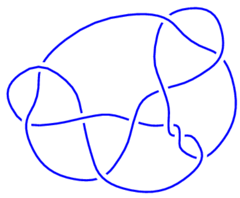
$11n_{105}$ ($K11n_{105}$)



[1]

Arc Sequences

↓	↓	↑	↓	↓	↓	↓	↑	↓	↓	↓
5	1	11	10	2	11	1	3	4	9	7

Solving Sequence

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

Representation Ideals

$$I = \bigcap_{i=1}^{4} I_i^u$$

$$\begin{aligned}
I_1^u &= \langle a^4 - 4a^3 + 8a^2 - 8a + 5,\ u + 1,\ b - 1 \rangle \\
I_2^u &= \langle u^{19} - u^{18} + \cdots + 2u - 1,\ b - u,\ u^{17} - u^{16} + \cdots + 8a + 1 \rangle \\
I_3^u &= \langle u^{22} - u^{21} + \cdots - 2u + 5,\ -u^{21} + u^{20} + \cdots + 5a + 2, \\
&\quad 2918667u^{21} - 1662902u^{20} + \cdots + 114494529b - 1518911 \rangle \\
I_4^u &= \langle u - 1,\ a + 1,\ b + 1 \rangle
\end{aligned}$$

There are 4 irreducible components with 46 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. $I_1^u = \langle a^4 - 4a^3 + 8a^2 - 8a + 5,\ u+1,\ b-1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes =unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = 0.544910 - 1.098684I$ $b = 1.00000$	$-5.75727 + 3.66386I$	$-16.0000 - 4.0000I$
$u = -1.00000$ $a = 0.544910 + 1.098684I$ $b = 1.00000$	$-5.75727 - 3.66386I$	$-16.0000 + 4.0000I$
$u = -1.00000$ $a = 1.45509 - 1.09868I$ $b = 1.00000$	$-5.75727 - 3.66386I$	$-16.0000 + 4.0000I$
$u = -1.00000$ $a = 1.45509 + 1.09868I$ $b = 1.00000$	$-5.75727 + 3.66386I$	$-16.0000 - 4.0000I$

II. $I_2^u = \langle u^{19} - u^{18} + \cdots + 2u - 1,\ b - u,\ u^{17} - u^{16} + \cdots + 8a + 1\rangle$

(i) Arc colorings

$$a_1 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_5 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_2 = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_3 = \begin{pmatrix}-u^2+1\\u^2\end{pmatrix}$$
$$a_7 = \begin{pmatrix}-\frac{1}{8}u^{17} + \frac{1}{8}u^{16} + \cdots - \frac{7}{4}u - \frac{1}{8}\\u\end{pmatrix}$$
$$a_8 = \begin{pmatrix}-\frac{1}{8}u^{17} + \frac{1}{8}u^{16} + \cdots - \frac{11}{4}u - \frac{1}{8}\\u\end{pmatrix}$$
$$a_9 = \begin{pmatrix}-\frac{1}{8}u^{17} + \frac{1}{8}u^{16} + \cdots - \frac{7}{4}u - \frac{1}{8}\\\frac{1}{8}u^{17} - \frac{1}{8}u^{16} + \cdots + \frac{3}{4}u + \frac{1}{8}\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}\frac{1}{8}u^{18} - \frac{1}{8}u^{17} + \cdots + \frac{1}{8}u + 1\\-u^2\end{pmatrix}$$
$$a_6 = \begin{pmatrix}-u\\-u^3+u\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}\frac{11}{8}u^{18} - \frac{7}{4}u^{17} + \cdots + \frac{33}{8}u + \frac{3}{8}\\-\frac{5}{8}u^{18} + \frac{7}{8}u^{17} + \cdots - \frac{23}{8}u + \frac{1}{2}\end{pmatrix}$$
$$a_4 = \begin{pmatrix}\frac{7}{8}u^{18} - u^{17} + \cdots + \frac{11}{8}u + \frac{7}{8}\\-\frac{1}{8}u^{18} + \frac{1}{8}u^{17} + \cdots + \frac{5}{4}u^2 - \frac{1}{8}u\end{pmatrix}$$
$$a_4 = \begin{pmatrix}\frac{7}{8}u^{18} - u^{17} + \cdots + \frac{11}{8}u + \frac{7}{8}\\-\frac{1}{8}u^{18} + \frac{1}{8}u^{17} + \cdots + \frac{5}{4}u^2 - \frac{1}{8}u\end{pmatrix}$$

