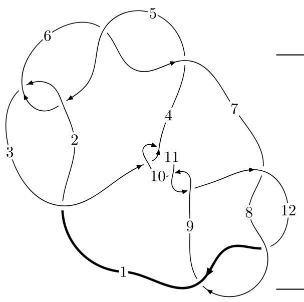
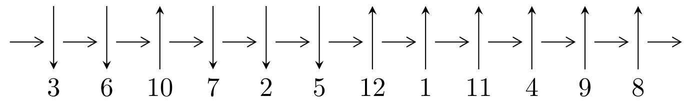
$12a_{0424}$ $(K12a_{0424})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -6.05060 \times 10^{58} u^{67} - 1.04724 \times 10^{59} u^{66} + \cdots + 1.01515 \times 10^{59} b + 8.01162 \times 10^{59},\ 7.86149 \times 10^{58} u^{67} + 1.36435 \times 10^{59} u^{66} + \cdots + 3.38385 \times 10^{58} a - 9.50671 \times 10^{59},\ u^{68} + u^{67} + \cdots - 4u + 8 \rangle$$

$$I_1^v = \langle a,\ b - v + 1,\ v^3 - 2v^2 + v - 1 \rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 71 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.
$\boldsymbol{I_1^u = \langle -6.05\times10^{58}u^{67} - 1.05\times10^{59}u^{66} + \cdots + 1.02\times10^{59}b + 8.01\times10^{59},\ 7.86\times10^{58}u^{67} + 1.36\times10^{59}u^{66} + \cdots + 3.38\times10^{58}a - 9.51\times10^{59},\ u^{68} + u^{67} + \cdots - 4u + 8\rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_4 = \begin{pmatrix}1\\-u^2\end{pmatrix}$$
$$a_6 = \begin{pmatrix}-2.32324u^{67} - 4.03195u^{66} + \cdots + 33.5515u + 28.0944\\0.596027u^{67} + 1.03160u^{66} + \cdots - 6.46797u - 7.89203\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}u\\-u^3 + u\end{pmatrix}$$
$$a_2 = \begin{pmatrix}-1.77029u^{67} - 2.91509u^{66} + \cdots + 24.3748u + 22.7432\\0.564882u^{67} + 0.682242u^{66} + \cdots - 5.65045u - 4.24863\end{pmatrix}$$
$$a_1 = \begin{pmatrix}-1.20541u^{67} - 2.23285u^{66} + \cdots + 18.7243u + 18.4946\\0.564882u^{67} + 0.682242u^{66} + \cdots - 5.65045u - 4.24863\end{pmatrix}$$
$$a_5 = \begin{pmatrix}-0.694072u^{67} - 1.44115u^{66} + \cdots + 11.5944u + 11.4434\\0.204815u^{67} + 0.394112u^{66} + \cdots - 0.0438270u - 5.62061\end{pmatrix}$$
$$a_7 = \begin{pmatrix}-1.77029u^{67} - 2.91509u^{66} + \cdots + 24.3748u + 22.7432\\0.269738u^{67} + 0.621521u^{66} + \cdots - 3.93271u - 4.90972\end{pmatrix}$$
$$a_9 = \begin{pmatrix}-u^3\\u^5 - u^3 + u\end{pmatrix}$$
$$a_8 = \begin{pmatrix}1.22840u^{67} + 2.01698u^{66} + \cdots - 18.5328u - 16.9508\\-0.265656u^{67} - 0.556698u^{66} + \cdots + 4.05685u + 6.12494\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}u^5 + u\\-u^7 + u^5 - 2u^3 + u\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -1.40934u^{67} - 1.84025u^{66} + \cdots + 36.8272u + 15.8368$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4, c_6	$u^{68} + 18u^{67} + \cdots + 11u + 1$
c_2, c_5	$u^{68} + 2u^{67} + \cdots + 3u - 1$
c_3, c_{10}	$u^{68} + u^{67} + \cdots - 4u + 8$
c_7, c_8, c_{12}	$u^{68} + 4u^{67} + \cdots - 8u^2 - 1$
c_9, c_{11}	$u^{68} - 21u^{67} + \cdots - 720u + 64$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_6	$y^{68} + 66y^{67} + \cdots - 19y + 1$
c_2, c_5	$y^{68} - 18y^{67} + \cdots - 11y + 1$
c_3, c_{10}	$y^{68} - 21y^{67} + \cdots - 720y + 64$
c_7, c_8, c_{12}	$y^{68} - 56y^{67} + \cdots + 16y + 1$
c_9, c_{11}	$y^{68} + 47y^{67} + \cdots - 19712y + 4096$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.993071 + 0.113125I$ $a = -1.89033 - 2.06207I$ $b = 0.881273 + 0.827269I$	$6.85914 - 0.90233I$	$8.48968 - 1.09090I$
