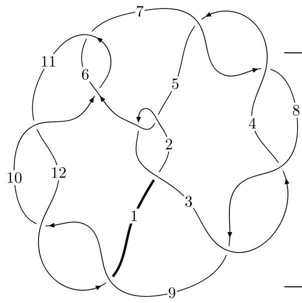
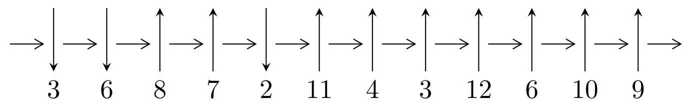
$12n_{0457}$ ($K12n_{0457}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned} I_1^u &= \langle -35u^{13} + 632u^{12} + \cdots + 1322b - 1940,\ -98u^{13} + 712u^{12} + \cdots + 1983a - 3449, \\ &\quad u^{14} - 2u^{13} - 2u^{12} + 8u^{11} - 2u^{10} - 12u^9 + 12u^8 + 5u^7 - 16u^6 + u^5 + 22u^4 - 20u^3 + 7u - 3\rangle \\ I_2^u &= \langle -2u^2b + b^2 + u^2 - 3u + 1,\ -u^2 + a + u,\ u^3 - u^2 + 1\rangle \\ I_3^u &= \langle -u^2 + b,\ -u^2 + a - u,\ u^3 + u^2 - 1\rangle \end{aligned}$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 23 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. $\boldsymbol{I_1^u = \langle -35u^{13} + 632u^{12} + \cdots + 1322b - 1940,\ -98u^{13} + 712u^{12} + \cdots + 1983a - 3449,\ u^{14} - 2u^{13} + \cdots + 7u - 3\rangle}$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 0.0494201u^{13} - 0.359052u^{12} + \cdots - 1.11346u + 1.73928 \\ 0.0264750u^{13} - 0.478064u^{12} + \cdots - 0.667927u + 1.46747 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -u^2 + 1 \\ -u^2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 0.0494201u^{13} - 0.359052u^{12} + \cdots - 1.11346u + 1.73928 \\ 0.391074u^{13} - 1.00454u^{12} + \cdots - 2.63767u + 2.24811 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u^6 + u^4 - 2u^2 + 1 \\ -u^6 - u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0.893091u^{13} - 1.06001u^{12} + \cdots - 4.26475u + 2.50277 \\ -0.0264750u^{13} + 0.478064u^{12} + \cdots + 1.66793u - 1.46747 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0.654060u^{13} - 0.986636u^{12} + \cdots - 3.70575u + 2.82501 \\ 0.164902u^{13} - 0.0347958u^{12} + \cdots + 0.111195u + 0.0688351 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} u^4 - u^2 + 1 \\ u^4 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 0.0229450u^{13} + 0.119012u^{12} + \cdots - 0.445537u + 0.271810 \\ -0.581694u^{13} + 0.746596u^{12} + \cdots + 2.14675u - 1.81392 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{1575}{661}u^{13} - \frac{2000}{661}u^{12} + \cdots - \frac{16600}{661}u + \frac{9963}{661}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{14} - 6u^{13} + \cdots - 4u + 1$
c_2, c_5	$u^{14} + 4u^{13} + \cdots + 4u - 1$
c_3, c_4, c_7 c_8	$u^{14} + u^{13} + \cdots - 32u + 8$
c_6, c_{10}	$u^{14} + 2u^{13} + \cdots - 7u - 3$
c_9, c_{11}, c_{12}	$u^{14} - 8u^{13} + \cdots - 49u + 9$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{14} - 34y^{13} + \cdots - 908y + 1$
c_2, c_5	$y^{14} + 6y^{13} + \cdots + 4y + 1$
c_3, c_4, c_7 c_8	$y^{14} + 7y^{13} + \cdots - 256y + 64$
c_6, c_{10}	$y^{14} - 8y^{13} + \cdots - 49y + 9$
c_9, c_{11}, c_{12}	$y^{14} + 16y^{12} + \cdots + 263y + 81$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.331897 + 1.038650I$ $a = 1.49914 - 0.30941I$ $b = 0.042314 - 0.355178I$	$1.13414 - 3.62470I$	$1.53739 + 1.98303I$
$u = 0.331897 - 1.038650I$ $a = 1.49914 + 0.30941I$ $b = 0.042314 + 0.355178I$	$1.13414 + 3.62470I$	$1.53739 - 1.98303I$
$u = 0.948812 + 0.550000I$ $a = -1.055470 + 0.686434I$ $b = -0.17948 + 1.87576I$	$-6.22033 + 2.16614I$	$0.60547 - 2.67775I$
$u = 0.948812 - 0.550000I$ $a = -1.055470 - 0.686434I$ $b = -0.17948 - 1.87576I$	$-6.22033 - 2.16614I$	$0.60547 + 2.67775I$
$u = -0.902807 + 0.737867I$ $a = 0.166043 - 0.126427I$ $b = 0.950914 - 0.969597I$	$-7.92408 - 2.80343I$	$2.49909 + 2.82255I$
$u = -0.902807 - 0.737867I$ $a = 0.166043 + 0.126427I$ $b = 0.950914 + 0.969597I$	$-7.92408 + 2.80343I$	$2.49909 - 2.82255I$
$u = 1.24269$ $a = 1.46455$ $b = 1.28241$	0.813631	6.43730
$u = 0.525421 + 0.402657I$ $a = 0.303592 - 0.966121I$ $b = 0.204868 - 0.509751I$	$-1.00992 + 1.33356I$	$-0.10273 - 5.72522I$
$u = 0.525421 - 0.402657I$ $a = 0.303592 + 0.966121I$ $b = 0.204868 + 0.509751I$	$-1.00992 - 1.33356I$	$-0.10273 + 5.72522I$
$u = -0.624400$ $a = 0.326568$ $b = -0.335778$	0.793364	13.8290

