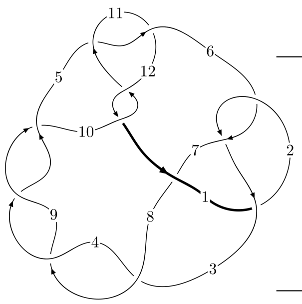
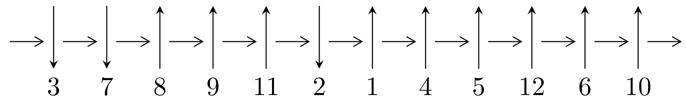
$12a_{0511}$ ($K12a_{0511}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

$$5{,}11 \xrightarrow[c_5]{} 6 \xrightarrow[c_{11}]{} 12 \xrightarrow[c_{10}]{} 10 \xrightarrow[c_{12}]{} 1 \xrightarrow[c_9]{} 9 \xrightarrow[c_4]{} 4 \xrightarrow[c_8]{} 8 \xrightarrow[c_3]{} 3 \xrightarrow[c_7]{} 7 \xrightarrow[c_2]{} 2 \ggg c_1, c_6$$

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

$$I_1^u = \langle u^{52} - u^{51} + \cdots - u^2 + 1 \rangle$$
$$I_2^u = \langle u^{10} - 2u^8 + 3u^6 + u^5 - 2u^4 - u^3 + u^2 + u - 1 \rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 62 representations.

