	$-15.6530-3.4641I$
$u=\ \ 0.758575-0.094110I$ $a=\ \ 0.049336+0.391801I$ $b=-0.074297-0.292567I$	$-2.22421-1.66592I$	$-15.6530+3.4641I$
$u=\ \ 0.633093+0.358144I$ $a=\ \ 0.135758-0.528918I$ $b=-0.275376+0.286233I$	$-1.63533-3.53225I$	$-15.3501+6.0239I$
$u=\ \ 0.633093-0.358144I$ $a=\ \ 0.135758+0.528918I$ $b=-0.275376-0.286233I$	$-1.63533+3.53225I$	$-15.3501-6.0239I$
$u=-0.494907+1.218760I$ $a=-0.89625-1.31642I$ $b=-2.04796+0.44080I$	$-6.31623-3.01599I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.494907 - 1.218760I$ $a = -0.89625 + 1.31642I$ $b = -2.04796 - 0.44080I$	$-6.31623 + 3.01599I$	0
$u = -0.457832 + 1.243030I$ $a = 0.88954 + 1.38304I$ $b = 2.12642 - 0.47253I$	$-4.18941 + 2.61474I$	0
$u = -0.457832 - 1.243030I$ $a = 0.88954 - 1.38304I$ $b = 2.12642 + 0.47253I$	$-4.18941 - 2.61474I$	0
$u = 0.285992 + 1.310300I$ $a = -0.053918 - 0.293250I$ $b = -0.368826 + 0.154516I$	$2.18000 - 2.07454I$	0
$u = 0.285992 - 1.310300I$ $a = -0.053918 + 0.293250I$ $b = -0.368826 - 0.154516I$	$2.18000 + 2.07454I$	0
$u = -0.480023 + 1.304310I$ $a = -0.77326 - 1.37509I$ $b = -2.16472 + 0.34850I$	$-10.25510 + 5.14488I$	0
$u = -0.480023 - 1.304310I$ $a = -0.77326 + 1.37509I$ $b = -2.16472 - 0.34850I$	$-10.25510 - 5.14488I$	0
$u = 0.146448 + 1.384710I$ $a = -0.301378 + 0.307270I$ $b = 0.469617 + 0.372324I$	$4.81791 - 1.66817I$	0
$u = 0.146448 - 1.384710I$ $a = -0.301378 - 0.307270I$ $b = 0.469617 - 0.372324I$	$4.81791 + 1.66817I$	0
$u = -0.427217 + 1.328920I$ $a = 0.72481 + 1.49260I$ $b = 2.29320 - 0.32556I$	$-3.52880 + 7.09218I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.427217 - 1.328920I$ $a = 0.72481 - 1.49260I$ $b = 2.29320 + 0.32556I$	$-3.52880 - 7.09218I$	0
$u = -0.43256 + 1.35367I$ $a = -0.66257 - 1.47304I$ $b = -2.28062 + 0.25972I$	$-5.27211 + 13.00920I$	0
$u = -0.43256 - 1.35367I$ $a = -0.66257 + 1.47304I$ $b = -2.28062 - 0.25972I$	$-5.27211 - 13.00920I$	0
$u = 0.19436 + 1.41468I$ $a = 0.190363 - 0.356157I$ $b = -0.540845 - 0.200080I$	$4.09613 - 6.42410I$	0
$u = 0.19436 - 1.41468I$ $a = 0.190363 + 0.356157I$ $b = -0.540845 + 0.200080I$	$4.09613 + 6.42410I$	0
$u = 0.269571 + 0.358650I$ $a = -0.373006 + 0.916266I$ $b = 0.429170 - 0.113220I$	$-0.650305 + 0.185166I$	$-12.44941 + 0.70433I$
$u = 0.269571 - 0.358650I$ $a = -0.373006 - 0.916266I$ $b = 0.429170 + 0.113220I$	$-0.650305 - 0.185166I$	$-12.44941 - 0.70433I$
$u = 0.334754$ $a = -0.815567$ $b = 0.273014$	-0.669605	-14.6520
$u = -0.311291 + 0.046384I$ $a = 0.17839 + 3.50865I$ $b = 0.218277 + 1.083940I$	$2.49750 - 2.73965I$	$-2.44237 + 2.28441I$
