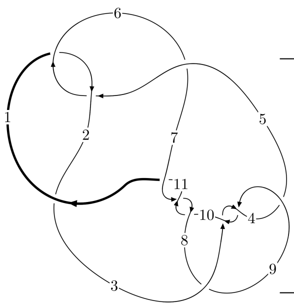
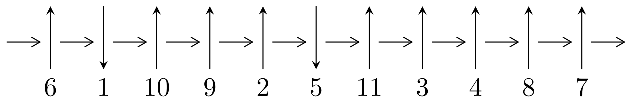
# $11a_{145}$ ($K11a_{145}$)




A knot diagram[1]

**Linearized knot diagam**




**Solving Sequence**

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

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

$$I_1^u = \langle u^{41} + u^{40} + \cdots + u + 1 \rangle$$

* 1 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 41 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. $I_1^u = \langle u^{41} + u^{40} + \cdots + u + 1 \rangle$

**(i) Arc colorings**

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} u^2 + 1 \\ -u^4 - 2u^2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u^3 - 2u \\ u^3 + u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} u^7 + 4u^5 + 4u^3 \\ -u^7 - 3u^5 - 2u^3 + u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u^{11} - 6u^9 - 12u^7 - 8u^5 - u^3 - 2u \\ u^{11} + 5u^9 + 8u^7 + 3u^5 - u^3 + u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^{15} + 8u^{13} + 24u^{11} + 32u^9 + 18u^7 + 8u^5 + 8u^3 \\ -u^{15} - 7u^{13} - 18u^{11} - 19u^9 - 6u^7 - 2u^5 - 4u^3 + u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} u^{30} + 15u^{28} + \cdots - 8u^4 + 1 \\ -u^{30} - 14u^{28} + \cdots + 8u^4 - u^2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -u^{17} - 8u^{15} - 25u^{13} - 38u^{11} - 31u^9 - 20u^7 - 14u^5 - 4u^3 - u \\ u^{19} + 9u^{17} + 32u^{15} + 55u^{13} + 45u^{11} + 19u^9 + 16u^7 + 10u^5 - 3u^3 + u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -u^{17} - 8u^{15} - 25u^{13} - 38u^{11} - 31u^9 - 20u^7 - 14u^5 - 4u^3 - u \\ u^{19} + 9u^{17} + 32u^{15} + 55u^{13} + 45u^{11} + 19u^9 + 16u^7 + 10u^5 - 3u^3 + u \end{pmatrix}$$

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

**(iii) Cusp Shapes** $= 4u^{40} + 4u^{39} + \cdots - 12u + 10$

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

| Crossings | u-Polynomials at each crossing |
|---|---|
| $c_1, c_5$ | $u^{41} - u^{40} + \cdots + u - 1$ |
| $c_2, c_6$ | $u^{41} + 15u^{40} + \cdots + 5u - 1$ |
| $c_3, c_4, c_9$ | $u^{41} - u^{40} + \cdots + u - 1$ |
| $c_7, c_{10}, c_{11}$ | $u^{41} + 5u^{40} + \cdots - 23u - 3$ |
| $c_8$ | $u^{41} + u^{40} + \cdots - 53u - 37$ |

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

| Crossings | Riley Polynomials at each crossing |
|---|---|
| $c_1, c_5$ | $y^{41} + 15y^{40} + \cdots + 5y - 1$ |
| $c_2, c_6$ | $y^{41} + 23y^{40} + \cdots + 85y - 1$ |
| $c_3, c_4, c_9$ | $y^{41} + 39y^{40} + \cdots + 5y - 1$ |
| $c_7, c_{10}, c_{11}$ | $y^{41} + 43y^{40} + \cdots - 131y - 9$ |
| $c_8$ | $y^{41} + 19y^{40} + \cdots - 34931y - 1369$ |