$u = 0.993071 - 0.113125I$ $a = -1.89033 + 2.06207I$ $b = 0.881273 - 0.827269I$	$6.85914 + 0.90233I$	$8.48968 + 1.09090I$
$u = 0.659498 + 0.764722I$ $a = 0.550961 + 0.309922I$ $b = 0.040503 - 0.569798I$	$0.588563 - 1.246350I$	$5.81021 + 0.45012I$
$u = 0.659498 - 0.764722I$ $a = 0.550961 - 0.309922I$ $b = 0.040503 + 0.569798I$	$0.588563 + 1.246350I$	$5.81021 - 0.45012I$
$u = -1.000140 + 0.155243I$ $a = -0.98075 - 2.90583I$ $b = 0.913795 + 0.817365I$	$6.75864 - 5.23492I$	$7.99359 + 6.56298I$
$u = -1.000140 - 0.155243I$ $a = -0.98075 + 2.90583I$ $b = 0.913795 - 0.817365I$	$6.75864 + 5.23492I$	$7.99359 - 6.56298I$
$u = 0.021687 + 1.023690I$ $a = -0.218747 + 0.841325I$ $b = -0.898997 - 0.825730I$	$8.72956 - 3.07936I$	$8.43070 + 2.69230I$
$u = 0.021687 - 1.023690I$ $a = -0.218747 - 0.841325I$ $b = -0.898997 + 0.825730I$	$8.72956 + 3.07936I$	$8.43070 - 2.69230I$
$u = 0.991893 + 0.263165I$ $a = -0.412778 - 1.347760I$ $b = -0.884341 + 0.498364I$	$5.18458 + 4.97460I$	$7.77509 - 7.49917I$
$u = 0.991893 - 0.263165I$ $a = -0.412778 + 1.347760I$ $b = -0.884341 - 0.498364I$	$5.18458 - 4.97460I$	$7.77509 + 7.49917I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.829279+0.618745I$ $a=-0.332097-0.896610I$ $b=-0.970966+0.736214I$	$3.84635+0.92115I$	$5.28354+1.08542I$
$u=-0.829279-0.618745I$ $a=-0.332097+0.896610I$ $b=-0.970966-0.736214I$	$3.84635-0.92115I$	$5.28354-1.08542I$
$u=-0.697002+0.783946I$ $a=-0.105875+0.873399I$ $b=-0.785825-0.814885I$	$0.83003-1.22443I$	$2.00000+2.28588I$
$u=-0.697002-0.783946I$ $a=-0.105875-0.873399I$ $b=-0.785825+0.814885I$	$0.83003+1.22443I$	$2.00000-2.28588I$
$u=\ \ 0.884256+0.567359I$ $a=-0.044342-0.919731I$ $b=-0.732492+0.772305I$	$4.53565+4.78229I$	$7.19204-6.23856I$
$u=\ \ 0.884256-0.567359I$ $a=-0.044342+0.919731I$ $b=-0.732492-0.772305I$	$4.53565-4.78229I$	$7.19204+6.23856I$
$u=-1.061960+0.111325I$ $a=\ \ 0.459698-0.837106I$ $b=-0.392765+0.607634I$	$6.64379-0.94912I$	$11.95029+0.I$
$u=-1.061960-0.111325I$ $a=\ \ 0.459698+0.837106I$ $b=-0.392765-0.607634I$	$6.64379+0.94912I$	$11.95029+0.I$
$u=\ \ 0.890731+0.590142I$ $a=-1.76219-0.11747I$ $b=\ \ 0.809278+0.829802I$	$4.59428-0.22084I$	$6.48510+0.I$
$u=\ \ 0.890731-0.590142I$ $a=-1.76219+0.11747I$ $b=\ \ 0.809278-0.829802I$	$4.59428+0.22084I$	$6.48510+0.I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.716202 + 0.821100I$ $a = -0.311479 + 0.865388I$ $b = -0.969652 - 0.768571I$	$0.27108 - 4.71837I$	0
$u = 0.716202 - 0.821100I$ $a = -0.311479 - 0.865388I$ $b = -0.969652 + 0.768571I$	$0.27108 + 4.71837I$	0
$u = -0.800894 + 0.745034I$ $a = -1.40099 + 1.63231I$ $b = -0.971234 - 0.263287I$	$-2.36206 - 1.49059I$	0
$u = -0.800894 - 0.745034I$ $a = -1.40099 - 1.63231I$ $b = -0.971234 + 0.263287I$	$-2.36206 + 1.49059I$	0
$u = -0.909702 + 0.630284I$ $a = 0.94341 - 2.77762I$ $b = 0.964261 + 0.783946I$	$4.11637 - 5.81729I$	0
