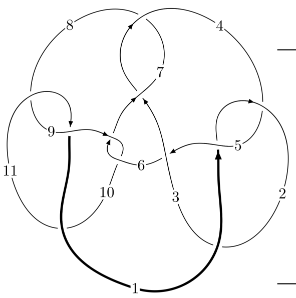
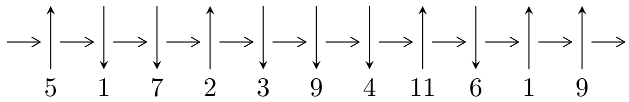
$11n_4$ ($K11n_4$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned} I_1^u = \langle & 9579649u^{28} + 28051230u^{27} + \cdots + 44628149b - 26156718, \\ & -402165u^{28} - 18012803u^{27} + \cdots + 44628149a - 25970340,\ u^{29} + 2u^{28} + \cdots - u + 1\rangle \\ I_2^u = \langle & b - 1,\ u^4 - u^3 + 2u^2 + a - u + 1,\ u^5 - u^4 + 2u^3 - u^2 + u - 1\rangle \end{aligned}$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 34 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.

$\boldsymbol{I_1^u = \langle 9.58\times 10^6 u^{28} + 2.81\times 10^7 u^{27} + \cdots + 4.46\times 10^7 b - 2.62\times 10^7,\ -4.02\times 10^5 u^{28} - 1.80\times 10^7 u^{27} + \cdots + 4.46\times 10^7 a - 2.60\times 10^7,\ u^{29} + 2u^{28} + \cdots - u + 1\rangle}$

