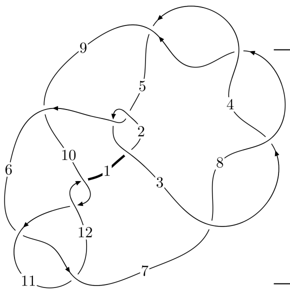
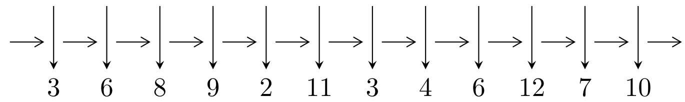
$12n_{0338}$ ($K12n_{0338}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I^u_1 = \langle & -3004101246716u^{20} - 373089817451u^{19} + \cdots + 210829544445324b + 26346240192572, \\
& 1831272589986u^{20} + 602119374746u^{19} + \cdots + 210829544445324a - 24452295430928, \\
& u^{21} + u^{20} + \cdots + 8u - 8\rangle \\
I^u_2 = \langle & 4a^2u + 6a^2 + b - 1,\ 4a^3 + 4au - 6a - 7u + 10,\ u^2 - 2\rangle
\end{aligned}$$

$$I^v_1 = \langle a,\ b + v + 1,\ v^3 + 2v^2 + v + 1\rangle$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 30 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.

