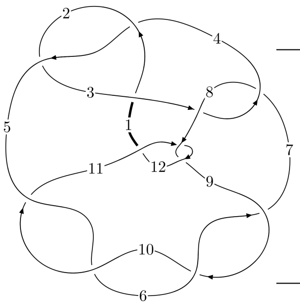
$12n_{0217}$ ($K12n_{0217}$)



A knot diagram[1]

Linearized knot diagam

$\rightarrow\downarrow\rightarrow\downarrow\rightarrow\downarrow\rightarrow\downarrow\rightarrow\downarrow\rightarrow\downarrow\rightarrow\downarrow\rightarrow\downarrow\rightarrow\downarrow\rightarrow\downarrow\rightarrow\downarrow\rightarrow\downarrow\rightarrow$

3 5 8 2 10 9 4 12 6 5 8 11

Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & -701858710240u^{15} + 1651068868988u^{14} + \cdots + 118483015541 32b + 11254876138420, \\
& 11529472260049u^{15} - 21953100573652u^{14} + \cdots + 71089809324792a + 197556161100296, \\
& u^{16} - 2u^{15} + \cdots - 8u - 8\rangle \\
I_2^u = \langle & b + 1,\ 4u^4 - 3u^3 + 16u^2 + 3a - 8u + 10,\ u^5 - u^4 + 4u^3 - 3u^2 + 3u - 1\rangle \\
I_3^u = \langle & -32a^2u - 18a^2 + 10au + 593b + 228a - 70u - 410,\ 4a^3 - 6a^2u - 4a^2 - 8au - 8a - u - 36,\ u^2 + 2\rangle
\end{aligned}$$

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

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 30 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.

$\boldsymbol{I_1^u = \langle -7.02\times10^{11}u^{15}+1.65\times10^{12}u^{14}+\cdots+1.18\times10^{13}b+1.13\times10^{13},\ 1.15\times10^{13}u^{15}-2.20\times10^{13}u^{14}+\cdots+7.11\times10^{13}a+1.98\times10^{14},\ u^{16}-2u^{15}+\cdots-8u-8\rangle}$