(i) Arc colorings

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

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

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

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

$$a_6 = \begin{pmatrix} -u^5 - 2u^3 - u \\ u^5 + u^3 + u \end{pmatrix}$$

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

$$a_9 = \begin{pmatrix} 0.00901146u^{28} + 0.403620u^{27} + \cdots + 0.0183714u + 0.581927 \\ -0.214655u^{28} - 0.628555u^{27} + \cdots + 0.800456u + 0.586104 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -0.250701u^{28} - 0.243034u^{27} + \cdots + 0.726970u + 1.25839 \\ -0.141381u^{28} - 0.485781u^{27} + \cdots + 0.798176u + 0.655586 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 1.26592u^{28} + 2.07814u^{27} + \cdots - 1.78235u - 0.0609626 \\ -0.853451u^{28} - 1.71445u^{27} + \cdots + 0.995441u - 0.861036 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0.667701u^{28} + 1.07191u^{27} + \cdots - 2.17896u - 0.0640826 \\ -0.263489u^{28} - 0.531459u^{27} + \cdots + 0.603619u - 0.667701 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -0.109320u^{28} + 0.242748u^{27} + \cdots - 0.0712062u + 0.602809 \\ -0.141381u^{28} - 0.485781u^{27} + \cdots + 0.798176u + 0.655586 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -0.109320u^{28} + 0.242748u^{27} + \cdots - 0.0712062u + 0.602809 \\ -0.141381u^{28} - 0.485781u^{27} + \cdots + 0.798176u + 0.655586 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{2569949}{44628149}u^{28} - \frac{167545923}{44628149}u^{27} + \cdots - \frac{46388860}{44628149}u + \frac{58164951}{44628149}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{29} + 2u^{28} + \cdots - u + 1$
c_2	$u^{29} + 12u^{28} + \cdots - 5u - 1$
c_3, c_7	$u^{29} + 2u^{28} + \cdots + u + 1$
c_5	$u^{29} - 2u^{28} + \cdots - 65u + 17$
c_6, c_9	$u^{29} - 5u^{28} + \cdots + 24u^2 + 32$
c_8, c_{11}	$u^{29} + 6u^{28} + \cdots + 5u + 1$
c_{10}	$u^{29} - 36u^{28} + \cdots - 183u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{29} + 12y^{28} + \cdots - 5y - 1$
c_2	$y^{29} + 12y^{28} + \cdots - 89y - 1$
c_3, c_7	$y^{29} + 30y^{27} + \cdots - 5y - 1$
c_5	$y^{29} + 12y^{28} + \cdots - 13285y - 289$
c_6, c_9	$y^{29} + 33y^{28} + \cdots - 1536y - 1024$
c_8, c_{11}	$y^{29} - 36y^{28} + \cdots - 183y - 1$
c_{10}	$y^{29} - 80y^{28} + \cdots + 16377y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.387233 + 0.859940I$ $a = 0.839842 - 0.200433I$ $b = -0.0183680 - 0.0952600I$	$-0.34137 + 1.65783I$	$-2.51721 - 4.37356I$
$u = 0.387233 - 0.859940I$ $a = 0.839842 + 0.200433I$ $b = -0.0183680 + 0.0952600I$	$-0.34137 - 1.65783I$	$-2.51721 + 4.37356I$
$u = 0.525029 + 0.781903I$ $a = -1.45815 - 1.69363I$ $b = 0.960834 - 0.144408I$	$1.78487 + 1.57609I$	$0.9666 - 16.5900I$
$u = 0.525029 - 0.781903I$ $a = -1.45815 + 1.69363I$ $b = 0.960834 + 0.144408I$	$1.78487 - 1.57609I$	$0.9666 + 16.5900I$
$u = -0.654583 + 0.675856I$ $a = -0.197062 - 0.780511I$ $b = 0.929333 + 1.022590I$	$3.12622 + 1.43345I$	$4.04144 - 2.82912I$
$u = -0.654583 - 0.675856I$ $a = -0.197062 + 0.780511I$ $b = 0.929333 - 1.022590I$	$3.12622 - 1.43345I$	$4.04144 + 2.82912I$
$u = -0.925881 + 0.518414I$ $a = 1.81441 + 0.23795I$ $b = -1.71997 - 0.32324I$	$11.74770 + 6.59261I$	$3.06245 - 2.55361I$
$u = -0.925881 - 0.518414I$ $a = 1.81441 - 0.23795I$ $b = -1.71997 + 0.32324I$	$11.74770 - 6.59261I$	$3.06245 + 2.55361I$
$u = 0.937398 + 0.500154I$ $a = 1.79802 - 0.06455I$ $b = -1.70627 - 0.02414I$	$11.61340 + 1.70244I$	$3.44440 - 1.84569I$
$u = 0.937398 - 0.500154I$ $a = 1.79802 + 0.06455I$ $b = -1.70627 + 0.02414I$	$11.61340 - 1.70244I$	$3.44440 + 1.84569I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.662767 + 0.848656I$ $a = -1.81457 - 1.32278I$ $b = 1.81677 - 0.13637I$	$5.01547 - 2.56835I$	$6.29777 + 3.45072I$
$u = -0.662767 - 0.848656I$ $a = -1.81457 + 1.32278I$ $b = 1.81677 + 0.13637I$	$5.01547 + 2.56835I$	$6.29777 - 3.45072I$
$u = 0.567900 + 0.933831I$ $a = -0.28660 + 1.95388I$ $b = 0.704163 + 0.280595I$	$1.23273 + 2.84215I$	$0.371066 + 0.581587I$
$u = 0.567900 - 0.933831I$ $a = -0.28660 - 1.95388I$ $b = 0.704163 - 0.280595I$	$1.23273 - 2.84215I$	$0.371066 - 0.581587I$
$u = -0.043975 + 0.873551I$ $a = 1.118610 + 0.586417I$ $b = 0.157858 + 0.616140I$	$-1.21438 + 1.50101I$	$-6.11641 - 3.93982I$
$u = -0.043975 - 0.873551I$ $a = 1.118610 - 0.586417I$ $b = 0.157858 - 0.616140I$	$-1.21438 - 1.50101I$	$-6.11641 + 3.93982I$
$u = -0.637441 + 0.973302I$ $a = -1.34495 - 0.55786I$ $b = 0.69848 - 1.23040I$	$2.23506 - 6.49074I$	$1.39267 + 8.34462I$
$u = -0.637441 - 0.973302I$ $a = -1.34495 + 0.55786I$ $b = 0.69848 + 1.23040I$	$2.23506 + 6.49074I$	$1.39267 - 8.34462I$
$u = -0.461488 + 1.163620I$ $a = 0.358541 + 0.419840I$ $b = -0.655831 - 0.154039I$	$-4.83578 - 4.15032I$	$-10.94337 + 1.86325I$
$u = -0.461488 - 1.163620I$ $a = 0.358541 - 0.419840I$ $b = -0.655831 + 0.154039I$	$-4.83578 + 4.15032I$	$-10.94337 - 1.86325I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.017652 + 1.279430I$ $a = -0.248173 - 0.176688I$ $b = -1.56169 - 0.18501I$	$4.96946 + 4.25609I$	$-1.11871 - 2.71437I$
$u = 0.017652 - 1.279430I$ $a = -0.248173 + 0.176688I$ $b = -1.56169 + 0.18501I$	$4.96946 - 4.25609I$	$-1.11871 + 2.71437I$
$u = -0.697556 + 1.121820I$ $a = 1.35862 + 1.61660I$ $b = -1.69014 + 0.41795I$	$9.9003 - 12.5531I$	$0.87648 + 6.84593I$
$u = -0.697556 - 1.121820I$ $a = 1.35862 - 1.61660I$ $b = -1.69014 - 0.41795I$	$9.9003 + 12.5531I$	$0.87648 - 6.84593I$
$u = 0.697068 + 1.137050I$ $a = 0.98961 - 1.53355I$ $b = -1.66331 - 0.08384I$	$9.66493 + 4.29038I$	$1.47355 - 2.52385I$
$u = 0.697068 - 1.137050I$ $a = 0.98961 + 1.53355I$ $b = -1.66331 + 0.08384I$	$9.66493 - 4.29038I$	$1.47355 + 2.52385I$
$u = -0.659229$ $a = 1.11847$ $b = -0.442580$	-1.67720	-6.86830
$u = 0.281024 + 0.265729I$ $a = 1.012610 - 0.151234I$ $b = 0.969423 + 0.291280I$	$1.86776 + 0.92254I$	$4.20343 - 0.65997I$
$u = 0.281024 - 0.265729I$ $a = 1.012610 + 0.151234I$ $b = 0.969423 - 0.291280I$	$1.86776 - 0.92254I$	$4.20343 + 0.65997I$