$\boldsymbol{I^u_1 = \langle -3.00\times 10^{12}u^{20} - 3.73\times 10^{11}u^{19} + \cdots + 2.11\times 10^{13}b + 2.63\times 10^{13},\ 1.83\times 10^{12}u^{20} + 6.02\times 10^{11}u^{19} + \cdots + 2.11\times 10^{13}a - 2.45\times 10^{13},\ u^{21} + u^{20} + \cdots + 8u - 8\rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} u^3 - 2u \\ u^5 - 3u^3 + u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -0.0868603u^{20} - 0.0285595u^{19} + \cdots - 0.459641u + 1.15981 \\ 0.142490u^{20} + 0.0176963u^{19} + \cdots + 2.40462u - 1.24965 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -0.229350u^{20} - 0.0462558u^{19} + \cdots - 2.86426u + 2.40946 \\ 0.142490u^{20} + 0.0176963u^{19} + \cdots + 2.40462u - 1.24965 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -0.138686u^{20} + 0.00718333u^{19} + \cdots - 0.505659u + 1.36119 \\ -0.242033u^{20} + 0.00703747u^{19} + \cdots - 5.49406u + 2.13835 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -0.128794u^{20} + 0.0122843u^{19} + \cdots - 3.05410u + 1.34108 \\ -0.237410u^{20} - 0.0250130u^{19} + \cdots - 2.82817u + 2.12013 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -0.128794u^{20} + 0.0122843u^{19} + \cdots - 3.05410u + 1.34108 \\ -0.111694u^{20} - 0.00741087u^{19} + \cdots - 0.669180u + 0.991499 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -0.121424u^{20} - 0.0196218u^{19} + \cdots - 2.92331u + 2.24622 \\ -0.185607u^{20} - 0.0285721u^{19} + \cdots - 2.65413u + 1.26626 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$= \frac{290833336030791}{21082954445324}u^{20} - \frac{503291539209}{21082954445324}u^{19} + \cdots + \frac{136967234579540}{5270738611331}u - \frac{144077080803222}{5270738611331}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{21} + 36u^{20} + \cdots + 11991u + 529$
c_2, c_5	$u^{21} + 4u^{20} + \cdots - 59u - 23$
c_3, c_4, c_7 c_8	$u^{21} - u^{20} + \cdots + 8u + 8$
c_6, c_{11}	$u^{21} - 2u^{20} + \cdots + 8u^2 - 1$
c_9	$u^{21} + 2u^{20} + \cdots - 144u - 52$
c_{10}, c_{12}	$u^{21} + 10u^{20} + \cdots + 16u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{21} - 92y^{20} + \cdots + 39622923y - 279841$
c_2, c_5	$y^{21} - 36y^{20} + \cdots + 11991y - 529$
c_3, c_4, c_7 c_8	$y^{21} - 35y^{20} + \cdots + 320y - 64$
c_6, c_{11}	$y^{21} - 10y^{20} + \cdots + 16y - 1$
c_9	$y^{21} - 66y^{20} + \cdots + 76376y - 2704$
c_{10}, c_{12}	$y^{21} + 6y^{20} + \cdots + 96y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I^u_1	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.901926+0.051407I$ $a=\ 1.58428+0.44230I$ $b=\ 0.929270-0.621178I$	$-0.70179+4.44296I$	$-15.1059-6.6514I$
$u=-0.901926-0.051407I$ $a=\ 1.58428-0.44230I$ $b=\ 0.929270+0.621178I$	$-0.70179-4.44296I$	$-15.1059+6.6514I$
$u=-0.487980+0.535998I$ $a=-1.29130-1.86784I$ $b=-0.972602+0.217979I$	$-3.41098+0.72478I$	$-18.1754-4.1507I$
$u=-0.487980-0.535998I$ $a=-1.29130+1.86784I$ $b=-0.972602-0.217979I$	$-3.41098-0.72478I$	$-18.1754+4.1507I$
$u=\ 0.667009+0.250056I$ $a=\ 0.473812-0.352817I$ $b=\ 0.746002-0.517025I$	$-0.131566+0.215455I$	$-13.55030+1.35945I$
$u=\ 0.667009-0.250056I$ $a=\ 0.473812+0.352817I$ $b=\ 0.746002+0.517025I$	$-0.131566-0.215455I$	$-13.55030-1.35945I$
$u=-1.336150+0.286473I$ $a=-0.480443-0.210578I$ $b=\ 0.219656+0.684964I$	$-6.45258+0.58096I$	$-15.0688-0.0562I$
$u=-1.336150-0.286473I$ $a=-0.480443+0.210578I$ $b=\ 0.219656-0.684964I$	$-6.45258-0.58096I$	$-15.0688+0.0562I$
$u=-1.46037$ $a=-1.04497$ $b=-0.429188$	-6.73694	-12.3530
$u=\ 1.37773+0.63713I$ $a=\ 1.24070-1.07467I$ $b=\ 1.177670+0.522691I$	$-9.24475-5.31786I$	$-17.8058+4.0813I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.37773 - 0.63713I$ $a = 1.24070 + 1.07467I$ $b = 1.177670 - 0.522691I$	$-9.24475 + 5.31786I$	$-17.8058 - 4.0813I$
$u = 0.007014 + 0.428132I$ $a = 0.157773 + 1.318050I$ $b = -0.876187 - 0.694943I$	$2.12758 - 2.67655I$	$-5.20055 + 2.49560I$
$u = 0.007014 - 0.428132I$ $a = 0.157773 - 1.318050I$ $b = -0.876187 + 0.694943I$	$2.12758 + 2.67655I$	$-5.20055 - 2.49560I$
$u = 0.380480$ $a = 0.651164$ $b = 0.349133$	-0.576083	-17.0820
$u = 1.73579 + 0.22895I$ $a = -1.43373 + 0.00630I$ $b = -1.176150 + 0.419094I$	$-10.01720 + 3.13008I$	$-18.2978 - 3.1992I$
$u = 1.73579 - 0.22895I$ $a = -1.43373 - 0.00630I$ $b = -1.176150 - 0.419094I$	$-10.01720 - 3.13008I$	$-18.2978 + 3.1992I$
$u = 1.90238 + 0.14731I$ $a = -0.0278466 + 0.0602262I$ $b = -0.516255 + 1.062480I$	$-18.6129 - 3.3460I$	$-15.4445 + 0.4593I$
$u = 1.90238 - 0.14731I$ $a = -0.0278466 - 0.0602262I$ $b = -0.516255 - 1.062480I$	$-18.6129 + 3.3460I$	$-15.4445 - 0.4593I$
$u = -1.89336 + 0.24852I$ $a = -1.27473 - 0.71223I$ $b = -1.194710 + 0.746952I$	$18.7399 + 9.8858I$	$-17.0280 - 4.3210I$
$u = -1.89336 - 0.24852I$ $a = -1.27473 + 0.71223I$ $b = -1.194710 - 0.746952I$	$18.7399 - 9.8858I$	$-17.0280 + 4.3210I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -2.06112$ $a = 1.49678$ $b = 1.40668$	13.3737	-19.2100