(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
$u = -1.107494 - 0.812678I$ $a = -0.57304 + 1.36863I$ $b = -1.107494 - 0.812678I$	$4.47255 - 8.26447I$	$-5.93446 + 4.83162I$
$u = -1.107494 + 0.812678I$ $a = -0.57304 - 1.36863I$ $b = -1.107494 + 0.812678I$	$4.47255 + 8.26447I$	$-5.93446 - 4.83162I$
$u = -0.968832 - 0.893275I$ $a = -0.382196 + 1.309221I$ $b = -0.968832 - 0.893275I$	$5.51436 - 5.01792I$	$-4.62542 + 4.88249I$
$u = -0.968832 + 0.893275I$ $a = -0.382196 - 1.309221I$ $b = -0.968832 + 0.893275I$	$5.51436 + 5.01792I$	$-4.62542 - 4.88249I$
$u = -0.777977 - 0.409956I$ $a = 0.48742 + 2.00922I$ $b = -0.777977 - 0.409956I$	$-4.54946 - 5.47873I$	$-11.07465 + 8.55667I$
$u = -0.777977 + 0.409956I$ $a = 0.48742 - 2.00922I$ $b = -0.777977 + 0.409956I$	$-4.54946 + 5.47873I$	$-11.07465 - 8.55667I$
$u = -0.697477 - 0.278835I$ $a = 1.21360 + 1.74151I$ $b = -0.697477 - 0.278835I$	$-4.36768 + 2.62850I$	$-9.97134 + 1.16882I$
$u = -0.697477 + 0.278835I$ $a = 1.21360 - 1.74151I$ $b = -0.697477 + 0.278835I$	$-4.36768 - 2.62850I$	$-9.97134 - 1.16882I$
$u = 0.133918 - 0.761043I$ $a = -0.043527 + 0.980596I$ $b = 0.133918 - 0.761043I$	$1.53985 + 2.22177I$	$-2.53368 - 4.26379I$
$u = 0.133918 + 0.761043I$ $a = -0.043527 - 0.980596I$ $b = 0.133918 + 0.761043I$	$1.53985 - 2.22177I$	$-2.53368 + 4.26379I$

Solution to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.395222$ $a = -0.936768$ $b = 0.395222$	-0.957690	-10.9546
$u = 0.647319 - 0.397441I$ $a = -0.67547 + 1.54605I$ $b = 0.647319 - 0.397441I$	$-1.23847 + 1.46671I$	$-6.68531 - 4.74531I$
$u = 0.647319 + 0.397441I$ $a = -0.67547 - 1.54605I$ $b = 0.647319 + 0.397441I$	$-1.23847 - 1.46671I$	$-6.68531 + 4.74531I$
$u = 0.887480 - 0.926590I$ $a = 0.297770 + 1.273124I$ $b = 0.887480 - 0.926590I$	$4.22972 - 0.35072I$	$-6.13837 + 0.22490I$
$u = 0.887480 + 0.926590I$ $a = 0.297770 - 1.273124I$ $b = 0.887480 + 0.926590I$	$4.22972 + 0.35072I$	$-6.13837 - 0.22490I$
$u = 1.033803 - 0.730109I$ $a = 0.49884 + 1.52309I$ $b = 1.033803 - 0.730109I$	$-0.86154 + 5.74817I$	$-11.63360 - 4.50327I$
$u = 1.033803 + 0.730109I$ $a = 0.49884 - 1.52309I$ $b = 1.033803 + 0.730109I$	$-0.86154 - 5.74817I$	$-11.63360 + 4.50327I$
$u = 1.151649 - 0.788448I$ $a = 0.64498 + 1.37321I$ $b = 1.151649 - 0.788448I$	$2.31925 + 13.64210I$	$-8.92588 - 8.81475I$
$u = 1.151649 + 0.788448I$ $a = 0.64498 - 1.37321I$ $b = 1.151649 + 0.788448I$	$2.31925 - 13.64210I$	$-8.92588 + 8.81475I$

