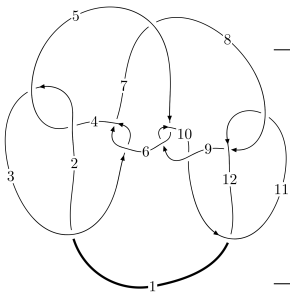
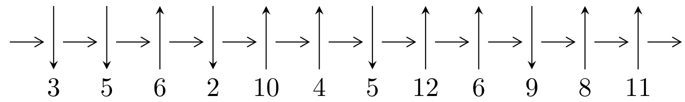
$12n_{0073}$ ($K12n_{0073}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -3.25963 \times 10^{16} u^{35} + 4.95553 \times 10^{16} u^{34} + \cdots + 3.15381 \times 10^{17} b + 2.76334 \times 10^{17},$$
$$-2.34713 \times 10^{17} u^{35} + 2.08730 \times 10^{17} u^{34} + \cdots + 3.15381 \times 10^{17} a - 4.82090 \times 10^{17},\ u^{36} - 2u^{35} + \cdots + u -$$
$$I_2^u = \langle b + 1,\ -u^8 + 2u^7 - 3u^6 + 3u^5 - 4u^4 + 4u^3 - 3u^2 + a + 2u - 1,\ u^9 - u^8 + 2u^7 - u^6 + 3u^5 - u^4 + 2u^3 + u +$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 45 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.

$\boldsymbol{I_1^u = \langle -3.26\times 10^{16}u^{35}+4.96\times 10^{16}u^{34}+\cdots+3.15\times 10^{17}b+2.76\times 10^{17},\ -2.35\times 10^{17}u^{35}+2.09\times 10^{17}u^{34}+\cdots+3.15\times 10^{17}a-4.82\times 10^{17},\ u^{36}-2u^{35}+\cdots+u-1\rangle}$

