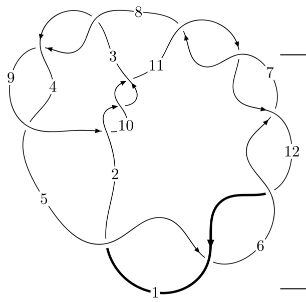
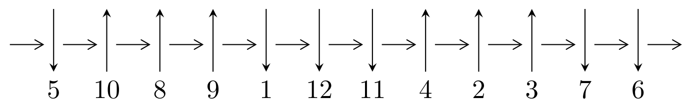
$12a_{1286}$ ($K12a_{1286}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle b - u,\ -u^{12} + u^{11} + 8u^{10} - 7u^9 - 23u^8 + 15u^7 + 26u^6 - 6u^5 - 8u^4 - 4u^3 + 2u^2 + 4a - 11u,$$
$$u^{13} - u^{12} - 9u^{11} + 8u^{10} + 31u^9 - 22u^8 - 49u^7 + 21u^6 + 34u^5 - 2u^4 - 10u^3 + 3u^2 + 2u + 1\rangle$$
$$I_2^u = \langle 5u^{13} + u^{12} - 28u^{11} - 14u^{10} + 50u^9 + 49u^8 - 41u^7 - 68u^6 + 68u^5 + 70u^4 - 87u^3 - 79u^2 + 6b + 18u + 30,$$
$$17u^{13} + 7u^{12} + \cdots + 24a + 105,$$
$$u^{14} - u^{13} - 6u^{12} + 4u^{11} + 14u^{10} - 2u^9 - 21u^8 - 5u^7 + 31u^6 - u^5 - 35u^4 + 3u^3 + 23u^2 + 5u - 8\rangle$$
$$I_3^u = \langle b - 1,\ a^2 + 3,\ u + 1\rangle$$
$$I_4^u = \langle b + 1,\ a^2 + 1,\ u - 1\rangle$$
$$I_5^u = \langle b - 1,\ a,\ u + 1\rangle$$

* 5 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 32 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. $I^u_1 = \langle b - u,\ -u^{12} + u^{11} + \cdots + 4a - 11u,\ u^{13} - u^{12} + \cdots + 2u + 1\rangle$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

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

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

$$a_{11} = \begin{pmatrix} \frac{1}{4}u^{12} - \frac{1}{4}u^{11} + \cdots - \frac{1}{2}u^2 + \frac{11}{4}u \\ u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} \frac{1}{2}u^{12} - \frac{3}{4}u^{11} + \cdots - \frac{1}{2}u + \frac{1}{4} \\ \frac{1}{4}u^{12} - \frac{1}{4}u^{11} + \cdots - \frac{1}{2}u^2 + \frac{3}{4}u \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} \frac{1}{2}u^{12} - \frac{1}{2}u^{11} + \cdots + 2u + \frac{1}{2} \\ \frac{1}{4}u^{12} - \frac{1}{2}u^{11} + \cdots + \frac{3}{4}u + \frac{1}{4} \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -\frac{1}{4}u^{12} + \frac{3}{4}u^{11} + \cdots - 2u^2 - \frac{7}{4}u \\ \frac{1}{4}u^{12} - \frac{9}{4}u^{10} + \cdots + \frac{1}{4}u + \frac{1}{4} \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} \frac{1}{4}u^{12} - \frac{1}{4}u^{11} + \cdots - \frac{1}{2}u^2 + \frac{7}{4}u \\ u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} \frac{1}{4}u^{11} - \frac{1}{4}u^{10} + \cdots - \frac{1}{2}u + \frac{3}{4} \\ u^2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} \frac{1}{4}u^{11} - \frac{1}{4}u^{10} + \cdots - \frac{1}{2}u + \frac{3}{4} \\ -\frac{1}{4}u^{11} + \frac{1}{4}u^{10} + \cdots + \frac{1}{2}u + \frac{1}{4} \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= \frac{5}{2}u^{12} - \frac{9}{2}u^{11} - 21u^{10} + \frac{75}{2}u^9 + \frac{131}{2}u^8 - \frac{225}{2}u^7 - 91u^6 + 136u^5 + 59u^4 - 55u^3 - 26u^2 + \frac{45}{2}u + 7$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5, c_6 c_7, c_{11}, c_{12}	$y^{13} + 19y^{12} + \cdots - 36y - 4$
c_2, c_3, c_4 c_8, c_9, c_{10}	$y^{13} - 19y^{12} + \cdots - 2y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.640373+0.415565I$ $a=-1.25824+1.93661I$ $b=-0.640373+0.415565I$	$15.1852-1.4688I$	$6.47409+4.73042I$
$u=-0.640373-0.415565I$ $a=-1.25824-1.93661I$ $b=-0.640373-0.415565I$	$15.1852+1.4688I$	$6.47409-4.73042I$
$u=\quad 0.481196+0.382474I$ $a=\quad 1.09706+1.46655I$ $b=\quad 0.481196+0.382474I$	$4.66648+1.38672I$	$6.13236-5.06598I$
$u=\quad 0.481196-0.382474I$ $a=\quad 1.09706-1.46655I$ $b=\quad 0.481196-0.382474I$	$4.66648-1.38672I$	$6.13236+5.06598I$
$u=-1.60418$ $a=\quad 0.434953$ $b=-1.60418$	10.2165	6.80950
$u=\quad 1.61970+0.12491I$ $a=-0.311845+0.455641I$ $b=\quad 1.61970+0.12491I$	$12.32310+4.09027I$	$9.54540-4.06441I$
$u=\quad 1.61970-0.12491I$ $a=-0.311845-0.455641I$ $b=\quad 1.61970-0.12491I$	$12.32310-4.09027I$	$9.54540+4.06441I$
$u=-0.187914+0.306655I$ $a=-0.476417+0.917350I$ $b=-0.187914+0.306655I$	$0.020555-0.726577I$	$0.71558+9.62371I$
$u=-0.187914-0.306655I$ $a=-0.476417-0.917350I$ $b=-0.187914-0.306655I$	$0.020555+0.726577I$	$0.71558-9.62371I$
$u=-1.65131+0.26273I$ $a=\quad 0.042681+0.832421I$ $b=-1.65131+0.26273I$	$19.0260-7.1684I$	$11.29845+3.79891I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.65131 - 0.26273I$ $a = 0.042681 - 0.832421I$ $b = -1.65131 - 0.26273I$	$19.0260 + 7.1684I$	$11.29845 - 3.79891I$
$u = 1.68079 + 0.37590I$ $a = 0.189278 + 1.048750I$ $b = 1.68079 + 0.37590I$	$-8.62649 + 8.95936I$	$11.42936 - 3.31793I$
$u = 1.68079 - 0.37590I$ $a = 0.189278 - 1.048750I$ $b = 1.68079 - 0.37590I$	$-8.62649 - 8.95936I$	$11.42936 + 3.31793I$

