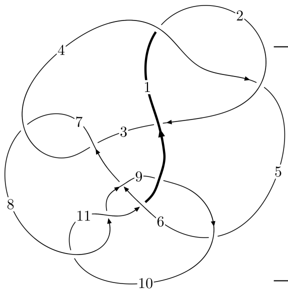
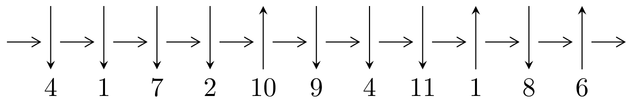
$11n_{41}$ $(K11n_{41})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 5.06381 \times 10^{26} u^{34} + 3.18576 \times 10^{27} u^{33} + \cdots + 7.97336 \times 10^{26} b - 1.25386 \times 10^{26},$$
$$- 4.65925 \times 10^{25} u^{34} + 3.98163 \times 10^{24} u^{33} + \cdots + 7.97336 \times 10^{26} a + 6.92161 \times 10^{26},\ u^{35} + 8u^{34} + \cdots + 9u -$$
$$I_2^u = \langle 10a^5 - 46a^4 + 69a^3 + 18a^2 + 13b - 31a - 12,\ a^6 - 5a^5 + 9a^4 - 2a^3 - 2a^2 - a + 1,\ u - 1\rangle$$
$$I_3^u = \langle b,\ -3u^2 + a - 5u - 4,\ u^3 + u^2 - 1\rangle$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 44 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.

$$\boldsymbol{I_1^u = \langle 5.06\times10^{26}u^{34}+3.19\times10^{27}u^{33}+\cdots+7.97\times10^{26}b-1.25\times10^{26},\ -4.66\times10^{25}u^{34}+3.98\times10^{24}u^{33}+\cdots+7.97\times10^{26}a+6.92\times10^{26},\ u^{35}+8u^{34}+\cdots+9u+1\rangle}$$

(i) Arc colorings

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

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

$$a_2 = \begin{pmatrix}1\\u^2\end{pmatrix}$$

$$a_5 = \begin{pmatrix}-u\\-u^3+u\end{pmatrix}$$

$$a_{10} = \begin{pmatrix}0.0584352u^{34}-0.00499367u^{33}+\cdots+87.4344u-0.868092\\-0.635091u^{34}-3.99551u^{33}+\cdots+1.26311u+0.157257\end{pmatrix}$$

$$a_6 = \begin{pmatrix}-1.72094u^{34}-17.6948u^{33}+\cdots+67.6060u+13.1818\\-0.291426u^{34}-1.97724u^{33}+\cdots-9.21351u-0.566549\end{pmatrix}$$

$$a_9 = \begin{pmatrix}0.693526u^{34}+3.99051u^{33}+\cdots+86.1713u-1.02535\\-0.635091u^{34}-3.99551u^{33}+\cdots+1.26311u+0.157257\end{pmatrix}$$

$$a_7 = \begin{pmatrix}0.135945u^{34}+1.32830u^{33}+\cdots+28.8699u-0.0316372\\0.201606u^{34}+1.17050u^{33}+\cdots+2.73205u+0.337551\end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix}-0.242664u^{34}-0.573718u^{33}+\cdots-63.3575u-0.192908\\0.239495u^{34}+1.52839u^{33}+\cdots-0.429444u-0.0968115\end{pmatrix}$$

$$a_8 = \begin{pmatrix}0.135945u^{34}+1.32830u^{33}+\cdots+28.8699u-0.0316372\\-0.239495u^{34}-1.52839u^{33}+\cdots+0.429444u+0.0968115\end{pmatrix}$$