$u = -0.909702 - 0.630284I$ $a = 0.94341 + 2.77762I$ $b = 0.964261 - 0.783946I$	$4.11637 + 5.81729I$	0
$u = 0.876321$ $a = 0.998697$ $b = 0.963850$	2.31122	4.45630
$u = -0.867744 + 0.719052I$ $a = 0.502678 - 0.415224I$ $b = -0.051505 + 0.630284I$	$-2.78825 - 2.74528I$	0
$u = -0.867744 - 0.719052I$ $a = 0.502678 + 0.415224I$ $b = -0.051505 - 0.630284I$	$-2.78825 + 2.74528I$	0
$u = -0.723892 + 0.871174I$ $a = 1.099390 - 0.016027I$ $b = 0.977262 - 0.289069I$	$-2.20577 + 4.23347I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.723892-0.871174I$ $a=1.099390+0.016027I$ $b=0.977262+0.289069I$	$-2.20577-4.23347I$	0
$u=0.829532+0.792287I$ $a=1.069520+0.001488I$ $b=0.995888+0.247406I$	$-6.00877-0.07335I$	0
$u=0.829532-0.792287I$ $a=1.069520-0.001488I$ $b=0.995888-0.247406I$	$-6.00877+0.07335I$	0
$u=0.637253+0.973593I$ $a=-0.123805-0.840626I$ $b=-0.805330+0.845791I$	$5.07615-2.51950I$	0
$u=0.637253-0.973593I$ $a=-0.123805+0.840626I$ $b=-0.805330-0.845791I$	$5.07615+2.51950I$	0
$u=-0.781819+0.294985I$ $a=-0.05603+1.97815I$ $b=-0.755261-0.362856I$	$0.13820-2.92436I$	$2.59443+9.53509I$
$u=-0.781819-0.294985I$ $a=-0.05603-1.97815I$ $b=-0.755261+0.362856I$	$0.13820+2.92436I$	$2.59443-9.53509I$
$u=-0.933508+0.715246I$ $a=1.048350+0.008631I$ $b=1.016160-0.211403I$	$-1.94942-4.06921I$	0
$u=-0.933508-0.715246I$ $a=1.048350-0.008631I$ $b=1.016160+0.211403I$	$-1.94942+4.06921I$	0
$u=-0.667756+0.982329I$ $a=-0.302229-0.843220I$ $b=-0.972548+0.790652I$	$4.55831+8.62464I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.667756 - 0.982329I$ $a = -0.302229 + 0.843220I$ $b = -0.972548 - 0.790652I$	$4.55831 - 8.62464I$	0
$u = 0.923270 + 0.765436I$ $a = -1.25292 - 1.44461I$ $b = -0.999457 + 0.296326I$	$-5.71945 + 5.92897I$	0
$u = 0.923270 - 0.765436I$ $a = -1.25292 + 1.44461I$ $b = -0.999457 - 0.296326I$	$-5.71945 - 5.92897I$	0
$u = -0.996451 + 0.711234I$ $a = -1.309380 + 0.201391I$ $b = 0.794344 - 0.853811I$	$1.73332 - 4.42504I$	0
$u = -0.996451 - 0.711234I$ $a = -1.309380 - 0.201391I$ $b = 0.794344 + 0.853811I$	$1.73332 + 4.42504I$	0
$u = 0.170683 + 0.754290I$ $a = 0.848846 + 0.211083I$ $b = 0.635194 + 0.359962I$	$2.32891 - 1.45239I$	$4.90559 + 4.31092I$
$u = 0.170683 - 0.754290I$ $a = 0.848846 - 0.211083I$ $b = 0.635194 - 0.359962I$	$2.32891 + 1.45239I$	$4.90559 - 4.31092I$
$u = 1.008450 + 0.698435I$ $a = 0.456475 + 0.467018I$ $b = -0.098986 - 0.677355I$	$1.62108 + 6.80691I$	0
$u = 1.008450 - 0.698435I$ $a = 0.456475 - 0.467018I$ $b = -0.098986 + 0.677355I$	$1.62108 - 6.80691I$	0
$u = 1.003540 + 0.733346I$ $a = 0.89900 + 2.36045I$ $b = 0.981570 - 0.789856I$	$1.15325 + 10.54940I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=\ \ 1.003540-0.733346I$ $a=\ \ 0.89900-2.36045I$ $b=\ \ 0.981570+0.789856I$	$1.15325-10.54940I$	0
$u=-1.234530+0.258857I$ $a=-1.25723+1.36690I$ $b=\ \ 0.873045-0.864648I$	$13.36960-1.32073I$	0
$u=-1.234530-0.258857I$ $a=-1.25723-1.36690I$ $b=\ \ 0.873045+0.864648I$	$13.36960+1.32073I$	0