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

| Solutions to $I_1^u$ | $\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = -0.036967 + 1.143640I$ | $0.42753 - 2.65969I$ | $8.24093 + 3.41095I$ |
| $u = -0.036967 - 1.143640I$ | $0.42753 + 2.65969I$ | $8.24093 - 3.41095I$ |
| $u = -0.660133 + 0.477624I$ | $-8.57548 - 2.18961I$ | $0.00248 + 3.13615I$ |
| $u = -0.660133 - 0.477624I$ | $-8.57548 + 2.18961I$ | $0.00248 - 3.13615I$ |
| $u = -0.684144 + 0.440280I$ | $-4.27384 - 8.98491I$ | $4.35745 + 7.89511I$ |
| $u = -0.684144 - 0.440280I$ | $-4.27384 + 8.98491I$ | $4.35745 - 7.89511I$ |
| $u = -0.623584 + 0.512428I$ | $-4.55106 + 4.63624I$ | $3.54482 - 1.91862I$ |
| $u = -0.623584 - 0.512428I$ | $-4.55106 - 4.63624I$ | $3.54482 + 1.91862I$ |
| $u = 0.664139 + 0.434640I$ | $-2.78722 + 3.54108I$ | $6.45783 - 3.37439I$ |
| $u = 0.664139 - 0.434640I$ | $-2.78722 - 3.54108I$ | $6.45783 + 3.37439I$ |
| $u = 0.612358 + 0.486042I$ | $-3.00487 + 0.67608I$ | $5.83606 - 3.00610I$ |
| $u = 0.612358 - 0.486042I$ | $-3.00487 - 0.67608I$ | $5.83606 + 3.00610I$ |
| $u = -0.096872 + 1.325610I$ | $-3.50591 - 1.71670I$ | 0 |
| $u = -0.096872 - 1.325610I$ | $-3.50591 + 1.71670I$ | 0 |
| $u = -0.199961 + 1.317980I$ | $-1.40317 - 2.83072I$ | 0 |
| $u = -0.199961 - 1.317980I$ | $-1.40317 + 2.83072I$ | 0 |
| $u = 0.217658 + 1.339710I$ | $-2.15015 + 8.22064I$ | 0 |
| $u = 0.217658 - 1.339710I$ | $-2.15015 - 8.22064I$ | 0 |
| $u = 0.614559 + 0.176529I$ | $2.60925 + 5.20134I$ | $10.53591 - 7.82962I$ |
| $u = 0.614559 - 0.176529I$ | $2.60925 - 5.20134I$ | $10.53591 + 7.82962I$ |
| $u = -0.600363 + 0.128544I$ | $3.10340 + 0.06542I$ | $12.57860 + 1.49885I$ |
| $u = -0.600363 - 0.128544I$ | $3.10340 - 0.06542I$ | $12.57860 - 1.49885I$ |
| $u = 0.148692 + 1.391290I$ | $-6.92446 + 3.50964I$ | 0 |
| $u = 0.148692 - 1.391290I$ | $-6.92446 - 3.50964I$ | 0 |
| $u = 0.047931 + 1.399990I$ | $-5.03762 - 1.88806I$ | 0 |
| $u = 0.047931 - 1.399990I$ | $-5.03762 + 1.88806I$ | 0 |
| $u = 0.093172 + 0.540106I$ | $0.77518 - 2.43453I$ | $4.67673 + 2.83072I$ |
| $u = 0.093172 - 0.540106I$ | $0.77518 + 2.43453I$ | $4.67673 - 2.83072I$ |
| $u = 0.440573 + 0.308368I$ | $-1.55862 + 1.34593I$ | $1.69201 - 5.88103I$ |
| $u = 0.440573 - 0.308368I$ | $-1.55862 - 1.34593I$ | $1.69201 + 5.88103I$ |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = \ \ 0.24207 + 1.47345I$ | $-8.94893 + 6.85378I$ | 0 |
| $u = \ \ 0.24207 - 1.47345I$ | $-8.94893 - 6.85378I$ | 0 |
| $u = \ \ 0.21537 + 1.47971I$ | $-9.35158 + 3.69269I$ | 0 |
| $u = \ \ 0.21537 - 1.47971I$ | $-9.35158 - 3.69269I$ | 0 |
| $u = -0.24862 + 1.47854I$ | $-10.4751 - 12.3911I$ | 0 |
| $u = -0.24862 - 1.47854I$ | $-10.4751 + 12.3911I$ | 0 |
| $u = -0.21135 + 1.49072I$ | $-11.04330 + 1.60938I$ | 0 |
| $u = -0.21135 - 1.49072I$ | $-11.04330 - 1.60938I$ | 0 |
| $u = -0.23235 + 1.48781I$ | $-14.9420 - 5.4434I$ | 0 |
| $u = -0.23235 - 1.48781I$ | $-14.9420 + 5.4434I$ | 0 |
| $u = -0.404356$ | 0.648370 | 15.5210 |

**II. u-Polynomials**

| Crossings | u-Polynomials at each crossing |
|---|---|
| $c_1, c_5$ | $u^{41} - u^{40} + \cdots + u - 1$ |
| $c_2, c_6$ | $u^{41} + 15u^{40} + \cdots + 5u - 1$ |
| $c_3, c_4, c_9$ | $u^{41} - u^{40} + \cdots + u - 1$ |
| $c_7, c_{10}, c_{11}$ | $u^{41} + 5u^{40} + \cdots - 23u - 3$ |
| $c_8$ | $u^{41} + u^{40} + \cdots - 53u - 37$ |

## III. Riley Polynomials

| Crossings | Riley Polynomials at each crossing |
|---|---|
| $c_1, c_5$ | $y^{41} + 15y^{40} + \cdots + 5y - 1$ |
| $c_2, c_6$ | $y^{41} + 23y^{40} + \cdots + 85y - 1$ |
| $c_3, c_4, c_9$ | $y^{41} + 39y^{40} + \cdots + 5y - 1$ |
| $c_7, c_{10}, c_{11}$ | $y^{41} + 43y^{40} + \cdots - 131y - 9$ |
| $c_8$ | $y^{41} + 19y^{40} + \cdots - 34931y - 1369$ |