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.23913 + 0.70216I$ $a = 0.336015 - 1.316350I$ $b = 0.02959 - 2.64674I$	$3.85381 + 9.90530I$	$2.86734 - 5.00880I$
$u = 1.23913 - 0.70216I$ $a = 0.336015 + 1.316350I$ $b = 0.02959 + 2.64674I$	$3.85381 - 9.90530I$	$2.86734 + 5.00880I$
$u = -1.45159 + 0.36092I$ $a = -0.31154 + 1.47612I$ $b = -0.52152 + 2.50638I$	$6.89548 - 1.15921I$	$5.46011 + 0.65565I$
$u = -1.45159 - 0.36092I$ $a = -0.31154 - 1.47612I$ $b = -0.52152 - 2.50638I$	$6.89548 + 1.15921I$	$5.46011 - 0.65565I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4u$

(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_7 c_8	$(u^2+2)^3$
c_6	$(u^3+u^2-1)^2$
c_9	$(u^3+u^2+2u+1)^2$
c_{10}	$(u^3-u^2+1)^2$
c_{11}, c_{12}	$(u^3-u^2+2u-1)^2$

(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_7 c_8	$(y+2)^6$
c_6, c_{10}	$(y^3-y^2+2y-1)^2$
c_9, c_{11}, c_{12}	$(y^3+3y^2+2y-1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.877439 + 0.744862I$ $a = -0.662359 + 0.562280I$ $b = -0.580103 + 0.370424I$	$-9.60386 + 2.82812I$	$-3.50976 - 2.97945I$
$u = 0.877439 + 0.744862I$ $a = -0.662359 + 0.562280I$ $b = 1.01026 + 2.24386I$	$-9.60386 + 2.82812I$	$-3.50976 - 2.97945I$
$u = 0.877439 - 0.744862I$ $a = -0.662359 - 0.562280I$ $b = -0.580103 - 0.370424I$	$-9.60386 - 2.82812I$	$-3.50976 + 2.97945I$
$u = 0.877439 - 0.744862I$ $a = -0.662359 - 0.562280I$ $b = 1.01026 - 2.24386I$	$-9.60386 - 2.82812I$	$-3.50976 + 2.97945I$
$u = -0.754878$ $a = 1.32472$ $b = 0.56984 + 1.87343I$	-5.46628	3.01950
$u = -0.754878$ $a = 1.32472$ $b = 0.56984 - 1.87343I$	-5.46628	3.01950

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

(i) Arc colorings

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

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

$$a_{11} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

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

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

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

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

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

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

$$a_4 = \begin{pmatrix} u^2 + u \\ u^2 \end{pmatrix}$$

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

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

(ii) Obstruction class $= 1$

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

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2	$(u-1)^3$
c_3, c_4, c_7 c_8	u^3
c_5	$(u+1)^3$
c_6	$u^3 - u^2 + 1$
c_9	$u^3 + u^2 + 2u + 1$
c_{10}	$u^3 + u^2 - 1$
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_5	$(y-1)^3$
c_3, c_4, c_7 c_8	y^3
c_6, c_{10}	$y^3 - y^2 + 2y - 1$
c_9, c_{11}, c_{12}	$y^3 + 3y^2 + 2y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.877439 + 0.744862I$ $a = -0.662359 - 0.562280I$ $b = 0.215080 - 1.307140I$	$-4.66906 - 2.82812I$	$4.89456 + 3.73884I$
$u = -0.877439 - 0.744862I$ $a = -0.662359 + 0.562280I$ $b = 0.215080 + 1.307140I$	$-4.66906 + 2.82812I$	$4.89456 - 3.73884I$
$u = 0.754878$ $a = 1.32472$ $b = 0.569840$	-0.531480	0.210880

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^9)(u^{14}-6u^{13}+\cdots-4u+1)$
c_2	$((u-1)^3)(u+1)^6(u^{14}+4u^{13}+\cdots+4u-1)$
c_3, c_4, c_7 c_8	$u^3(u^2+2)^3(u^{14}+u^{13}+\cdots-32u+8)$
c_5	$((u-1)^6)(u+1)^3(u^{14}+4u^{13}+\cdots+4u-1)$
c_6	$(u^3-u^2+1)(u^3+u^2-1)^2(u^{14}+2u^{13}+\cdots-7u-3)$
c_9	$((u^3+u^2+2u+1)^3)(u^{14}-8u^{13}+\cdots-49u+9)$
c_{10}	$((u^3-u^2+1)^2)(u^3+u^2-1)(u^{14}+2u^{13}+\cdots-7u-3)$
c_{11}, c_{12}	$((u^3-u^2+2u-1)^3)(u^{14}-8u^{13}+\cdots-49u+9)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^9)(y^{14} - 34y^{13} + \cdots - 908y + 1)$
c_2, c_5	$((y-1)^9)(y^{14} + 6y^{13} + \cdots + 4y + 1)$
c_3, c_4, c_7 c_8	$y^3(y+2)^6(y^{14} + 7y^{13} + \cdots - 256y + 64)$
c_6, c_{10}	$((y^3 - y^2 + 2y - 1)^3)(y^{14} - 8y^{13} + \cdots - 49y + 9)$
c_9, c_{11}, c_{12}	$((y^3 + 3y^2 + 2y - 1)^3)(y^{14} + 16y^{12} + \cdots + 263y + 81)$