$u=\ \ 1.231130+0.291396I$ $a=-0.32877+2.27833I$ $b=\ \ 0.940263-0.838288I$	$13.1585+7.6380I$	0
$u=\ \ 1.231130-0.291396I$ $a=-0.32877-2.27833I$ $b=\ \ 0.940263+0.838288I$	$13.1585-7.6380I$	0
$u=-1.017380+0.758083I$ $a=-1.15099+1.34572I$ $b=-1.016370-0.322893I$	$-1.29085-10.28430I$	0
$u=-1.017380-0.758083I$ $a=-1.15099-1.34572I$ $b=-1.016370+0.322893I$	$-1.29085+10.28430I$	0
$u=\ \ 0.676957+0.032911I$ $a=\ \ 1.18518+1.04468I$ $b=-0.420279-0.292993I$	$1.049650+0.101234I$	$9.47396-0.04712I$
$u=\ \ 0.676957-0.032911I$ $a=\ \ 1.18518-1.04468I$ $b=-0.420279+0.292993I$	$1.049650-0.101234I$	$9.47396+0.04712I$
$u=\ \ 1.094230+0.755851I$ $a=-1.129750-0.325888I$ $b=\ \ 0.793548+0.872752I$	$6.52598+8.82716I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.094230 - 0.755851I$ $a = -1.129750 + 0.325888I$ $b = 0.793548 - 0.872752I$	$6.52598 - 8.82716I$	0
$u = -1.091090 + 0.774273I$ $a = 0.79093 - 2.16616I$ $b = 0.990918 + 0.798516I$	$5.9100 - 15.0350I$	0
$u = -1.091090 - 0.774273I$ $a = 0.79093 + 2.16616I$ $b = 0.990918 - 0.798516I$	$5.9100 + 15.0350I$	0
$u = -0.022492 + 0.551897I$ $a = -0.220910 - 0.899639I$ $b = -0.884082 + 0.773478I$	$3.60354 + 2.91698I$	$-1.07047 - 2.93516I$
$u = -0.022492 - 0.551897I$ $a = -0.220910 + 0.899639I$ $b = -0.884082 - 0.773478I$	$3.60354 - 2.91698I$	$-1.07047 + 2.93516I$
$u = 0.528183$ $a = 2.56903$ $b = -0.477187$	1.06452	11.9270
$u = -0.298991 + 0.383237I$ $a = 0.953304 - 0.043713I$ $b = 0.759455 - 0.112169I$	$-1.254010 + 0.311770I$	$-6.76966 - 0.58136I$
$u = -0.298991 - 0.383237I$ $a = 0.953304 + 0.043713I$ $b = 0.759455 + 0.112169I$	$-1.254010 - 0.311770I$	$-6.76966 + 0.58136I$

II. $I_1^v = \langle a,\ b - v + 1,\ v^3 - 2v^2 + v - 1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -2v^2 - 3v + 7$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = 0.122561 + 0.744862I$ $a = 0$ $b = -0.877439 + 0.744862I$	$4.66906 + 2.82812I$	$7.71191 - 2.59975I$
$v = 0.122561 - 0.744862I$ $a = 0$ $b = -0.877439 - 0.744862I$	$4.66906 - 2.82812I$	$7.71191 + 2.59975I$
$v = 1.75488$ $a = 0$ $b = 0.754878$	0.531480	-4.42380

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_4	$(u^3 - u^2 + 2u - 1)(u^{68} + 18u^{67} + \cdots + 11u + 1)$
c_2	$(u^3 + u^2 - 1)(u^{68} + 2u^{67} + \cdots + 3u - 1)$
c_3, c_{10}	$u^3(u^{68} + u^{67} + \cdots - 4u + 8)$
c_5	$(u^3 - u^2 + 1)(u^{68} + 2u^{67} + \cdots + 3u - 1)$
c_6	$(u^3 + u^2 + 2u + 1)(u^{68} + 18u^{67} + \cdots + 11u + 1)$
c_7, c_8	$((u + 1)^3)(u^{68} + 4u^{67} + \cdots - 8u^2 - 1)$
c_9, c_{11}	$u^3(u^{68} - 21u^{67} + \cdots - 720u + 64)$
c_{12}	$((u - 1)^3)(u^{68} + 4u^{67} + \cdots - 8u^2 - 1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_6	$(y^3+3y^2+2y-1)(y^{68}+66y^{67}+\cdots-19y+1)$
c_2, c_5	$(y^3-y^2+2y-1)(y^{68}-18y^{67}+\cdots-11y+1)$
c_3, c_{10}	$y^3(y^{68}-21y^{67}+\cdots-720y+64)$
c_7, c_8, c_{12}	$((y-1)^3)(y^{68}-56y^{67}+\cdots+16y+1)$
c_9, c_{11}	$y^3(y^{68}+47y^{67}+\cdots-19712y+4096)$