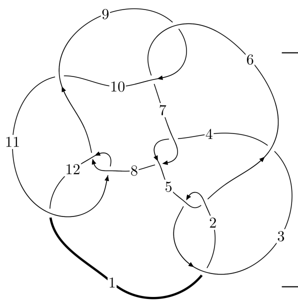
$12n_{0020}$ ($K12n_{0020}$)



A knot diagram[1]

Linearized knot diagam

$$\rightarrow \underset{3}{\downarrow} \rightarrow \underset{5}{\uparrow} \rightarrow \underset{6}{\downarrow} \rightarrow \underset{7}{\uparrow} \rightarrow \underset{2}{\uparrow} \rightarrow \underset{10}{\downarrow} \rightarrow \underset{5}{\uparrow} \rightarrow \underset{12}{\uparrow} \rightarrow \underset{6}{\downarrow} \rightarrow \underset{9}{\downarrow} \rightarrow \underset{8}{\uparrow} \rightarrow \underset{11}{\uparrow} \rightarrow$$

Solving Sequence

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

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

$$I_1^u = \langle 6.15417\times10^{24}u^{34}+4.90608\times10^{25}u^{33}+\cdots+1.32838\times10^{26}b-6.91943\times10^{25},$$
$$1.02387\times10^{26}u^{34}+2.68565\times10^{26}u^{33}+\cdots+1.32838\times10^{26}a-3.02927\times10^{26},\ u^{35}+3u^{34}+\cdots-2u-1$$
$$I_2^u = \langle 4u^5a+5u^4a+4u^5-7u^3a+5u^4-14u^2a-7u^3+5au-14u^2+17b+a+5u+1,$$
$$-u^5a+2u^3a-2u^4+u^2a-u^3+a^2-2au+2u^2+2u,\ u^6+u^5-u^4-2u^3+u+1\rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}}=0$, with total 47 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.

$\boldsymbol{I_1^u = \langle 6.15\times 10^{24}u^{34}+4.91\times 10^{25}u^{33}+\cdots+1.33\times 10^{26}b-6.92\times 10^{25},\ 1.02\times 10^{26}u^{34}+2.69\times 10^{26}u^{33}+\cdots+1.33\times 10^{26}a-3.03\times 10^{26},\ u^{35}+3u^{34}+\cdots-2u-1\rangle}$

(i) Arc colorings

$$a_6 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_2 = \begin{pmatrix}-0.770764u^{34}-2.02174u^{33}+\cdots-4.41998u+2.28042\\-0.0463282u^{34}-0.369327u^{33}+\cdots+0.317345u+0.520890\end{pmatrix}$$
$$a_7 = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_5 = \begin{pmatrix}1.26890u^{34}+2.84616u^{33}+\cdots-4.14141u+0.782118\\-0.0631189u^{34}-0.437170u^{33}+\cdots+0.413577u-0.482385\end{pmatrix}$$
$$a_3 = \begin{pmatrix}1.55412u^{34}+3.44078u^{33}+\cdots-4.40019u-0.146776\\-0.0448946u^{34}-0.427369u^{33}+\cdots+0.806983u-0.450739\end{pmatrix}$$
$$a_8 = \begin{pmatrix}0.690375u^{34}+2.08177u^{33}+\cdots-1.15296u-2.07734\\0.00686562u^{34}+0.115030u^{33}+\cdots-0.332383u-0.172479\end{pmatrix}$$
$$a_1 = \begin{pmatrix}0.700744u^{34}+1.98651u^{33}+\cdots-0.108902u-1.89421\\0.0103696u^{34}-0.0952592u^{33}+\cdots+1.04406u+0.183128\end{pmatrix}$$
$$a_4 = \begin{pmatrix}1.59901u^{34}+3.86815u^{33}+\cdots-5.20717u+0.303962\\-0.0448946u^{34}-0.427369u^{33}+\cdots+0.806983u-0.450739\end{pmatrix}$$
$$a_9 = \begin{pmatrix}u\\u\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-u^3\\-u^3+u\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}0.743963u^{34}+2.07828u^{33}+\cdots-0.147237u-1.89598\\0.0883859u^{34}+0.102670u^{33}+\cdots+1.52166u+0.0975759\end{pmatrix}$$

