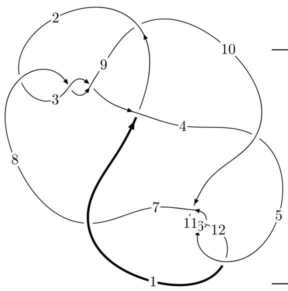
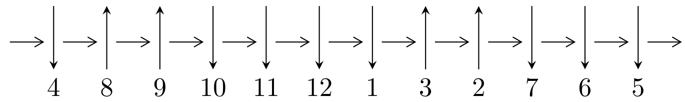
$12a_{1136}$ $(K12a_{1136})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle u^{66} + u^{65} + \cdots + 2u^2 + 1 \rangle$$
$$I_2^u = \langle u^6 + u^5 - 2u^4 - 2u^3 + 1 \rangle$$
$$I_3^u = \langle u - 1 \rangle$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 73 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. $I^u_1 = \langle u^{66} + u^{65} + \cdots + 2u^2 + 1\rangle$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u^5 - 2u^3 + u \\ u^7 - 3u^5 + 2u^3 + u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} u^{12} - 5u^{10} + 9u^8 - 6u^6 + u^2 + 1 \\ u^{14} - 6u^{12} + 13u^{10} - 10u^8 - 2u^6 + 4u^4 + u^2 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u^4 + u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u^{11} + 4u^9 - 4u^7 - 2u^5 + 3u^3 \\ -u^{11} + 5u^9 - 8u^7 + 3u^5 + u^3 + u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u^{29} + 12u^{27} + \cdots - 2u^3 + u \\ -u^{29} + 13u^{27} + \cdots + 3u^3 + u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} u^{30} - 13u^{28} + \cdots + 2u^2 + 1 \\ u^{32} - 14u^{30} + \cdots - 20u^8 + 2u^2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u^{65} - 28u^{63} + \cdots + u + 2 \\ u^{65} - 29u^{63} + \cdots + 3u^2 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^{63} + 116u^{61} + \cdots + 8u - 10$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{66} - 15u^{65} + \cdots - 1396u + 113$
c_2, c_3, c_8	$u^{66} - u^{65} + \cdots + 2u^2 + 1$
c_4, c_7	$u^{66} - 6u^{65} + \cdots + 84u + 8$
c_5, c_6, c_{11}	$u^{66} - u^{65} + \cdots + 2u^2 + 1$
c_9	$u^{66} + 3u^{65} + \cdots - 6u - 1$
c_{10}, c_{12}	$u^{66} + 3u^{65} + \cdots - 2u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{66} + 13y^{65} + \cdots + 264176y + 12769$
c_2, c_3, c_8	$y^{66} - 59y^{65} + \cdots + 4y + 1$
c_4, c_7	$y^{66} - 42y^{65} + \cdots - 8112y + 64$
c_5, c_6, c_{11}	$y^{66} - 55y^{65} + \cdots + 4y + 1$
c_9	$y^{66} + y^{65} + \cdots - 52y + 1$
c_{10}, c_{12}	$y^{66} + 37y^{65} + \cdots - 4y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.990309+0.197371I$	$0.77149-3.51641I$	$-4.00000+4.68932I$
$u=-0.990309-0.197371I$	$0.77149+3.51641I$	$-4.00000-4.68932I$
$u=\ \ 0.983886+0.233964I$	$-4.05748+7.29975I$	$0.-6.02392I$
$u=\ \ 0.983886-0.233964I$	$-4.05748-7.29975I$	$0.+6.02392I$
$u=\ \ 0.917926$	-1.63623	-6.25380
$u=-0.855417+0.248728I$	$-8.04962+0.09735I$	$-10.00686+0.77062I$
$u=-0.855417-0.248728I$	$-8.04962-0.09735I$	$-10.00686-0.77062I$
$u=\ \ 0.738976+0.315928I$	$-3.71204-7.38704I$	$-6.03668+3.97983I$
$u=\ \ 0.738976-0.315928I$	$-3.71204+7.38704I$	$-6.03668-3.97983I$
$u=\ \ 1.20059$	-1.54443	0
$u=\ \ 0.262184+0.729860I$	$-5.40381+11.28260I$	$-8.66884-8.74113I$
$u=\ \ 0.262184-0.729860I$	$-5.40381-11.28260I$	$-8.66884+8.74113I$
$u=-0.710255+0.292534I$	$1.06112+3.49327I$	$-1.18332-2.67462I$
$u=-0.710255-0.292534I$	$1.06112-3.49327I$	$-1.18332+2.67462I$
$u=-0.262033+0.720142I$	$-0.59286-7.29825I$	$-4.05645+7.44817I$
$u=-0.262033-0.720142I$	$-0.59286+7.29825I$	$-4.05645-7.44817I$
$u=-0.224274+0.729292I$	$-10.09160-3.88890I$	$-12.88295+4.18648I$
$u=-0.224274-0.729292I$	$-10.09160+3.88890I$	$-12.88295-4.18648I$
$u=\ \ 0.256468+0.700542I$	$-3.25124+3.34292I$	$-7.24196-3.75335I$
$u=\ \ 0.256468-0.700542I$	$-3.25124-3.34292I$	$-7.24196+3.75335I$
$u=\ \ 0.176621+0.719075I$	$-6.50527-3.62888I$	$-10.79295+1.37881I$
$u=\ \ 0.176621-0.719075I$	$-6.50527+3.62888I$	$-10.79295-1.37881I$
$u=\ \ 0.224321+0.695502I$	$-3.61835+3.40694I$	$-9.07650-5.66068I$
$u=\ \ 0.224321-0.695502I$	$-3.61835-3.40694I$	$-9.07650+5.66068I$
$u=-0.354761+0.564052I$	$0.22062-5.60280I$	$-3.25617+7.64930I$
$u=-0.354761-0.564052I$	$0.22062+5.60280I$	$-3.25617-7.64930I$
$u=-1.317080+0.220326I$	$-0.01372-5.66365I$	0
$u=-1.317080-0.220326I$	$-0.01372+5.66365I$	0
$u=\ \ 0.610474+0.243113I$	$-1.66667+0.22451I$	$-3.98223-1.07282I$
$u=\ \ 0.610474-0.243113I$	$-1.66667-0.22451I$	$-3.98223+1.07282I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.368164 + 0.533247I$	$4.23434 + 1.69125I$	$1.84273 - 4.33152I$
$u = 0.368164 - 0.533247I$	$4.23434 - 1.69125I$	$1.84273 + 4.33152I$
$u = -1.354690 + 0.123144I$	$3.75022 - 0.64597I$	0
$u = -1.354690 - 0.123144I$	$3.75022 + 0.64597I$	0
$u = -0.392625 + 0.501531I$	$0.44010 + 2.19041I$	$-2.25026 + 0.38117I$
$u = -0.392625 - 0.501531I$	$0.44010 - 2.19041I$	$-2.25026 - 0.38117I$
$u = 1.355680 + 0.183514I$	$4.57952 + 3.25192I$	0
$u = 1.355680 - 0.183514I$	$4.57952 - 3.25192I$	0
$u = 0.102907 + 0.618996I$	$-4.43547 + 2.62457I$	$-11.91060 - 4.28004I$
$u = 0.102907 - 0.618996I$	$-4.43547 - 2.62457I$	$-11.91060 + 4.28004I$
$u = 1.367250 + 0.272605I$	$3.25888 + 3.51289I$	0
$u = 1.367250 - 0.272605I$	$3.25888 - 3.51289I$	0
$u = -1.408740 + 0.110369I$	$4.37917 - 1.51275I$	0
$u = -1.408740 - 0.110369I$	$4.37917 + 1.51275I$	0
$u = -1.38787 + 0.27581I$	$1.50869 - 6.93616I$	0
$u = -1.38787 - 0.27581I$	$1.50869 + 6.93616I$	0
$u = 1.41479 + 0.09089I$	$7.41801 - 2.39956I$	0
$u = 1.41479 - 0.09089I$	$7.41801 + 2.39956I$	0
$u = 1.38826 + 0.29191I$	$-4.97005 + 7.59047I$	0
$u = 1.38826 - 0.29191I$	$-4.97005 - 7.59047I$	0
$u = -1.42024 + 0.07916I$	$2.81245 + 6.36681I$	0
$u = -1.42024 - 0.07916I$	$2.81245 - 6.36681I$	0
$u = -1.40307 + 0.27814I$	$2.03846 - 6.90566I$	0
$u = -1.40307 - 0.27814I$	$2.03846 + 6.90566I$	0
$u = 1.42052 + 0.19384I$	$6.18270 + 0.37995I$	0
$u = 1.42052 - 0.19384I$	$6.18270 - 0.37995I$	0
$u = -1.42012 + 0.20531I$	$9.92026 - 4.41693I$	0
$u = -1.42012 - 0.20531I$	$9.92026 + 4.41693I$	0
$u = 1.40654 + 0.28588I$	$4.72530 + 10.95400I$	0
$u = 1.40654 - 0.28588I$	$4.72530 - 10.95400I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \quad 1.42058 + 0.21544I$	$5.87848 + 8.46734I$	0
$u = \quad 1.42058 - 0.21544I$	$5.87848 - 8.46734I$	0
$u = -1.40733 + 0.29033I$	$-0.0836 - 14.9873I$	0
$u = -1.40733 - 0.29033I$	$-0.0836 + 14.9873I$	0
$u = -0.148067 + 0.449066I$	$-0.202946 - 0.853104I$	$-4.89270 + 7.93904I$
$u = -0.148067 - 0.449066I$	$-0.202946 + 0.853104I$	$-4.89270 - 7.93904I$

