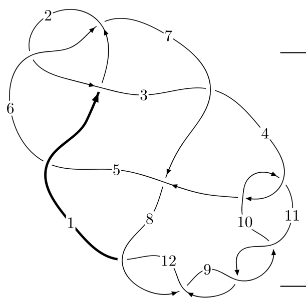
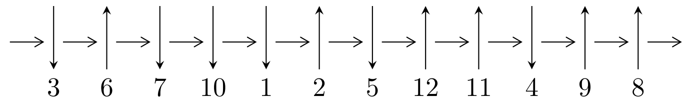
$12a_{0259}$ $(K12a_{0259})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

$$4,11 \underset{c_{10}}{\rightarrow} 10 \underset{c_4}{\rightarrow} 5 \underset{c_9}{\rightarrow} 9 \underset{c_{11}}{\rightarrow} 12 \underset{c_8}{\rightarrow} 8 \underset{c_{12}}{\rightarrow} 1 \underset{c_5}{\rightarrow} 6 \underset{c_7}{\rightarrow} 7 \underset{c_3}{\rightarrow} 3 \underset{c_2}{\rightarrow} 2 \gg c_1, c_6$$

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

$$I_1^u = \langle u^{55} + 5u^{53} + \cdots + 2u - 1 \rangle$$
$$I_2^u = \langle u^2 + u + 1 \rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 57 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. $I_1^u = \langle u^{55} + 5u^{53} + \cdots + 2u - 1 \rangle$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