(i) Arc colorings

$$a_5 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_6 = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_3 = \begin{pmatrix}-0.162182u^{15}+0.308808u^{14}+\cdots-20.6422u-2.77897\\0.0592371u^{15}-0.139351u^{14}+\cdots-1.86827u-0.949915\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-u\\u\end{pmatrix}$$
$$a_2 = \begin{pmatrix}-0.102945u^{15}+0.169457u^{14}+\cdots-22.5104u-3.72888\\0.0592371u^{15}-0.139351u^{14}+\cdots-1.86827u-0.949915\end{pmatrix}$$
$$a_1 = \begin{pmatrix}-0.0354092u^{15}+0.0455388u^{14}+\cdots-6.52383u-0.485363\\0.0593874u^{15}-0.138415u^{14}+\cdots-0.826057u-0.465521\end{pmatrix}$$
$$a_4 = \begin{pmatrix}-0.152070u^{15}+0.290947u^{14}+\cdots-18.3389u-2.21890\\0.000477366u^{15}-0.0269082u^{14}+\cdots-1.35512u+0.0663976\end{pmatrix}$$
$$a_9 = \begin{pmatrix}u\\u^3+u\end{pmatrix}$$
$$a_7 = \begin{pmatrix}u^2+1\\u^4+2u^2\end{pmatrix}$$
$$a_8 = \begin{pmatrix}-0.0357612u^{15}+0.0641648u^{14}+\cdots-6.69137u-0.844724\\-0.0626778u^{15}+0.160544u^{14}+\cdots+0.313570u+0.0472977\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}-0.0357612u^{15}+0.0641648u^{14}+\cdots-6.69137u-0.844724\\0.0597395u^{15}-0.157041u^{14}+\cdots-0.658521u-0.106159\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$= -\frac{1637037920523}{11848301554132}u^{15}+\frac{2186962426267}{8886226165599}u^{14}+\cdots-\frac{226259574309964}{2962075388533}u-\frac{279610162162742}{8886226165599}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{16} - 5u^{15} + \cdots + 2230u + 81$
c_2, c_4	$u^{16} - 9u^{15} + \cdots + 40u + 9$
c_3, c_7	$u^{16} + 2u^{15} + \cdots + 192u - 288$
c_5, c_6, c_9 c_{10}	$u^{16} - 2u^{15} + \cdots - 8u - 8$
c_8, c_{11}	$u^{16} + 5u^{15} + \cdots + 77u + 49$
c_{12}	$u^{16} - 7u^{15} + \cdots + 11515u + 2401$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{16} + 125y^{15} + \cdots - 5228050y + 6561$
c_2, c_4	$y^{16} + 5y^{15} + \cdots - 2230y + 81$
c_3, c_7	$y^{16} + 78y^{15} + \cdots - 935424y + 82944$
c_5, c_6, c_9 c_{10}	$y^{16} + 32y^{15} + \cdots - 1216y + 64$
c_8, c_{11}	$y^{16} + 7y^{15} + \cdots - 11515y + 2401$
c_{12}	$y^{16} + 223y^{15} + \cdots - 218306123y + 5764801$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.010246 + 1.149370I$ $a = 0.791080 - 0.938892I$ $b = -0.214689 + 0.526707I$	$2.75443 + 1.56440I$	$-5.92206 - 4.42049I$
$u = 0.010246 - 1.149370I$ $a = 0.791080 + 0.938892I$ $b = -0.214689 - 0.526707I$	$2.75443 - 1.56440I$	$-5.92206 + 4.42049I$
$u = -0.523193 + 0.477390I$ $a = 0.845221 + 0.799076I$ $b = -0.840636 - 0.527182I$	$-0.699414 - 0.322898I$	$-10.19188 - 0.54504I$
$u = -0.523193 - 0.477390I$ $a = 0.845221 - 0.799076I$ $b = -0.840636 + 0.527182I$	$-0.699414 + 0.322898I$	$-10.19188 + 0.54504I$
$u = -0.307601 + 0.557834I$ $a = 0.369622 + 0.769525I$ $b = 0.719726 - 0.602269I$	$1.30361 + 3.67873I$	$-7.60649 - 8.93405I$
$u = -0.307601 - 0.557834I$ $a = 0.369622 - 0.769525I$ $b = 0.719726 + 0.602269I$	$1.30361 - 3.67873I$	$-7.60649 + 8.93405I$
$u = -0.398844$ $a = 0.830482$ $b = -0.188115$	-0.713389	-13.5530
$u = 0.02902 + 1.65352I$ $a = -0.817077 + 0.790518I$ $b = 1.069770 - 0.413434I$	$9.00996 + 4.18278I$	$-7.18732 - 6.68831I$
$u = 0.02902 - 1.65352I$ $a = -0.817077 - 0.790518I$ $b = 1.069770 + 0.413434I$	$9.00996 - 4.18278I$	$-7.18732 + 6.68831I$
$u = 0.234441$ $a = -12.8312$ $b = -0.889606$	-2.92059	-60.0340

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.42095 + 1.83693I$ $a = -1.25179 - 2.08277I$ $b = 1.56472 + 0.94125I$	$-14.6966 - 11.6900I$	$-9.38618 + 4.27031I$
$u = 0.42095 - 1.83693I$ $a = -1.25179 + 2.08277I$ $b = 1.56472 - 0.94125I$	$-14.6966 + 11.6900I$	$-9.38618 - 4.27031I$
$u = 1.17925 + 1.85135I$ $a = -0.79943 - 2.75277I$ $b = 1.31233 + 2.03102I$	$14.0944 - 4.3162I$	$-8.81389 + 1.69710I$
$u = 1.17925 - 1.85135I$ $a = -0.79943 + 2.75277I$ $b = 1.31233 - 2.03102I$	$14.0944 + 4.3162I$	$-8.81389 - 1.69710I$
$u = 0.27353 + 2.59286I$ $a = -1.63728 + 2.97926I$ $b = 1.42763 - 2.33180I$	$-11.59440 - 0.80168I$	$-8.76521 + 0.15055I$
$u = 0.27353 - 2.59286I$ $a = -1.63728 - 2.97926I$ $b = 1.42763 + 2.33180I$	$-11.59440 + 0.80168I$	$-8.76521 - 0.15055I$

