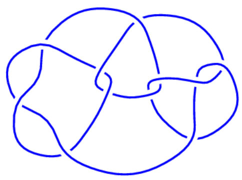
$11n_{27}$ ($K11n_{27}$)



[1]

Arc Sequences

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

4 1 7 2 8 10 4 11 1 6 9

Solving Sequence

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

Representation Ideals

$$I = \bigcap_{i=1}^{3} I_i^u$$

$$I_1^u = \langle b^2 + b - 1,\ u + 1,\ a - 1 \rangle$$
$$I_2^u = \langle u^5 - 4u^3 - 5u^2 - 2u - 1,\ -3u^4 + 4u^3 + 10u^2 + 5a - 4,\ 2u^4 - u^3 - 10u^2 + 5b - 5u + 1 \rangle$$
$$\begin{aligned} I_3^u = \langle & u^{16} - u^{15} + \cdots + 71u - 41, \\ & -6.72277 \times 10^{19}u^{15} + 8.40759 \times 10^{18}u^{14} + \cdots + 4.95570 \times 10^{21}b - 9.94823 \times 10^{20}, \\ & 2.71636 \times 10^{21}u^{15} - 1.06484 \times 10^{21}u^{14} + \cdots + 1.01592 \times 10^{23}a + 2.70442 \times 10^{22} \rangle \end{aligned}$$

There are 3 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. $I_1^u = \langle b^2 + b - 1,\ u + 1,\ a - 1 \rangle$

(i) Arc colorings

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

(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
$u = -1.00000$ $a = \quad 1.00000$ $b = -1.61803$	-2.63189	-21.0000
$u = -1.00000$ $a = \quad 1.00000$ $b = \quad 0.618034$	-10.5276	-21.0000

II. $I_2^u =$
$\langle u^5-4u^3-5u^2-2u-1,\ -3u^4+4u^3+10u^2+5a-4,\ 2u^4-u^3-10u^2+5b-5u+1\rangle$

(i) Arc colorings

$$a_9 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} \frac{3}{5}u^4 - \frac{4}{5}u^3 - 2u^2 + \frac{4}{5} \\ -\frac{2}{5}u^4 + \frac{1}{5}u^3 + 2u^2 + u - \frac{1}{5} \end{pmatrix}$$
$$a_1 = \begin{pmatrix} \frac{3}{5}u^4 - \frac{4}{5}u^3 - 2u^2 + \frac{4}{5} \\ -1 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} \frac{3}{5}u^4 - \frac{4}{5}u^3 - 2u^2 + \frac{9}{5} \\ -1 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -\frac{3}{5}u^4 + \frac{4}{5}u^3 + 2u^2 - \frac{4}{5} \\ 1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -\frac{1}{5}u^4 + \frac{3}{5}u^3 - u + \frac{2}{5} \\ -\frac{4}{5}u^4 + \frac{2}{5}u^3 + 3u^2 + 3u + \frac{3}{5} \end{pmatrix}$$
$$a_8 = \begin{pmatrix} \frac{1}{5}u^4 - \frac{3}{5}u^3 + u - \frac{2}{5} \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} \frac{1}{5}u^4 - \frac{3}{5}u^3 + u - \frac{2}{5} \\ 0 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -\frac{1}{5}u^4 - \frac{2}{5}u^3 + 2u^2 + u - \frac{3}{5} \\ 1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -\frac{1}{5}u^4 - \frac{2}{5}u^3 + 2u^2 + u - \frac{3}{5} \\ 1 \end{pmatrix}$$

(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
$u = -1.142272 - 0.509071I$ $a = -0.964913 + 0.621896I$ $b = 0.732208 + 0.471915I$	$-7.51750 + 4.40083I$	$-14.3774 - 5.8297I$
$u = -1.142272 + 0.509071I$ $a = -0.964913 - 0.621896I$ $b = 0.732208 - 0.471915I$	$-7.51750 - 4.40083I$	$-14.3774 + 5.8297I$
$u = -0.118634 - 0.489365I$ $a = 1.206354 - 0.340852I$ $b = -0.767660 - 0.216900I$	$-1.97403 - 1.53058I$	$-10.50099 + 3.45976I$
$u = -0.118634 + 0.489365I$ $a = 1.206354 + 0.340852I$ $b = -0.767660 + 0.216900I$	$-1.97403 + 1.53058I$	$-10.50099 - 3.45976I$
$u = 2.52181$ $a = -0.482881$ $b = 2.07090$	-4.04602	-8.24327