III. $\boldsymbol{I^u_3 = \langle u^{22} - u^{21} + \cdots - 2u + 5,\ -u^{21} + u^{20} + \cdots + 5a + 2,\ 2.92 \times 10^6 u^{21} - 1.66 \times 10^6 u^{20} + \cdots + 1.15 \times 10^7 b - 1.52 \times 10^6\rangle}$

(i) Arc colorings

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

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

$$a_2 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -u^2 + 1 \\ u^2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} \frac{1}{5}u^{21} - \frac{1}{5}u^{20} + \cdots - \frac{22}{5}u - \frac{2}{5} \\ -0.253918u^{21} + 0.144669u^{20} + \cdots - 2.56818u + 0.132142 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.453918u^{21} - 0.344669u^{20} + \cdots - 1.83182u - 0.532142 \\ -0.253918u^{21} + 0.144669u^{20} + \cdots - 2.56818u + 0.132142 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.531094u^{21} - 0.655649u^{20} + \cdots - 4.45109u - 0.946245 \\ -0.585012u^{21} + 0.600318u^{20} + \cdots - 1.51708u + 0.678387 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -0.0264284u^{21} - 0.227490u^{20} + \cdots - 0.137095u - 1.51532 \\ -0.109249u^{21} - 0.221845u^{20} + \cdots - 0.375694u + 0.269590 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.136175u^{21} + 0.0168155u^{20} + \cdots + 2.42666u - 0.867149 \\ 0.278577u^{21} - 0.861057u^{20} + \cdots - 2.18135u - 2.39173 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 0.207376u^{21} - 0.422121u^{20} + \cdots + 0.122656u - 0.129439 \\ -0.0945157u^{21} - 0.235897u^{20} + \cdots - 1.35042u - 1.58175 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 0.207376u^{21} - 0.422121u^{20} + \cdots + 0.122656u - 0.129439 \\ -0.0945157u^{21} - 0.235897u^{20} + \cdots - 1.35042u - 1.58175 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes =**unknown**

(iv) Complex Volumes and Cusp Shapes

Solution to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.282542-0.010543I$ $a=\ 0.779649-0.006409I$ $b=\ 0.620308+0.489049I$	$-3.66655-4.75030I$	$-9.35891+6.77690I$
$u=-1.282542+0.010543I$ $a=\ 0.779649+0.006409I$ $b=\ 0.620308-0.489049I$	$-3.66655+4.75030I$	$-9.35891-6.77690I$
$u=-1.195773-0.178364I$ $a=\ 0.818078-0.122026I$ $b=\ 0.968725-0.342171I$	$-4.92613-1.27541I$	$-13.47945+0.80097I$
$u=-1.195773+0.178364I$ $a=\ 0.818078+0.122026I$ $b=\ 0.968725+0.342171I$	$-4.92613+1.27541I$	$-13.47945-0.80097I$
$u=-0.892154-0.917804I$ $a=\ 0.544560-0.560216I$ $b=-0.703026+0.993334I$	$5.74879-1.64593I$	$-3.95012+0.24481I$
$u=-0.892154+0.917804I$ $a=\ 0.544560+0.560216I$ $b=-0.703026-0.993334I$	$5.74879+1.64593I$	$-3.95012-0.24481I$
$u=-0.703026-0.993334I$ $a=\ 0.474710-0.670738I$ $b=-0.892154+0.917804I$	$5.74879+1.64593I$	$-3.95012-0.24481I$
$u=-0.703026+0.993334I$ $a=\ 0.474710+0.670738I$ $b=-0.892154-0.917804I$	$5.74879-1.64593I$	$-3.95012+0.24481I$
$u=-0.520797-0.242115I$ $a=\ 1.57889-0.73402I$ $b=\ 1.182923+0.018546I$	$-1.99990-0.45477I$	$-4.80492+1.36957I$
$u=-0.520797+0.242115I$ $a=\ 1.57889+0.73402I$ $b=\ 1.182923-0.018546I$	$-1.99990+0.45477I$	$-4.80492-1.36957I$