$$a_8 = \begin{pmatrix}0.135945u^{34}+1.32830u^{33}+\cdots+28.8699u-0.0316372\\-0.239495u^{34}-1.52839u^{33}+\cdots+0.429444u+0.0968115\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$$= -\frac{3378359165600571190629683677}{3986681917292529601112 15152}u^{34}-\frac{1552639970273317649970593 1937}{1993340958646264800556075 76}u^{33}+\cdots+\frac{6547413537166942371334987 7783}{3986681917292529601112 15152}u+\frac{2429897091838954454446349621}{1993340958646264800556075 76}$$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{35} - 8u^{34} + \cdots + 9u - 1$
c_2	$u^{35} + 42u^{34} + \cdots - 129u + 1$
c_3, c_7	$u^{35} + 2u^{34} + \cdots - 320u - 64$
c_5	$u^{35} - 4u^{34} + \cdots + 1417u + 1219$
c_6	$u^{35} - 8u^{34} + \cdots + 73u + 31$
c_8, c_{10}	$u^{35} - 5u^{34} + \cdots + 67u - 1$
c_9	$u^{35} + 6u^{34} + \cdots + 124u - 8$
c_{11}	$u^{35} + 3u^{34} + \cdots + 2u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{35} - 42y^{34} + \cdots - 129y - 1$
c_2	$y^{35} - 90y^{34} + \cdots + 6323y - 1$
c_3, c_7	$y^{35} - 36y^{34} + \cdots - 20480y - 4096$
c_5	$y^{35} - 4y^{34} + \cdots + 25178641y - 1485961$
c_6	$y^{35} - 52y^{34} + \cdots + 29509y - 961$
c_8, c_{10}	$y^{35} - 33y^{34} + \cdots + 5091y - 1$
c_9	$y^{35} + 18y^{34} + \cdots + 7312y - 64$
c_{11}	$y^{35} + y^{34} + \cdots + 14y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.964380 + 0.326022I$ $a = -1.34533 - 1.00277I$ $b = 1.165200 + 0.364382I$	$-4.47629 - 0.99972I$	$-15.2464 + 0.4133I$
$u = 0.964380 - 0.326022I$ $a = -1.34533 + 1.00277I$ $b = 1.165200 - 0.364382I$	$-4.47629 + 0.99972I$	$-15.2464 - 0.4133I$
$u = 0.679243 + 0.583622I$ $a = 0.692444 - 0.020033I$ $b = -0.491434 + 1.250360I$	$-1.63296 - 3.48211I$	$-7.94104 + 7.54592I$
$u = 0.679243 - 0.583622I$ $a = 0.692444 + 0.020033I$ $b = -0.491434 - 1.250360I$	$-1.63296 + 3.48211I$	$-7.94104 - 7.54592I$
$u = -0.990139 + 0.655507I$ $a = -0.328445 - 0.034132I$ $b = -0.537541 + 0.273251I$	$1.54213 + 2.47872I$	$0. + 5.93000I$
$u = -0.990139 - 0.655507I$ $a = -0.328445 + 0.034132I$ $b = -0.537541 - 0.273251I$	$1.54213 - 2.47872I$	$0. - 5.93000I$
$u = 1.204600 + 0.063415I$ $a = -1.45117 - 1.83159I$ $b = -0.035022 - 0.979858I$	$-3.08874 + 1.42303I$	$-6.41632 - 5.79805I$
$u = 1.204600 - 0.063415I$ $a = -1.45117 + 1.83159I$ $b = -0.035022 + 0.979858I$	$-3.08874 - 1.42303I$	$-6.41632 + 5.79805I$
$u = 0.779230$ $a = -0.816856$ $b = -0.118472$	-1.12597	-9.35810
$u = 0.605532 + 0.380104I$ $a = -1.43703 + 0.00546I$ $b = -0.043259 - 0.568475I$	$-1.46738 - 0.11420I$	$-8.20214 + 0.34884I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.605532 - 0.380104I$ $a = -1.43703 - 0.00546I$ $b = -0.043259 + 0.568475I$	$-1.46738 + 0.11420I$	$-8.20214 - 0.34884I$
$u = 0.704998$ $a = 12.6158$ $b = -0.141812$	-2.72892	194.390
$u = -0.686181 + 0.154265I$ $a = 0.838455 - 0.370991I$ $b = 0.977826 - 0.650468I$	$-1.08296 - 5.42643I$	$-0.21975 + 3.30530I$
$u = -0.686181 - 0.154265I$ $a = 0.838455 + 0.370991I$ $b = 0.977826 + 0.650468I$	$-1.08296 + 5.42643I$	$-0.21975 - 3.30530I$
$u = 0.730316 + 1.119100I$ $a = -0.586120 - 0.340107I$ $b = 0.70143 - 1.39478I$	$-7.84770 - 8.00129I$	0
$u = 0.730316 - 1.119100I$ $a = -0.586120 + 0.340107I$ $b = 0.70143 + 1.39478I$	$-7.84770 + 8.00129I$	0
$u = 0.656190 + 1.188230I$ $a = 0.395829 - 0.005674I$ $b = 0.109496 + 1.311600I$	$-7.58070 + 0.56154I$	0
$u = 0.656190 - 1.188230I$ $a = 0.395829 + 0.005674I$ $b = 0.109496 - 1.311600I$	$-7.58070 - 0.56154I$	0
$u = -1.63022 + 0.11868I$ $a = -0.279124 + 1.207660I$ $b = 0.397690 + 0.969208I$	$-9.25057 + 1.88240I$	0
$u = -1.63022 - 0.11868I$ $a = -0.279124 - 1.207660I$ $b = 0.397690 - 0.969208I$	$-9.25057 - 1.88240I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.294421 + 0.137620I$ $a = -1.30767 - 1.56416I$ $b = -0.805847 - 0.442462I$	$1.40601 + 1.20005I$	$2.74470 - 1.99044I$
$u = -0.294421 - 0.137620I$ $a = -1.30767 + 1.56416I$ $b = -0.805847 + 0.442462I$	$1.40601 - 1.20005I$	$2.74470 + 1.99044I$
$u = -1.68600$ $a = 0.808929$ $b = -0.920335$	-11.4779	0
$u = -1.68299 + 0.18586I$ $a = -0.18783 - 1.58377I$ $b = -1.25568 - 1.90551I$	$-9.90660 + 6.51942I$	0
$u = -1.68299 - 0.18586I$ $a = -0.18783 + 1.58377I$ $b = -1.25568 + 1.90551I$	$-9.90660 - 6.51942I$	0
$u = -1.70107 + 0.39786I$ $a = -0.17360 + 1.42986I$ $b = 1.20989 + 1.48650I$	$-15.7071 + 13.7623I$	0
$u = -1.70107 - 0.39786I$ $a = -0.17360 - 1.42986I$ $b = 1.20989 - 1.48650I$	$-15.7071 - 13.7623I$	0
$u = 1.74717 + 0.03675I$ $a = 0.316839 + 1.172530I$ $b = 0.41033 + 1.45360I$	$-10.19430 + 4.27290I$	0
$u = 1.74717 - 0.03675I$ $a = 0.316839 - 1.172530I$ $b = 0.41033 - 1.45360I$	$-10.19430 - 4.27290I$	0
$u = -1.75068 + 0.06096I$ $a = 0.777922 - 1.044170I$ $b = 1.93922 - 1.67518I$	$-14.4753 + 2.5419I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.75068-0.06096I$ $a=\ 0.777922+1.044170I$ $b=\ 1.93922+1.67518I$	$-14.4753-2.5419I$	0
$u=-1.72022+0.43828I$ $a=\ 0.296229-1.018870I$ $b=-0.61061-1.35195I$	$-15.2163+5.6356I$	0
$u=-1.72022-0.43828I$ $a=\ 0.296229+1.018870I$ $b=-0.61061+1.35195I$	$-15.2163-5.6356I$	0
$u=-0.0306219+0.0974691I$ $a=-7.02532+6.31954I$ $b=\ 0.458623+0.535266I$	$-1.92040-0.80331I$	$-4.44102-0.15082I$
$u=-0.0306219-0.0974691I$ $a=-7.02532-6.31954I$ $b=\ 0.458623-0.535266I$	$-1.92040+0.80331I$	$-4.44102+0.15082I$

