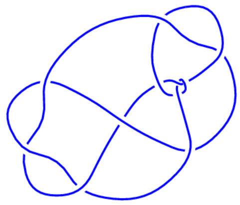
$11n_{16}$ ($K11n_{16}$)



[1]

Arc Sequences

$$\rightarrow \overset{\uparrow}{5} \rightarrow \overset{\downarrow}{1} \rightarrow \overset{\downarrow}{8} \rightarrow \overset{\uparrow}{2} \rightarrow \overset{\downarrow}{3} \rightarrow \overset{\downarrow}{10} \rightarrow \overset{\downarrow}{11} \rightarrow \overset{\downarrow}{4} \rightarrow \overset{\downarrow}{1} \rightarrow \overset{\downarrow}{8} \rightarrow \overset{\downarrow}{7} \rightarrow$$

Solving Sequence

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

Representation Ideals

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

$$I_1^u = \langle a^6 + 3a^5 + 9a^4 + 8a^3 + 30a^2 + 9a + 7,\ -3a^5 - 8a^4 - 17a^3 + 99b - 2a + 58,$$
$$- 8a^5 - 25a^4 - 71a^3 - 44a^2 - 196a + 99u + 19\rangle$$
$$I_2^u = \langle u^{24} - 4u^{23} + \cdots - 8u + 1,\ -u^{23} + 4u^{22} + \cdots + 4b + 1,\ 2u^{23} - 7u^{22} + \cdots + 4a + 3\rangle$$

There are 2 irreducible components with 30 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. $I_1^u = \langle a^6 + 3a^5 + 9a^4 + 8a^3 + 30a^2 + 9a + 7,\ -3a^5 - 8a^4 - 17a^3 + 99b - 2a + 58,\ -8a^5 + 99u + \cdots - 196a + 19\rangle$

(i) Arc colorings

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

$$a_5 = \begin{pmatrix} 0 \\ 0.0808081a^5 + 0.252525a^4 + \cdots + 1.97980a - 0.191919 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 1 \\ 0.0808081a^5 + 0.252525a^4 + \cdots + 1.97980a + 0.808081 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -0.0808081a^5 - 0.252525a^4 + \cdots - 1.97980a + 0.191919 \\ 0.0808081a^5 + 0.252525a^4 + \cdots + 1.97980a + 0.808081 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -0.0808081a^5 - 0.252525a^4 + \cdots - 1.97980a + 0.191919 \\ 0.0808081a^5 + 0.252525a^4 + \cdots + 1.97980a + 0.808081 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} a \\ 0.0303030a^5 + 0.0808081a^4 + \cdots + 0.0202020a - 0.585859 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0.0101010a^5 + 0.101010a^4 + \cdots + 0.858586a + 1.21212 \\ 0.0202020a^5 - 0.0202020a^4 + \cdots - 0.171717a - 0.464646 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.0505051a^5 + 0.171717a^4 + \cdots + 1.62626a + 0.727273 \\ -0.0101010a^5 - 0.101010a^4 + \cdots - 0.191919a - 0.878788 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.0505051a^5 + 0.171717a^4 + \cdots + 1.62626a + 0.727273 \\ -0.0101010a^5 - 0.101010a^4 + \cdots - 0.191919a - 0.878788 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.0606061a^5 + 0.272727a^4 + \cdots + 1.81818a + 1.60606 \\ -0.0101010a^5 - 0.101010a^4 + \cdots - 0.191919a - 0.878788 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

(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
$u=-0.500000-0.866025I$ $a=-1.80940-2.14698I$ $b=-0.215080+1.307141I$	$3.02413+4.85801I$	$-2.88198-6.08229I$
$u=-0.500000+0.866025I$ $a=-1.80940+2.14698I$ $b=-0.215080-1.307141I$	$3.02413-4.85801I$	$-2.88198+6.08229I$
$u=-0.500000-0.866025I$ $a=-0.145240-0.493496I$ $b=-0.569840$	$-1.11345+2.02988I$	$-12.18187-4.49037I$
$u=-0.500000+0.866025I$ $a=-0.145240+0.493496I$ $b=-0.569840$	$-1.11345-2.02988I$	$-12.18187+4.49037I$
$u=-0.500000+0.866025I$ $a=\ \ 0.45464-1.77445I$ $b=-0.215080+1.307141I$	$3.02413+0.79824I$	$-6.43615+0.68567I$
$u=-0.500000-0.866025I$ $a=\ \ 0.45464+1.77445I$ $b=-0.215080-1.307141I$	$3.02413-0.79824I$	$-6.43615-0.68567I$

