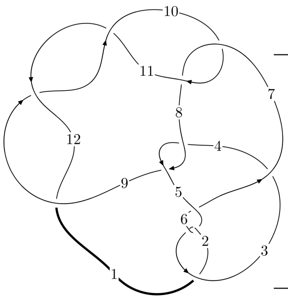
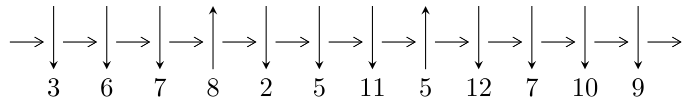
$12n_{0293}$ ($K12n_{0293}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle u^2 + b,\ -u^5 + u^4 - u^2 + a - 2u + 1,\ u^6 - 2u^5 + u^4 + 2u^3 - 2u + 1\rangle$$
$$I_2^u = \langle u^2 + b,\ a + 1,\ u^3 + u^2 - 1\rangle$$
$$I_3^u = \langle -u^2a + b,\ a^2 + au + 2u^2 + 3u + 2,\ u^3 + u^2 - 1\rangle$$
$$I_4^u = \langle u^4 - 2u^3 + u^2 + 2b - u + 1,\ -u^5 + 3u^4 - 5u^3 + 4u^2 + 2a - 6u + 3,\ u^6 - 2u^5 + 3u^4 - 2u^3 + 4u^2 - 2u - 1\rangle$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 21 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. $I_1^u = \langle u^2 + b,\ -u^5 + u^4 - u^2 + a - 2u + 1,\ u^6 - 2u^5 + u^4 + 2u^3 - 2u + 1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 6u^5 - 8u^4 - 2u^3 + 18u^2 + 6u - 16$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_6, c_9 c_{11}, c_{12}	$u^6 + 2u^5 + 9u^4 + 10u^3 + 10u^2 + 4u + 1$
c_2, c_5, c_7 c_{10}	$u^6 + 2u^5 + u^4 - 2u^3 + 2u + 1$
c_3	$u^6 - 12u^5 + 79u^4 + 50u^3 - 2u^2 - 2u + 1$
c_4, c_8	$u^6 + 10u^5 + 38u^4 + 56u^3 + 44u^2 + 24u + 8$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_6, c_9 c_{11}, c_{12}	$y^6 + 14y^5 + 61y^4 + 66y^3 + 38y^2 + 4y + 1$
c_2, c_5, c_7 c_{10}	$y^6 - 2y^5 + 9y^4 - 10y^3 + 10y^2 - 4y + 1$
c_3	$y^6 + 14y^5 + 7437y^4 - 2862y^3 + 362y^2 - 8y + 1$
c_4, c_8	$y^6 - 24y^5 + 412y^4 - 256y^3 - 144y^2 + 128y + 64$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.801169 + 0.530454I$ $a = -0.849606 + 1.000430I$ $b = -0.360490 + 0.849967I$	$1.85230 + 4.21966I$	$-5.10387 - 7.89854I$
$u = -0.801169 - 0.530454I$ $a = -0.849606 - 1.000430I$ $b = -0.360490 - 0.849967I$	$1.85230 - 4.21966I$	$-5.10387 + 7.89854I$
$u = 0.586664 + 0.275361I$ $a = 0.407311 + 0.793222I$ $b = -0.268351 - 0.323088I$	$-0.92569 - 1.07524I$	$-7.92809 + 6.11055I$
$u = 0.586664 - 0.275361I$ $a = 0.407311 - 0.793222I$ $b = -0.268351 + 0.323088I$	$-0.92569 + 1.07524I$	$-7.92809 - 6.11055I$
$u = 1.21451 + 1.05065I$ $a = -1.55771 - 1.63833I$ $b = -0.37116 - 2.55204I$	$-13.2636 - 8.5731I$	$-4.96804 + 3.72288I$
$u = 1.21451 - 1.05065I$ $a = -1.55771 + 1.63833I$ $b = -0.37116 + 2.55204I$	$-13.2636 + 8.5731I$	$-4.96804 - 3.72288I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -8u - 12$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_3, c_9	$u^3 - u^2 + 2u - 1$
c_2, c_7	$u^3 + u^2 - 1$
c_4, c_8	u^3
c_5, c_{10}	$u^3 - u^2 + 1$
c_6, 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_3, c_6 c_9, c_{11}, c_{12}	$y^3 + 3y^2 + 2y - 1$
c_2, c_5, c_7 c_{10}	$y^3 - y^2 + 2y - 1$
c_4, c_8	y^3