II.

$$\boldsymbol{I_2^u = \langle b+1,\ 4u^4-3u^3+16u^2+3a-8u+10,\ u^5-u^4+4u^3-3u^2+3u-1\rangle}$$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -\frac{4}{3}u^4+u^3+\cdots+\frac{8}{3}u-\frac{10}{3} \\ -1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -\frac{4}{3}u^4+u^3+\cdots+\frac{8}{3}u-\frac{13}{3} \\ -1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -\frac{4}{3}u^4+u^3+\cdots+\frac{8}{3}u-\frac{10}{3} \\ -1 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} u \\ u^3+u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u^2+1 \\ u^4+2u^2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} u^2+1 \\ u^4+2u^2 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -u^2-1 \\ u^2 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -\frac{14}{9}u^4+\frac{11}{3}u^3-\frac{77}{9}u^2+\frac{88}{9}u-\frac{137}{9}$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.233677 + 0.885557I$ $a = 0.162657 + 0.410020I$ $b = -1.00000$	$0.17487 - 2.21397I$	$-9.22580 + 4.04289I$
$u = 0.233677 - 0.885557I$ $a = 0.162657 - 0.410020I$ $b = -1.00000$	$0.17487 + 2.21397I$	$-9.22580 - 4.04289I$
$u = 0.416284$ $a = -3.11537$ $b = -1.00000$	-2.52712	-12.4170
$u = 0.05818 + 1.69128I$ $a = 0.728361 + 0.139255I$ $b = -1.00000$	$9.31336 - 3.33174I$	$-4.67696 - 1.07305I$
$u = 0.05818 - 1.69128I$ $a = 0.728361 - 0.139255I$ $b = -1.00000$	$9.31336 + 3.33174I$	$-4.67696 + 1.07305I$

III. $\boldsymbol{I_3^u =}$
$\boldsymbol{\langle -32a^2u+10au+\cdots+228a-410,\ 4a^3-6a^2u-4a^2-8au-8a-u-36,\ u^2+2\rangle}$

(i) Arc colorings

$$a_5 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_6 = \begin{pmatrix}1\\-2\end{pmatrix}$$
$$a_3 = \begin{pmatrix}a\\0.0539629a^2u-0.0168634au+\cdots-0.384486a+0.691400\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-u\\u\end{pmatrix}$$
$$a_2 = \begin{pmatrix}0.0539629a^2u-0.0168634au+\cdots+0.615514a+0.691400\\0.0539629a^2u-0.0168634au+\cdots-0.384486a+0.691400\end{pmatrix}$$
$$a_1 = \begin{pmatrix}-0.0607083a^2u-0.231029au+\cdots-0.0674536a-1.52782\\0.0607083a^2u+0.231029au+\cdots+0.0674536a+1.52782\end{pmatrix}$$
$$a_4 = \begin{pmatrix}-0.0758853a^2u-0.0387858au+\cdots-0.0843170a+0.590219\\0.00674536a^2u+0.247892au+\cdots+0.451939a-0.163575\end{pmatrix}$$
$$a_9 = \begin{pmatrix}u\\-u\end{pmatrix}$$
$$a_7 = \begin{pmatrix}-1\\0\end{pmatrix}$$
$$a_8 = \begin{pmatrix}-0.0607083a^2u-0.231029au+\cdots-0.0674536a-1.52782\\0.0607083a^2u+0.231029au+\cdots+0.0674536a+1.52782\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}-0.0607083a^2u-0.231029au+\cdots-0.0674536a-1.52782\\0.0607083a^2u+0.231029au+\cdots+0.0674536a+1.52782\end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= \frac{128}{593}a^2u+\frac{72}{593}a^2-\frac{40}{593}au-\frac{912}{593}a+\frac{280}{593}u-\frac{5476}{593}$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.414210I$ $a = -1.15247 - 1.25098I$ $b = 0.877439 + 0.744862I$	$6.31400 - 2.82812I$	$-8.49024 + 2.97945I$
$u = 1.414210I$ $a = -0.35729 + 1.72847I$ $b = 0.877439 - 0.744862I$	$6.31400 + 2.82812I$	$-8.49024 - 2.97945I$
$u = 1.414210I$ $a = 2.50976 + 1.64382I$ $b = -0.754878$	2.17641	$-15.0195 + 0.I$
$u = -1.414210I$ $a = -1.15247 + 1.25098I$ $b = 0.877439 - 0.744862I$	$6.31400 + 2.82812I$	$-8.49024 - 2.97945I$
$u = -1.414210I$ $a = -0.35729 - 1.72847I$ $b = 0.877439 + 0.744862I$	$6.31400 - 2.82812I$	$-8.49024 + 2.97945I$
$u = -1.414210I$ $a = 2.50976 - 1.64382I$ $b = -0.754878$	2.17641	$-15.0195 + 0.I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -2v - 6$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3, c_7	$y^3 + 3y^2 + 2y - 1$
c_2, c_4	$y^3 - y^2 + 2y - 1$
c_5, c_6, c_9 c_{10}	y^3
c_8, c_{11}, 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
$v = 0.539798 + 0.182582I$ $a = 0$ $b = 0.877439 + 0.744862I$	$1.37919 - 2.82812I$	$-7.07960 - 0.36516I$
$v = 0.539798 - 0.182582I$ $a = 0$ $b = 0.877439 - 0.744862I$	$1.37919 + 2.82812I$	$-7.07960 + 0.36516I$
$v = -3.07960$ $a = 0$ $b = -0.754878$	-2.75839	0.159190