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[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. $I_1^u = \langle u^{52} - u^{51} + \cdots - u^2 + 1 \rangle$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -u^3 \\ u^5 - u^3 + u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^5 + u \\ -u^7 + u^5 - 2u^3 + u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -u^5 - u \\ u^5 - u^3 + u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -u^{10} + u^8 - 2u^6 + u^4 - u^2 + 1 \\ u^{10} - 2u^8 + 3u^6 - 2u^4 + u^2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} u^{15} - 2u^{13} + 4u^{11} - 4u^9 + 4u^7 - 4u^5 + 2u^3 - 2u \\ -u^{15} + 3u^{13} - 6u^{11} + 7u^9 - 6u^7 + 4u^5 - 2u^3 + u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u^{20} - 3u^{18} + \cdots - 3u^2 + 1 \\ -u^{20} + 4u^{18} + \cdots - 5u^4 + 2u^2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u^{27} + 4u^{25} + \cdots - u^3 - 2u \\ u^{29} - 5u^{27} + \cdots - 5u^3 + u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} u^{47} - 8u^{45} + \cdots - 42u^5 + 10u^3 \\ -u^{47} + 9u^{45} + \cdots - 4u^3 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^{51} + 40u^{49} + \cdots + 16u + 10$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{52} + 23u^{51} + \cdots + 2u + 1$
c_2, c_6	$u^{52} - u^{51} + \cdots - 2u + 1$
c_3, c_4, c_8 c_9	$u^{52} - 4u^{51} + \cdots + 36u + 4$
c_5, c_{11}	$u^{52} - u^{51} + \cdots - u^2 + 1$
c_7	$u^{52} - 3u^{51} + \cdots - 8u + 5$
c_{10}, c_{12}	$u^{52} - 19u^{51} + \cdots - 2u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{52}+13y^{51}+\cdots-6y+1$
c_2, c_6	$y^{52}-23y^{51}+\cdots-2y+1$
c_3, c_4, c_8 c_9	$y^{52}-60y^{51}+\cdots-696y+16$
c_5, c_{11}	$y^{52}-19y^{51}+\cdots-2y+1$
c_7	$y^{52}-3y^{51}+\cdots-534y+25$
c_{10}, c_{12}	$y^{52}+29y^{51}+\cdots-6y+1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.998941 + 0.045978I$	$5.28620 - 0.93871I$	$15.9673 + 0.9512I$
$u = -0.998941 - 0.045978I$	$5.28620 + 0.93871I$	$15.9673 - 0.9512I$
$u = -0.728323 + 0.685940I$	$-3.57521 - 0.97987I$	$0.260565 + 0.640305I$
$u = -0.728323 - 0.685940I$	$-3.57521 + 0.97987I$	$0.260565 - 0.640305I$
$u = \quad 1.002230 + 0.089379I$	$3.67626 + 5.72177I$	$12.7013 - 6.5868I$
$u = \quad 1.002230 - 0.089379I$	$3.67626 - 5.72177I$	$12.7013 + 6.5868I$
$u = -0.665641 + 0.720471I$	$-1.78289 + 5.70739I$	$3.97022 - 5.89201I$
$u = -0.665641 - 0.720471I$	$-1.78289 - 5.70739I$	$3.97022 + 5.89201I$
$u = \quad 0.530837 + 0.816404I$	$6.92563 - 8.79045I$	$7.25155 + 4.85962I$
$u = \quad 0.530837 - 0.816404I$	$6.92563 + 8.79045I$	$7.25155 - 4.85962I$
$u = -0.522819 + 0.813333I$	$8.75278 + 3.37930I$	$9.83163 - 0.35758I$
$u = -0.522819 - 0.813333I$	$8.75278 - 3.37930I$	$9.83163 + 0.35758I$
$u = \quad 0.521713 + 0.791233I$	$3.07937 - 1.57482I$	$4.02266 + 0.18175I$
$u = \quad 0.521713 - 0.791233I$	$3.07937 + 1.57482I$	$4.02266 - 0.18175I$
$u = -0.833280 + 0.443412I$	$0.09032 - 4.10436I$	$9.88532 + 7.11286I$
$u = -0.833280 - 0.443412I$	$0.09032 + 4.10436I$	$9.88532 - 7.11286I$
$u = \quad 0.650819 + 0.682385I$	$0.204162 - 1.159700I$	$7.88295 + 1.51609I$
$u = \quad 0.650819 - 0.682385I$	$0.204162 + 1.159700I$	$7.88295 - 1.51609I$
$u = \quad 0.492028 + 0.801217I$	$7.16166 + 5.41348I$	$7.59584 - 4.65169I$
$u = \quad 0.492028 - 0.801217I$	$7.16166 - 5.41348I$	$7.59584 + 4.65169I$
$u = -0.850769 + 0.649712I$	$-2.04278 - 2.52764I$	$4.28217 + 3.73621I$
$u = -0.850769 - 0.649712I$	$-2.04278 + 2.52764I$	$4.28217 - 3.73621I$
$u = \quad 0.823932 + 0.690742I$	$-4.74803 - 0.75860I$	$-0.678268 + 1.202668I$
$u = \quad 0.823932 - 0.690742I$	$-4.74803 + 0.75860I$	$-0.678268 - 1.202668I$
$u = \quad 0.874578 + 0.686205I$	$-4.59465 + 6.05228I$	$0. - 7.84880I$
$u = \quad 0.874578 - 0.686205I$	$-4.59465 - 6.05228I$	$0. + 7.84880I$
$u = \quad 0.982865 + 0.602859I$	$2.10133 + 4.69499I$	$11.88053 - 6.10182I$
$u = \quad 0.982865 - 0.602859I$	$2.10133 - 4.69499I$	$11.88053 + 6.10182I$
$u = -0.946937 + 0.662515I$	$-2.91580 - 4.23415I$	$0. + 5.26094I$
$u = -0.946937 - 0.662515I$	$-2.91580 + 4.23415I$	$0. - 5.26094I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.158760 + 0.014478I$	$12.9367 - 7.2052I$	$13.29023 + 4.77271I$
$u = -1.158760 - 0.014478I$	$12.9367 + 7.2052I$	$13.29023 - 4.77271I$
$u = \quad 1.159210 + 0.007998I$	$14.7139 + 1.7466I$	$15.7254 + 0.I$
$u = \quad 1.159210 - 0.007998I$	$14.7139 - 1.7466I$	$15.7254 + 0.I$
$u = \quad 0.984648 + 0.652855I$	$1.18503 + 6.34235I$	$6.00000 - 6.57485I$
$u = \quad 0.984648 - 0.652855I$	$1.18503 - 6.34235I$	$6.00000 + 6.57485I$
$u = -0.986168 + 0.671138I$	$-0.83243 - 11.04580I$	$0. + 10.84993I$
$u = -0.986168 - 0.671138I$	$-0.83243 + 11.04580I$	$0. - 10.84993I$
$u = \quad 1.064000 + 0.654185I$	$4.67776 + 7.01331I$	0
$u = \quad 1.064000 - 0.654185I$	$4.67776 - 7.01331I$	0
$u = -1.074140 + 0.648969I$	$10.57820 - 5.44672I$	0
$u = -1.074140 - 0.648969I$	$10.57820 + 5.44672I$	0
$u = -1.072330 + 0.660031I$	$10.38760 - 8.89731I$	0
$u = -1.072330 - 0.660031I$	$10.38760 + 8.89731I$	0
$u = \quad 1.071430 + 0.664123I$	$8.5369 + 14.3344I$	0
$u = \quad 1.071430 - 0.664123I$	$8.5369 - 14.3344I$	0
$u = \quad 0.649830 + 0.190765I$	$0.943472 + 0.087273I$	$11.64609 - 1.04296I$
$u = \quad 0.649830 - 0.190765I$	$0.943472 - 0.087273I$	$11.64609 + 1.04296I$
$u = -0.355914 + 0.492873I$	$-0.32921 - 4.26537I$	$5.60545 + 7.03160I$
$u = -0.355914 - 0.492873I$	$-0.32921 + 4.26537I$	$5.60545 - 7.03160I$
$u = -0.114095 + 0.393922I$	$-1.45941 + 1.41253I$	$0.827325 - 0.785575I$
$u = -0.114095 - 0.393922I$	$-1.45941 - 1.41253I$	$0.827325 + 0.785575I$