II. $I_2^u = \langle 4a^2u+6a^2+b-1,\ 4a^3+4au-6a-7u+10,\ u^2-2\rangle$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ 2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -u \\ -u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0 \\ -u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} a \\ -4a^2u-6a^2+1 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 4a^2u+6a^2+a-1 \\ -4a^2u-6a^2+1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} \frac{1}{2}u \\ 4a^2u+6a^2+au+2a-1 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} \frac{1}{2}u \\ 4a^2u+6a^2+au+2a+u-1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} \frac{1}{2}u \\ 4a^2u+6a^2+au+2a-1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -3a^2u-4a^2-au-a+\frac{1}{2}u-1 \\ au+2a+1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -16a^2u-24a^2-16$

(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, c_{10}	$(u^3-u^2+2u-1)^2$
c_{11}	$(u^3+u^2-1)^2$
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_{11}	$(y^3-y^2+2y-1)^2$
c_9, c_{10}, c_{12}	$(y^3+3y^2+2y-1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.41421$ $a = -0.388001$ $b = -0.754878$	-7.69319	-23.0200
$u = 1.41421$ $a = 0.194000 + 0.164688I$ $b = 0.877439 - 0.744862I$	$-3.55561 + 2.82812I$	$-16.4902 - 2.9794I$
$u = 1.41421$ $a = 0.194000 - 0.164688I$ $b = 0.877439 + 0.744862I$	$-3.55561 - 2.82812I$	$-16.4902 + 2.9794I$
$u = -1.41421$ $a = 1.13072 + 0.95987I$ $b = 0.877439 - 0.744862I$	$-3.55561 + 2.82812I$	$-16.4902 - 2.9794I$
$u = -1.41421$ $a = 1.13072 - 0.95987I$ $b = 0.877439 + 0.744862I$	$-3.55561 - 2.82812I$	$-16.4902 + 2.9794I$
$u = -1.41421$ $a = -2.26144$ $b = -0.754878$	-7.69319	-23.0200

III. $\boldsymbol{I_1^v = \langle a,\ b+v+1,\ v^3+2v^2+v+1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4v^2+6v-14$

(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, c_{12}	u^3+u^2+2u+1
c_{10}	u^3-u^2+2u-1
c_{11}	u^3-u^2+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_{11}	$y^3 - y^2 + 2y - 1$
c_9, c_{10}, c_{12}	$y^3 + 3y^2 + 2y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = -0.122561 + 0.744862I$ $a = 0$ $b = -0.877439 - 0.744862I$	$1.37919 - 2.82812I$	$-16.8946 + 3.7388I$
$v = -0.122561 - 0.744862I$ $a = 0$ $b = -0.877439 + 0.744862I$	$1.37919 + 2.82812I$	$-16.8946 - 3.7388I$
$v = -1.75488$ $a = 0$ $b = 0.754878$	-2.75839	-12.2110

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^9)(u^{21}+36u^{20}+\cdots+11991u+529)$
c_2	$((u-1)^3)(u+1)^6(u^{21}+4u^{20}+\cdots-59u-23)$
c_3, c_4, c_7 c_8	$u^3(u^2-2)^3(u^{21}-u^{20}+\cdots+8u+8)$
c_5	$((u-1)^6)(u+1)^3(u^{21}+4u^{20}+\cdots-59u-23)$
c_6	$((u^3-u^2+1)^2)(u^3+u^2-1)(u^{21}-2u^{20}+\cdots+8u^2-1)$
c_9	$((u^3-u^2+2u-1)^2)(u^3+u^2+2u+1)(u^{21}+2u^{20}+\cdots-144u-52)$
c_{10}	$((u^3-u^2+2u-1)^3)(u^{21}+10u^{20}+\cdots+16u+1)$
c_{11}	$(u^3-u^2+1)(u^3+u^2-1)^2(u^{21}-2u^{20}+\cdots+8u^2-1)$
c_{12}	$((u^3+u^2+2u+1)^3)(u^{21}+10u^{20}+\cdots+16u+1)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^9)(y^{21}-92y^{20}+\cdots+3.96229\times 10^7 y-279841)$
c_2, c_5	$((y-1)^9)(y^{21}-36y^{20}+\cdots+11991y-529)$
c_3, c_4, c_7 c_8	$y^3(y-2)^6(y^{21}-35y^{20}+\cdots+320y-64)$
c_6, c_{11}	$((y^3-y^2+2y-1)^3)(y^{21}-10y^{20}+\cdots+16y-1)$
c_9	$((y^3+3y^2+2y-1)^3)(y^{21}-66y^{20}+\cdots+76376y-2704)$
c_{10}, c_{12}	$((y^3+3y^2+2y-1)^3)(y^{21}+6y^{20}+\cdots+96y-1)$