(i) Arc colorings

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

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

$$a_3 = \begin{pmatrix} 0.744221u^{35} - 0.661834u^{34} + \cdots - 3.44897u + 1.52860 \\ 0.103355u^{35} - 0.157128u^{34} + \cdots + 0.0286142u - 0.876190 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} 0.847576u^{35} - 0.818962u^{34} + \cdots - 3.42035u + 0.652406 \\ 0.103355u^{35} - 0.157128u^{34} + \cdots + 0.0286142u - 0.876190 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.376173u^{35} - 0.492061u^{34} + \cdots + 0.281199u - 0.411800 \\ 0.0410701u^{35} - 0.0783542u^{34} + \cdots - 0.108796u - 0.0990764 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 0.700268u^{35} - 0.600854u^{34} + \cdots - 3.50274u + 1.47901 \\ 0.106016u^{35} - 0.0966188u^{34} + \cdots + 0.0456405u - 0.849264 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0.376173u^{35} - 0.492061u^{34} + \cdots + 0.281199u - 0.411800 \\ -0.170748u^{35} + 0.219929u^{34} + \cdots - 0.00709182u - 0.161209 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.546921u^{35} - 0.711990u^{34} + \cdots + 0.288291u - 0.250591 \\ -0.170748u^{35} + 0.219929u^{34} + \cdots - 0.00709182u - 0.161209 \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} -u^3 \\ u^5 + u^3 + u \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 0.267209u^{35} - 0.299525u^{34} + \cdots + 0.309131u - 0.445002 \\ 0.211046u^{35} - 0.287825u^{34} + \cdots + 0.274209u + 0.206608 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $=$
$\frac{110199305673793977}{315381009766300841}u^{35} + \frac{250535878173710291}{315381009766300841}u^{34} + \cdots - \frac{683728502499797155}{28671000887845531}u + \frac{318623665053787648 8}{315381009766300841}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{36} + 2u^{35} + \cdots + 151u + 1$
c_2, c_4	$u^{36} - 10u^{35} + \cdots + 19u - 1$
c_3, c_6	$u^{36} + 3u^{35} + \cdots + 512u + 512$
c_5, c_9	$u^{36} - 2u^{35} + \cdots + u - 1$
c_7	$u^{36} - 6u^{35} + \cdots + 790797u - 444601$
c_8, c_{11}	$u^{36} + 2u^{35} + \cdots + 5u + 1$
c_{10}	$u^{36} + 6u^{35} + \cdots + u + 1$
c_{12}	$u^{36} - 22u^{35} + \cdots + u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{36} + 74y^{35} + \cdots - 20743y + 1$
c_2, c_4	$y^{36} - 2y^{35} + \cdots - 151y + 1$
c_3, c_6	$y^{36} - 57y^{35} + \cdots - 8126464y + 262144$
c_5, c_9	$y^{36} + 6y^{35} + \cdots + y + 1$
c_7	$y^{36} + 134y^{35} + \cdots - 15572451598723y + 197670049201$
c_8, c_{11}	$y^{36} - 22y^{35} + \cdots + y + 1$
c_{10}	$y^{36} + 50y^{35} + \cdots - 35y + 1$
c_{12}	$y^{36} - 14y^{35} + \cdots + 61y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.615843 + 0.841646I$ $a = 1.43664 - 0.80379I$ $b = 0.301969 + 0.746984I$	$4.77425 - 0.10637I$	$7.48146 + 1.59247I$
$u = -0.615843 - 0.841646I$ $a = 1.43664 + 0.80379I$ $b = 0.301969 - 0.746984I$	$4.77425 + 0.10637I$	$7.48146 - 1.59247I$
$u = -0.732748 + 0.745235I$ $a = -0.092665 + 1.018320I$ $b = 0.079470 - 1.108210I$	$5.18897 - 4.94800I$	$7.17998 + 5.99105I$
$u = -0.732748 - 0.745235I$ $a = -0.092665 - 1.018320I$ $b = 0.079470 + 1.108210I$	$5.18897 + 4.94800I$	$7.17998 - 5.99105I$
$u = 0.739358 + 0.601439I$ $a = 0.104781 - 0.811350I$ $b = 0.083215 + 0.736081I$	$1.62325 + 1.32416I$	$4.12502 - 2.60316I$
$u = 0.739358 - 0.601439I$ $a = 0.104781 + 0.811350I$ $b = 0.083215 - 0.736081I$	$1.62325 - 1.32416I$	$4.12502 + 2.60316I$
$u = 0.125468 + 1.044610I$ $a = 0.966320 + 0.109826I$ $b = 0.454746 - 0.102565I$	$-2.34146 + 2.27465I$	$2.44627 - 4.29475I$