II. $I_2^u =$
$\langle 5u^{13}+u^{12}+\cdots+6b+30,\ 17u^{13}+7u^{12}+\cdots+24a+105,\ u^{14}-u^{13}+\cdots+5u-8\rangle$

(i) Arc colorings

$$a_3 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_8 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_4 = \begin{pmatrix}1\\-u^2\end{pmatrix}$$
$$a_9 = \begin{pmatrix}u\\-u^3+u\end{pmatrix}$$
$$a_5 = \begin{pmatrix}-u^2+1\\u^4-2u^2\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-0.708333u^{13}-0.291667u^{12}+\cdots-0.125000u-4.37500\\-\frac{5}{6}u^{13}-\frac{1}{6}u^{12}+\cdots-3u-5\end{pmatrix}$$
$$a_7 = \begin{pmatrix}-0.208333u^{13}-0.125000u^{12}+\cdots-0.458333u-1.37500\\\frac{1}{2}u^{13}+\frac{1}{6}u^{12}+\cdots+\frac{2}{3}u+3\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}-\frac{5}{12}u^{13}-\frac{1}{4}u^{12}+\cdots+\frac{1}{12}u-\frac{11}{4}\\-\frac{5}{3}u^{13}-\frac{1}{3}u^{12}+\cdots-3u-10\end{pmatrix}$$
$$a_6 = \begin{pmatrix}-0.458333u^{13}-0.208333u^{12}+\cdots-0.541667u-2.12500\\\frac{1}{3}u^{13}+\frac{1}{6}u^{12}+\cdots+\frac{1}{2}u+\frac{7}{3}\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}\frac{1}{8}u^{13}-\frac{1}{8}u^{12}+\cdots+\frac{23}{8}u+\frac{5}{8}\\-\frac{5}{6}u^{13}-\frac{1}{6}u^{12}+\cdots-3u-5\end{pmatrix}$$
$$a_2 = \begin{pmatrix}-0.625000u^{13}-0.208333u^{12}+\cdots-1.20833u-5.12500\\u^{13}+\frac{1}{3}u^{12}+\cdots+\frac{5}{6}u+\frac{23}{3}\end{pmatrix}$$
$$a_1 = \begin{pmatrix}\frac{1}{24}u^{13}+\frac{1}{8}u^{12}+\cdots-\frac{17}{24}u-\frac{1}{8}\\\frac{3}{2}u^{13}+\frac{1}{3}u^{12}+\cdots+\frac{11}{6}u+\frac{31}{3}\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{26}{3}u^{13}-\frac{8}{3}u^{12}+50u^{11}+28u^{10}-90u^9-92u^8+\frac{208}{3}u^7+\frac{392}{3}u^6-\frac{344}{3}u^5-136u^4+\frac{446}{3}u^3+146u^2-\frac{46}{3}u-\frac{158}{3}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5, c_6 c_7, c_{11}, c_{12}	$(u^7 - u^6 + 6u^5 - 5u^4 + 10u^3 - 6u^2 + 4u - 1)^2$
c_2, c_3, c_4 c_8, c_9, c_{10}	$u^{14} + u^{13} + \cdots - 5u - 8$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5, c_6 c_7, c_{11}, c_{12}	$(y^7 + 11y^6 + 46y^5 + 91y^4 + 86y^3 + 34y^2 + 4y - 1)^2$
c_2, c_3, c_4 c_8, c_9, c_{10}	$y^{14} - 13y^{13} + \cdots - 393y + 64$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.648339 + 0.868507I$ $a = -0.946848 - 0.814097I$ $b = -1.49879 - 0.07472I$	$11.28970 + 2.92126I$	$9.79653 - 2.94858I$
$u = 0.648339 - 0.868507I$ $a = -0.946848 + 0.814097I$ $b = -1.49879 + 0.07472I$	$11.28970 - 2.92126I$	$9.79653 + 2.94858I$
$u = -1.15470$ $a = -0.288944$ $b = 0.577082$	2.54463	-1.98880
$u = -0.613438 + 0.507408I$ $a = 0.322269 - 0.816953I$ $b = 1.290190 - 0.016333I$	$4.55769 - 1.83261I$	$8.22558 + 5.43914I$
$u = -0.613438 - 0.507408I$ $a = 0.322269 + 0.816953I$ $b = 1.290190 + 0.016333I$	$4.55769 + 1.83261I$	$8.22558 - 5.43914I$
$u = -0.674237 + 1.068950I$ $a = 1.21462 - 0.78780I$ $b = 1.63675 - 0.11855I$	$-16.2972 - 3.4867I$	$9.97231 + 2.18600I$
$u = -0.674237 - 1.068950I$ $a = 1.21462 + 0.78780I$ $b = 1.63675 + 0.11855I$	$-16.2972 + 3.4867I$	$9.97231 - 2.18600I$
$u = 1.290190 + 0.016333I$ $a = 0.161518 - 0.517219I$ $b = -0.613438 - 0.507408I$	$4.55769 + 1.83261I$	$8.22558 - 5.43914I$
$u = 1.290190 - 0.016333I$ $a = 0.161518 + 0.517219I$ $b = -0.613438 + 0.507408I$	$4.55769 - 1.83261I$	$8.22558 + 5.43914I$
$u = 0.577082$ $a = 0.578156$ $b = -1.15470$	2.54463	-1.98880