II. $\boldsymbol{I_2^u = \langle u^{10} - 2u^8 + 3u^6 + u^5 - 2u^4 - u^3 + u^2 + u - 1 \rangle}$

(i) Arc colorings

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

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

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

$$a_{12} = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -u^3 \\ u^5 - u^3 + u \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^5 + u \\ -u^7 + u^5 - 2u^3 + u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u^5 - u \\ u^5 - u^3 + u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u^8 + u^6 + u^5 - u^4 - u^3 + u \\ -u^5 + u^3 - u + 1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u^8 + u^6 - u^4 - 1 \\ -u^5 + u^3 - u + 1 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -u^3 \\ u^5 - u^3 + u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^2 - 1 \\ u^4 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 10$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{10}+4u^9+10u^8+16u^7+19u^6+19u^5+16u^4+13u^3+7u^2+3u+1$
c_2, c_5, c_6 c_{11}	$u^{10}-2u^8+3u^6+u^5-2u^4-u^3+u^2+u-1$
c_3, c_4, c_8 c_9	$(u^2+u-1)^5$
c_7	$u^{10}-2u^8+2u^7+9u^6-5u^5-12u^4+u^3+13u^2-7u+1$
c_{10}, c_{12}	$u^{10}-4u^9+10u^8-16u^7+19u^6-19u^5+16u^4-13u^3+7u^2-3u+1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{10}, c_{12}	$y^{10} + 4y^9 + 10y^8 + 4y^7 - 17y^6 - 51y^5 - 48y^4 - 21y^3 + 3y^2 + 5y + 1$
c_2, c_5, c_6 c_{11}	$y^{10} - 4y^9 + 10y^8 - 16y^7 + 19y^6 - 19y^5 + 16y^4 - 13y^3 + 7y^2 - 3y + 1$
c_3, c_4, c_8 c_9	$(y^2 - 3y + 1)^5$
c_7	$y^{10} - 4y^9 + \cdots - 23y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.501486 + 0.805060I$	8.88264	10.0000
$u = -0.501486 - 0.805060I$	8.88264	10.0000
$u = -0.974665 + 0.570706I$	0.986960	10.0000
$u = -0.974665 - 0.570706I$	0.986960	10.0000
$u = -1.14608$	8.88264	10.0000
$u = \quad 0.802076$	0.986960	10.0000
$u = \quad 0.573627 + 0.524384I$	0.986960	10.0000
$u = \quad 0.573627 - 0.524384I$	0.986960	10.0000
$u = \quad 1.074530 + 0.643996I$	8.88264	10.0000
$u = \quad 1.074530 - 0.643996I$	8.88264	10.0000

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^{10}+4u^9+10u^8+16u^7+19u^6+19u^5+16u^4+13u^3+7u^2+3u+1)$ $\cdot(u^{52}+23u^{51}+\cdots+2u+1)$
c_2, c_6	$(u^{10}-2u^8+\cdots+u-1)(u^{52}-u^{51}+\cdots-2u+1)$
c_3, c_4, c_8 c_9	$((u^2+u-1)^5)(u^{52}-4u^{51}+\cdots+36u+4)$
c_5, c_{11}	$(u^{10}-2u^8+\cdots+u-1)(u^{52}-u^{51}+\cdots-u^2+1)$
c_7	$(u^{10}-2u^8+2u^7+9u^6-5u^5-12u^4+u^3+13u^2-7u+1)$ $\cdot(u^{52}-3u^{51}+\cdots-8u+5)$
c_{10}, c_{12}	$(u^{10}-4u^9+10u^8-16u^7+19u^6-19u^5+16u^4-13u^3+7u^2-3u+1)$ $\cdot(u^{52}-19u^{51}+\cdots-2u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y^{10}+4y^9+10y^8+4y^7-17y^6-51y^5-48y^4-21y^3+3y^2+5y+1)$ $\cdot\,(y^{52}+13y^{51}+\cdots-6y+1)$
c_2, c_6	$(y^{10}-4y^9+10y^8-16y^7+19y^6-19y^5+16y^4-13y^3+7y^2-3y+1)$ $\cdot\,(y^{52}-23y^{51}+\cdots-2y+1)$
c_3, c_4, c_8 c_9	$((y^2-3y+1)^5)(y^{52}-60y^{51}+\cdots-696y+16)$
c_5, c_{11}	$(y^{10}-4y^9+10y^8-16y^7+19y^6-19y^5+16y^4-13y^3+7y^2-3y+1)$ $\cdot\,(y^{52}-19y^{51}+\cdots-2y+1)$
c_7	$(y^{10}-4y^9+\cdots-23y+1)(y^{52}-3y^{51}+\cdots-534y+25)$
c_{10}, c_{12}	$(y^{10}+4y^9+10y^8+4y^7-17y^6-51y^5-48y^4-21y^3+3y^2+5y+1)$ $\cdot\,(y^{52}+29y^{51}+\cdots-6y+1)$