(ii) Obstruction class $=-1$

(iii) Cusp Shapes $=\frac{1385010110225360713883544471}{2213973219393169954446580 5}u^{34}+\frac{3682263585230138481960488 53}{2213973219393169954446580 5}u^{33}+\cdots-\frac{4235138584088859500879406 61}{4427946438786339908893161 0}u-\frac{1303096727063438302888601 33}{1475982146262113302964387 0}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{35} + 5u^{34} + \cdots + 6u - 1$
c_2, c_5	$u^{35} + 7u^{34} + \cdots - 6u - 1$
c_3	$u^{35} - 7u^{34} + \cdots - 25346u - 337$
c_4, c_7	$u^{35} + 3u^{34} + \cdots + 16384u + 4096$
c_6, c_9	$u^{35} + 3u^{34} + \cdots - 2u - 1$
c_8, c_{11}	$u^{35} + 3u^{34} + \cdots + 2u - 1$
c_{10}	$u^{35} + 3u^{34} + \cdots - 2u + 1$
c_{12}	$u^{35} - 23u^{34} + \cdots - 2u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{35} + 57y^{34} + \cdots + 6y - 1$
c_2, c_5	$y^{35} + 5y^{34} + \cdots + 6y - 1$
c_3	$y^{35} + 109y^{34} + \cdots + 279652022y - 113569$
c_4, c_7	$y^{35} - 65y^{34} + \cdots - 83886080y - 16777216$
c_6, c_9	$y^{35} - 3y^{34} + \cdots - 2y - 1$
c_8, c_{11}	$y^{35} - 23y^{34} + \cdots - 2y - 1$
c_{10}	$y^{35} + 61y^{34} + \cdots + 6y - 1$
c_{12}	$y^{35} - 19y^{34} + \cdots + 182y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.991966+0.091776I$ $a=\ \ 0.72692+1.45829I$ $b=-0.068558+0.738981I$	$-2.80047+0.03393I$	$-4.96122-0.73381I$
$u=-0.991966-0.091776I$ $a=\ \ 0.72692-1.45829I$ $b=-0.068558-0.738981I$	$-2.80047-0.03393I$	$-4.96122+0.73381I$
$u=\ \ 0.909482+0.380777I$ $a=\ \ 0.29144-1.73248I$ $b=\ \ 0.014187-1.000160I$	$-1.72254-4.24984I$	$-2.18876+7.04122I$
$u=\ \ 0.909482-0.380777I$ $a=\ \ 0.29144+1.73248I$ $b=\ \ 0.014187+1.000160I$	$-1.72254+4.24984I$	$-2.18876-7.04122I$
$u=\ \ 0.576907+0.754246I$ $a=\ \ 0.591225+0.311198I$ $b=-0.377861-0.131381I$	$2.25585+1.15466I$	$4.96533-0.29519I$
$u=\ \ 0.576907-0.754246I$ $a=\ \ 0.591225-0.311198I$ $b=-0.377861+0.131381I$	$2.25585-1.15466I$	$4.96533+0.29519I$
$u=-1.010040+0.446446I$ $a=\ \ 0.650598-0.883449I$ $b=-0.388281-0.417527I$	$-1.67432+1.71265I$	$-0.948963+0.233573I$
$u=-1.010040-0.446446I$ $a=\ \ 0.650598+0.883449I$ $b=-0.388281+0.417527I$	$-1.67432-1.71265I$	$-0.948963-0.233573I$
$u=-0.438128+0.690005I$ $a=-0.45748+1.41127I$ $b=\ \ 0.70266+1.26431I$	$2.97461+5.04238I$	$7.52995-7.92929I$
$u=-0.438128-0.690005I$ $a=-0.45748-1.41127I$ $b=\ \ 0.70266-1.26431I$	$2.97461-5.04238I$	$7.52995+7.92929I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.125324 + 0.796091I$ $a = 0.172538 - 0.306733I$ $b = 1.204060 - 0.564978I$	$5.45936 - 1.99795I$	$12.38801 + 3.24689I$
$u = 0.125324 - 0.796091I$ $a = 0.172538 + 0.306733I$ $b = 1.204060 + 0.564978I$	$5.45936 + 1.99795I$	$12.38801 - 3.24689I$