$$a_{10} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u^2 + 1 \\ -u^2 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} u^4 + u^2 + 1 \\ -u^4 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} u^6 + u^4 + 2u^2 + 1 \\ -u^6 - u^2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^8 + u^6 + 3u^4 + 2u^2 + 1 \\ -u^8 - 2u^4 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -u^{19} - 2u^{17} - 8u^{15} - 12u^{13} - 21u^{11} - 22u^9 - 20u^7 - 12u^5 - 5u^3 - 2u \\ u^{19} + u^{17} + 6u^{15} + 5u^{13} + 11u^{11} + 7u^9 + 6u^7 + 2u^5 + u^3 + u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u^{10} + u^8 + 4u^6 + 3u^4 + 3u^2 + 1 \\ -u^{12} - 2u^{10} - 4u^8 - 6u^6 - 3u^4 - 2u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} u^{21} + 2u^{19} + \cdots + 6u^3 + u \\ -u^{23} - 3u^{21} + \cdots - 2u^3 + u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -u^{52} - 5u^{50} + \cdots + 3u^2 + 1 \\ u^{54} + 6u^{52} + \cdots - 4u^4 + u^2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^{54} - 4u^{53} + \cdots + 16u - 6$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{55} + 30u^{54} + \cdots - 2u - 1$
c_2, c_6	$u^{55} - 2u^{54} + \cdots - 4u + 1$
c_3, c_5	$u^{55} + 2u^{54} + \cdots + 20u + 1$
c_4, c_{10}	$u^{55} + 5u^{53} + \cdots + 2u + 1$
c_7	$u^{55} - 10u^{54} + \cdots - 10716u + 797$
c_8, c_9, c_{11} c_{12}	$u^{55} - 10u^{54} + \cdots - 2u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{55} - 10y^{54} + \cdots - 10y - 1$
c_2, c_6	$y^{55} + 30y^{54} + \cdots - 2y - 1$
c_3, c_5	$y^{55} - 50y^{54} + \cdots + 94y - 1$
c_4, c_{10}	$y^{55} + 10y^{54} + \cdots - 2y - 1$
c_7	$y^{55} - 30y^{54} + \cdots + 41338098y - 635209$
c_8, c_9, c_{11} c_{12}	$y^{55} + 70y^{54} + \cdots - 26y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.592575 + 0.744780I$	$-3.48431 + 2.23232I$	$-9.07962 - 4.25588I$
$u = -0.592575 - 0.744780I$	$-3.48431 - 2.23232I$	$-9.07962 + 4.25588I$
$u = 0.459054 + 0.825274I$	$0.68501 - 1.99360I$	$2.38430 + 3.67911I$
$u = 0.459054 - 0.825274I$	$0.68501 + 1.99360I$	$2.38430 - 3.67911I$
$u = 0.707571 + 0.613437I$	$-8.01052 - 2.80329I$	$-9.21279 + 3.18913I$
$u = 0.707571 - 0.613437I$	$-8.01052 + 2.80329I$	$-9.21279 - 3.18913I$
$u = -0.571994 + 0.897415I$	$-3.20861 + 6.06664I$	$-2.24668 - 6.88488I$
$u = -0.571994 - 0.897415I$	$-3.20861 - 6.06664I$	$-2.24668 + 6.88488I$
$u = 0.597490 + 0.892631I$	$-7.10023 - 2.03443I$	$-6.83549 + 3.30973I$
$u = 0.597490 - 0.892631I$	$-7.10023 + 2.03443I$	$-6.83549 - 3.30973I$
$u = 0.573656 + 0.915528I$	$-6.37071 - 10.79630I$	$-5.21230 + 9.86505I$
$u = 0.573656 - 0.915528I$	$-6.37071 + 10.79630I$	$-5.21230 - 9.86505I$
$u = 0.709473 + 0.569448I$	$-7.49807 + 6.03817I$	$-8.34541 - 3.60218I$
$u = 0.709473 - 0.569448I$	$-7.49807 - 6.03817I$	$-8.34541 + 3.60218I$
$u = -0.163111 + 0.892318I$	$-2.29512 + 6.47172I$	$0.57317 - 7.45825I$
$u = -0.163111 - 0.892318I$	$-2.29512 - 6.47172I$	$0.57317 + 7.45825I$
$u = -0.688302 + 0.586086I$	$-4.22010 - 1.37659I$	$-5.30101 + 0.34335I$
$u = -0.688302 - 0.586086I$	$-4.22010 + 1.37659I$	$-5.30101 - 0.34335I$
$u = -0.226650 + 0.864103I$	$-2.66284 - 1.79951I$	$-0.604898 - 0.931152I$
$u = -0.226650 - 0.864103I$	$-2.66284 + 1.79951I$	$-0.604898 + 0.931152I$
$u = 0.158391 + 0.848063I$	$0.73193 - 2.06229I$	$4.26089 + 4.61664I$
$u = 0.158391 - 0.848063I$	$0.73193 + 2.06229I$	$4.26089 - 4.61664I$
$u = 0.032760 + 0.848874I$	$2.77969 - 2.00175I$	$7.49779 + 4.64090I$
$u = 0.032760 - 0.848874I$	$2.77969 + 2.00175I$	$7.49779 - 4.64090I$
$u = 0.406358 + 0.693825I$	$0.093723 - 1.399000I$	$1.38184 + 4.66196I$
$u = 0.406358 - 0.693825I$	$0.093723 + 1.399000I$	$1.38184 - 4.66196I$
$u = -0.548612 + 0.514408I$	$-1.05882 - 2.06467I$	$-4.27290 + 3.60449I$
$u = -0.548612 - 0.514408I$	$-1.05882 + 2.06467I$	$-4.27290 - 3.60449I$
$u = 0.894461 + 0.903176I$	$-8.78655 + 1.96573I$	0
$u = 0.894461 - 0.903176I$	$-8.78655 - 1.96573I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.884957 + 0.914000I$	$-7.60137 + 2.47945I$	0
$u = -0.884957 - 0.914000I$	$-7.60137 - 2.47945I$	0
$u = -0.876087 + 0.934697I$	$-7.53561 + 4.03332I$	0
$u = -0.876087 - 0.934697I$	$-7.53561 - 4.03332I$	0
$u = 0.874986 + 0.947470I$	$-8.64564 - 8.50368I$	0
$u = 0.874986 - 0.947470I$	$-8.64564 + 8.50368I$	0
$u = 0.920221 + 0.904244I$	$-12.94750 + 1.94957I$	0
$u = 0.920221 - 0.904244I$	$-12.94750 - 1.94957I$	0
$u = -0.924130 + 0.901108I$	$-16.2298 - 6.8466I$	0
$u = -0.924130 - 0.901108I$	$-16.2298 + 6.8466I$	0
$u = 0.899259 + 0.932836I$	$-12.49120 - 3.31619I$	0
$u = 0.899259 - 0.932836I$	$-12.49120 + 3.31619I$	0
$u = -0.923024 + 0.910030I$	$-17.0363 + 2.2847I$	0
$u = -0.923024 - 0.910030I$	$-17.0363 - 2.2847I$	0
$u = 0.889204 + 0.964577I$	$-12.7512 - 8.6150I$	0
$u = 0.889204 - 0.964577I$	$-12.7512 + 8.6150I$	0
$u = -0.888934 + 0.968984I$	$-16.0087 + 13.5233I$	0
$u = -0.888934 - 0.968984I$	$-16.0087 - 13.5233I$	0
$u = -0.894950 + 0.963625I$	$-16.8614 + 4.4090I$	0
$u = -0.894950 - 0.963625I$	$-16.8614 - 4.4090I$	0
$u = -0.569536 + 0.038892I$	$-5.25644 + 4.29003I$	$-8.82901 - 3.69791I$
$u = -0.569536 - 0.038892I$	$-5.25644 - 4.29003I$	$-8.82901 + 3.69791I$
$u = 0.522568$	-1.89518	-5.69250
$u = 0.368693 + 0.284269I$	$-0.336797 - 1.233170I$	$-4.20998 + 5.17134I$
$u = 0.368693 - 0.284269I$	$-0.336797 + 1.233170I$	$-4.20998 - 5.17134I$

