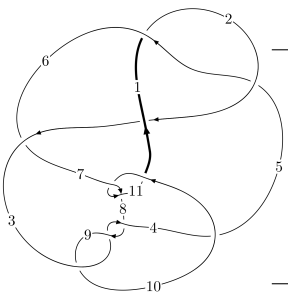
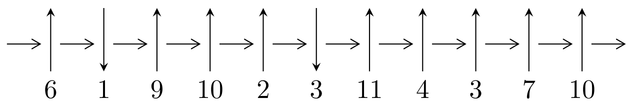
$11n_{91}$ ($K11n_{91}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u &= \langle -10091257321u^{20} + 17716980292u^{19} + \cdots + 3661969563382b + 49796914345, \\
&\quad 591910942537u^{20} - 2794488596145u^{19} + \cdots + 4394363476584a - 481484753828, \\
&\quad u^{21} - 3u^{20} + \cdots - 2u - 3\rangle \\
I_2^u &= \langle b^2 + 2,\ a^2 - a + 1,\ u + 1\rangle \\
I_3^u &= \langle b,\ a^2 - a + 1,\ u - 1\rangle
\end{aligned}$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 27 representations.

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[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.

$\boldsymbol{I_1^u = \langle -1.01\times 10^{10}u^{20} + 1.77\times 10^{10}u^{19} + \cdots + 3.66\times 10^{11}b + 4.98\times 10^{10},\ 5.92\times 10^{11}u^{20} - 2.79\times 10^{12}u^{19} + \cdots + 4.39\times 10^{12}a - 4.81\times 10^{11},\ u^{21} - 3u^{20} + \cdots - 2u - 3\rangle}$

