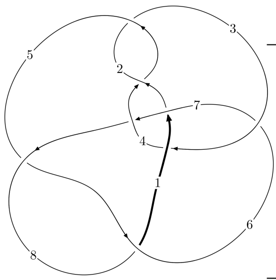
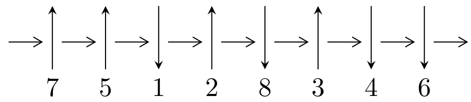
# $8_{17}$ $(K8a_{14})$




A knot diagram[1]

**Linearized knot diagam**




**Solving Sequence**

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

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

$$I_1^u = \langle -11044u^{17} - 26768u^{16} + \cdots + 654509b - 534698, \\ -14404u^{17} + 515530u^{16} + \cdots + 654509a - 1200167,\ u^{18} + u^{17} + \cdots + 3u + 1\rangle$$

* 1 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 18 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.**

$\boldsymbol{I_1^u = \langle -1.10\times10^4u^{17} - 2.68\times10^4u^{16} + \cdots + 6.55\times10^5b - 5.35\times10^5,\ -1.44\times10^4u^{17} + 5.16\times10^5u^{16} + \cdots + 6.55\times10^5a - 1.20\times10^6,\ u^{18} + u^{17} + \cdots + 3u + 1\rangle}$

**(i) Arc colorings**

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_6 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} 0.0220073u^{17} - 0.787659u^{16} + \cdots + 2.49594u + 1.83369 \\ 0.0168737u^{17} + 0.0408978u^{16} + \cdots - 0.737771u + 0.816945 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.00513362u^{17} - 0.828557u^{16} + \cdots + 3.23371u + 1.01675 \\ 0.0168737u^{17} + 0.0408978u^{16} + \cdots - 0.737771u + 0.816945 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -0.00366076u^{17} - 0.644874u^{16} + \cdots + 2.32739u + 1.74996 \\ -0.0674949u^{17} - 0.163591u^{16} + \cdots - 1.04891u + 0.732219 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -0.00251181u^{17} - 0.00174176u^{16} + \cdots - 1.88221u - 0.722479 \\ 0.176743u^{17} - 0.811747u^{16} + \cdots + 3.33200u + 0.00509084 \end{pmatrix}$$

**(ii) Obstruction class** $= -1$

**(iii) Cusp Shapes** $= -\frac{2081176}{654509}u^{17} - \frac{1538700}{654509}u^{16} + \cdots + \frac{3609404}{654509}u + \frac{2997870}{654509}$

**(iv) u-Polynomials at the component**

| Crossings | u-Polynomials at each crossing |
|---|---|
| $c_1$ | $u^{18} + 3u^{17} + \cdots + u + 1$ |
| $c_2, c_4$ | $u^{18} + u^{17} + \cdots + 3u + 1$ |
| $c_3$ | $u^{18} - 3u^{17} + \cdots - u + 1$ |
| $c_5, c_8$ | $u^{18} - u^{17} + \cdots - 3u + 1$ |
| $c_6$ | $u^{18} - u^{17} + \cdots + 5u + 1$ |
| $c_7$ | $u^{18} + u^{17} + \cdots - 5u + 1$ |

**(v) Riley Polynomials at the component**

| Crossings | Riley Polynomials at each crossing |
|---|---|
| $c_1, c_3$ | $y^{18} - 3y^{17} + \cdots - 3y + 1$ |
| $c_2, c_4, c_5$<br>$c_8$ | $y^{18} - 11y^{17} + \cdots - 3y + 1$ |
| $c_6, c_7$ | $y^{18} + 13y^{17} + \cdots - 3y + 1$ |