$u = 0.125468 - 1.044610I$ $a = 0.966320 - 0.109826I$ $b = 0.454746 + 0.102565I$	$-2.34146 - 2.27465I$	$2.44627 + 4.29475I$
$u = -0.912979 + 0.603282I$ $a = -0.094847 + 0.581208I$ $b = 0.428044 - 0.685537I$	$4.35891 + 2.74036I$	$7.57970 - 3.16606I$
$u = -0.912979 - 0.603282I$ $a = -0.094847 - 0.581208I$ $b = 0.428044 + 0.685537I$	$4.35891 - 2.74036I$	$7.57970 + 3.16606I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.552810 + 1.007290I$ $a = 1.032000 + 0.667957I$ $b = 0.536480 - 0.548160I$	$0.20181 + 3.58839I$	$2.59766 - 4.47078I$
$u = 0.552810 - 1.007290I$ $a = 1.032000 - 0.667957I$ $b = 0.536480 + 0.548160I$	$0.20181 - 3.58839I$	$2.59766 + 4.47078I$
$u = 0.403187 + 0.692172I$ $a = 0.222101 - 1.316930I$ $b = -0.848909 + 0.718608I$	$-0.01273 + 3.75640I$	$1.96178 - 8.67374I$
$u = 0.403187 - 0.692172I$ $a = 0.222101 + 1.316930I$ $b = -0.848909 - 0.718608I$	$-0.01273 - 3.75640I$	$1.96178 + 8.67374I$
$u = -0.656810 + 1.069490I$ $a = 0.849616 - 0.843755I$ $b = 0.705777 + 0.623024I$	$2.76036 - 8.54206I$	$5.00446 + 8.46696I$
$u = -0.656810 - 1.069490I$ $a = 0.849616 + 0.843755I$ $b = 0.705777 - 0.623024I$	$2.76036 + 8.54206I$	$5.00446 - 8.46696I$
$u = 0.959801 + 0.917573I$ $a = -0.795562 - 0.722155I$ $b = 1.04335 + 1.28065I$	$15.4107 + 4.2831I$	$6.51475 - 3.16359I$
$u = 0.959801 - 0.917573I$ $a = -0.795562 + 0.722155I$ $b = 1.04335 - 1.28065I$	$15.4107 - 4.2831I$	$6.51475 + 3.16359I$
$u = -0.110883 + 0.661998I$ $a = -0.567675 + 0.716209I$ $b = -1.295050 - 0.200690I$	$-2.17080 - 1.28901I$	$-2.65057 + 3.66135I$
$u = -0.110883 - 0.661998I$ $a = -0.567675 - 0.716209I$ $b = -1.295050 + 0.200690I$	$-2.17080 + 1.28901I$	$-2.65057 - 3.66135I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.981174 + 0.904102I$ $a = -0.759912 + 0.643457I$ $b = 1.05191 - 1.17838I$	$11.26030 + 0.66616I$	$3.25844 + 0.20862I$
$u = -0.981174 - 0.904102I$ $a = -0.759912 - 0.643457I$ $b = 1.05191 + 1.17838I$	$11.26030 - 0.66616I$	$3.25844 - 0.20862I$
$u = 0.914043 + 0.991327I$ $a = 0.58196 + 1.72130I$ $b = 1.10681 - 1.16652I$	$15.1611 + 2.6010I$	$6.17050 - 1.49093I$
$u = 0.914043 - 0.991327I$ $a = 0.58196 - 1.72130I$ $b = 1.10681 + 1.16652I$	$15.1611 - 2.6010I$	$6.17050 + 1.49093I$
$u = 1.000680 + 0.916853I$ $a = -0.805879 - 0.579891I$ $b = 1.13554 + 1.14001I$	$15.0538 - 5.8256I$	$6.10110 + 2.81591I$
$u = 1.000680 - 0.916853I$ $a = -0.805879 + 0.579891I$ $b = 1.13554 - 1.14001I$	$15.0538 + 5.8256I$	$6.10110 - 2.81591I$
$u = -0.914948 + 1.013510I$ $a = 0.49309 - 1.64704I$ $b = 1.15250 + 1.09178I$	$10.89350 - 7.61965I$	$2.72159 + 4.20211I$
$u = -0.914948 - 1.013510I$ $a = 0.49309 + 1.64704I$ $b = 1.15250 - 1.09178I$	$10.89350 + 7.61965I$	$2.72159 - 4.20211I$
$u = 0.931682 + 1.021610I$ $a = 0.39982 + 1.67662I$ $b = 1.22688 - 1.08995I$	$14.6962 + 12.8981I$	$5.54056 - 6.97685I$
$u = 0.931682 - 1.021610I$ $a = 0.39982 - 1.67662I$ $b = 1.22688 + 1.08995I$	$14.6962 - 12.8981I$	$5.54056 + 6.97685I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.473309 + 0.394862I$ $a = 2.44876 - 1.56604I$ $b = -0.697476 - 0.163056I$	$0.829785 - 0.751885I$	$3.89282 - 2.36905I$
$u = 0.473309 - 0.394862I$ $a = 2.44876 + 1.56604I$ $b = -0.697476 + 0.163056I$	$0.829785 + 0.751885I$	$3.89282 + 2.36905I$
$u = -0.261492 + 0.555195I$ $a = -0.24853 + 1.82453I$ $b = -0.984945 - 0.277413I$	$-1.87419 - 0.91390I$	$-3.92701 + 0.44517I$
$u = -0.261492 - 0.555195I$ $a = -0.24853 - 1.82453I$ $b = -0.984945 + 0.277413I$	$-1.87419 + 0.91390I$	$-3.92701 - 0.44517I$
$u = 0.560238$ $a = 0.651078$ $b = 0.0833533$	1.12215	9.27350
$u = -0.387160$ $a = 9.00889$ $b = -1.04399$	-0.292584	54.7300