(i) Arc colorings

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

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

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

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

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

$$a_3 = \begin{pmatrix} -0.134698u^{20} + 0.635926u^{19} + \cdots - 0.0316545u + 0.109569 \\ 0.0275569u^{20} - 0.0483810u^{19} + \cdots - 1.11621u - 0.135984 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.0599090u^{20} + 0.413165u^{19} + \cdots - 1.26842u + 0.402548 \\ 0.129090u^{20} - 0.405931u^{19} + \cdots - 1.14509u - 0.299649 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.0944207u^{20} + 0.398371u^{19} + \cdots + 0.793023u - 0.448119 \\ 0.0612997u^{20} - 0.138407u^{19} + \cdots + 0.143901u - 0.565085 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 0.340816u^{20} - 1.13692u^{19} + \cdots - 0.307450u - 1.55518 \\ 0.154312u^{20} - 0.484554u^{19} + \cdots - 0.533633u - 0.125533 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -0.188362u^{20} + 0.626385u^{19} + \cdots + 2.11578u + 0.520624 \\ 0.0158081u^{20} + 0.0256218u^{19} + \cdots + 0.586386u - 0.748984 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -0.186504u^{20} + 0.652367u^{19} + \cdots - 0.226183u + 1.42965 \\ -0.154312u^{20} + 0.484554u^{19} + \cdots + 0.533633u + 0.125533 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -0.186504u^{20} + 0.652367u^{19} + \cdots - 0.226183u + 1.42965 \\ -0.154312u^{20} + 0.484554u^{19} + \cdots + 0.533633u + 0.125533 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= \frac{57646172449}{732393912764}u^{20} + \frac{387941164973}{732393912764}u^{19} + \cdots + \frac{4279700760483}{732393912764}u + \frac{1134852296901}{183098478191}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5	$u^{21} - 2u^{20} + \cdots + 7u - 3$
c_2	$u^{21} + 14u^{20} + \cdots + 49u - 9$
c_3, c_8, c_9	$u^{21} + u^{20} + \cdots + 8u - 4$
c_4	$u^{21} - u^{20} + \cdots - 64u - 548$
c_6	$u^{21} + 2u^{20} + \cdots + 19u - 3$
c_7, c_{10}	$u^{21} - 3u^{20} + \cdots - 2u - 3$
c_{11}	$u^{21} - 3u^{20} + \cdots + 22u - 9$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5	$y^{21} + 14y^{20} + \cdots + 49y - 9$
c_2	$y^{21} - 10y^{20} + \cdots + 7117y - 81$
c_3, c_8, c_9	$y^{21} + 31y^{20} + \cdots - 160y - 16$
c_4	$y^{21} + 91y^{20} + \cdots - 4121248y - 300304$
c_6	$y^{21} - 34y^{20} + \cdots + 193y - 9$
c_7, c_{10}	$y^{21} - 3y^{20} + \cdots + 22y - 9$
c_{11}	$y^{21} + 37y^{20} + \cdots + 2158y - 81$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.678453 + 0.688147I$ $a = 0.845365 + 0.796760I$ $b = -0.271568 + 1.062540I$	$-2.57223 - 2.30104I$	$5.12347 + 3.68698I$
$u = -0.678453 - 0.688147I$ $a = 0.845365 - 0.796760I$ $b = -0.271568 - 1.062540I$	$-2.57223 + 2.30104I$	$5.12347 - 3.68698I$
$u = 0.316999 + 0.813917I$ $a = -0.403688 + 0.492380I$ $b = 0.713808 + 0.270061I$	$-2.21076 + 2.09468I$	$3.00496 - 3.91489I$
$u = 0.316999 - 0.813917I$ $a = -0.403688 - 0.492380I$ $b = 0.713808 - 0.270061I$	$-2.21076 - 2.09468I$	$3.00496 + 3.91489I$
$u = 1.145710 + 0.140166I$ $a = 0.239466 - 0.410115I$ $b = -0.264392 + 0.442489I$	$1.11524 + 1.37460I$	$4.04933 + 2.02582I$
$u = 1.145710 - 0.140166I$ $a = 0.239466 + 0.410115I$ $b = -0.264392 - 0.442489I$	$1.11524 - 1.37460I$	$4.04933 - 2.02582I$
$u = -1.134400 + 0.465760I$ $a = -0.130701 - 0.200335I$ $b = -0.21844 - 1.42669I$	$-5.12357 + 0.62763I$	$1.407681 + 0.031302I$
$u = -1.134400 - 0.465760I$ $a = -0.130701 + 0.200335I$ $b = -0.21844 + 1.42669I$	$-5.12357 - 0.62763I$	$1.407681 - 0.031302I$
$u = -0.831921 + 0.976886I$ $a = -0.814769 - 0.824529I$ $b = 0.567067 - 1.129180I$	$-6.41753 - 6.55364I$	$2.05255 + 5.68240I$
$u = -0.831921 - 0.976886I$ $a = -0.814769 + 0.824529I$ $b = 0.567067 + 1.129180I$	$-6.41753 + 6.55364I$	$2.05255 - 5.68240I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.684877+0.126673I$ $a=\ 0.28002+1.72236I$ $b=-0.033686+0.472962I$	$0.91652-2.35539I$	$2.06528+5.30676I$
$u=-0.684877-0.126673I$ $a=\ 0.28002-1.72236I$ $b=-0.033686-0.472962I$	$0.91652+2.35539I$	$2.06528-5.30676I$
$u=-0.153992+0.545893I$ $a=-1.93201-1.20990I$ $b=\ 0.130919-1.391490I$	$-5.17740+1.74265I$	$0.53526-2.03708I$
$u=-0.153992-0.545893I$ $a=-1.93201+1.20990I$ $b=\ 0.130919+1.391490I$	$-5.17740-1.74265I$	$0.53526+2.03708I$
$u=\ 0.515961$ $a=\ 0.725450$ $b=-0.417301$	0.754310	13.3550
$u=\ 1.06707+1.07605I$ $a=\ 0.80534-1.32502I$ $b=-0.08814-1.77927I$	$-12.95410+3.94853I$	$4.46142-1.91994I$
$u=\ 1.06707-1.07605I$ $a=\ 0.80534+1.32502I$ $b=-0.08814+1.77927I$	$-12.95410-3.94853I$	$4.46142+1.91994I$
$u=\ 0.92823+1.31603I$ $a=-0.465176+1.276900I$ $b=-0.01070+1.85472I$	$-17.8929-1.4476I$	$1.24285+0.69389I$
$u=\ 0.92823-1.31603I$ $a=-0.465176-1.276900I$ $b=-0.01070-1.85472I$	$-17.8929+1.4476I$	$1.24285-0.69389I$
$u=\ 1.26765+1.02698I$ $a=-0.95325+1.07681I$ $b=\ 0.18378+1.78761I$	$-16.6802+9.9035I$	$2.37944-4.78800I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.26765 - 1.02698I$		
$a = -0.95325 - 1.07681I$	$-16.6802 - 9.9035I$	$2.37944 + 4.78800I$
$b = 0.18378 - 1.78761I$		

