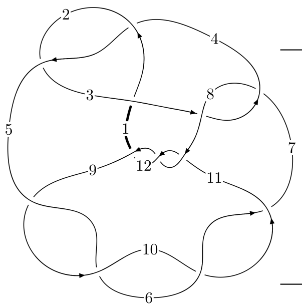
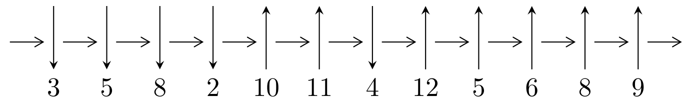
$12n_{0192}$ ($K12n_{0192}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & -3.17034 \times 10^{19}u^{22} + 2.06027 \times 10^{19}u^{21} + \cdots + 1.07970 \times 10^{20}b + 1.66107 \times 10^{20}, \\
& -9.79843 \times 10^{18}u^{22} - 2.69589 \times 10^{19}u^{21} + \cdots + 2.15940 \times 10^{20}a - 7.11427 \times 10^{20}, \\
& u^{23} - 2u^{22} + \cdots - 24u + 8\rangle \\
I_2^u = \langle & -2a^2 - au + b - 2a - u - 1,\ 4a^3 + 2a^2u - u,\ u^2 - 2\rangle \\
I_3^u = \langle & b + u - 1,\ u^2 + a - u - 2,\ u^3 - u^2 - 2u + 1\rangle
\end{aligned}$$