II.

$$\boldsymbol{I_2^u = \langle b+1,\ -u^8+2u^7+\cdots+a-1,\ u^9-u^8+2u^7-u^6+3u^5-u^4+2u^3+u+1\rangle}$$

(i) Arc colorings

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

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

$$a_3 = \begin{pmatrix}u^8-2u^7+3u^6-3u^5+4u^4-4u^3+3u^2-2u+1\\-1\end{pmatrix}$$

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

$$a_2 = \begin{pmatrix}u^8-2u^7+3u^6-3u^5+4u^4-4u^3+3u^2-2u\\-1\end{pmatrix}$$

$$a_1 = \begin{pmatrix}-1\\0\end{pmatrix}$$

$$a_4 = \begin{pmatrix}u^8-2u^7+3u^6-3u^5+4u^4-4u^3+3u^2-2u+1\\-1\end{pmatrix}$$

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

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

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

$$a_{11} = \begin{pmatrix}-u^3\\u^5+u^3+u\end{pmatrix}$$

$$a_{12} = \begin{pmatrix}u^8+u^6+u^4-1\\-u^8+u^7-u^6+2u^5-u^4+2u^3+2u+1\end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -3u^8-4u^6+3u^5-10u^4+u^3-7u^2+6u-4$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2	$(u-1)^9$
c_3, c_6	u^9
c_4	$(u+1)^9$
c_5	$u^9 - u^8 + 2u^7 - u^6 + 3u^5 - u^4 + 2u^3 + u + 1$
c_7, c_{10}	$u^9 + 3u^8 + 8u^7 + 13u^6 + 17u^5 + 17u^4 + 12u^3 + 6u^2 + u - 1$
c_8	$u^9 - u^8 - 2u^7 + 3u^6 + u^5 - 3u^4 + 2u^3 - u + 1$
c_9	$u^9 + u^8 + 2u^7 + u^6 + 3u^5 + u^4 + 2u^3 + u - 1$
c_{11}	$u^9 + u^8 - 2u^7 - 3u^6 + u^5 + 3u^4 + 2u^3 - u - 1$
c_{12}	$u^9 - 5u^8 + 12u^7 - 15u^6 + 9u^5 + u^4 - 4u^3 + 2u^2 + u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y-1)^9$
c_3, c_6	y^9
c_5, c_9	$y^9 + 3y^8 + 8y^7 + 13y^6 + 17y^5 + 17y^4 + 12y^3 + 6y^2 + y - 1$
c_7, c_{10}	$y^9 + 7y^8 + 20y^7 + 25y^6 + 5y^5 - 15y^4 + 22y^2 + 13y - 1$
c_8, c_{11}	$y^9 - 5y^8 + 12y^7 - 15y^6 + 9y^5 + y^4 - 4y^3 + 2y^2 + y - 1$
c_{12}	$y^9 - y^8 + 12y^7 - 7y^6 + 37y^5 + y^4 - 10y^2 + 5y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.140343 + 0.966856I$ $a = -1.004430 + 0.297869I$ $b = -1.00000$	$-3.42837 - 2.09337I$	$-6.19892 + 4.26451I$
$u = -0.140343 - 0.966856I$ $a = -1.004430 - 0.297869I$ $b = -1.00000$	$-3.42837 + 2.09337I$	$-6.19892 - 4.26451I$
$u = -0.628449 + 0.875112I$ $a = -0.275254 + 0.816341I$ $b = -1.00000$	$-1.02799 - 2.45442I$	$-0.00914 + 2.54651I$
$u = -0.628449 - 0.875112I$ $a = -0.275254 - 0.816341I$ $b = -1.00000$	$-1.02799 + 2.45442I$	$-0.00914 - 2.54651I$
$u = 0.796005 + 0.733148I$ $a = 0.070080 - 0.850995I$ $b = -1.00000$	$2.72642 - 1.33617I$	$5.35644 + 0.59665I$
$u = 0.796005 - 0.733148I$ $a = 0.070080 + 0.850995I$ $b = -1.00000$	$2.72642 + 1.33617I$	$5.35644 - 0.59665I$
$u = 0.728966 + 0.986295I$ $a = -0.195086 - 0.635552I$ $b = -1.00000$	$1.95319 + 7.08493I$	$3.81555 - 4.89194I$
$u = 0.728966 - 0.986295I$ $a = -0.195086 + 0.635552I$ $b = -1.00000$	$1.95319 - 7.08493I$	$3.81555 + 4.89194I$
$u = -0.512358$ $a = 3.80937$ $b = -1.00000$	-0.446489	-9.92790

