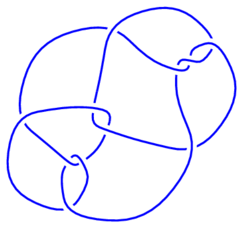
$11n_{20}$ ($K11n_{20}$)



[1]

Arc Sequences

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

5 1 9 2 3 10 11 1 3 8 7

Solving Sequence

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

Representation Ideals

$$I = \bigcap_{i=1}^{2} I_i^u$$

$$\begin{aligned}
I_1^u = \langle & a^6 + 7a^5 + 19a^4 + 26a^3 + 22a^2 + 15a + 7,\ a^5 + 4a^4 + 7a^3 + 10a^2 + 5b + 12a + 4, \\
& 2a^5 + 13a^4 + 29a^3 + 30a^2 + 24a + 5u + 18\rangle \\
I_2^u = \langle & u^{17} + 4u^{16} + \cdots + 3u + 1, \\
& -u^{16} - 3u^{15} - 5u^{14} - 4u^{13} - 7u^{12} - 10u^{11} - 10u^{10} - 7u^8 - 8u^7 - 3u^6 + 3u^5 - 5u^4 + 10u^2 + 4a - 9u + 4, \\
& u^{16} + 4u^{15} + \cdots + 4b + 1\rangle
\end{aligned}$$

There are 2 irreducible components with 23 representations.

[1]The knot diagram image is adapter from "C. Livingston and A. H. Moore, KnotInfo: Table of Knot Invariants, http://www.indiana.edu/ knotinfo"

I. $\boldsymbol{I_1^u = \langle a^6 + 7a^5 + 19a^4 + 26a^3 + 22a^2 + 15a + 7,\ a^5 + 4a^4 + 7a^3 + 10a^2 + 5b + 12a + 4,\ 2a^5 + 13a^4 + 29a^3 + 30a^2 + 24a + 5u + 18\rangle}$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0 \\ -\frac{2}{5}a^5 - \frac{13}{5}a^4 + \cdots - \frac{24}{5}a - \frac{18}{5} \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 1 \\ -\frac{2}{5}a^5 - \frac{13}{5}a^4 + \cdots - \frac{24}{5}a - \frac{13}{5} \end{pmatrix}$$
$$a_3 = \begin{pmatrix} \frac{2}{5}a^5 + \frac{13}{5}a^4 + \cdots + \frac{24}{5}a + \frac{18}{5} \\ -\frac{2}{5}a^5 - \frac{13}{5}a^4 + \cdots - \frac{24}{5}a - \frac{13}{5} \end{pmatrix}$$
$$a_7 = \begin{pmatrix} a \\ -\frac{1}{5}a^5 - \frac{4}{5}a^4 + \cdots - \frac{12}{5}a - \frac{4}{5} \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} \frac{3}{5}a^5 + \frac{12}{5}a^4 + \cdots + \frac{11}{5}a + \frac{12}{5} \\ -\frac{2}{5}a^5 - \frac{8}{5}a^4 + \cdots - \frac{9}{5}a - \frac{8}{5} \end{pmatrix}$$
$$a_8 = \begin{pmatrix} a^5 + 5a^4 + 8a^3 + 5a^2 + 3a + 2 \\ -\frac{1}{5}a^5 - \frac{4}{5}a^4 + \cdots + \frac{3}{5}a + \frac{1}{5} \end{pmatrix}$$
$$a_9 = \begin{pmatrix} \frac{4}{5}a^5 + \frac{21}{5}a^4 + \cdots + \frac{18}{5}a + \frac{11}{5} \\ -\frac{1}{5}a^5 - \frac{4}{5}a^4 + \cdots + \frac{3}{5}a + \frac{1}{5} \end{pmatrix}$$
$$a_4 = \begin{pmatrix} \frac{2}{5}a^5 + \frac{13}{5}a^4 + \cdots + \frac{24}{5}a + \frac{18}{5} \\ -\frac{2}{5}a^5 - \frac{13}{5}a^4 + \cdots - \frac{24}{5}a - \frac{13}{5} \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} \frac{4}{5}a^5 + \frac{21}{5}a^4 + \cdots + \frac{18}{5}a + \frac{11}{5} \\ -\frac{1}{5}a^5 - \frac{4}{5}a^4 + \cdots + \frac{3}{5}a + \frac{1}{5} \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes =unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.500000-0.866025I$ $a=-2.23956-0.46731I$ $b=\ \ 0.215080+1.307141I$	$-3.02413+4.85801I$	$-1.45566-6.64456I$
$u=-0.500000+0.866025I$ $a=-2.23956+0.46731I$ $b=\ \ 0.215080-1.307141I$	$-3.02413-4.85801I$	$-1.45566+6.64456I$
$u=-0.500000+0.866025I$ $a=-1.284920-0.493496I$ $b=\ \ 0.569840$	$1.11345-2.02988I$	$5.85715+4.49037I$
$u=-0.500000-0.866025I$ $a=-1.284920+0.493496I$ $b=\ \ 0.569840$	$1.11345+2.02988I$	$5.85715-4.49037I$
$u=-0.500000+0.866025I$ $a=\ \ 0.024478-0.839835I$ $b=\ \ 0.215080+1.307141I$	$-3.02413+0.79824I$	$2.09851+0.12339I$
$u=-0.500000-0.866025I$ $a=\ \ 0.024478+0.839835I$ $b=\ \ 0.215080-1.307141I$	$-3.02413-0.79824I$	$2.09851-0.12339I$