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^5)(u^3-u^2+2u-1)^3(u^{16}-5u^{15}+\cdots+2230u+81)$
c_2	$((u-1)^5)(u^3+u^2-1)^3(u^{16}-9u^{15}+\cdots+40u+9)$
c_3	$u^5(u^3-u^2+2u-1)(u^3+u^2+2u+1)^2(u^{16}+2u^{15}+\cdots+192u-288)$
c_4	$((u+1)^5)(u^3-u^2+1)^3(u^{16}-9u^{15}+\cdots+40u+9)$
c_5, c_6	$u^3(u^2+2)^3(u^5-u^4+\cdots+3u-1)(u^{16}-2u^{15}+\cdots-8u-8)$
c_7	$u^5(u^3-u^2+2u-1)^2(u^3+u^2+2u+1)(u^{16}+2u^{15}+\cdots+192u-288)$
c_8	$((u-1)^3)(u+1)^6(u^5-u^4+\cdots+u-1)(u^{16}+5u^{15}+\cdots+77u+49)$
c_9, c_{10}	$u^3(u^2+2)^3(u^5+u^4+\cdots+3u+1)(u^{16}-2u^{15}+\cdots-8u-8)$
c_{11}	$((u-1)^6)(u+1)^3(u^5+u^4+\cdots+u+1)(u^{16}+5u^{15}+\cdots+77u+49)$
c_{12}	$(u+1)^9(u^5+u^4+4u^3+3u^2+3u+1)$ $\cdot\,(u^{16}-7u^{15}+\cdots+11515u+2401)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y-1)^5(y^3+3y^2+2y-1)^3$ $\cdot (y^{16}+125y^{15}+\cdots-5228050y+6561)$
c_2, c_4	$((y-1)^5)(y^3-y^2+2y-1)^3(y^{16}+5y^{15}+\cdots-2230y+81)$
c_3, c_7	$y^5(y^3+3y^2+2y-1)^3(y^{16}+78y^{15}+\cdots-935424y+82944)$
c_5, c_6, c_9 c_{10}	$y^3(y+2)^6(y^5+7y^4+16y^3+13y^2+3y-1)$ $\cdot (y^{16}+32y^{15}+\cdots-1216y+64)$
c_8, c_{11}	$(y-1)^9(y^5-y^4+4y^3-3y^2+3y-1)$ $\cdot (y^{16}+7y^{15}+\cdots-11515y+2401)$
c_{12}	$(y-1)^9(y^5+7y^4+16y^3+13y^2+3y-1)$ $\cdot (y^{16}+223y^{15}+\cdots-218306123y+5764801)$