II.

$$\boldsymbol{I^u_2 = \langle u^{24} - 4u^{23} + \cdots - 8u + 1,\ -u^{23} + 4u^{22} + \cdots + 4b + 1,\ 2u^{23} - 7u^{22} + \cdots + 4a + 3\rangle}$$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u^2 + 1 \\ -u^2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -\frac{1}{2}u^{23} + \frac{7}{4}u^{22} + \cdots - \frac{25}{4}u - \frac{3}{4} \\ \frac{1}{4}u^{23} - u^{22} + \cdots + 4u - \frac{1}{4} \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -2u^{23} + \frac{15}{2}u^{22} + \cdots - 8u + 2 \\ \frac{3}{4}u^{23} - \frac{13}{4}u^{22} + \cdots + \frac{33}{4}u - 1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} \frac{7}{4}u^{23} - 6u^{22} + \cdots + 16u - \frac{17}{4} \\ -u^{23} + \frac{15}{4}u^{22} + \cdots - \frac{39}{4}u + \frac{7}{4} \end{pmatrix}$$
$$a_9 = \begin{pmatrix} \frac{5}{4}u^{23} - 4u^{22} + \cdots + 13u - \frac{15}{4} \\ -u^{23} + \frac{17}{4}u^{22} + \cdots - \frac{29}{4}u + \frac{5}{4} \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -\frac{9}{4}u^{23} + \frac{33}{4}u^{22} + \cdots - \frac{81}{4}u + 5 \\ u^{23} - \frac{17}{4}u^{22} + \cdots + \frac{29}{4}u - \frac{5}{4} \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -u^5 - 2u^3 - u \\ u^5 + u^3 + u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -u^5 - 2u^3 - u \\ u^5 + u^3 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes =**unknown**

(iv) Complex Volumes and Cusp Shapes

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.616982 - 0.990185I$ $a = -1.64986 - 1.46617I$ $b = -0.132356 + 1.101639I$	$2.09684 + 3.39237I$	$-6.49952 - 2.22048I$
$u = -0.616982 + 0.990185I$ $a = -1.64986 + 1.46617I$ $b = -0.132356 - 1.101639I$	$2.09684 - 3.39237I$	$-6.49952 + 2.22048I$
$u = -0.596105 - 0.529686I$ $a = -0.56319 + 1.98983I$ $b = 0.023030 - 1.170736I$	$3.34786 + 1.42933I$	$-3.02808 - 3.24576I$
$u = -0.596105 + 0.529686I$ $a = -0.56319 - 1.98983I$ $b = 0.023030 + 1.170736I$	$3.34786 - 1.42933I$	$-3.02808 + 3.24576I$
$u = -0.417031 - 0.889639I$ $a = -0.477190 + 0.003218I$ $b = -0.228245 - 0.158994I$	$-0.34648 + 1.75564I$	$-2.27719 - 2.42480I$
$u = -0.417031 + 0.889639I$ $a = -0.477190 - 0.003218I$ $b = -0.228245 + 0.158994I$	$-0.34648 - 1.75564I$	$-2.27719 + 2.42480I$
$u = -0.146297 - 1.185904I$ $a = 0.524502 + 0.020338I$ $b = 0.369901 - 1.056050I$	$-1.33599 + 3.11324I$	$-9.44737 - 3.66544I$
$u = -0.146297 + 1.185904I$ $a = 0.524502 - 0.020338I$ $b = 0.369901 + 1.056050I$	$-1.33599 - 3.11324I$	$-9.44737 + 3.66544I$
$u = 0.063779 - 1.133979I$ $a = 0.686605 - 0.618182I$ $b = 0.736962 + 0.245534I$	$-3.71809 - 1.00013I$	$-12.92204 + 1.61108I$
$u = 0.063779 + 1.133979I$ $a = 0.686605 + 0.618182I$ $b = 0.736962 - 0.245534I$	$-3.71809 + 1.00013I$	$-12.92204 - 1.61108I$