$u = 1.114360 + 0.664977I$ $a = 0.458155 + 0.916311I$ $b = -0.612297 + 0.465157I$	$0.69794 - 6.72088I$	$4.01525 + 3.80549I$
$u = 1.114360 - 0.664977I$ $a = 0.458155 - 0.916311I$ $b = -0.612297 - 0.465157I$	$0.69794 + 6.72088I$	$4.01525 - 3.80549I$
$u = 0.675945$ $a = 2.49935$ $b = 0.470215$	2.49299	1.75040
$u = -0.019593 + 0.666979I$ $a = 0.386507 - 0.586859I$ $b = 0.438826 + 0.519059I$	$0.93795 + 1.36112I$	$3.65858 - 4.50590I$
$u = -0.019593 - 0.666979I$ $a = 0.386507 + 0.586859I$ $b = 0.438826 - 0.519059I$	$0.93795 - 1.36112I$	$3.65858 + 4.50590I$
$u = -0.000172 + 0.620501I$ $a = 0.266778 - 1.045710I$ $b = 0.458461 + 0.655103I$	$0.93048 + 1.37281I$	$3.33756 - 4.46340I$
$u = -0.000172 - 0.620501I$ $a = 0.266778 + 1.045710I$ $b = 0.458461 - 0.655103I$	$0.93048 - 1.37281I$	$3.33756 + 4.46340I$
$u = 0.428622 + 0.434204I$ $a = -1.22891 - 2.28547I$ $b = 0.489459 - 1.005660I$	$-0.28045 - 2.82979I$	$1.83395 + 3.29320I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.428622 - 0.434204I$ $a = -1.22891 + 2.28547I$ $b = 0.489459 + 1.005660I$	$-0.28045 + 2.82979I$	$1.83395 - 3.29320I$
$u = -0.98049 + 1.10389I$ $a = -0.491542 + 0.320489I$ $b = -1.14756 + 0.89148I$	$16.2670 + 5.6984I$	$6.10259 - 2.75484I$
$u = -0.98049 - 1.10389I$ $a = -0.491542 - 0.320489I$ $b = -1.14756 - 0.89148I$	$16.2670 - 5.6984I$	$6.10259 + 2.75484I$
$u = 0.99399 + 1.11491I$ $a = -0.412944 - 0.428999I$ $b = -1.046520 - 0.943327I$	$11.73730 - 0.22593I$	0
$u = 0.99399 - 1.11491I$ $a = -0.412944 + 0.428999I$ $b = -1.046520 + 0.943327I$	$11.73730 + 0.22593I$	0
$u = -1.10793 + 1.00267I$ $a = 0.35872 - 1.51332I$ $b = -1.04229 - 1.00409I$	$15.8086 + 2.0235I$	$5.61504 + 0.I$
$u = -1.10793 - 1.00267I$ $a = 0.35872 + 1.51332I$ $b = -1.04229 + 1.00409I$	$15.8086 - 2.0235I$	$5.61504 + 0.I$
$u = -1.08711 + 1.02841I$ $a = 0.53533 - 1.58797I$ $b = -0.94816 - 1.13708I$	$15.3839 + 13.3033I$	$4.97161 - 6.77945I$
$u = -1.08711 - 1.02841I$ $a = 0.53533 + 1.58797I$ $b = -0.94816 + 1.13708I$	$15.3839 - 13.3033I$	$4.97161 + 6.77945I$
$u = -1.01043 + 1.10512I$ $a = -0.436340 + 0.546687I$ $b = -1.01525 + 1.03906I$	$15.6838 - 5.5084I$	$5.51943 + 2.85249I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.01043 - 1.10512I$ $a = -0.436340 - 0.546687I$ $b = -1.01525 - 1.03906I$	$15.6838 + 5.5084I$	$5.51943 - 2.85249I$
$u = 1.10529 + 1.02256I$ $a = 0.46909 + 1.51898I$ $b = -0.96358 + 1.05901I$	$11.33260 - 7.58418I$	$0. + 4.10781I$
$u = 1.10529 - 1.02256I$ $a = 0.46909 - 1.51898I$ $b = -0.96358 - 1.05901I$	$11.33260 + 7.58418I$	$0. - 4.10781I$
$u = -0.446086 + 0.207143I$ $a = 5.87024 - 1.44569I$ $b = 0.567586 - 0.882988I$	$1.99036 - 2.28427I$	$-9.4417 - 11.9389I$
$u = -0.446086 - 0.207143I$ $a = 5.87024 + 1.44569I$ $b = 0.567586 + 0.882988I$	$1.99036 + 2.28427I$	$-9.4417 + 11.9389I$