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^9)(u^{36}+2u^{35}+\cdots+151u+1)$
c_2	$((u-1)^9)(u^{36}-10u^{35}+\cdots+19u-1)$
c_3, c_6	$u^9(u^{36}+3u^{35}+\cdots+512u+512)$
c_4	$((u+1)^9)(u^{36}-10u^{35}+\cdots+19u-1)$
c_5	$(u^9-u^8+\cdots+u+1)(u^{36}-2u^{35}+\cdots+u-1)$
c_7	$(u^9+3u^8+8u^7+13u^6+17u^5+17u^4+12u^3+6u^2+u-1)$ $\cdot(u^{36}-6u^{35}+\cdots+790797u-444601)$
c_8	$(u^9-u^8+\cdots-u+1)(u^{36}+2u^{35}+\cdots+5u+1)$
c_9	$(u^9+u^8+\cdots+u-1)(u^{36}-2u^{35}+\cdots+u-1)$
c_{10}	$(u^9+3u^8+8u^7+13u^6+17u^5+17u^4+12u^3+6u^2+u-1)$ $\cdot(u^{36}+6u^{35}+\cdots+u+1)$
c_{11}	$(u^9+u^8+\cdots-u-1)(u^{36}+2u^{35}+\cdots+5u+1)$
c_{12}	$(u^9-5u^8+12u^7-15u^6+9u^5+u^4-4u^3+2u^2+u-1)$ $\cdot(u^{36}-22u^{35}+\cdots+u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^9)(y^{36}+74y^{35}+\cdots-20743y+1)$
c_2, c_4	$((y-1)^9)(y^{36}-2y^{35}+\cdots-151y+1)$
c_3, c_6	$y^9(y^{36}-57y^{35}+\cdots-8126464y+262144)$
c_5, c_9	$(y^9+3y^8+8y^7+13y^6+17y^5+17y^4+12y^3+6y^2+y-1)$ $\cdot(y^{36}+6y^{35}+\cdots+y+1)$
c_7	$(y^9+7y^8+20y^7+25y^6+5y^5-15y^4+22y^2+13y-1)$ $\cdot(y^{36}+134y^{35}+\cdots-15572451598723y+197670049201)$
c_8, c_{11}	$(y^9-5y^8+12y^7-15y^6+9y^5+y^4-4y^3+2y^2+y-1)$ $\cdot(y^{36}-22y^{35}+\cdots+y+1)$
c_{10}	$(y^9+7y^8+20y^7+25y^6+5y^5-15y^4+22y^2+13y-1)$ $\cdot(y^{36}+50y^{35}+\cdots-35y+1)$
c_{12}	$(y^9-y^8+12y^7-7y^6+37y^5+y^4-10y^2+5y-1)$ $\cdot(y^{36}-14y^{35}+\cdots+61y+1)$