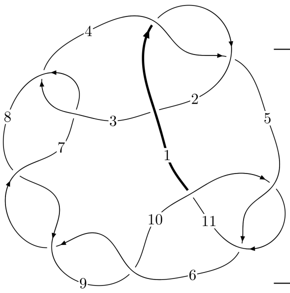
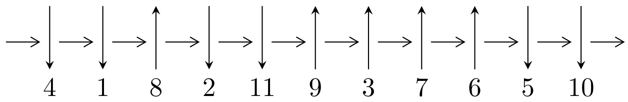
$11a_{46}$ ($K11a_{46}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned} I_1^u = \langle &-u^{15} - u^{14} + 3u^{13} + 4u^{12} - 4u^{11} - 7u^{10} - u^9 + 4u^8 + 4u^7 + 2u^6 - 4u^5 - 4u^4 - u^3 + u^2 + b, \\ &u^{15} + u^{14} - 3u^{13} - 4u^{12} + 4u^{11} + 7u^{10} + u^9 - 4u^8 - 4u^7 - 2u^6 + 4u^5 + 4u^4 + 2u^3 - u^2 + a, \\ &u^{16} + u^{15} - 4u^{14} - 5u^{13} + 7u^{12} + 11u^{11} - 3u^{10} - 11u^9 - 5u^8 + 2u^7 + 8u^6 + 6u^5 - 2u^4 - 5u^3 - u^2 + u + 1\rangle \\ I_2^u = \langle &-u^{26} + 8u^{24} + \cdots + 3u^2 + b,\ 2u^{27} + u^{26} + \cdots + a - 3,\ u^{28} + u^{27} + \cdots - 2u - 1\rangle \\ I_3^u = \langle &b - 1,\ a + 2,\ u - 1\rangle \end{aligned}$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 45 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.

$\boldsymbol{I^u_1 = \langle -u^{15} - u^{14} + \cdots + u^2 + b,\ u^{15} + u^{14} + \cdots - u^2 + a,\ u^{16} + u^{15} + \cdots + u + 1\rangle}$