II. $I_2^u = \langle u^2 + u + 1 \rangle$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

$$a_{10} = \begin{pmatrix} 1 \\ u+1 \end{pmatrix}$$

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

$$a_9 = \begin{pmatrix} -u \\ u+1 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 0 \\ -u \end{pmatrix}$$

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

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

$$a_6 = \begin{pmatrix} 0 \\ -u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 1 \\ u-1 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} u \\ -u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -12u - 6$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_6 c_7	$u^2 + u + 1$
c_3, c_4, c_5 c_8, c_9, c_{10} c_{11}, c_{12}	$u^2 - u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_3 c_4, c_5, c_6 c_7, c_8, c_9 c_{10}, c_{11}, c_{12}	$y^2 + y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.500000 + 0.866025I$	$6.08965I$	$0. - 10.39230I$
$u = -0.500000 - 0.866025I$	$-\ 6.08965I$	$0. + 10.39230I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^2+u+1)(u^{55}+30u^{54}+\cdots-2u-1)$
c_2, c_6	$(u^2+u+1)(u^{55}-2u^{54}+\cdots-4u+1)$
c_3, c_5	$(u^2-u+1)(u^{55}+2u^{54}+\cdots+20u+1)$
c_4, c_{10}	$(u^2-u+1)(u^{55}+5u^{53}+\cdots+2u+1)$
c_7	$(u^2+u+1)(u^{55}-10u^{54}+\cdots-10716u+797)$
c_8, c_9, c_{11} c_{12}	$(u^2-u+1)(u^{55}-10u^{54}+\cdots-2u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y^2+y+1)(y^{55}-10y^{54}+\cdots-10y-1)$
c_2, c_6	$(y^2+y+1)(y^{55}+30y^{54}+\cdots-2y-1)$
c_3, c_5	$(y^2+y+1)(y^{55}-50y^{54}+\cdots+94y-1)$
c_4, c_{10}	$(y^2+y+1)(y^{55}+10y^{54}+\cdots-2y-1)$
c_7	$(y^2+y+1)(y^{55}-30y^{54}+\cdots+4.13381\times10^7y-635209)$
c_8, c_9, c_{11} c_{12}	$(y^2+y+1)(y^{55}+70y^{54}+\cdots-26y-1)$