Solution to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.620308 - 0.489049I$ $a = -0.994161 - 0.783795I$ $b = -1.282542 + 0.010543I$	$-3.66655 + 4.75030I$	$-9.35891 - 6.77690I$
$u = 0.620308 + 0.489049I$ $a = -0.994161 + 0.783795I$ $b = -1.282542 - 0.010543I$	$-3.66655 - 4.75030I$	$-9.35891 + 6.77690I$
$u = 0.624756 - 1.026888I$ $a = -0.432411 - 0.710738I$ $b = 0.967997 + 0.889244I$	$3.97498 - 7.02220I$	$-6.49946 + 4.88619I$
$u = 0.624756 + 1.026888I$ $a = -0.432411 + 0.710738I$ $b = 0.967997 - 0.889244I$	$3.97498 + 7.02220I$	$-6.49946 - 4.88619I$
$u = 0.729583 - 0.772577I$ $a = -0.646125 - 0.684201I$ $b = 0.729583 + 0.772577I$	0.0927065	-9.81428
$u = 0.729583 + 0.772577I$ $a = -0.646125 + 0.684201I$ $b = 0.729583 - 0.772577I$	0.0927065	-9.81428
$u = 0.967997 - 0.889244I$ $a = -0.560257 - 0.514676I$ $b = 0.624756 + 1.026888I$	$3.97498 + 7.02220I$	$-6.49946 - 4.88619I$
$u = 0.967997 + 0.889244I$ $a = -0.560257 + 0.514676I$ $b = 0.624756 - 1.026888I$	$3.97498 - 7.02220I$	$-6.49946 + 4.88619I$
$u = 0.968725 - 0.342171I$ $a = -0.917780 - 0.324176I$ $b = -1.195773 - 0.178364I$	$-4.92613 - 1.27541I$	$-13.47945 + 0.80097I$
$u = 0.968725 + 0.342171I$ $a = -0.917780 + 0.324176I$ $b = -1.195773 + 0.178364I$	$-4.92613 + 1.27541I$	$-13.47945 - 0.80097I$

Solution to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.182923 - 0.018546I$ $a = -0.845156 - 0.013250I$ $b = -0.520797 + 0.242115I$	$-1.99990 + 0.45477I$	$-4.80492 - 1.36957I$
$u = 1.182923 + 0.018546I$ $a = -0.845156 + 0.013250I$ $b = -0.520797 - 0.242115I$	$-1.99990 - 0.45477I$	$-4.80492 + 1.36957I$