**(vi) Complex Volumes and Cusp Shapes**

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = -0.912810 + 0.341070I$<br>$a = 0.50288 + 1.83925I$<br>$b = 1.168300 + 0.720176I$ | $1.46999 + 3.11720I$ | $3.21326 - 6.66243I$ |
| $u = -0.912810 - 0.341070I$<br>$a = 0.50288 - 1.83925I$<br>$b = 1.168300 - 0.720176I$ | $1.46999 - 3.11720I$ | $3.21326 + 6.66243I$ |
| $u = 0.950168 + 0.130449I$<br>$a = 0.05948 - 3.09238I$<br>$b = 0.950168 - 0.130449I$ | $-0.520528I$ | $0. - 13.01684I$ |
| $u = 0.950168 - 0.130449I$<br>$a = 0.05948 + 3.09238I$<br>$b = 0.950168 + 0.130449I$ | $0.520528I$ | $0. + 13.01684I$ |
| $u = -0.167072 + 1.125400I$<br>$a = 0.300048 + 0.121690I$<br>$b = -1.190060 + 0.368733I$ | $3.57267 - 4.95181I$ | $3.31278 + 5.61624I$ |
| $u = -0.167072 - 1.125400I$<br>$a = 0.300048 - 0.121690I$<br>$b = -1.190060 - 0.368733I$ | $3.57267 + 4.95181I$ | $3.31278 - 5.61624I$ |
| $u = -1.190060 + 0.368733I$<br>$a = -0.385891 + 1.324270I$<br>$b = -0.167072 + 1.125400I$ | $-3.57267 + 4.95181I$ | $-3.31278 - 5.61624I$ |
| $u = -1.190060 - 0.368733I$<br>$a = -0.385891 - 1.324270I$<br>$b = -0.167072 - 1.125400I$ | $-3.57267 - 4.95181I$ | $-3.31278 + 5.61624I$ |
| $u = 1.342100 + 0.135496I$<br>$a = -0.083889 - 0.268734I$<br>$b = -0.470709 - 0.243089I$ | $-2.59619 - 0.05903I$ | $-5.04488 - 1.45254I$ |
| $u = 1.342100 - 0.135496I$<br>$a = -0.083889 + 0.268734I$<br>$b = -0.470709 + 0.243089I$ | $-2.59619 + 0.05903I$ | $-5.04488 + 1.45254I$ |

| Solutions to $I_1^u$ | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = 1.168300 + 0.720176I$<br>$a = 0.337342 + 0.860665I$<br>$b = -0.912810 + 0.341070I$ | $-1.46999 - 3.11720I$ | $-3.21326 + 6.66243I$ |
| $u = 1.168300 - 0.720176I$<br>$a = 0.337342 - 0.860665I$<br>$b = -0.912810 - 0.341070I$ | $-1.46999 + 3.11720I$ | $-3.21326 - 6.66243I$ |
| $u = -1.30098 + 0.59320I$<br>$a = -0.11190 - 1.47782I$<br>$b = -1.30098 - 0.59320I$ | $10.9859I$ | $0. - 7.09338I$ |
| $u = -1.30098 - 0.59320I$<br>$a = -0.11190 + 1.47782I$<br>$b = -1.30098 + 0.59320I$ | $-10.9859I$ | $0. + 7.09338I$ |
| $u = 0.081063 + 0.532154I$<br>$a = 0.989810 - 0.121474I$<br>$b = 0.081063 - 0.532154I$ | $-1.47534I$ | $0. + 4.20317I$ |
| $u = 0.081063 - 0.532154I$<br>$a = 0.989810 + 0.121474I$<br>$b = 0.081063 + 0.532154I$ | $1.47534I$ | $0. - 4.20317I$ |
| $u = -0.470709 + 0.243089I$<br>$a = 0.892107 + 0.422485I$<br>$b = 1.342100 - 0.135496I$ | $2.59619 - 0.05903I$ | $5.04488 - 1.45254I$ |
| $u = -0.470709 - 0.243089I$<br>$a = 0.892107 - 0.422485I$<br>$b = 1.342100 + 0.135496I$ | $2.59619 + 0.05903I$ | $5.04488 + 1.45254I$ |

**II. u-Polynomials**

| Crossings | u-Polynomials at each crossing |
|---|---|
| $c_1$ | $u^{18} + 3u^{17} + \cdots + u + 1$ |
| $c_2, c_4$ | $u^{18} + u^{17} + \cdots + 3u + 1$ |
| $c_3$ | $u^{18} - 3u^{17} + \cdots - u + 1$ |
| $c_5, c_8$ | $u^{18} - u^{17} + \cdots - 3u + 1$ |
| $c_6$ | $u^{18} - u^{17} + \cdots + 5u + 1$ |
| $c_7$ | $u^{18} + u^{17} + \cdots - 5u + 1$ |

## III. Riley Polynomials

| Crossings | Riley Polynomials at each crossing |
|---|---|
| $c_1, c_3$ | $y^{18} - 3y^{17} + \cdots - 3y + 1$ |
| $c_2, c_4, c_5$ $c_8$ | $y^{18} - 11y^{17} + \cdots - 3y + 1$ |
| $c_6, c_7$ | $y^{18} + 13y^{17} + \cdots - 3y + 1$ |