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.877439+0.744862I$ $a=-1.00000$ $b=-0.215080+1.307140I$	$6.04826+5.65624I$	$-4.98049-5.95889I$
$u=-0.877439-0.744862I$ $a=-1.00000$ $b=-0.215080-1.307140I$	$6.04826-5.65624I$	$-4.98049+5.95889I$
$u=\ \ 0.754878$ $a=-1.00000$ $b=-0.569840$	-2.22691	-18.0390

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

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

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_3, c_9	$(u^3 - u^2 + 2u - 1)^2$
c_2, c_7	$(u^3 + u^2 - 1)^2$
c_4, c_8	u^6
c_5, c_{10}	$(u^3 - u^2 + 1)^2$
c_6, 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_3, c_6 c_9, c_{11}, c_{12}	$(y^3+3y^2+2y-1)^2$
c_2, c_5, c_7 c_{10}	$(y^3-y^2+2y-1)^2$
c_4, c_8	y^6

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.877439 + 0.744862I$ $a = 0.947279 - 0.320410I$ $b = -0.215080 - 1.307140I$	6.04826	$-4.56984 + 0.I$
$u = -0.877439 + 0.744862I$ $a = -0.069840 - 0.424452I$ $b = -0.569840$	$1.91067 + 2.82812I$	$-4.21508 - 1.30714I$
$u = -0.877439 - 0.744862I$ $a = 0.947279 + 0.320410I$ $b = -0.215080 + 1.307140I$	6.04826	$-4.56984 + 0.I$
$u = -0.877439 - 0.744862I$ $a = -0.069840 + 0.424452I$ $b = -0.569840$	$1.91067 - 2.82812I$	$-4.21508 + 1.30714I$
$u = 0.754878$ $a = -0.37744 + 2.29387I$ $b = -0.215080 + 1.307140I$	$1.91067 + 2.82812I$	$-4.21508 - 1.30714I$
$u = 0.754878$ $a = -0.37744 - 2.29387I$ $b = -0.215080 - 1.307140I$	$1.91067 - 2.82812I$	$-4.21508 + 1.30714I$

IV. $\boldsymbol{I^u_4 = \langle u^4 - 2u^3 + u^2 + 2b - u + 1,\ -u^5 + 3u^4 - 5u^3 + 4u^2 + 2a - 6u + 3,\ u^6 - 2u^5 + 3u^4 - 2u^3 + 4u^2 - 2u - 1\rangle}$

(i) Arc colorings

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

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

$$a_5 = \begin{pmatrix} \frac{1}{2}u^5 - \frac{3}{2}u^4 + \cdots + 3u - \frac{3}{2} \\ -\frac{1}{2}u^4 + u^3 - \frac{1}{2}u^2 + \frac{1}{2}u - \frac{1}{2} \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} \frac{1}{2}u^5 - \frac{1}{2}u^4 + \frac{3}{2}u^3 + 2u - \frac{3}{2} \\ u^5 - \frac{3}{2}u^4 + \cdots + \frac{5}{2}u + \frac{1}{2} \end{pmatrix}$$

$$a_3 = \begin{pmatrix} \frac{3}{2}u^5 - 2u^4 + \cdots + \frac{9}{2}u - 1 \\ u^5 - \frac{3}{2}u^4 + \cdots + \frac{5}{2}u + \frac{1}{2} \end{pmatrix}$$

$$a_6 = \begin{pmatrix} \frac{1}{2}u^5 - u^4 + \frac{1}{2}u^3 - \frac{3}{2}u^2 + \frac{5}{2}u \\ -\frac{1}{2}u^4 - \frac{1}{2}u^3 - u^2 + \frac{3}{2}u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} \frac{1}{2}u^5 - \frac{1}{2}u^4 + 2u^3 - \frac{3}{2}u^2 + 3u - 1 \\ \frac{1}{2}u^4 + \frac{1}{2}u^3 - u^2 + \frac{1}{2}u \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^5 - 4u^4 + 2u^3 - 6u^2 + 5u + 2 \\ -4u^4 + 2u^3 - 6u^2 + 4u + 2 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u \\ u \end{pmatrix}$$

