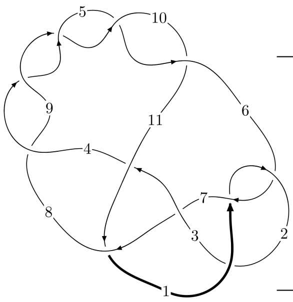
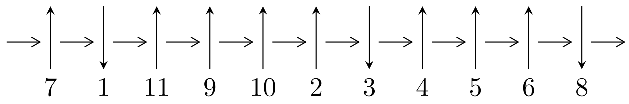
# $11a_{182}$ ($K11a_{182}$)




A knot diagram[1]

**Linearized knot diagam**




**Solving Sequence**

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

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

$$I_1^u = \langle u^{36} - u^{35} + \cdots + u^2 - 1 \rangle$$

* 1 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 36 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. $I_1^u = \langle u^{36} - u^{35} + \cdots + u^2 - 1 \rangle$

**(i) Arc colorings**

$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u^2 + 1 \\ u^4 - 2u^2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u^7 - 4u^5 + 4u^3 - 2u \\ -u^9 + 5u^7 - 7u^5 + 2u^3 + u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u^2 + 1 \\ u^2 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u^8 + 5u^6 - 7u^4 + 2u^2 + 1 \\ u^8 - 4u^6 + 4u^4 - 2u^2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -u^{25} + 16u^{23} + \cdots + 6u^3 - u \\ u^{25} - 15u^{23} + \cdots - 3u^5 + u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u^{18} + 11u^{16} - 48u^{14} + 107u^{12} - 133u^{10} + 95u^8 - 34u^6 + 2u^4 + u^2 + 1 \\ u^{20} - 12u^{18} + 58u^{16} - 144u^{14} + 193u^{12} - 130u^{10} + 26u^8 + 14u^6 - 5u^4 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u^{18} + 11u^{16} - 48u^{14} + 107u^{12} - 133u^{10} + 95u^8 - 34u^6 + 2u^4 + u^2 + 1 \\ u^{20} - 12u^{18} + 58u^{16} - 144u^{14} + 193u^{12} - 130u^{10} + 26u^8 + 14u^6 - 5u^4 \end{pmatrix}$$

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

**(iii) Cusp Shapes** $=$
$-4u^{32} + 84u^{30} - 780u^{28} + 4u^{27} + 4216u^{26} - 72u^{25} - 14700u^{24} + 560u^{23} + 34636u^{22} - 2464u^{21} - 56164u^{20} + 6748u^{19} + 62536u^{18} - 11928u^{17} - 46600u^{16} + 13636u^{15} + 21736u^{14} - 9752u^{13} - 5352u^{12} + 3984u^{11} + 364u^{10} - 800u^9 - 32u^8 + 168u^7 + 60u^6 - 116u^5 + 28u^3 - 4u^2 - 4u + 6$

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

| Crossings | u-Polynomials at each crossing |
|---|---|
| $c_1, c_6$ | $u^{36} + u^{35} + \cdots + u^2 - 1$ |
| $c_2$ | $u^{36} + 17u^{35} + \cdots - 2u + 1$ |
| $c_3$ | $u^{36} + 5u^{35} + \cdots + 38u + 5$ |
| $c_4, c_5, c_8$<br>$c_9, c_{10}$ | $u^{36} + u^{35} + \cdots + u^2 - 1$ |
| $c_7$ | $u^{36} - u^{35} + \cdots + 34u - 13$ |
| $c_{11}$ | $u^{36} + 5u^{35} + \cdots - 38u - 39$ |

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

| Crossings | Riley Polynomials at each crossing |
|---|---|
| $c_1, c_6$ | $y^{36} + 17y^{35} + \cdots - 2y + 1$ |
| $c_2$ | $y^{36} + 5y^{35} + \cdots - 6y + 1$ |
| $c_3$ | $y^{36} - 7y^{35} + \cdots - 1434y + 25$ |
| $c_4, c_5, c_8$<br>$c_9, c_{10}$ | $y^{36} - 47y^{35} + \cdots - 2y + 1$ |
| $c_7$ | $y^{36} - 7y^{35} + \cdots - 3314y + 169$ |
| $c_{11}$ | $y^{36} + 13y^{35} + \cdots + 16730y + 1521$ |