II.

$$\boldsymbol{I_2^u = \langle 10a^5 + 13b + \cdots - 31a - 12,\ a^6 - 5a^5 + 9a^4 - 2a^3 - 2a^2 - a + 1,\ u - 1\rangle}$$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} a \\ -0.769231a^5 + 3.53846a^4 + \cdots + 2.38462a + 0.923077 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -0.307692a^5 + 1.61538a^4 + \cdots + 0.153846a - 0.230769 \\ -1.15385a^5 + 5.30769a^4 + \cdots + 0.0769231a + 2.38462 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0.769231a^5 - 3.53846a^4 + \cdots - 1.38462a - 0.923077 \\ -0.769231a^5 + 3.53846a^4 + \cdots + 2.38462a + 0.923077 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0 \\ -2.30769a^5 + 10.6154a^4 + \cdots + 1.15385a + 2.76923 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} a \\ -2.30769a^5 + 10.6154a^4 + \cdots + 1.15385a + 2.76923 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 0 \\ -2.30769a^5 + 10.6154a^4 + \cdots + 1.15385a + 2.76923 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 0 \\ -2.30769a^5 + 10.6154a^4 + \cdots + 1.15385a + 2.76923 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= \frac{7}{13}a^5 - \frac{40}{13}a^4 + \frac{112}{13}a^3 - \frac{146}{13}a^2 + \frac{120}{13}a - \frac{115}{13}$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y-1)^6$
c_3, c_7	y^6
c_5, c_8, c_9 c_{10}	$y^6 - 3y^5 + 5y^4 - 4y^3 + 2y^2 - y + 1$
c_6, c_{11}	$y^6 + y^5 + 5y^4 + 6y^2 + 3y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.00000$ $a = 0.655968 + 0.098281I$ $b = 1.002190 - 0.295542I$	$0.245672 - 0.924305I$	$-5.68949 + 0.25702I$
$u = 1.00000$ $a = 0.655968 - 0.098281I$ $b = 1.002190 + 0.295542I$	$0.245672 + 0.924305I$	$-5.68949 - 0.25702I$
$u = 1.00000$ $a = -0.415113 + 0.381252I$ $b = -1.073950 + 0.558752I$	$-1.64493 - 5.69302I$	$-11.7058 + 8.3306I$
$u = 1.00000$ $a = -0.415113 - 0.381252I$ $b = -1.073950 - 0.558752I$	$-1.64493 + 5.69302I$	$-11.7058 - 8.3306I$
$u = 1.00000$ $a = 2.25915 + 1.43225I$ $b = -0.428243 + 0.664531I$	$-3.53554 + 0.92430I$	$-12.60470 + 5.55069I$
$u = 1.00000$ $a = 2.25915 - 1.43225I$ $b = -0.428243 - 0.664531I$	$-3.53554 - 0.92430I$	$-12.60470 - 5.55069I$