$u = -0.311291 - 0.046384I$ $a = 0.17839 - 3.50865I$ $b = 0.218277 - 1.083940I$	$2.49750 + 2.73965I$	$-2.44237 - 2.28441I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -7u^2 + 8u - 20$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \quad 0.215080 + 1.307140I$ $a = -1.00000$ $b = -0.215080 - 1.307140I$	$6.04826 - 5.65624I$	$-6.64285 + 6.52117I$
$u = \quad 0.215080 - 1.307140I$ $a = -1.00000$ $b = -0.215080 + 1.307140I$	$6.04826 + 5.65624I$	$-6.64285 - 6.52117I$
$u = \quad 0.569840$ $a = -1.00000$ $b = -0.569840$	-2.22691	-17.7140

III. $\boldsymbol{I_3^u = \langle -au + b,\ u^2a + a^2 - au + 3u^2 + a - u + 5,\ u^3 - u^2 + 2u - 1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -3u^2a - 3au - 2u^2 + a + 4u - 19$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.215080 + 1.307140I$ $a = 0.947279 + 0.320410I$ $b = -0.215080 + 1.307140I$	6.04826	$-7.95781 + 0.50299I$
$u = 0.215080 + 1.307140I$ $a = -0.069840 + 0.424452I$ $b = -0.569840$	$1.91067 - 2.82812I$	$-12.8076 + 6.7630I$
$u = 0.215080 - 1.307140I$ $a = 0.947279 - 0.320410I$ $b = -0.215080 - 1.307140I$	6.04826	$-7.95781 - 0.50299I$
$u = 0.215080 - 1.307140I$ $a = -0.069840 - 0.424452I$ $b = -0.569840$	$1.91067 + 2.82812I$	$-12.8076 - 6.7630I$
$u = 0.569840$ $a = -0.37744 + 2.29387I$ $b = -0.215080 + 1.307140I$	$1.91067 + 2.82812I$	$-16.7346 - 3.8621I$
$u = 0.569840$ $a = -0.37744 - 2.29387I$ $b = -0.215080 - 1.307140I$	$1.91067 - 2.82812I$	$-16.7346 + 3.8621I$

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^3-u^2+2u-1)^3)(u^{40}+16u^{39}+\cdots+14u+1)$
c_2	$((u^3+u^2-1)^3)(u^{40}+4u^{39}+\cdots-6u-1)$
c_3	$((u^3-u^2+2u-1)^3)(u^{40}-4u^{39}+\cdots+7u^2-1)$
c_4, c_9	$u^9(u^{40}-u^{39}+\cdots+1536u+512)$
c_5	$((u^3-u^2+1)^3)(u^{40}+4u^{39}+\cdots-6u-1)$
c_6	$((u^3+u^2+2u+1)^3)(u^{40}+16u^{39}+\cdots+14u+1)$
c_7, c_8	$((u^3-u^2+2u-1)^3)(u^{40}-4u^{39}+\cdots+2u-1)$
c_{10}	$((u^3-u^2+1)^3)(u^{40}+4u^{39}+\cdots+7u-2)$
c_{11}	$((u^3+u^2+2u+1)^3)(u^{40}-4u^{39}+\cdots+2u-1)$
c_{12}	$((u^3-u^2+1)^3)(u^{40}-20u^{39}+\cdots-2480u+20513)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_6	$((y^3+3y^2+2y-1)^3)(y^{40}+20y^{39}+\cdots-142y+1)$
c_2, c_5	$((y^3-y^2+2y-1)^3)(y^{40}-16y^{39}+\cdots-14y+1)$
c_3	$((y^3+3y^2+2y-1)^3)(y^{40}-64y^{39}+\cdots-14y+1)$
c_4, c_9	$y^9(y^{40}-49y^{39}+\cdots-655360y+262144)$
c_7, c_8, c_{11}	$((y^3+3y^2+2y-1)^3)(y^{40}+32y^{39}+\cdots-22y+1)$
c_{10}	$((y^3-y^2+2y-1)^3)(y^{40}-48y^{39}+\cdots-109y+4)$
c_{12}	$(y^3-y^2+2y-1)^3$ $\cdot(y^{40}-76y^{39}+\cdots-22287329974y+420783169)$