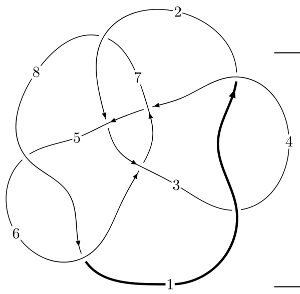
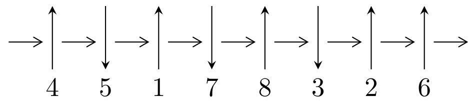
8_{16} ($K8a_{15}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -u^4 + b + 2u - 2,\ -5u^4 - 2u^3 - u^2 + a + 10u - 11,\ u^5 - 2u^2 + 3u - 1\rangle$$

$$I_2^u = \langle 816u^{11} + 1706u^{10} + \cdots + 605b - 492,\ -596u^{11} - 1838u^{10} + \cdots + 121a - 1235,$$
$$u^{12} + 3u^{11} + 6u^{10} + 9u^9 + 20u^8 + 31u^7 + 41u^6 + 39u^5 + 34u^4 + 22u^3 + 12u^2 + 4u + 1\rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 17 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. $\boldsymbol{I_1^u = \langle -u^4 + b + 2u - 2,\ -5u^4 - 2u^3 - u^2 + a + 10u - 11,\ u^5 - 2u^2 + 3u - 1\rangle}$

(i) Arc colorings

$$a_4 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_7 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_2 = \begin{pmatrix}5u^4 + 2u^3 + u^2 - 10u + 11\\u^4 - 2u + 2\end{pmatrix}$$
$$a_5 = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_8 = \begin{pmatrix}17u^4 + 8u^3 + 4u^2 - 33u + 36\\3u^4 + u^3 + u^2 - 5u + 6\end{pmatrix}$$
$$a_1 = \begin{pmatrix}4u^4 + 2u^3 + u^2 - 8u + 9\\u^4 - 2u + 2\end{pmatrix}$$
$$a_3 = \begin{pmatrix}5u^4 + 2u^3 + u^2 - 9u + 11\\u^4 + u^3 - 2u + 2\end{pmatrix}$$
$$a_6 = \begin{pmatrix}19u^4 + 9u^3 + 4u^2 - 35u + 40\\3u^4 + 2u^3 + u^2 - 6u + 7\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -12u^4 - 4u^3 + 20u - 26$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_3, c_5 c_8	$u^5 + 2u^4 - 2u^2 - u - 1$
c_2, c_4	$u^5 + 2u^2 + 3u + 1$
c_6	$u^5 + 7u^4 + 19u^3 + 30u^2 + 24u + 8$
c_7	$u^5 + 7u^4 + 18u^3 + 23u^2 + 14u + 4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3, c_5 c_8	$y^5 - 4y^4 + 6y^3 - 3y - 1$
c_2, c_4	$y^5 + 6y^3 - 4y^2 + 5y - 1$
c_6	$y^5 - 11y^4 - 11y^3 - 100y^2 + 96y - 64$
c_7	$y^5 - 13y^4 + 30y^3 - 81y^2 + 12y - 16$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.761218 + 0.545187I$ $a = 0.148341 - 0.707998I$ $b = -0.131705 - 0.621876I$	$-1.32133 - 1.30034I$	$-2.51370 + 2.13902I$
$u = 0.761218 - 0.545187I$ $a = 0.148341 + 0.707998I$ $b = -0.131705 + 0.621876I$	$-1.32133 + 1.30034I$	$-2.51370 - 2.13902I$
$u = 0.476529$ $a = 6.93603$ $b = 1.09851$	3.68417	-17.5210
$u = -0.99948 + 1.18099I$ $a = -0.116359 - 1.043350I$ $b = -1.41755 - 0.49337I$	$6.88145 + 10.57900I$	$6.27422 - 6.37200I$
$u = -0.99948 - 1.18099I$ $a = -0.116359 + 1.043350I$ $b = -1.41755 + 0.49337I$	$6.88145 - 10.57900I$	$6.27422 + 6.37200I$

II. $\boldsymbol{I_2^u = \langle 816u^{11} + 1706u^{10} + \cdots + 605b - 492,\ -596u^{11} - 1838u^{10} + \cdots + 121a - 1235,\ u^{12} + 3u^{11} + \cdots + 4u + 1\rangle}$