Solution to I_2^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.199581$ $a = -1.88453$ $b = 0.450904$	-0.785516	-12.5270
$u = 0.218526 - 1.046829I$ $a = 1.82175 - 1.61064I$ $b = 0.24692 + 1.39353I$	$1.55911 - 4.48321I$	$-9.00126 + 3.05253I$
$u = 0.218526 + 1.046829I$ $a = 1.82175 + 1.61064I$ $b = 0.24692 - 1.39353I$	$1.55911 + 4.48321I$	$-9.00126 - 3.05253I$
$u = 0.265216 - 0.431756I$ $a = -1.66612 + 2.63925I$ $b = 0.149866 - 1.301079I$	$3.26690 + 2.11293I$	$-4.50894 - 4.47286I$
$u = 0.265216 + 0.431756I$ $a = -1.66612 - 2.63925I$ $b = 0.149866 + 1.301079I$	$3.26690 - 2.11293I$	$-4.50894 + 4.47286I$
$u = 0.45926 - 1.38021I$ $a = 0.110011 - 0.521955I$ $b = -0.521270 + 1.255459I$	$-10.25044 - 0.34153I$	$-9.34191 - 0.16934I$
$u = 0.45926 + 1.38021I$ $a = 0.110011 + 0.521955I$ $b = -0.521270 - 1.255459I$	$-10.25044 + 0.34153I$	$-9.34191 + 0.16934I$
$u = 0.52159 - 1.36218I$ $a = -0.307618 + 0.642525I$ $b = -0.977245 - 0.071776I$	$-13.8937 - 5.6522I$	$-11.88129 + 3.05170I$
$u = 0.52159 + 1.36218I$ $a = -0.307618 - 0.642525I$ $b = -0.977245 + 0.071776I$	$-13.8937 + 5.6522I$	$-11.88129 - 3.05170I$
$u = 0.56243 - 1.32456I$ $a = -1.46207 + 1.39387I$ $b = -0.45937 - 1.35651I$	$-9.4212 - 10.7764I$	$-8.42021 + 5.67335I$

Solution to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.56243 + 1.32456I$ $a = -1.46207 - 1.39387I$ $b = -0.45937 + 1.35651I$	$-9.4212 + 10.7764I$	$-8.42021 - 5.67335I$
$u = 1.052424 - 0.085795I$ $a = -0.26757 - 1.89599I$ $b = -0.461477 + 1.300212I$	$-5.57948 + 5.01306I$	$-6.18016 - 2.85769I$
$u = 1.052424 + 0.085795I$ $a = -0.26757 + 1.89599I$ $b = -0.461477 - 1.300212I$	$-5.57948 - 5.01306I$	$-6.18016 + 2.85769I$
$u = 1.06681$ $a = 0.386018$ $b = -0.944342$	-9.62200	-9.45700

III. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1	$(u^2+u+1)^3(u^{24}+4u^{23}+\cdots+8u+1)$
c_2	$(u^2+u+1)^3(u^{24}+16u^{23}+\cdots-16u+1)$
c_3, c_8	$u^6(u^{24}+u^{23}+\cdots+96u-64)$
c_4	$(u^2-u+1)^3(u^{24}+4u^{23}+\cdots+8u+1)$
c_5	$(u^2+u+1)^3(u^{24}+4u^{23}+\cdots-2u+1)$
c_6	$(u^3+u^2-1)^2(u^{24}+3u^{23}+\cdots+u-1)$
c_7	$(u^3-u^2+2u-1)^2(u^{24}+3u^{23}+\cdots-5u-1)$
c_9	$(u^3+u^2-1)^2(u^{24}+13u^{23}+\cdots+995u+563)$
c_{10}, c_{11}	$(u^3+u^2+2u+1)^2(u^{24}+3u^{23}+\cdots-5u-1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_4	$(y^2+y+1)^3(y^{24}+16y^{23}+\cdots-16y+1)$
c_2	$(y^2+y+1)^3(y^{24}-12y^{23}+\cdots-612y+1)$
c_3, c_8	$y^6(y^{24}-35y^{23}+\cdots-13312y+4096)$
c_5	$(y^2+y+1)^3(y^{24}-40y^{23}+\cdots-16y+1)$
c_6	$(y^3-y^2+2y-1)^2(y^{24}-33y^{23}+\cdots-11y+1)$
c_7, c_{10}, c_{11}	$(y^3+3y^2+2y-1)^2(y^{24}+19y^{23}+\cdots-11y+1)$
c_9	$(y^3-y^2+2y-1)^2(y^{24}-53y^{23}+\cdots+1.71329\times 10^7 y+316969)$