(i) Arc colorings

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

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

$$a_2 = \begin{pmatrix} -u^{15} - u^{14} + \cdots - 2u^3 + u^2 \\ u^{15} + u^{14} + \cdots + u^3 - u^2 \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} u^{14} + u^{13} + \cdots + u^2 - u \\ -u^{14} - u^{13} + \cdots + u + 1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u^3 \\ u^5 - u^3 + u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -u^{15} - u^{14} + \cdots - 2u^3 + u^2 \\ u^{15} + u^{14} + \cdots + 4u^4 - u^2 \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} u^6 - u^4 + 1 \\ -u^6 + 2u^4 - u^2 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} u^9 - 2u^7 + u^5 + 2u^3 - u \\ -u^9 + 3u^7 - 3u^5 + u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} u^9 - 2u^7 + u^5 + 2u^3 - u \\ -u^9 + 3u^7 - 3u^5 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 2u^{15} + 6u^{14} - 6u^{13} - 24u^{12} + 4u^{11} + 46u^{10} + 14u^9 - 32u^8 - 28u^7 - 4u^6 + 16u^5 + 32u^4 + 4u^3 - 10u^2 - 10u + 2$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4, c_5 c_{10}	$u^{16} - u^{15} + \cdots - u + 1$
c_2, c_{11}	$u^{16} + 9u^{15} + \cdots + 3u + 1$
c_3, c_7	$u^{16} + 3u^{15} + \cdots + 2u + 2$
c_6, c_8, c_9	$u^{16} - 3u^{15} + \cdots - 11u^2 + 4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_5 c_{10}	$y^{16} - 9y^{15} + \cdots - 3y + 1$
c_2, c_{11}	$y^{16} - y^{15} + \cdots + 5y + 1$
c_3, c_7	$y^{16} - 3y^{15} + \cdots - 11y^2 + 4$
c_6, c_8, c_9	$y^{16} + 17y^{15} + \cdots - 88y + 16$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.807171 + 0.504072I$ $a = -0.65855 - 1.36972I$ $b = 0.569167 + 0.512553I$	$1.82651 + 4.13679I$	$2.56414 - 7.87070I$
$u = -0.807171 - 0.504072I$ $a = -0.65855 + 1.36972I$ $b = 0.569167 - 0.512553I$	$1.82651 - 4.13679I$	$2.56414 + 7.87070I$
$u = 1.048260 + 0.400216I$ $a = 1.81547 - 2.15452I$ $b = -2.46363 + 0.89931I$	$-4.21490 - 4.31562I$	$-7.10271 + 5.64590I$
$u = 1.048260 - 0.400216I$ $a = 1.81547 + 2.15452I$ $b = -2.46363 - 0.89931I$	$-4.21490 + 4.31562I$	$-7.10271 - 5.64590I$
$u = -0.034491 + 0.874872I$ $a = -0.0293241 - 0.1171040I$ $b = -0.049834 + 0.783610I$	$-5.17406 - 3.14776I$	$-1.28039 + 2.42611I$
$u = -0.034491 - 0.874872I$ $a = -0.0293241 + 0.1171040I$ $b = -0.049834 - 0.783610I$	$-5.17406 + 3.14776I$	$-1.28039 - 2.42611I$
$u = -1.079150 + 0.504952I$ $a = -1.83629 - 1.53825I$ $b = 2.26756 - 0.09714I$	$-2.62432 + 9.39287I$	$-3.86862 - 9.95391I$
$u = -1.079150 - 0.504952I$ $a = -1.83629 + 1.53825I$ $b = 2.26756 + 0.09714I$	$-2.62432 - 9.39287I$	$-3.86862 + 9.95391I$
$u = 0.735290 + 0.237976I$ $a = -0.78828 - 1.71780I$ $b = 0.51567 + 1.34529I$	$-1.32039 - 1.29101I$	$-3.35201 + 4.88471I$
$u = 0.735290 - 0.237976I$ $a = -0.78828 + 1.71780I$ $b = 0.51567 - 1.34529I$	$-1.32039 + 1.29101I$	$-3.35201 - 4.88471I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.255070 + 0.472625I$ $a = 2.56417 - 1.25500I$ $b = -3.70009 - 0.87285I$	$-12.8673 - 6.3576I$	$-8.01117 + 3.79413I$
$u = 1.255070 - 0.472625I$ $a = 2.56417 + 1.25500I$ $b = -3.70009 + 0.87285I$	$-12.8673 + 6.3576I$	$-8.01117 - 3.79413I$
$u = -1.258180 + 0.499599I$ $a = -2.49673 - 1.17352I$ $b = 3.54634 - 1.07442I$	$-12.4913 + 13.0634I$	$-7.30770 - 8.20106I$
$u = -1.258180 - 0.499599I$ $a = -2.49673 + 1.17352I$ $b = 3.54634 + 1.07442I$	$-12.4913 - 13.0634I$	$-7.30770 + 8.20106I$
$u = -0.359617 + 0.529211I$ $a = -0.070464 - 0.486206I$ $b = -0.185176 + 0.429100I$	$1.49968 - 0.85752I$	$4.35846 + 1.06718I$
$u = -0.359617 - 0.529211I$ $a = -0.070464 + 0.486206I$ $b = -0.185176 - 0.429100I$	$1.49968 + 0.85752I$	$4.35846 - 1.06718I$

II.

$$\boldsymbol{I_2^u = \langle -u^{26}+8u^{24}+\cdots+3u^2+b,\ 2u^{27}+u^{26}+\cdots+a-3,\ u^{28}+u^{27}+\cdots-2u-1\rangle}$$

