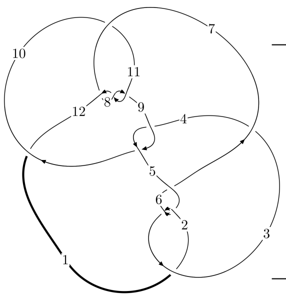
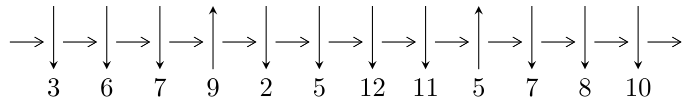
$12n_{0306}$ ($K12n_{0306}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -3u^{25} - 12u^{24} + \cdots + 2b + 3,\ u^{25} + 10u^{24} + \cdots + 4a + 11,\ u^{26} + 4u^{25} + \cdots - u - 1\rangle$$
$$I_2^u = \langle b,\ u^2 + a - u,\ u^3 - u^2 + 1\rangle$$
$$I_3^u = \langle b,\ -u^2a + a^2 + 2au + u^2 - a - 2u + 2,\ u^3 - u^2 + 1\rangle$$

* 3 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. $I^u_1 = \langle -3u^{25} - 12u^{24} + \cdots + 2b + 3,\ u^{25} + 10u^{24} + \cdots + 4a + 11,\ u^{26} + 4u^{25} + \cdots - u - 1 \rangle$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

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

$$a_3 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

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

$$a_{10} = \begin{pmatrix} -\frac{1}{4}u^{25} - \frac{5}{2}u^{24} + \cdots - \frac{13}{2}u - \frac{11}{4} \\ \frac{3}{2}u^{25} + 6u^{24} + \cdots + u - \frac{3}{2} \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -\frac{1}{2}u^{25} - \frac{9}{4}u^{24} + \cdots - \frac{15}{2}u - \frac{17}{4} \\ \frac{1}{4}u^{24} + \frac{5}{4}u^{23} + \cdots + \frac{7}{4}u^2 + \frac{3}{4}u \end{pmatrix}$$

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

$$a_9 = \begin{pmatrix} -\frac{7}{4}u^{25} - \frac{17}{2}u^{24} + \cdots - \frac{15}{2}u - \frac{5}{4} \\ \frac{3}{2}u^{25} + 6u^{24} + \cdots + u - \frac{3}{2} \end{pmatrix}$$