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

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u=-0.923130+0.285145I$ | $-0.30787-2.25346I$ | $5.12843+3.26342I$ |
| $u=-0.923130-0.285145I$ | $-0.30787+2.25346I$ | $5.12843-3.26342I$ |
| $u=\quad 0.995096+0.286789I$ | $4.18097+4.67479I$ | $11.82536-4.59597I$ |
| $u=\quad 0.995096-0.286789I$ | $4.18097-4.67479I$ | $11.82536+4.59597I$ |
| $u=\quad 1.024000+0.199158I$ | $5.17530+2.55443I$ | $13.5240-4.2251I$ |
| $u=\quad 1.024000-0.199158I$ | $5.17530-2.55443I$ | $13.5240+4.2251I$ |
| $u=-0.994663+0.317611I$ | $2.00397-9.65728I$ | $8.40249+8.58483I$ |
| $u=-0.994663-0.317611I$ | $2.00397+9.65728I$ | $8.40249-8.58483I$ |
| $u=-1.049710+0.138664I$ | $3.94362+2.17455I$ | $11.37017-2.11968I$ |
| $u=-1.049710-0.138664I$ | $3.94362-2.17455I$ | $11.37017+2.11968I$ |
| $u=\quad 0.674179+0.268506I$ | $-1.71251+3.16112I$ | $3.99113-5.83038I$ |
| $u=\quad 0.674179-0.268506I$ | $-1.71251-3.16112I$ | $3.99113+5.83038I$ |
| $u=-0.691311$ | $1.07542$ | $9.42760$ |
| $u=\quad 0.472191+0.368747I$ | $-0.77973-3.66810I$ | $5.58740+1.24735I$ |
| $u=\quad 0.472191-0.368747I$ | $-0.77973+3.66810I$ | $5.58740-1.24735I$ |
| $u=\quad 0.201428+0.536486I$ | $-1.68498+6.75016I$ | $2.91272-7.90487I$ |
| $u=\quad 0.201428-0.536486I$ | $-1.68498-6.75016I$ | $2.91272+7.90487I$ |
| $u=-0.210047+0.484113I$ | $0.46489-2.03480I$ | $6.34842+4.41097I$ |
| $u=-0.210047-0.484113I$ | $0.46489+2.03480I$ | $6.34842-4.41097I$ |
| $u=\quad 0.100349+0.504234I$ | $-3.42760-0.43485I$ | $-1.35617-0.72368I$ |
| $u=\quad 0.100349-0.504234I$ | $-3.42760+0.43485I$ | $-1.35617+0.72368I$ |
| $u=-0.332629+0.351120I$ | $1.029420-0.669064I$ | $9.01560+4.71804I$ |
| $u=-0.332629-0.351120I$ | $1.029420+0.669064I$ | $9.01560-4.71804I$ |
| $u=-1.64665+0.02163I$ | $6.41597-3.89056I$ | 0 |
| $u=-1.64665-0.02163I$ | $6.41597+3.89056I$ | 0 |
| $u=\quad 1.66590$ | $9.58969$ | 0 |
| $u=\quad 1.70003+0.06962I$ | $8.97882+3.61851I$ | 0 |
| $u=\quad 1.70003-0.06962I$ | $8.97882-3.61851I$ | 0 |
| $u=\quad 1.71726+0.08303I$ | $11.6119+11.2693I$ | 0 |
| $u=\quad 1.71726-0.08303I$ | $11.6119-11.2693I$ | 0 |

| Solutions to $I_1^u$ | $\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$ | Cusp shape |
|---|---|---|
| $u = -1.71795 + 0.07461I$ | $13.8143 - 6.1298I$ | 0 |
| $u = -1.71795 - 0.07461I$ | $13.8143 + 6.1298I$ | 0 |
| $u = -1.72470 + 0.05141I$ | $14.9875 - 3.5755I$ | 0 |
| $u = -1.72470 - 0.05141I$ | $14.9875 + 3.5755I$ | 0 |
| $u = \quad 1.72765 + 0.03757I$ | $13.86510 - 1.43953I$ | 0 |
| $u = \quad 1.72765 - 0.03757I$ | $13.86510 + 1.43953I$ | 0 |

**II. u-Polynomials**

| Crossings | u-Polynomials at each crossing |
|---|---|
| $c_1, c_6$ | $u^{36} + u^{35} + \cdots + u^2 - 1$ |
| $c_2$ | $u^{36} + 17u^{35} + \cdots - 2u + 1$ |
| $c_3$ | $u^{36} + 5u^{35} + \cdots + 38u + 5$ |
| $c_4, c_5, c_8$ $c_9, c_{10}$ | $u^{36} + u^{35} + \cdots + u^2 - 1$ |
| $c_7$ | $u^{36} - u^{35} + \cdots + 34u - 13$ |
| $c_{11}$ | $u^{36} + 5u^{35} + \cdots - 38u - 39$ |

**III. Riley Polynomials**

| Crossings | Riley Polynomials at each crossing |
|---|---|
| $c_1, c_6$ | $y^{36} + 17y^{35} + \cdots - 2y + 1$ |
| $c_2$ | $y^{36} + 5y^{35} + \cdots - 6y + 1$ |
| $c_3$ | $y^{36} - 7y^{35} + \cdots - 1434y + 25$ |
| $c_4, c_5, c_8$ $c_9, c_{10}$ | $y^{36} - 47y^{35} + \cdots - 2y + 1$ |
| $c_7$ | $y^{36} - 7y^{35} + \cdots - 3314y + 169$ |
| $c_{11}$ | $y^{36} + 13y^{35} + \cdots + 16730y + 1521$ |