$$I_1^v = \langle a,\ b + v + 2,\ v^3 + 3v^2 + 2v - 1\rangle$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 35 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. $I^u_1 = \langle -3.17\times10^{19}u^{22} + 2.06\times10^{19}u^{21} + \cdots + 1.08\times10^{20}b + 1.66\times10^{20},\ -9.80\times10^{18}u^{22} - 2.70\times10^{19}u^{21} + \cdots + 2.16\times10^{20}a - 7.11\times10^{20},\ u^{23} - 2u^{22} + \cdots - 24u + 8\rangle$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 0.0453756u^{22} + 0.124844u^{21} + \cdots + 6.96611u + 3.29455 \\ 0.293631u^{22} - 0.190818u^{21} + \cdots + 6.03607u - 1.53845 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u^2 + 1 \\ u^4 - 2u^2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 0.0453756u^{22} + 0.124844u^{21} + \cdots + 6.96611u + 3.29455 \\ -0.0606713u^{22} + 0.0493494u^{21} + \cdots + 1.22479u + 0.186315 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 0.00815407u^{22} + 0.0581561u^{21} + \cdots + 0.816899u + 0.942300 \\ 0.167916u^{22} - 0.134620u^{21} + \cdots + 3.19264u - 1.46520 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -0.318134u^{22} + 0.323483u^{21} + \cdots + 1.70680u + 4.47989 \\ 0.354835u^{22} - 0.251401u^{21} + \cdots + 7.02928u - 1.98143 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -0.159762u^{22} + 0.192776u^{21} + \cdots - 2.37574u + 2.40750 \\ 0.167916u^{22} - 0.134620u^{21} + \cdots + 3.19264u - 1.46520 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -0.231610u^{22} + 0.238881u^{21} + \cdots - 3.80455u + 2.85872 \\ 0.190322u^{22} - 0.136611u^{21} + \cdots + 2.10246u - 1.34349 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u^3 - 2u \\ -u^5 + 3u^3 - u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{158891265015344169787}{107970245740225855892}u^{22} - \frac{49683941378257544770}{26992561435056463973}u^{21} + \cdots - \frac{76563959767459940106}{26992561435056463973}u - \frac{39567394927239141250 2}{26992561435056463973}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{23} + 23u^{22} + \cdots + 431u + 1$
c_2, c_4	$u^{23} - 7u^{22} + \cdots - 25u - 1$
c_3, c_7	$u^{23} + 2u^{22} + \cdots - 92u + 8$
c_5, c_6, c_9 c_{10}	$u^{23} + 2u^{22} + \cdots - 24u - 8$
c_8, c_{11}, c_{12}	$u^{23} - 5u^{22} + \cdots + 105u - 7$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{23} - 39y^{22} + \cdots + 167215y - 1$
c_2, c_4	$y^{23} - 23y^{22} + \cdots + 431y - 1$
c_3, c_7	$y^{23} - 12y^{22} + \cdots + 4048y - 64$
c_5, c_6, c_9 c_{10}	$y^{23} - 18y^{22} + \cdots + 1984y - 64$
c_8, c_{11}, c_{12}	$y^{23} - 3y^{22} + \cdots + 3857y - 49$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.524450 + 0.823406I$ $a = 1.198540 - 0.301680I$ $b = -0.0820455 - 0.0681602I$	$-2.40419 - 0.36830I$	$2.14910 - 0.07440I$
$u = 0.524450 - 0.823406I$ $a = 1.198540 + 0.301680I$ $b = -0.0820455 + 0.0681602I$	$-2.40419 + 0.36830I$	$2.14910 + 0.07440I$
$u = 0.647880 + 0.361661I$ $a = -1.60944 - 0.06303I$ $b = 0.610235 + 0.499402I$	$5.21554 - 2.25150I$	$8.85155 - 0.03890I$
$u = 0.647880 - 0.361661I$ $a = -1.60944 + 0.06303I$ $b = 0.610235 - 0.499402I$	$5.21554 + 2.25150I$	$8.85155 + 0.03890I$
$u = -0.968334 + 0.805177I$ $a = -0.791369 - 0.993332I$ $b = 0.30258 - 1.86935I$	$-3.71088 - 3.05913I$	$3.40896 + 2.62935I$
$u = -0.968334 - 0.805177I$ $a = -0.791369 + 0.993332I$ $b = 0.30258 + 1.86935I$	$-3.71088 + 3.05913I$	$3.40896 - 2.62935I$
$u = 1.348180 + 0.047266I$ $a = -0.707662 - 0.573551I$ $b = 0.028918 - 1.035860I$	$7.94226 - 2.99119I$	$5.45880 + 3.25887I$
$u = 1.348180 - 0.047266I$ $a = -0.707662 + 0.573551I$ $b = 0.028918 + 1.035860I$	$7.94226 + 2.99119I$	$5.45880 - 3.25887I$
$u = 1.37411$ $a = 0.0360037$ $b = 1.16320$	6.50526	14.0870
$u = -0.596550 + 0.120314I$ $a = -0.457301 - 0.724116I$ $b = -0.799393 - 0.727747I$	$0.931592 - 0.038203I$	$9.32722 + 1.98466I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.596550-0.120314I$ $a=-0.457301+0.724116I$ $b=-0.799393+0.727747I$	$0.931592+0.038203I$	$9.32722-1.98466I$
$u=\ \ 1.253460+0.611260I$ $a=-0.257061-0.819047I$ $b=-0.178277-0.996927I$	$-0.01572+5.94333I$	$6.39784-4.46809I$
$u=\ \ 1.253460-0.611260I$ $a=-0.257061+0.819047I$ $b=-0.178277+0.996927I$	$-0.01572-5.94333I$	$6.39784+4.46809I$
$u=-1.42929$ $a=-0.686494$ $b=-12.0652$	4.96770	-112.550
$u=-0.25726+1.43341I$ $a=-0.014716+1.238780I$ $b=-0.02116+1.93499I$	$-11.10700-5.35109I$	$2.30683+2.56727I$
$u=-0.25726-1.43341I$ $a=-0.014716-1.238780I$ $b=-0.02116-1.93499I$	$-11.10700+5.35109I$	$2.30683-2.56727I$
$u=-0.444315$ $a=-0.534871$ $b=-0.856360$	0.878779	12.7060
$u=\ \ 1.59666+0.55985I$ $a=-0.723361+0.626398I$ $b=\ \ 0.55500+2.06165I$	$-5.20585+12.38690I$	$5.26515-5.63238I$
$u=\ \ 1.59666-0.55985I$ $a=-0.723361-0.626398I$ $b=\ \ 0.55500-2.06165I$	$-5.20585-12.38690I$	$5.26515+5.63238I$
$u=-1.49695+0.90558I$ $a=\ \ 0.809749+0.607559I$ $b=-0.42702+1.59069I$	$-7.48548-2.83924I$	$3.01997+1.35778I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.49695 - 0.90558I$ $a = \ \ 0.809749 - 0.607559I$ $b = -0.42702 - 1.59069I$	$-7.48548 + 2.83924I$	$3.01997 - 1.35778I$
$u = \ \ 0.244699$ $a = \ \ 3.66585$ $b = \ \ 0.520617$	-1.28182	-11.3970
$u = -1.84826$ $a = \ \ 0.624762$ $b = -0.739954$	15.6748	-4.21640