IV. $I_4^u = \langle u-1,\ a+1,\ b+1\rangle$

(i) Arc colorings

$$a_1 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_5 = \begin{pmatrix}0\\1\end{pmatrix}$$
$$a_2 = \begin{pmatrix}1\\1\end{pmatrix}$$
$$a_3 = \begin{pmatrix}0\\1\end{pmatrix}$$
$$a_7 = \begin{pmatrix}-1\\-1\end{pmatrix}$$
$$a_8 = \begin{pmatrix}0\\-1\end{pmatrix}$$
$$a_9 = \begin{pmatrix}0\\-1\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}0\\-1\end{pmatrix}$$
$$a_6 = \begin{pmatrix}-1\\0\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}0\\-1\end{pmatrix}$$
$$a_4 = \begin{pmatrix}0\\1\end{pmatrix}$$
$$a_4 = \begin{pmatrix}0\\1\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes =unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.00000$ $a = -1.00000$ $b = -1.00000$	-3.28987	-12.0000

V. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1	$(u+1)^5(u^{19}+u^{18}+\cdots+2u+1)(u^{22}+u^{21}+\cdots+2u+5)$
c_2	$(u+1)^5(u^{19}+5u^{18}+\cdots+10u+1)(u^{22}+9u^{21}+\cdots+224u+25)$
c_3	$u(u^4+2u^2+2)$ $(u^{11}-3u^{10}+4u^9-u^8+2u^7-8u^6+8u^5+5u^4-3u^3-u^2+4u-1)^2$ $(u^{19}+9u^{18}+\cdots+106u+14)$
c_4, c_9	$(u)(u^4-2u^2+2)(1-u^2-u^3+3u^4-4u^6+2u^7+3u^8-2u^9-u^{10}+u^{11})^2$ $(u^{19}+3u^{18}+\cdots+6u+2)$
c_5	$(u-1)^4(u+1)(u^{19}+u^{18}+\cdots+2u+1)(u^{22}+u^{21}+\cdots+2u+5)$
c_6, c_7	$(u-1)(u+1)^4(u^{19}+u^{18}+\cdots+2u+1)(u^{22}+u^{21}+\cdots+2u+5)$
c_8	$u(u^4+2u^2+2)$ $(u^{11}-u^{10}-6u^9+5u^8+12u^7-6u^6-10u^5-u^4+5u^3+u^2-1)^2$ $(u^{19}+3u^{18}+\cdots-70u-26)$
c_{10}	$u(u^2+2u+2)^2$ $(1+2u+7u^2+15u^3+23u^4+28u^5+32u^6+32u^7+25u^8+14u^9+5u^{10}+u^{11})^2$ $(u^{19}+9u^{18}+\cdots+4u+4)$
c_{11}	$(u-1)^5(u^{19}+u^{18}+\cdots+2u+1)(u^{22}+u^{21}+\cdots+2u+5)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_5, c_6 c_7, c_{11}	$(y-1)^5(y^{19}-5y^{18}+\cdots+10y-1)(y^{22}-9y^{21}+\cdots-224y+25)$
c_2	$(y-1)^5(y^{19}+27y^{18}+\cdots+38y-1)(y^{22}+7y^{21}+\cdots+5624y+625)$
c_3	$y(y^2+2y+2)^2$ $(-1+14y-15y^2+67y^3-75y^4+156y^5-44y^6+76y^7-17y^8+14y^9-y^{10}+y^{11})^2$ $(y^{19}+3y^{18}+\cdots+1044y-196)$
c_4, c_9	$y(y^2-2y+2)^2$ $(-1+2y-7y^2+15y^3-23y^4+28y^5-32y^6+32y^7-25y^8+14y^9-5y^{10}+y^{11})^2$ $(y^{19}-9y^{18}+\cdots+4y-4)$
c_8	$y(y^2+2y+2)^2$ $(-1+2y-3y^2+15y^3-79y^4+196y^5-324y^6+332y^7-201y^8+70y^9-13y^{10}+y^{11})^2$ $(y^{19}-9y^{18}+\cdots-14444y-676)$
c_{10}	$y(y^2+4)^2$ $(-1-10y-35y^2-49y^3-59y^4-32y^5-28y^6+8y^7+7y^8+10y^9+3y^{10}+y^{11})^2$ $(y^{19}+3y^{18}+\cdots+144y-16)$