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.49879 + 0.07472I$ $a = -0.017211 - 0.901687I$ $b = 0.648339 - 0.868507I$	$11.28970 - 2.92126I$	$9.79653 + 2.94858I$
$u = -1.49879 - 0.07472I$ $a = -0.017211 + 0.901687I$ $b = 0.648339 + 0.868507I$	$11.28970 + 2.92126I$	$9.79653 - 2.94858I$
$u = 1.63675 + 0.11855I$ $a = -0.066458 - 1.112970I$ $b = -0.674237 - 1.068950I$	$-16.2972 + 3.4867I$	$9.97231 - 2.18600I$
$u = 1.63675 - 0.11855I$ $a = -0.066458 + 1.112970I$ $b = -0.674237 + 1.068950I$	$-16.2972 - 3.4867I$	$9.97231 + 2.18600I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = \quad 1.73205I$ $b = \quad 1.00000$	16.4493	12.0000
$u = -1.00000$ $a = \quad -1.73205I$ $b = \quad 1.00000$	16.4493	12.0000

IV. $I_4^u = \langle b+1,\ a^2+1,\ u-1 \rangle$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

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

$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} a \\ -1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -1 \\ -a+1 \end{pmatrix}$$

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

$$a_6 = \begin{pmatrix} -1 \\ -a \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} a+1 \\ -1 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -a \\ 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -a \\ a+1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.00000$ $a = 1.000000I$ $b = -1.00000$	6.57974	12.0000
$u = 1.00000$ $a = -1.000000I$ $b = -1.00000$	6.57974	12.0000

V. $I_5^u = \langle b-1,\ a,\ u+1 \rangle$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$

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

$$a_9 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

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

$$a_{12} = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I^u_5	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = 0$ $b = 1.00000$	3.28987	12.0000

VI. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_5, c_6 c_7, c_{11}, c_{12}	$u(u^2+1)(u^2+3)(u^7-u^6+6u^5-5u^4+10u^3-6u^2+4u-1)^2$ $\cdot\,(u^{13}+3u^{12}+\cdots+12u+2)$
c_2, c_8	$((u-1)^3)(u+1)^2(u^{13}+u^{12}+\cdots+2u-1)(u^{14}+u^{13}+\cdots-5u-8)$
c_3, c_4, c_9 c_{10}	$((u-1)^2)(u+1)^3(u^{13}+u^{12}+\cdots+2u-1)(u^{14}+u^{13}+\cdots-5u-8)$

VII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_5, c_6 c_7, c_{11}, c_{12}	$y(y+1)^2(y+3)^2$ $\cdot (y^7 + 11y^6 + 46y^5 + 91y^4 + 86y^3 + 34y^2 + 4y - 1)^2$ $\cdot (y^{13} + 19y^{12} + \cdots - 36y - 4)$
c_2, c_3, c_4 c_8, c_9, c_{10}	$((y-1)^5)(y^{13} - 19y^{12} + \cdots - 2y - 1)(y^{14} - 13y^{13} + \cdots - 393y + 64)$