II.

$$\boldsymbol{I_2^u = \langle u^{17}+4u^{16}+\cdots+3u+1,\ -u^{16}-3u^{15}+\cdots+4a+4,\ u^{16}+4u^{15}+\cdots+4b+1\rangle}$$

(i) Arc colorings

$$a_1 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_5 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_2 = \begin{pmatrix}1\\-u^2\end{pmatrix}$$
$$a_3 = \begin{pmatrix}u^2+1\\-u^2\end{pmatrix}$$
$$a_7 = \begin{pmatrix}\frac{1}{4}u^{16}+\frac{3}{4}u^{15}+\cdots+\frac{9}{4}u-1\\-\frac{1}{4}u^{16}-u^{15}+\cdots-\frac{3}{4}u-\frac{1}{4}\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}\frac{1}{4}u^{16}+\frac{7}{4}u^{15}+\cdots+\frac{11}{4}u+\frac{5}{2}\\\frac{3}{4}u^{16}+\frac{9}{4}u^{15}+\cdots+2u^2+\frac{5}{4}u\end{pmatrix}$$
$$a_8 = \begin{pmatrix}-\frac{11}{4}u^{16}-\frac{39}{4}u^{15}+\cdots-\frac{27}{4}u-4\\u^{16}+\frac{15}{4}u^{15}+\cdots+3u+\frac{7}{4}\end{pmatrix}$$
$$a_9 = \begin{pmatrix}-\frac{7}{4}u^{16}-6u^{15}+\cdots-\frac{15}{4}u-\frac{9}{4}\\u^{16}+\frac{15}{4}u^{15}+\cdots+3u+\frac{7}{4}\end{pmatrix}$$
$$a_4 = \begin{pmatrix}u\\-u^3-u\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}-\frac{13}{4}u^{16}-10u^{15}+\cdots-\frac{25}{4}u-\frac{15}{4}\\2u^{16}+\frac{25}{4}u^{15}+\cdots+4u+\frac{9}{4}\end{pmatrix}$$
$$a_6 = \begin{pmatrix}-u^5-2u^3-u\\u^5+u^3+u\end{pmatrix}$$
$$a_6 = \begin{pmatrix}-u^5-2u^3-u\\u^5+u^3+u\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes =unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.09163-0.95076I$ $a=\ \ 0.96960-1.67272I$ $b=-0.55805+1.32231I$	$11.91545-1.84478I$	$3.96952+0.75367I$
$u=-1.09163+0.95076I$ $a=\ \ 0.96960+1.67272I$ $b=-0.55805-1.32231I$	$11.91545+1.84478I$	$3.96952-0.75367I$
$u=-1.05476-1.04416I$ $a=\ \ 2.07888-0.43065I$ $b=-1.052716-0.047013I$	$15.8539+3.8626I$	$6.39661-2.12816I$
$u=-1.05476+1.04416I$ $a=\ \ 2.07888+0.43065I$ $b=-1.052716+0.047013I$	$15.8539-3.8626I$	$6.39661+2.12816I$
$u=-0.97902-1.09233I$ $a=\ \ 2.11700+1.07061I$ $b=-0.50759-1.37481I$	$11.4057+9.4106I$	$3.33658-4.76975I$
$u=-0.97902+1.09233I$ $a=\ \ 2.11700-1.07061I$ $b=-0.50759+1.37481I$	$11.4057-9.4106I$	$3.33658+4.76975I$
$u=-0.509232-0.371578I$ $a=-2.67025-1.66568I$ $b=\ \ 0.281522+1.323870I$	$-2.51924+3.59257I$	$1.69678-1.62034I$
$u=-0.509232+0.371578I$ $a=-2.67025+1.66568I$ $b=\ \ 0.281522-1.323870I$	$-2.51924-3.59257I$	$1.69678+1.62034I$
$u=-0.494210$ $a=-2.62173$ $b=\ \ 0.710942$	1.69761	6.54343
$u=\ \ 0.045204-0.831305I$ $a=\ \ 0.842729-0.566333I$ $b=\ \ 0.095288-1.269798I$	$-4.44298-1.97657I$	$-3.41444+3.62302I$