II. $I_2^u = \langle u^6 + u^5 - 2u^4 - 2u^3 + 1 \rangle$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u^5 - 2u^3 + u \\ 1 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} u^5 - 2u^3 + u + 1 \\ 1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u^4 + u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u^4 + u^2 - u + 1 \\ -u^4 - u^3 + 2u^2 + u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u^4 + u^2 + u - 1 \\ u^5 - 2u^3 - u^2 + u + 1 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} u^3 - u^2 + 1 \\ -u^4 + u^3 + 2u^2 - u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -u^3 + u^2 + 1 \\ -u^5 + u^3 + u^2 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^6 - y^5 + 8y^4 - 10y^3 + 20y^2 - 12y + 1$
c_2, c_3, c_5 c_6, c_8, c_{11}	$y^6 - 5y^5 + 8y^4 - 2y^3 - 4y^2 + 1$
c_4, c_7	$(y-1)^6$
c_9, c_{10}, c_{12}	$y^6 + 2y^5 + 5y^4 - 2y^3 - 6y^2 - 8y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \quad 0.733459$	-1.64493	-6.00000
$u = -0.181278 + 0.698849I$	-1.64493	-6.00000
$u = -0.181278 - 0.698849I$	-1.64493	-6.00000
$u = \quad 1.35202$	-1.64493	-6.00000
$u = -1.361460 + 0.284643I$	-1.64493	-6.00000
$u = -1.361460 - 0.284643I$	-1.64493	-6.00000