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

$$a_9 = \begin{pmatrix} u^5 + u \\ u^5 - u^3 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{1}{2}u^4 + u^3 - \frac{3}{2}u^2 + \frac{1}{2}u - \frac{11}{2}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_6, c_9 c_{11}, c_{12}	$u^6 - 2u^5 + 9u^4 - 10u^3 + 2u^2 + 12u + 1$
c_2, c_5, c_7 c_{10}	$u^6 + 2u^5 + 3u^4 + 2u^3 + 4u^2 + 2u - 1$
c_3	$u^6 - 12u^5 + 217u^4 - 1458u^3 + 3038u^2 + 1786u - 673$
c_4, c_8	$(u^3 - 8u^2 + 12u + 8)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_6, c_9 c_{11}, c_{12}	$y^6 + 14y^5 + 45y^4 - 14y^3 + 262y^2 - 140y + 1$
c_2, c_5, c_7 c_{10}	$y^6 + 2y^5 + 9y^4 + 10y^3 + 2y^2 - 12y + 1$
c_3	$y^6 + 290y^5 + \cdots - 7278944y + 452929$
c_4, c_8	$(y^3 - 40y^2 + 272y - 64)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.846666$ $a = 0.570369$ $b = -0.0850937$	-1.40994	-5.80190
$u = -0.400969 + 1.133260I$ $a = 1.346010 - 0.279891I$ $b = 1.12349 - 0.90880I$	4.22983	$-2.75302 + 0.I$
$u = -0.400969 - 1.133260I$ $a = 1.346010 + 0.279891I$ $b = 1.12349 + 0.90880I$	4.22983	$-2.75302 + 0.I$
$u = 1.12349 + 1.24085I$ $a = 1.17845 + 1.79308I$ $b = 0.27748 + 2.78816I$	-12.6895	$-4.44504 + 0.I$
$u = 1.12349 - 1.24085I$ $a = 1.17845 - 1.79308I$ $b = 0.27748 - 2.78816I$	-12.6895	$-4.44504 + 0.I$
$u = -0.291708$ $a = -2.61929$ $b = -0.716844$	-1.40994	-5.80190

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_9	$(u^3-u^2+2u-1)^3(u^6-2u^5+9u^4-10u^3+2u^2+12u+1)$ $\cdot(u^6+2u^5+9u^4+10u^3+10u^2+4u+1)$
c_2, c_7	$(u^3+u^2-1)^3(u^6+2u^5+u^4-2u^3+2u+1)$ $\cdot(u^6+2u^5+3u^4+2u^3+4u^2+2u-1)$
c_3	$(u^3-u^2+2u-1)^3(u^6-12u^5+79u^4+50u^3-2u^2-2u+1)$ $\cdot(u^6-12u^5+217u^4-1458u^3+3038u^2+1786u-673)$
c_4, c_8	$u^9(u^3-8u^2+12u+8)^2(u^6+10u^5+\cdots+24u+8)$
c_5, c_{10}	$(u^3-u^2+1)^3(u^6+2u^5+u^4-2u^3+2u+1)$ $\cdot(u^6+2u^5+3u^4+2u^3+4u^2+2u-1)$
c_6, c_{11}, c_{12}	$(u^3+u^2+2u+1)^3(u^6-2u^5+9u^4-10u^3+2u^2+12u+1)$ $\cdot(u^6+2u^5+9u^4+10u^3+10u^2+4u+1)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_6, c_9 c_{11}, c_{12}	$(y^3+3y^2+2y-1)^3(y^6+14y^5+45y^4-14y^3+262y^2-140y+1)$ $\cdot(y^6+14y^5+61y^4+66y^3+38y^2+4y+1)$
c_2, c_5, c_7 c_{10}	$(y^3-y^2+2y-1)^3(y^6-2y^5+9y^4-10y^3+10y^2-4y+1)$ $\cdot(y^6+2y^5+9y^4+10y^3+2y^2-12y+1)$
c_3	$((y^3+3y^2+2y-1)^3)(y^6+14y^5+\cdots-8y+1)$ $\cdot(y^6+290y^5+\cdots-7278944y+452929)$
c_4, c_8	$y^9(y^3-40y^2+272y-64)^2$ $\cdot(y^6-24y^5+412y^4-256y^3-144y^2+128y+64)$