(i) Arc colorings

$$a_4 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_7 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_2 = \begin{pmatrix}4.92562u^{11} + 15.1901u^{10} + \cdots + 37.2893u + 10.2066\\-1.34876u^{11} - 2.81983u^{10} + \cdots - 3.02149u + 0.813223\end{pmatrix}$$
$$a_5 = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_8 = \begin{pmatrix}-7.14050u^{11} - 21.7521u^{10} + \cdots - 47.2314u - 12.1653\\1.29256u^{11} + 2.11901u^{10} + \cdots - 3.27107u - 3.27934\end{pmatrix}$$
$$a_1 = \begin{pmatrix}6.27438u^{11} + 18.0099u^{10} + \cdots + 40.3107u + 9.39339\\-1.34876u^{11} - 2.81983u^{10} + \cdots - 3.02149u + 0.813223\end{pmatrix}$$
$$a_3 = \begin{pmatrix}4.42314u^{11} + 13.6298u^{10} + \cdots + 33.7322u + 8.98017\\-1.14380u^{11} - 2.49917u^{10} + \cdots - 2.30744u + 0.866116\end{pmatrix}$$
$$a_6 = \begin{pmatrix}-3.42314u^{11} - 10.6298u^{10} + \cdots - 21.7322u - 4.98017\\-0.0826446u^{11} - 1.67769u^{10} + \cdots - 6.90083u - 3.21488\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{128}{605}u^{11} - \frac{112}{605}u^{10} - \frac{8}{605}u^9 - \frac{632}{605}u^8 - \frac{436}{605}u^7 - \frac{744}{121}u^6 - \frac{1512}{605}u^5 - \frac{7904}{605}u^4 - \frac{156}{11}u^3 - \frac{544}{55}u^2 - \frac{1896}{605}u + \frac{2414}{605}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_3, c_5 c_8	$u^{12} - u^{11} + \cdots - 4u + 1$
c_2, c_4	$u^{12} - 3u^{11} + \cdots - 4u + 1$
c_6	$(u^2 - u + 1)^6$
c_7	$(u^3 - u^2 + 1)^4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3, c_5 c_8	$y^{12} - 9y^{11} + \cdots + 80y^2 + 1$
c_2, c_4	$y^{12} + 3y^{11} + \cdots + 8y + 1$
c_6	$(y^2 + y + 1)^6$
c_7	$(y^3 - y^2 + 2y - 1)^4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.654045 + 0.759899I$ $a = 0.007824 + 1.147940I$ $b = 0.167732 + 1.153850I$	$1.91067 + 4.85801I$	$4.49024 - 6.44355I$
$u = -0.654045 - 0.759899I$ $a = 0.007824 - 1.147940I$ $b = 0.167732 - 1.153850I$	$1.91067 - 4.85801I$	$4.49024 + 6.44355I$
$u = 0.204191 + 0.813066I$ $a = 0.219331 - 0.873352I$ $b = 1.52069 - 0.58643I$	$6.04826 - 2.02988I$	$11.01951 + 3.46410I$
$u = 0.204191 - 0.813066I$ $a = 0.219331 + 0.873352I$ $b = 1.52069 + 0.58643I$	$6.04826 + 2.02988I$	$11.01951 - 3.46410I$
$u = -0.438452 + 0.525580I$ $a = 1.65687 + 0.28727I$ $b = 0.210547 - 0.250904I$	$1.91067 - 0.79824I$	$4.49024 - 0.48465I$
$u = -0.438452 - 0.525580I$ $a = 1.65687 - 0.28727I$ $b = 0.210547 + 0.250904I$	$1.91067 + 0.79824I$	$4.49024 + 0.48465I$
$u = -0.217317 + 0.536846I$ $a = -0.62366 + 1.88689I$ $b = 1.029010 + 0.216402I$	$1.91067 + 0.79824I$	$4.49024 + 0.48465I$
$u = -0.217317 - 0.536846I$ $a = -0.62366 - 1.88689I$ $b = 1.029010 - 0.216402I$	$1.91067 - 0.79824I$	$4.49024 - 0.48465I$
$u = 0.97217 + 1.33344I$ $a = 0.051487 + 0.695562I$ $b = -1.192210 + 0.314018I$	$1.91067 - 4.85801I$	$4.49024 + 6.44355I$
$u = 0.97217 - 1.33344I$ $a = 0.051487 - 0.695562I$ $b = -1.192210 - 0.314018I$	$1.91067 + 4.85801I$	$4.49024 - 6.44355I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.36655+1.20020I$ $a=-0.311849-0.273888I$ $b=-1.235770+0.092938I$	$6.04826-2.02988I$	$11.01951+3.46410I$
$u=-1.36655-1.20020I$ $a=-0.311849+0.273888I$ $b=-1.235770-0.092938I$	$6.04826+2.02988I$	$11.01951-3.46410I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_3, c_5 c_8	$(u^5 + 2u^4 - 2u^2 - u - 1)(u^{12} - u^{11} + \cdots - 4u + 1)$
c_2, c_4	$(u^5 + 2u^2 + 3u + 1)(u^{12} - 3u^{11} + \cdots - 4u + 1)$
c_6	$(u^2 - u + 1)^6(u^5 + 7u^4 + 19u^3 + 30u^2 + 24u + 8)$
c_7	$(u^3 - u^2 + 1)^4(u^5 + 7u^4 + 18u^3 + 23u^2 + 14u + 4)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_3, c_5 c_8	$(y^5 - 4y^4 + 6y^3 - 3y - 1)(y^{12} - 9y^{11} + \cdots + 80y^2 + 1)$
c_2, c_4	$(y^5 + 6y^3 - 4y^2 + 5y - 1)(y^{12} + 3y^{11} + \cdots + 8y + 1)$
c_6	$(y^2 + y + 1)^6(y^5 - 11y^4 - 11y^3 - 100y^2 + 96y - 64)$
c_7	$(y^3 - y^2 + 2y - 1)^4(y^5 - 13y^4 + 30y^3 - 81y^2 + 12y - 16)$