III. $I_3^u = \langle b,\ -3u^2 + a - 5u - 4,\ u^3 + u^2 - 1\rangle$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -u \\ u^2 + u - 1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 3u^2 + 5u + 4 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 9u^2 + 15u + 12 \\ u^2 + u - 1 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 3u^2 + 5u + 4 \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u \\ u^2 + u - 1 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u^2 + 1 \\ u^2 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 3u^2 + 6u + 4 \\ -2u^2 - u + 2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u \\ 2u^2 + u - 2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u \\ 2u^2 + u - 2 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -21u^2 - 53u - 51$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^3 - y^2 + 2y - 1$
c_2, c_3, c_7	$y^3 + 3y^2 + 2y - 1$
c_5, c_6	$y^3 - 10y^2 + 5y - 1$
c_8, c_{10}	$(y - 1)^3$
c_9	y^3
c_{11}	$y^3 - 5y^2 + 10y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.877439 + 0.744862I$ $a = 0.258045 - 0.197115I$ $b = 0$	$1.37919 + 2.82812I$	$-9.0124 - 12.0277I$
$u = -0.877439 - 0.744862I$ $a = 0.258045 + 0.197115I$ $b = 0$	$1.37919 - 2.82812I$	$-9.0124 + 12.0277I$
$u = 0.754878$ $a = 9.48391$ $b = 0$	-2.75839	-102.980

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^6)(u^3+u^2-1)(u^{35}-8u^{34}+\cdots+9u-1)$
c_2	$((u+1)^6)(u^3+u^2+2u+1)(u^{35}+42u^{34}+\cdots-129u+1)$
c_3	$u^6(u^3-u^2+2u-1)(u^{35}+2u^{34}+\cdots-320u-64)$
c_4	$((u+1)^6)(u^3-u^2+1)(u^{35}-8u^{34}+\cdots+9u-1)$
c_5	$(u^3+2u^2-3u+1)(u^6-u^5-u^4+2u^3-u+1)$ $\cdot(u^{35}-4u^{34}+\cdots+1417u+1219)$
c_6	$(u^3+2u^2-3u+1)(u^6-3u^5+5u^4-4u^3+2u^2-u+1)$ $\cdot(u^{35}-8u^{34}+\cdots+73u+31)$
c_7	$u^6(u^3+u^2+2u+1)(u^{35}+2u^{34}+\cdots-320u-64)$
c_8	$((u-1)^3)(u^6+u^5+\cdots+u+1)(u^{35}-5u^{34}+\cdots+67u-1)$
c_9	$u^3(u^6-u^5+\cdots-u+1)(u^{35}+6u^{34}+\cdots+124u-8)$
c_{10}	$((u+1)^3)(u^6-u^5+\cdots-u+1)(u^{35}-5u^{34}+\cdots+67u-1)$
c_{11}	$(u^3+3u^2+2u-1)(u^6-3u^5+5u^4-4u^3+2u^2-u+1)$ $\cdot(u^{35}+3u^{34}+\cdots+2u+1)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4	$((y-1)^6)(y^3-y^2+2y-1)(y^{35}-42y^{34}+\cdots-129y-1)$
c_2	$((y-1)^6)(y^3+3y^2+2y-1)(y^{35}-90y^{34}+\cdots+6323y-1)$
c_3, c_7	$y^6(y^3+3y^2+2y-1)(y^{35}-36y^{34}+\cdots-20480y-4096)$
c_5	$(y^3-10y^2+5y-1)(y^6-3y^5+5y^4-4y^3+2y^2-y+1)$ $\cdot(y^{35}-4y^{34}+\cdots+25178641y-1485961)$
c_6	$(y^3-10y^2+5y-1)(y^6+y^5+5y^4+6y^2+3y+1)$ $\cdot(y^{35}-52y^{34}+\cdots+29509y-961)$
c_8, c_{10}	$(y-1)^3(y^6-3y^5+5y^4-4y^3+2y^2-y+1)$ $\cdot(y^{35}-33y^{34}+\cdots+5091y-1)$
c_9	$y^3(y^6-3y^5+\cdots-y+1)(y^{35}+18y^{34}+\cdots+7312y-64)$
c_{11}	$(y^3-5y^2+10y-1)(y^6+y^5+5y^4+6y^2+3y+1)$ $\cdot(y^{35}+y^{34}+\cdots+14y-1)$