II. $I_2^u = \langle b-1,\ u^4-u^3+2u^2+a-u+1,\ u^5-u^4+2u^3-u^2+u-1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 3u^4+3u^3-4u^2+8u-3$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^5 + 3y^4 + 4y^3 + y^2 - y - 1$
c_2	$y^5 - y^4 + 8y^3 - 3y^2 + 3y - 1$
c_3, c_5, c_7	$y^5 - 5y^4 + 8y^3 - 3y^2 - y - 1$
c_6, c_9	y^5
c_8, c_{10}, c_{11}	$(y-1)^5$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.339110 + 0.822375I$ $a = 0.428550 + 1.039280I$ $b = 1.00000$	$1.31583 - 1.53058I$	$-1.50865 + 9.87103I$
$u = -0.339110 - 0.822375I$ $a = 0.428550 - 1.039280I$ $b = 1.00000$	$1.31583 + 1.53058I$	$-1.50865 - 9.87103I$
$u = 0.766826$ $a = -1.30408$ $b = 1.00000$	-0.756147	3.17260
$u = 0.455697 + 1.200150I$ $a = -0.276511 + 0.728237I$ $b = 1.00000$	$-4.22763 + 4.40083I$	$0.92237 - 5.80708I$
$u = 0.455697 - 1.200150I$ $a = -0.276511 - 0.728237I$ $b = 1.00000$	$-4.22763 - 4.40083I$	$0.92237 + 5.80708I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^5 - u^4 + 2u^3 - u^2 + u - 1)(u^{29} + 2u^{28} + \cdots - u + 1)$
c_2	$(u^5 + 3u^4 + 4u^3 + u^2 - u - 1)(u^{29} + 12u^{28} + \cdots - 5u - 1)$
c_3	$(u^5 + u^4 - 2u^3 - u^2 + u - 1)(u^{29} + 2u^{28} + \cdots + u + 1)$
c_4	$(u^5 + u^4 + 2u^3 + u^2 + u + 1)(u^{29} + 2u^{28} + \cdots - u + 1)$
c_5	$(u^5 - u^4 - 2u^3 + u^2 + u + 1)(u^{29} - 2u^{28} + \cdots - 65u + 17)$
c_6, c_9	$u^5(u^{29} - 5u^{28} + \cdots + 24u^2 + 32)$
c_7	$(u^5 - u^4 - 2u^3 + u^2 + u + 1)(u^{29} + 2u^{28} + \cdots + u + 1)$
c_8	$((u + 1)^5)(u^{29} + 6u^{28} + \cdots + 5u + 1)$
c_{10}	$((u + 1)^5)(u^{29} - 36u^{28} + \cdots - 183u - 1)$
c_{11}	$((u - 1)^5)(u^{29} + 6u^{28} + \cdots + 5u + 1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4	$(y^5+3y^4+4y^3+y^2-y-1)(y^{29}+12y^{28}+\cdots-5y-1)$
c_2	$(y^5-y^4+8y^3-3y^2+3y-1)(y^{29}+12y^{28}+\cdots-89y-1)$
c_3, c_7	$(y^5-5y^4+8y^3-3y^2-y-1)(y^{29}+30y^{27}+\cdots-5y-1)$
c_5	$(y^5-5y^4+8y^3-3y^2-y-1)(y^{29}+12y^{28}+\cdots-13285y-289)$
c_6, c_9	$y^5(y^{29}+33y^{28}+\cdots-1536y-1024)$
c_8, c_{11}	$((y-1)^5)(y^{29}-36y^{28}+\cdots-183y-1)$
c_{10}	$((y-1)^5)(y^{29}-80y^{28}+\cdots+16377y-1)$