$$a_4 = \begin{pmatrix} u^7 - 2u^5 + 2u^3 - 2u \\ -u^7 + u^5 - 2u^3 + u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -\frac{3}{4}u^{25} - \frac{13}{4}u^{24} + \cdots - \frac{7}{4}u + \frac{1}{4} \\ \frac{1}{4}u^{25} + u^{24} + \cdots + 3u^2 - \frac{1}{4} \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} \frac{1}{4}u^{23} + \frac{3}{4}u^{22} + \cdots + \frac{9}{4}u + \frac{5}{4} \\ -u^2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{11}{4}u^{25} + \frac{21}{2}u^{24} + \cdots + \frac{17}{4}u - \frac{35}{2}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_6	$u^{26} + 4u^{25} + \cdots + 15u + 1$
c_2, c_5	$u^{26} + 4u^{25} + \cdots - u - 1$
c_3	$u^{26} - 4u^{25} + \cdots - 103464u - 31428$
c_4, c_9	$u^{26} - u^{25} + \cdots - 3456u^2 + 512$
c_7, c_8, c_{11}	$u^{26} - 4u^{25} + \cdots + 7u - 1$
c_{10}	$u^{26} + 4u^{25} + \cdots + 889u - 193$
c_{12}	$u^{26} + 28u^{24} + \cdots + 25u + 3$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_6	$y^{26} + 40y^{25} + \cdots - 15y + 1$
c_2, c_5	$y^{26} - 4y^{25} + \cdots - 15y + 1$
c_3	$y^{26} + 124y^{25} + \cdots - 27391370184y + 987719184$
c_4, c_9	$y^{26} - 49y^{25} + \cdots - 3538944y + 262144$
c_7, c_8, c_{11}	$y^{26} + 28y^{25} + \cdots - 23y + 1$
c_{10}	$y^{26} + 28y^{25} + \cdots - 417831y + 37249$
c_{12}	$y^{26} + 56y^{25} + \cdots - 1231y + 9$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.927978 + 0.281302I$ $a = -0.892022 + 0.688694I$ $b = -0.624177 + 0.789814I$	$2.80822 + 0.17134I$	$-6.35112 - 1.45434I$
$u = -0.927978 - 0.281302I$ $a = -0.892022 - 0.688694I$ $b = -0.624177 - 0.789814I$	$2.80822 - 0.17134I$	$-6.35112 + 1.45434I$
$u = 0.736454 + 0.746707I$ $a = 0.855774 + 0.275171I$ $b = -0.860539 + 0.488199I$	$3.28913 - 1.44124I$	$-2.49548 + 1.39542I$
$u = 0.736454 - 0.746707I$ $a = 0.855774 - 0.275171I$ $b = -0.860539 - 0.488199I$	$3.28913 + 1.44124I$	$-2.49548 - 1.39542I$
$u = 0.930739 + 0.665116I$ $a = -0.109280 - 0.822401I$ $b = 0.882348 + 0.149927I$	$2.63703 - 3.89810I$	$-3.35232 + 6.23910I$
$u = 0.930739 - 0.665116I$ $a = -0.109280 + 0.822401I$ $b = 0.882348 - 0.149927I$	$2.63703 + 3.89810I$	$-3.35232 - 6.23910I$
$u = -0.828014$ $a = 0.505037$ $b = 0.430120$	-1.35925	-5.94650
$u = 0.670758 + 0.970438I$ $a = -1.198940 - 0.023490I$ $b = 1.59537 - 1.11430I$	$10.51200 - 0.45901I$	$-0.702444 + 1.109804I$
$u = 0.670758 - 0.970438I$ $a = -1.198940 + 0.023490I$ $b = 1.59537 + 1.11430I$	$10.51200 + 0.45901I$	$-0.702444 - 1.109804I$
$u = -0.437740 + 0.645989I$ $a = -0.332493 + 0.449600I$ $b = 0.029303 + 1.123950I$	$4.72486 + 3.33852I$	$-2.36603 - 3.49962I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.437740 - 0.645989I$ $a = -0.332493 - 0.449600I$ $b = 0.029303 - 1.123950I$	$4.72486 - 3.33852I$	$-2.36603 + 3.49962I$
$u = 1.079900 + 0.695708I$ $a = -0.362002 + 1.203280I$ $b = -1.56097 - 0.59580I$	$9.04679 - 5.69366I$	$-2.13177 + 3.88502I$
$u = 1.079900 - 0.695708I$ $a = -0.362002 - 1.203280I$ $b = -1.56097 + 0.59580I$	$9.04679 + 5.69366I$	$-2.13177 - 3.88502I$
$u = -0.953135 + 0.981373I$ $a = 1.41685 - 1.08331I$ $b = -2.31682 + 0.09546I$	$14.7661 + 0.7496I$	$-4.35446 + 0.19083I$
$u = -0.953135 - 0.981373I$ $a = 1.41685 + 1.08331I$ $b = -2.31682 - 0.09546I$	$14.7661 - 0.7496I$	$-4.35446 - 0.19083I$
$u = -0.996483 + 0.952652I$ $a = -1.54076 + 1.18418I$ $b = 2.26473 + 0.34444I$	$14.6174 + 6.3423I$	$-4.67499 - 4.46303I$
$u = -0.996483 - 0.952652I$ $a = -1.54076 - 1.18418I$ $b = 2.26473 - 0.34444I$	$14.6174 - 6.3423I$	$-4.67499 + 4.46303I$
$u = -0.918139 + 1.031730I$ $a = -1.21694 + 1.06831I$ $b = 2.52632 - 0.56908I$	$-17.5237 - 3.4354I$	$-1.66037 + 0.61088I$
$u = -0.918139 - 1.031730I$ $a = -1.21694 - 1.06831I$ $b = 2.52632 + 0.56908I$	$-17.5237 + 3.4354I$	$-1.66037 - 0.61088I$
$u = -1.046110 + 0.939916I$ $a = 1.58869 - 1.30078I$ $b = -2.33420 - 0.78739I$	$-17.9709 + 10.6421I$	$-2.17770 - 4.87168I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.046110 - 0.939916I$ $a = 1.58869 + 1.30078I$ $b = -2.33420 + 0.78739I$	$-17.9709 - 10.6421I$	$-2.17770 + 4.87168I$
$u = 0.547038 + 0.202189I$ $a = 2.44519 + 0.75423I$ $b = -0.603638 + 0.076459I$	$2.36049 - 3.21762I$	$0.10564 + 7.29080I$
$u = 0.547038 - 0.202189I$ $a = 2.44519 - 0.75423I$ $b = -0.603638 - 0.076459I$	$2.36049 + 3.21762I$	$0.10564 - 7.29080I$
$u = -0.482360 + 0.313885I$ $a = 0.443368 - 0.835553I$ $b = 0.021358 - 0.703916I$	$-0.662371 + 1.026000I$	$-7.80706 - 6.48797I$
$u = -0.482360 - 0.313885I$ $a = 0.443368 + 0.835553I$ $b = 0.021358 + 0.703916I$	$-0.662371 - 1.026000I$	$-7.80706 + 6.48797I$
$u = 0.422126$ $a = -2.69989$ $b = 0.531699$	-1.56806	-4.11730