II.

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

(i) Arc colorings

$$a_6 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_2 = \begin{pmatrix}a\\-0.235294au^5-0.235294u^5+\cdots-0.0588235a-0.0588235\end{pmatrix}$$
$$a_7 = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_5 = \begin{pmatrix}0.235294au^5-0.764706u^5+\cdots+1.05882a+0.0588235\\-0.235294au^5-0.235294u^5+\cdots-0.0588235a-1.05882\end{pmatrix}$$
$$a_3 = \begin{pmatrix}-u^5+2u^3+u^2+a-2u-1\\-0.235294au^5-0.235294u^5+\cdots-0.0588235a-1.05882\end{pmatrix}$$
$$a_8 = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_1 = \begin{pmatrix}-1\\0\end{pmatrix}$$
$$a_4 = \begin{pmatrix}0.235294au^5-0.764706u^5+\cdots+1.05882a+0.0588235\\-0.235294au^5-0.235294u^5+\cdots-0.0588235a-1.05882\end{pmatrix}$$
$$a_9 = \begin{pmatrix}u\\u\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-u^3\\-u^3+u\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}u^5-2u^3+u\\u^5+u^4-2u^3-u^2+u+1\end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes
$= \frac{33}{17}u^5a+\frac{3}{17}u^4a+\frac{33}{17}u^5-\frac{62}{17}u^3a+\frac{88}{17}u^4-\frac{56}{17}u^2a-\frac{62}{17}u^3+\frac{54}{17}au-\frac{124}{17}u^2+\frac{4}{17}a-\frac{14}{17}u+\frac{106}{17}$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.002190 + 0.295542I$ $a = 0.315127 + 1.283850I$ $b = 0.500000 + 0.866025I$	$-1.89061 + 1.10558I$	$0.30406 - 2.63469I$
$u = 1.002190 + 0.295542I$ $a = -0.54572 - 1.78086I$ $b = 0.500000 - 0.866025I$	$-1.89061 - 2.95419I$	$-2.90246 + 4.54482I$
$u = 1.002190 - 0.295542I$ $a = 0.315127 - 1.283850I$ $b = 0.500000 - 0.866025I$	$-1.89061 - 1.10558I$	$0.30406 + 2.63469I$
$u = 1.002190 - 0.295542I$ $a = -0.54572 + 1.78086I$ $b = 0.500000 + 0.866025I$	$-1.89061 + 2.95419I$	$-2.90246 - 4.54482I$
$u = -0.428243 + 0.664531I$ $a = 0.431357 + 0.434984I$ $b = 0.500000 - 0.866025I$	$1.89061 - 2.95419I$	$2.82220 + 4.67955I$
$u = -0.428243 + 0.664531I$ $a = -2.09239 + 1.02210I$ $b = 0.500000 + 0.866025I$	$1.89061 + 1.10558I$	$6.66783 - 4.72351I$