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4a + 4$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_6	$(u^2 - u + 1)^2$
c_2, c_5	$(u^2 + u + 1)^2$
c_3, c_4, c_8 c_9	$(u^2 + 2)^2$
c_7, c_{11}	$(u - 1)^4$
c_{10}	$(u + 1)^4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_5 c_6	$(y^2 + y + 1)^2$
c_3, c_4, c_8 c_9	$(y + 2)^4$
c_7, c_{10}, c_{11}	$(y - 1)^4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = 0.500000 + 0.866025I$ $b = 1.414210I$	$-3.28987 - 2.02988I$	$6.00000 + 3.46410I$
$u = -1.00000$ $a = 0.500000 + 0.866025I$ $b = -1.414210I$	$-3.28987 - 2.02988I$	$6.00000 + 3.46410I$
$u = -1.00000$ $a = 0.500000 - 0.866025I$ $b = 1.414210I$	$-3.28987 + 2.02988I$	$6.00000 - 3.46410I$
$u = -1.00000$ $a = 0.500000 - 0.866025I$ $b = -1.414210I$	$-3.28987 + 2.02988I$	$6.00000 - 3.46410I$

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

(i) Arc colorings

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

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

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

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

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

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

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

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

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

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

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

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4a + 10$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

	Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u =$	1.00000		
$a =$	$0.500000 + 0.866025I$	$1.64493 - 2.02988I$	$12.00000 + 3.46410I$
$b =$	0		
$u =$	1.00000		
$a =$	$0.500000 - 0.866025I$	$1.64493 + 2.02988I$	$12.00000 - 3.46410I$
$b =$	0		

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^2-u+1)^2)(u^2+u+1)(u^{21}-2u^{20}+\cdots+7u-3)$
c_2	$((u^2+u+1)^3)(u^{21}+14u^{20}+\cdots+49u-9)$
c_3, c_8, c_9	$u^2(u^2+2)^2(u^{21}+u^{20}+\cdots+8u-4)$
c_4	$u^2(u^2+2)^2(u^{21}-u^{20}+\cdots-64u-548)$
c_5	$(u^2-u+1)(u^2+u+1)^2(u^{21}-2u^{20}+\cdots+7u-3)$
c_6	$((u^2-u+1)^2)(u^2+u+1)(u^{21}+2u^{20}+\cdots+19u-3)$
c_7	$((u-1)^4)(u+1)^2(u^{21}-3u^{20}+\cdots-2u-3)$
c_{10}	$((u-1)^2)(u+1)^4(u^{21}-3u^{20}+\cdots-2u-3)$
c_{11}	$((u-1)^6)(u^{21}-3u^{20}+\cdots+22u-9)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_5	$((y^2+y+1)^3)(y^{21}+14y^{20}+\cdots+49y-9)$
c_2	$((y^2+y+1)^3)(y^{21}-10y^{20}+\cdots+7117y-81)$
c_3, c_8, c_9	$y^2(y+2)^4(y^{21}+31y^{20}+\cdots-160y-16)$
c_4	$y^2(y+2)^4(y^{21}+91y^{20}+\cdots-4121248y-300304)$
c_6	$((y^2+y+1)^3)(y^{21}-34y^{20}+\cdots+193y-9)$
c_7, c_{10}	$((y-1)^6)(y^{21}-3y^{20}+\cdots+22y-9)$
c_{11}	$((y-1)^6)(y^{21}+37y^{20}+\cdots+2158y-81)$