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -u^2 + 9u - 11$

(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	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u =$	$0.877439 + 0.744862I$		
$a =$	$0.662359 - 0.562280I$	$6.04826 - 5.65624I$	$-3.31813 + 5.39661I$
$b =$	0		
$u =$	$0.877439 - 0.744862I$		
$a =$	$0.662359 + 0.562280I$	$6.04826 + 5.65624I$	$-3.31813 - 5.39661I$
$b =$	0		
$u =$	-0.754878		
$a =$	-1.32472	-2.22691	-18.3640
$b =$	0		

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

(i) Arc colorings

$$a_2 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

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

$$a_3 = \begin{pmatrix} -u \\ -u^2 + u + 1 \end{pmatrix}$$

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

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

$$a_{11} = \begin{pmatrix} au + 2a \\ u^2a - au - a \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^2 - 1 \\ -u^2 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} a \\ 0 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} u^2a + au + u^2 - a - 2u + 3 \\ -u^2a + u^2 - u \end{pmatrix}$$

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 2u^2a + au - a + 3u - 7$

(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
$u = 0.877439 + 0.744862I$ $a = -0.447279 - 0.744862I$ $b = 0$	6.04826	$-2.00317 + 0.50299I$
$u = 0.877439 + 0.744862I$ $a = -0.092519 + 0.562280I$ $b = 0$	$1.91067 - 2.82812I$	$-6.28492 + 2.09676I$
$u = 0.877439 - 0.744862I$ $a = -0.447279 + 0.744862I$ $b = 0$	6.04826	$-2.00317 - 0.50299I$
$u = 0.877439 - 0.744862I$ $a = -0.092519 - 0.562280I$ $b = 0$	$1.91067 + 2.82812I$	$-6.28492 - 2.09676I$
$u = -0.754878$ $a = 1.53980 + 1.30714I$ $b = 0$	$1.91067 - 2.82812I$	$-10.21191 - 0.80415I$
$u = -0.754878$ $a = 1.53980 - 1.30714I$ $b = 0$	$1.91067 + 2.82812I$	$-10.21191 + 0.80415I$

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^3-u^2+2u-1)^3)(u^{26}+4u^{25}+\cdots+15u+1)$
c_2	$((u^3+u^2-1)^3)(u^{26}+4u^{25}+\cdots-u-1)$
c_3	$((u^3-u^2+2u-1)^3)(u^{26}-4u^{25}+\cdots-103464u-31428)$
c_4, c_9	$u^9(u^{26}-u^{25}+\cdots-3456u^2+512)$
c_5	$((u^3-u^2+1)^3)(u^{26}+4u^{25}+\cdots-u-1)$
c_6	$((u^3+u^2+2u+1)^3)(u^{26}+4u^{25}+\cdots+15u+1)$
c_7, c_8	$((u^3-u^2+2u-1)^3)(u^{26}-4u^{25}+\cdots+7u-1)$
c_{10}	$((u^3-u^2+1)^3)(u^{26}+4u^{25}+\cdots+889u-193)$
c_{11}	$((u^3+u^2+2u+1)^3)(u^{26}-4u^{25}+\cdots+7u-1)$
c_{12}	$((u^3-u^2+1)^3)(u^{26}+28u^{24}+\cdots+25u+3)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_6	$((y^3+3y^2+2y-1)^3)(y^{26}+40y^{25}+\cdots-15y+1)$
c_2, c_5	$((y^3-y^2+2y-1)^3)(y^{26}-4y^{25}+\cdots-15y+1)$
c_3	$(y^3+3y^2+2y-1)^3$ $\cdot(y^{26}+124y^{25}+\cdots-27391370184y+987719184)$
c_4, c_9	$y^9(y^{26}-49y^{25}+\cdots-3538944y+262144)$
c_7, c_8, c_{11}	$((y^3+3y^2+2y-1)^3)(y^{26}+28y^{25}+\cdots-23y+1)$
c_{10}	$((y^3-y^2+2y-1)^3)(y^{26}+28y^{25}+\cdots-417831y+37249)$
c_{12}	$((y^3-y^2+2y-1)^3)(y^{26}+56y^{25}+\cdots-1231y+9)$