$u = -0.428243 - 0.664531I$ $a = 0.431357 - 0.434984I$ $b = 0.500000 + 0.866025I$	$1.89061 + 2.95419I$	$2.82220 - 4.67955I$
$u = -0.428243 - 0.664531I$ $a = -2.09239 - 1.02210I$ $b = 0.500000 - 0.866025I$	$1.89061 - 1.10558I$	$6.66783 + 4.72351I$
$u = -1.073950 + 0.558752I$ $a = 0.179704 - 0.925804I$ $b = 0.500000 - 0.866025I$	$3.66314I$	$3.68173 - 3.33422I$
$u = -1.073950 + 0.558752I$ $a = -0.78808 + 1.48456I$ $b = 0.500000 + 0.866025I$	$7.72290I$	$-0.57335 - 9.26831I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.073950-0.558752I$ $a=\quad 0.179704+0.925804I$ $b=\quad 0.500000+0.866025I$	$-\,3.66314I$	$3.68173+3.33422I$
$u=-1.073950-0.558752I$ $a=-0.78808-1.48456I$ $b=\quad 0.500000-0.866025I$	$-\,7.72290I$	$-0.57335+9.26831I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^2-u+1)^6)(u^{35}+5u^{34}+\cdots+6u-1)$
c_2	$((u^2+u+1)^6)(u^{35}+7u^{34}+\cdots-6u-1)$
c_3	$((u^2-u+1)^6)(u^{35}-7u^{34}+\cdots-25346u-337)$
c_4, c_7	$u^{12}(u^{35}+3u^{34}+\cdots+16384u+4096)$
c_5	$((u^2-u+1)^6)(u^{35}+7u^{34}+\cdots-6u-1)$
c_6	$((u^6+u^5-u^4-2u^3+u+1)^2)(u^{35}+3u^{34}+\cdots-2u-1)$
c_8	$((u^6-u^5-u^4+2u^3-u+1)^2)(u^{35}+3u^{34}+\cdots+2u-1)$
c_9	$((u^6-u^5-u^4+2u^3-u+1)^2)(u^{35}+3u^{34}+\cdots-2u-1)$
c_{10}	$((u^6+3u^5+5u^4+4u^3+2u^2+u+1)^2)(u^{35}+3u^{34}+\cdots-2u+1)$
c_{11}	$((u^6+u^5-u^4-2u^3+u+1)^2)(u^{35}+3u^{34}+\cdots+2u-1)$
c_{12}	$((u^6-3u^5+5u^4-4u^3+2u^2-u+1)^2)(u^{35}-23u^{34}+\cdots-2u-1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y^2+y+1)^6)(y^{35}+57y^{34}+\cdots+6y-1)$
c_2, c_5	$((y^2+y+1)^6)(y^{35}+5y^{34}+\cdots+6y-1)$
c_3	$((y^2+y+1)^6)(y^{35}+109y^{34}+\cdots+2.79652\times 10^8 y-113569)$
c_4, c_7	$y^{12}(y^{35}-65y^{34}+\cdots-8.38861\times 10^7 y-1.67772\times 10^7)$
c_6, c_9	$((y^6-3y^5+5y^4-4y^3+2y^2-y+1)^2)(y^{35}-3y^{34}+\cdots-2y-1)$
c_8, c_{11}	$((y^6-3y^5+5y^4-4y^3+2y^2-y+1)^2)(y^{35}-23y^{34}+\cdots-2y-1)$
c_{10}	$((y^6+y^5+5y^4+6y^2+3y+1)^2)(y^{35}+61y^{34}+\cdots+6y-1)$
c_{12}	$((y^6+y^5+5y^4+6y^2+3y+1)^2)(y^{35}-19y^{34}+\cdots+182y-1)$