III. $I^u_3 =$
$\langle u^{16} - u^{15} + \cdots + 71u - 41,\ -6.72\times10^{19}u^{15} + 8.41\times10^{18}u^{14} + \cdots + 4.96\times10^{21}b - 9.95\times10^{20},\ 2.72\times10^{21}u^{15} - 1.06\times10^{21}u^{14} + \cdots + 1.02\times10^{23}a + 2.70\times10^{22}\rangle$

(i) Arc colorings

$$a_9 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -0.0267380u^{15} + 0.0104816u^{14} + \cdots - 1.36193u - 0.266204 \\ 0.0135658u^{15} - 0.00169655u^{14} + \cdots - 0.705658u + 0.200743 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -0.0267380u^{15} + 0.0104816u^{14} + \cdots - 1.36193u - 0.266204 \\ -0.000819945u^{15} + 0.00450546u^{14} + \cdots - 0.647712u - 0.465768 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -0.0259180u^{15} + 0.00597614u^{14} + \cdots - 0.714218u + 0.199564 \\ -0.000819945u^{15} + 0.00450546u^{14} + \cdots - 0.647712u - 0.465768 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -0.0215167u^{15} - 0.00210266u^{14} + \cdots - 0.182334u + 0.235316 \\ 0.0200970u^{15} + 0.00152051u^{14} + \cdots - 0.214731u + 0.743230 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0.0181385u^{15} + 0.0114287u^{14} + \cdots - 2.65417u + 1.48574 \\ 0.00200178u^{15} - 0.00569618u^{14} + \cdots + 0.920660u + 0.0582048 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -0.0181385u^{15} - 0.0114287u^{14} + \cdots + 2.65417u - 1.48574 \\ 0.0153044u^{15} + 0.00614683u^{14} + \cdots - 0.276252u + 1.15405 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -0.00283417u^{15} - 0.00528184u^{14} + \cdots + 2.37792u - 0.331684 \\ 0.0153044u^{15} + 0.00614683u^{14} + \cdots - 0.276252u + 1.15405 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -0.0109636u^{15} + 0.00522172u^{14} + \cdots - 1.53465u + 1.24351 \\ -0.0155996u^{15} - 0.0115747u^{14} + \cdots + 0.139188u - 0.457919 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0.0174875u^{15} - 0.0291539u^{14} + \cdots + 1.83034u + 0.340220 \\ 0.000819945u^{15} - 0.00450546u^{14} + \cdots + 0.647712u + 0.465768 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0.0174875u^{15} - 0.0291539u^{14} + \cdots + 1.83034u + 0.340220 \\ 0.000819945u^{15} - 0.00450546u^{14} + \cdots + 0.647712u + 0.465768 \end{pmatrix}$$

(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
$u=-2.75413-0.83327I$ $a=\ \ 0.513894-0.307699I$ $b=-2.94107-0.66400I$	$15.4222+9.3337I$	$-13.42948-3.49093I$
$u=-2.75413+0.83327I$ $a=\ \ 0.513894+0.307699I$ $b=-2.94107+0.66400I$	$15.4222-9.3337I$	$-13.42948+3.49093I$
$u=-1.10854$ $a=\ \ 0.656633$ $b=\ \ 0.869046$	-10.0599	-3.26618
$u=-1.00968-1.74590I$ $a=-0.091891+0.435115I$ $b=\ \ 0.21748+1.39785I$	$-3.23204+0.76102I$	$-14.1078+3.1845I$
$u=-1.00968+1.74590I$ $a=-0.091891-0.435115I$ $b=\ \ 0.21748-1.39785I$	$-3.23204-0.76102I$	$-14.1078-3.1845I$
$u=-0.764692-0.192667I$ $a=\ \ 1.77958-0.70366I$ $b=-0.658398+0.409536I$	$-6.69050+3.49798I$	$-9.87558-1.25665I$
$u=-0.764692+0.192667I$ $a=\ \ 1.77958+0.70366I$ $b=-0.658398-0.409536I$	$-6.69050-3.49798I$	$-9.87558+1.25665I$
$u=\ \ 0.022638-0.459801I$ $a=\ \ 0.938004+0.768501I$ $b=\ \ 0.256531+0.411391I$	$-0.428790+1.166927I$	$-5.36023-5.57896I$
$u=\ \ 0.022638+0.459801I$ $a=\ \ 0.938004-0.768501I$ $b=\ \ 0.256531-0.411391I$	$-0.428790-1.166927I$	$-5.36023+5.57896I$
$u=\ \ 0.530023$ $a=-0.159422$ $b=-0.678379$	-1.09573	-8.61157