(i) Arc colorings

$$a_6 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_2 = \begin{pmatrix}-2u^{27}-u^{26}+\cdots+4u+3\\u^{26}-8u^{24}+\cdots-4u^3-3u^2\end{pmatrix}$$
$$a_5 = \begin{pmatrix}1\\-u^2\end{pmatrix}$$
$$a_4 = \begin{pmatrix}2u^{27}-17u^{25}+\cdots-5u-3\\u^{25}-7u^{23}+\cdots+4u^2+u\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}u\\-u^3+u\end{pmatrix}$$
$$a_1 = \begin{pmatrix}-u^3\\u^5-u^3+u\end{pmatrix}$$
$$a_3 = \begin{pmatrix}-2u^{27}+16u^{25}+\cdots+5u+3\\u^{22}-6u^{20}+\cdots-3u^2-u\end{pmatrix}$$
$$a_9 = \begin{pmatrix}u^3\\-u^3+u\end{pmatrix}$$
$$a_7 = \begin{pmatrix}u^6-u^4+1\\-u^6+2u^4-u^2\end{pmatrix}$$
$$a_8 = \begin{pmatrix}u^9-2u^7+u^5+2u^3-u\\-u^9+3u^7-3u^5+u\end{pmatrix}$$
$$a_8 = \begin{pmatrix}u^9-2u^7+u^5+2u^3-u\\-u^9+3u^7-3u^5+u\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= 4u^{24}-28u^{22}-4u^{21}+88u^{20}+24u^{19}-140u^{18}-64u^{17}+80u^{16}+80u^{15}+96u^{14}-20u^{13}-188u^{12}-72u^{11}+80u^{10}+76u^9+60u^8-8u^7-56u^6-28u^5+4u^4+8u^3+8u^2-2$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4, c_5 c_{10}	$u^{28} - u^{27} + \cdots + 2u - 1$
c_2, c_{11}	$u^{28} + 17u^{27} + \cdots - 4u + 1$
c_3, c_7	$(u^{14} - u^{13} + \cdots - u - 1)^2$
c_6, c_8, c_9	$(u^{14} - 3u^{13} + \cdots - 5u + 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_5 c_{10}	$y^{28} - 17y^{27} + \cdots + 4y + 1$
c_2, c_{11}	$y^{28} - 13y^{27} + \cdots - 28y + 1$
c_3, c_7	$(y^{14} - 3y^{13} + \cdots - 5y + 1)^2$
c_6, c_8, c_9	$(y^{14} + 17y^{13} + \cdots - y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.997731 + 0.254321I$ $a = -0.812406 - 0.190507I$ $b = 0.788217 + 0.159208I$	$-1.87700 - 0.85224I$	$-4.40198 + 0.38712I$
$u = 0.997731 - 0.254321I$ $a = -0.812406 + 0.190507I$ $b = 0.788217 - 0.159208I$	$-1.87700 + 0.85224I$	$-4.40198 - 0.38712I$
$u = -0.053235 + 0.909759I$ $a = -1.181850 + 0.612019I$ $b = -2.28006 - 0.09309I$	$-8.82756 - 8.01486I$	$-4.36796 + 5.37427I$
$u = -0.053235 - 0.909759I$ $a = -1.181850 - 0.612019I$ $b = -2.28006 + 0.09309I$	$-8.82756 + 8.01486I$	$-4.36796 - 5.37427I$
$u = -1.051200 + 0.342720I$ $a = 2.04075 + 0.52134I$ $b = -1.21015 + 1.19657I$	$-4.64212 + 1.98638I$	$-7.34408 - 5.08636I$
$u = -1.051200 - 0.342720I$ $a = 2.04075 - 0.52134I$ $b = -1.21015 - 1.19657I$	$-4.64212 - 1.98638I$	$-7.34408 + 5.08636I$
$u = -1.013550 + 0.462956I$ $a = 0.550084 - 0.313876I$ $b = -0.418870 + 0.084661I$	$-0.31026 + 4.88256I$	$-0.31401 - 6.44337I$
$u = -1.013550 - 0.462956I$ $a = 0.550084 + 0.313876I$ $b = -0.418870 - 0.084661I$	$-0.31026 - 4.88256I$	$-0.31401 + 6.44337I$
$u = 0.009396 + 0.884908I$ $a = 1.24317 + 0.68253I$ $b = 2.23988 + 0.06633I$	$-9.09089 + 1.51934I$	$-4.87778 - 0.64840I$
$u = 0.009396 - 0.884908I$ $a = 1.24317 - 0.68253I$ $b = 2.23988 - 0.06633I$	$-9.09089 - 1.51934I$	$-4.87778 + 0.64840I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.13074$ $a = -1.65240$ $b = 1.34469$	-2.55923	2.09270
$u = -0.644858 + 0.497518I$ $a = 0.327243 + 0.252473I$ $b = -0.861939 - 0.330036I$	2.27008	$4.70520 + 0.I$
$u = -0.644858 - 0.497518I$ $a = 0.327243 - 0.252473I$ $b = -0.861939 + 0.330036I$	2.27008	$4.70520 + 0.I$
$u = 1.180860 + 0.240994I$ $a = -1.86418 + 0.50864I$ $b = 1.72950 + 0.72402I$	$-4.64212 + 1.98638I$	$-7.34408 - 5.08636I$
$u = 1.180860 - 0.240994I$ $a = -1.86418 - 0.50864I$ $b = 1.72950 - 0.72402I$	$-4.64212 - 1.98638I$	$-7.34408 + 5.08636I$
$u = -0.768027$ $a = 2.43278$ $b = -0.304273$	-2.55923	2.09270
$u = -0.266232 + 0.686741I$ $a = -0.522796 + 0.802943I$ $b = -1.51666 - 0.33236I$	$-0.31026 - 4.88256I$	$-0.31401 + 6.44337I$
$u = -0.266232 - 0.686741I$ $a = -0.522796 - 0.802943I$ $b = -1.51666 + 0.33236I$	$-0.31026 + 4.88256I$	$-0.31401 - 6.44337I$
$u = 1.255170 + 0.447404I$ $a = -0.697496 - 0.632935I$ $b = 0.257772 + 0.768928I$	$-9.09089 - 1.51934I$	$-4.87778 + 0.64840I$
$u = 1.255170 - 0.447404I$ $a = -0.697496 + 0.632935I$ $b = 0.257772 - 0.768928I$	$-9.09089 + 1.51934I$	$-4.87778 - 0.64840I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.245950 + 0.483423I$ $a = 0.644350 - 0.639100I$ $b = -0.133052 + 0.709234I$	$-8.82756 + 8.01486I$	$-4.36796 - 5.37427I$
$u = -1.245950 - 0.483423I$ $a = 0.644350 + 0.639100I$ $b = -0.133052 - 0.709234I$	$-8.82756 - 8.01486I$	$-4.36796 + 5.37427I$
$u = -1.257930 + 0.462599I$ $a = 1.97998 + 0.69687I$ $b = -2.24068 + 1.79013I$	$-12.94110 + 3.26499I$	$-8.09314 - 2.49004I$
$u = -1.257930 - 0.462599I$ $a = 1.97998 - 0.69687I$ $b = -2.24068 - 1.79013I$	$-12.94110 - 3.26499I$	$-8.09314 + 2.49004I$
$u = 1.279730 + 0.439354I$ $a = -1.95695 + 0.70259I$ $b = 2.35927 + 1.64819I$	$-12.94110 + 3.26499I$	$-8.09314 - 2.49004I$
$u = 1.279730 - 0.439354I$ $a = -1.95695 - 0.70259I$ $b = 2.35927 - 1.64819I$	$-12.94110 - 3.26499I$	$-8.09314 + 2.49004I$
$u = 0.128720 + 0.430400I$ $a = 0.35991 + 1.87835I$ $b = 1.266560 + 0.022630I$	$-1.87700 + 0.85224I$	$-4.40198 - 0.38712I$
$u = 0.128720 - 0.430400I$ $a = 0.35991 - 1.87835I$ $b = 1.266560 - 0.022630I$	$-1.87700 - 0.85224I$	$-4.40198 + 0.38712I$