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.045204 + 0.831305I$ $a = 0.842729 + 0.566333I$ $b = 0.095288 + 1.269798I$	$-4.44298 + 1.97657I$	$-3.41444 - 3.62302I$
$u = 0.559459 - 0.682406I$ $a = 0.584057 + 0.456170I$ $b = -0.122694 - 0.403191I$	$0.106087 - 1.407485I$	$0.91901 + 2.91397I$
$u = 0.559459 + 0.682406I$ $a = 0.584057 - 0.456170I$ $b = -0.122694 + 0.403191I$	$0.106087 + 1.407485I$	$0.91901 - 2.91397I$
$u = 0.591154 - 1.059120I$ $a = 1.71916 - 0.51588I$ $b = -0.219268 + 0.999289I$	$-1.31705 - 3.54605I$	$2.16487 + 2.95335I$
$u = 0.591154 + 1.059120I$ $a = 1.71916 + 0.51588I$ $b = -0.219268 - 0.999289I$	$-1.31705 + 3.54605I$	$2.16487 - 2.95335I$
$u = 0.685929 - 0.418499I$ $a = -0.330311 + 0.852864I$ $b = 0.228042 - 0.683004I$	$0.22550 - 1.43526I$	$4.15937 + 3.64291I$
$u = 0.685929 + 0.418499I$ $a = -0.330311 - 0.852864I$ $b = 0.228042 + 0.683004I$	$0.22550 + 1.43526I$	$4.15937 - 3.64291I$

III. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1	$(u^2+u+1)^3(u^{17}+4u^{16}+\cdots+3u+1)$
c_2	$(u^2+u+1)^3(u^{17}+2u^{16}+\cdots+3u-1)$
c_3, c_9	$u^6(u^{17}+u^{16}+\cdots-96u-64)$
c_4	$(u^2-u+1)^3(u^{17}+4u^{16}+\cdots+3u+1)$
c_5	$(u^2+u+1)^3(u^{17}+4u^{16}+\cdots+557u-137)$
c_6, c_8	$(u^3-u^2+1)^2(u^{17}+3u^{16}+\cdots+2u+1)$
c_7, c_{10}, c_{11}	$(u^3-u^2+2u-1)^2(u^{17}+3u^{16}+\cdots-2u-1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_4	$(y^2+y+1)^3(y^{17}+2y^{16}+\cdots+3y-1)$
c_2	$(y^2+y+1)^3(y^{17}+30y^{16}+\cdots+3y-1)$
c_3, c_9	$y^6(y^{17}+35y^{16}+\cdots+9216y-4096)$
c_5	$(y^2+y+1)^3(y^{17}+58y^{16}+\cdots-518053y-18769)$
c_6, c_8	$(y^3-y^2+2y-1)^2(y^{17}-31y^{16}+\cdots-14y-1)$
c_7, c_{10}, c_{11}	$(y^3+3y^2+2y-1)^2(y^{17}+13y^{16}+\cdots-14y-1)$