Solution to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.871184$ $a = 1.28231$ $b = -1.13180$	-2.15355	-1.76419
$u = 1.018812 - 0.314256I$ $a = 0.290313 + 1.176814I$ $b = 1.030660 - 0.784875I$	$-16.5506 - 3.5813I$	$-12.12116 + 2.15994I$
$u = 1.018812 + 0.314256I$ $a = 0.290313 - 1.176814I$ $b = 1.030660 + 0.784875I$	$-16.5506 + 3.5813I$	$-12.12116 - 2.15994I$
$u = 2.19773 - 0.03597I$ $a = -0.787135 - 0.050402I$ $b = 2.31778 - 0.82044I$	$-12.66301 - 2.31460I$	$-13.80105 + 1.17558I$
$u = 2.19773 + 0.03597I$ $a = -0.787135 + 0.050402I$ $b = 2.31778 + 0.82044I$	$-12.66301 + 2.31460I$	$-13.80105 - 1.17558I$
$u = 3.28596$ $a = 0.520308$ $b = -3.50482$	-19.0073	-12.9675

IV. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1	$(u-1)^5(u^2+u-1)(u^{16}+7u^{15}+\cdots-3u+1)$
c_2	$(u+1)^5(u^2+3u+1)(u^{16}+29u^{15}+\cdots+17u+1)$
c_3	$u^5(u^2+u-1)(u^{16}+2u^{15}+\cdots+72u^2-32)$
c_4	$(u+1)^5(u^2-u-1)(u^{16}+7u^{15}+\cdots-3u+1)$
c_5	$(u^2-3u+1)(u^5-3u^4+\cdots-u+1)(u^{16}+3u^{15}+\cdots-u-1)$
c_6	$u^2(u^5-u^4+\cdots+u-1)(u^{16}+2u^{15}+\cdots+20u-4)$
c_7	$u^5(u^2-u-1)(u^{16}+2u^{15}+\cdots+72u^2-32)$
c_8, c_9	$(u-1)^2(u^5+u^4+\cdots+u-1)(u^{16}+4u^{15}+\cdots+10u+1)$
c_{10}	$u^2(u^5+u^4+\cdots+u+1)(u^{16}+2u^{15}+\cdots+20u-4)$
c_{11}	$(u+1)^2(u^5-u^4+\cdots+u+1)(u^{16}+4u^{15}+\cdots+10u+1)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_4	$(y-1)^5(y^2-3y+1)(y^{16}-29y^{15}+\cdots-17y+1)$
c_2	$(y-1)^5(y^2-7y+1)(y^{16}-77y^{15}+\cdots-1761y+1)$
c_3, c_7	$y^5(y^2-3y+1)(y^{16}-36y^{15}+\cdots-4608y+1024)$
c_5	$(y^2-7y+1)(y^5-y^4+\cdots+3y-1)(y^{16}-37y^{15}+\cdots-11y+1)$
c_6, c_{10}	$y^2(y^5+3y^4+\cdots-y-1)(y^{16}+18y^{15}+\cdots-168y+16)$
c_8, c_9, c_{11}	$(y-1)^2(y^5-5y^4+\cdots-y-1)(y^{16}-20y^{15}+\cdots-146y+1)$