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

(i) Arc colorings

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

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

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

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

$a_4 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$

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

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

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

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

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

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

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I^u_3	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.00000$ $a = -2.00000$ $b = 1.00000$	-3.28987	-12.0000

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_5	$(u-1)(u^{16}-u^{15}+\cdots-u+1)(u^{28}-u^{27}+\cdots+2u-1)$
c_2, c_{11}	$(u+1)(u^{16}+9u^{15}+\cdots+3u+1)(u^{28}+17u^{27}+\cdots-4u+1)$
c_3, c_7	$u(u^{14}-u^{13}+\cdots-u-1)^2(u^{16}+3u^{15}+\cdots+2u+2)$
c_4, c_{10}	$(u+1)(u^{16}-u^{15}+\cdots-u+1)(u^{28}-u^{27}+\cdots+2u-1)$
c_6, c_8, c_9	$u(u^{14}-3u^{13}+\cdots-5u+1)^2(u^{16}-3u^{15}+\cdots-11u^2+4)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_5 c_{10}	$(y-1)(y^{16}-9y^{15}+\cdots-3y+1)(y^{28}-17y^{27}+\cdots+4y+1)$
c_2, c_{11}	$(y-1)(y^{16}-y^{15}+\cdots+5y+1)(y^{28}-13y^{27}+\cdots-28y+1)$
c_3, c_7	$y(y^{14}-3y^{13}+\cdots-5y+1)^2(y^{16}-3y^{15}+\cdots-11y^2+4)$
c_6, c_8, c_9	$y(y^{14}+17y^{13}+\cdots-y+1)^2(y^{16}+17y^{15}+\cdots-88y+16)$