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4au + 8$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.41421$ $a = -0.620443 + 0.526697I$ $b = 0.510969 + 0.491114I$	$9.60386 + 2.82812I$	$11.50976 - 2.97945I$
$u = 1.41421$ $a = -0.620443 - 0.526697I$ $b = 0.510969 - 0.491114I$	$9.60386 - 2.82812I$	$11.50976 + 2.97945I$
$u = 1.41421$ $a = 0.533779$ $b = 4.80649$	5.46628	4.98050
$u = -1.41421$ $a = 0.620443 + 0.526697I$ $b = 0.16431 + 1.61567I$	$9.60386 - 2.82812I$	$11.50976 + 2.97945I$
$u = -1.41421$ $a = 0.620443 - 0.526697I$ $b = 0.16431 - 1.61567I$	$9.60386 + 2.82812I$	$11.50976 - 2.97945I$
$u = -1.41421$ $a = -0.533779$ $b = -0.157054$	5.46628	4.98050

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

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

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.24698$ $a=-0.801938$ $b=\ \ 2.24698$	4.69981	8.56700
$u=\ \ 0.445042$ $a=\ \ 2.24698$ $b=\ \ 0.554958$	-0.939962	13.9780
$u=\ \ 1.80194$ $a=\ \ 0.554958$ $b=-0.801938$	15.9794	22.4550

IV. $I_1^v = \langle a,\ b + v + 2,\ v^3 + 3v^2 + 2v - 1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -10v^2 - 22v - 10$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = 0.324718$ $a = 0$ $b = -2.32472$	0.531480	-18.1980
$v = -1.66236 + 0.56228I$ $a = 0$ $b = -0.337641 - 0.562280I$	$4.66906 - 2.82812I$	$2.09911 + 6.32406I$
$v = -1.66236 - 0.56228I$ $a = 0$ $b = -0.337641 + 0.562280I$	$4.66906 + 2.82812I$	$2.09911 - 6.32406I$

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^3)(u^3-u^2+2u-1)^3(u^{23}+23u^{22}+\cdots+431u+1)$
c_2	$((u-1)^3)(u^3+u^2-1)^3(u^{23}-7u^{22}+\cdots-25u-1)$
c_3	$u^3(u^3-u^2+2u-1)(u^3+u^2+2u+1)^2(u^{23}+2u^{22}+\cdots-92u+8)$
c_4	$((u+1)^3)(u^3-u^2+1)^3(u^{23}-7u^{22}+\cdots-25u-1)$
c_5, c_6	$u^3(u^2-2)^3(u^3+u^2-2u-1)(u^{23}+2u^{22}+\cdots-24u-8)$
c_7	$u^3(u^3-u^2+2u-1)^2(u^3+u^2+2u+1)(u^{23}+2u^{22}+\cdots-92u+8)$
c_8	$((u-1)^6)(u+1)^3(u^3+u^2-2u-1)(u^{23}-5u^{22}+\cdots+105u-7)$
c_9, c_{10}	$u^3(u^2-2)^3(u^3-u^2-2u+1)(u^{23}+2u^{22}+\cdots-24u-8)$
c_{11}, c_{12}	$((u-1)^3)(u+1)^6(u^3-u^2-2u+1)(u^{23}-5u^{22}+\cdots+105u-7)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^3)(y^3+3y^2+2y-1)^3(y^{23}-39y^{22}+\cdots+167215y-1)$
c_2, c_4	$((y-1)^3)(y^3-y^2+2y-1)^3(y^{23}-23y^{22}+\cdots+431y-1)$
c_3, c_7	$y^3(y^3+3y^2+2y-1)^3(y^{23}-12y^{22}+\cdots+4048y-64)$
c_5, c_6, c_9 c_{10}	$y^3(y-2)^6(y^3-5y^2+6y-1)(y^{23}-18y^{22}+\cdots+1984y-64)$
c_8, c_{11}, c_{12}	$((y-1)^9)(y^3-5y^2+6y-1)(y^{23}-3y^{22}+\cdots+3857y-49)$