III. $I_3^u = \langle u - 1 \rangle$

(i) Arc colorings

$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$

$a_9 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$

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

$a_8 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$

$a_2 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$

$a_{10} = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$

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

$a_1 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$

$a_7 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$

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

$a_{12} = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -6$

(iv) u-Polynomials at the component

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

(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_{11}	$y - 1$
c_9, c_{10}, c_{12}	y

(vi) Complex Volumes and Cusp Shapes

	Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u =$	1.00000	-1.64493	-6.00000

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u-1)(u^6-u^5+\cdots-4u+1)(u^{66}-15u^{65}+\cdots-1396u+113)$
c_2, c_3, c_8	$(u+1)(u^6-u^5-2u^4+2u^3+1)(u^{66}-u^{65}+\cdots+2u^2+1)$
c_4, c_7	$((u+1)^7)(u^{66}-6u^{65}+\cdots+84u+8)$
c_5, c_6, c_{11}	$(u+1)(u^6-u^5-2u^4+2u^3+1)(u^{66}-u^{65}+\cdots+2u^2+1)$
c_9	$u(u^6+u^4+\cdots-2u-1)(u^{66}+3u^{65}+\cdots-6u-1)$
c_{10}, c_{12}	$u(u^6+u^4+\cdots-2u-1)(u^{66}+3u^{65}+\cdots-2u-1)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y-1)(y^6-y^5+8y^4-10y^3+20y^2-12y+1)$ $\cdot(y^{66}+13y^{65}+\cdots+264176y+12769)$
c_2, c_3, c_8	$(y-1)(y^6-5y^5+\cdots-4y^2+1)(y^{66}-59y^{65}+\cdots+4y+1)$
c_4, c_7	$((y-1)^7)(y^{66}-42y^{65}+\cdots-8112y+64)$
c_5, c_6, c_{11}	$(y-1)(y^6-5y^5+\cdots-4y^2+1)(y^{66}-55y^{65}+\cdots+4y+1)$
c_9	$y(y^6+2y^5+\cdots-8y+1)(y^{66}+y^{65}+\cdots-52y+1)$
c_{10}, c_{12}	$y(y^6+2y^5+\cdots-8y+1)(y^{66}+37y^{65}+\cdots-4y+1)$