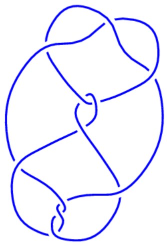
$11a_{241}$ ($K11a_{241}$)



1

Arc Sequences

$\rightarrow$	$\rightarrow$	$\rightarrow$	$\rightarrow$	$\rightarrow$	$\rightarrow$	$\rightarrow$	$\rightarrow$	$\rightarrow$	$\rightarrow$	$\rightarrow$
7	1	11	10	8	9	2	6	3	4	5

Solving Sequence

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

Representation Ideals

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

$$I_1^u = \langle b^3 + b^2 + 2b + 1,\ a + 1,\ u - 1\rangle$$
$$I_2^u = \langle u^{50} - 4u^{49} + \cdots - 3u - 1,\ -u^{12} + 5u^{10} + 2u^9 - 9u^8 - 8u^7 + 4u^6 + 10u^5 + 6u^4 - 2u^3 - 5u^2 + a - 2u - 1,$$
$$u^{49} - 3u^{48} + \cdots + 4b + 1\rangle$$

There are 2 irreducible components with 53 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. $I_1^u = \langle b^3 + b^2 + 2b + 1,\ a + 1,\ u - 1 \rangle$

(i) Arc colorings

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

(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
$u = 1.00000$ $a = -1.00000$ $b = -0.569840$	-2.75839	-14.6948
$u = 1.00000$ $a = -1.00000$ $b = -0.215080 - 1.307141I$	$1.37919 - 2.82812I$	$-10.15260 + 3.54173I$
$u = 1.00000$ $a = -1.00000$ $b = -0.215080 + 1.307141I$	$1.37919 + 2.82812I$	$-10.15260 - 3.54173I$

II.

$\boldsymbol{I^u_2 = \langle u^{50} - 4u^{49} + \cdots - 3u - 1,\ -u^{12} + 5u^{10} + \cdots + a - 1,\ u^{49} - 3u^{48} + \cdots + 4b + 1\rangle}$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u^{12} - 5u^{10} - 2u^9 + 9u^8 + 8u^7 - 4u^6 - 10u^5 - 6u^4 + 2u^3 + 5u^2 + 2u + 1 \\ -\frac{1}{4}u^{49} + \frac{3}{4}u^{48} + \cdots + u - \frac{1}{4} \end{pmatrix}$$
$$a_4 = \begin{pmatrix} \frac{1}{4}u^{49} - \frac{3}{4}u^{48} + \cdots - u + \frac{5}{4} \\ -3u^{49} + \frac{17}{2}u^{48} + \cdots - \frac{19}{2}u - \frac{5}{2} \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -\frac{3}{4}u^{49} + \frac{11}{4}u^{48} + \cdots - \frac{11}{2}u - \frac{1}{4} \\ -7.25000u^{49} + 19.2500u^{48} + \cdots - 20.5000u - 5.75000 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} \frac{13}{2}u^{49} - \frac{33}{2}u^{48} + \cdots + 15u + \frac{11}{2} \\ -7.25000u^{49} + 19.2500u^{48} + \cdots - 20.5000u - 5.75000 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -\frac{11}{2}u^{49} + \frac{29}{2}u^{48} + \cdots - 14u - \frac{5}{2} \\ -10.7500u^{49} + 28.7500u^{48} + \cdots - 30.5000u - 8.25000 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} \frac{7}{2}u^{49} - \frac{21}{2}u^{48} + \cdots + 11u + \frac{9}{2} \\ -18.7500u^{49} + 50.7500u^{48} + \cdots - 52.5000u - 14.2500 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} \frac{7}{2}u^{49} - \frac{21}{2}u^{48} + \cdots + 11u + \frac{9}{2} \\ -18.7500u^{49} + 50.7500u^{48} + \cdots - 52.5000u - 14.2500 \end{pmatrix}$$

(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
$u = -1.347802 - 0.244464I$ $a = -2.76858 - 0.61561I$ $b = -0.331579 - 1.330071I$	$-0.80897 - 7.30656I$	$-11.87888 + 5.13251I$
$u = -1.347802 + 0.244464I$ $a = -2.76858 + 0.61561I$ $b = -0.331579 + 1.330071I$	$-0.80897 + 7.30656I$	$-11.87888 - 5.13251I$
$u = -1.341701 - 0.206608I$ $a = -1.86713 + 0.80037I$ $b = -0.772297 - 0.099116I$	$-5.29863 - 3.31697I$	$-16.7691 + 3.0814I$
$u = -1.341701 + 0.206608I$ $a = -1.86713 - 0.80037I$ $b = -0.772297 + 0.099116I$	$-5.29863 + 3.31697I$	$-16.7691 - 3.0814I$
$u = -1.338188 - 0.148593I$ $a = -0.19104 + 1.90685I$ $b = -0.304563 + 1.171450I$	$-2.05727 + 0.60926I$	$-13.40155 - 0.92964I$
$u = -1.338188 + 0.148593I$ $a = -0.19104 - 1.90685I$ $b = -0.304563 - 1.171450I$	$-2.05727 - 0.60926I$	$-13.40155 + 0.92964I$
$u = -1.178281 - 0.322665I$ $a = 1.48378 - 0.70190I$ $b = 0.019632 + 1.351750I$	$3.75475 - 1.24423I$	$-7.62293 + 0.40296I$
$u = -1.178281 + 0.322665I$ $a = 1.48378 + 0.70190I$ $b = 0.019632 - 1.351750I$	$3.75475 + 1.24423I$	$-7.62293 - 0.40296I$
$u = -1.139666 - 0.147758I$ $a = 0.894279 - 0.021486I$ $b = 0.166424 + 0.369815I$	$-1.55529 - 0.78493I$	$-9.19094 + 1.36537I$
$u = -1.139666 + 0.147758I$ $a = 0.894279 + 0.021486I$ $b = 0.166424 - 0.369815I$	$-1.55529 + 0.78493I$	$-9.19094 - 1.36537I$

Solution to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.969038 - 0.498459I$ $a = 0.480236 + 0.039738I$ $b = 0.317517 - 1.315332I$	$0.04307 + 4.61787I$	$-12.77680 - 3.96714I$
$u = -0.969038 + 0.498459I$ $a = 0.480236 - 0.039738I$ $b = 0.317517 + 1.315332I$	$0.04307 - 4.61787I$	$-12.77680 + 3.96714I$
$u = -0.889209 - 0.489632I$ $a = 0.914872 - 0.265987I$ $b = 0.748495 - 0.067917I$	$-4.29681 + 0.76442I$	$-18.3162 - 1.2723I$
$u = -0.889209 + 0.489632I$ $a = 0.914872 + 0.265987I$ $b = 0.748495 + 0.067917I$	$-4.29681 - 0.76442I$	$-18.3162 + 1.2723I$
$u = -0.781241 - 0.521632I$ $a = 1.48070 - 0.17158I$ $b = 0.300001 + 1.216562I$	$-0.78921 - 3.02934I$	$-14.4745 + 3.5215I$
$u = -0.781241 + 0.521632I$ $a = 1.48070 + 0.17158I$ $b = 0.300001 - 1.216562I$	$-0.78921 + 3.02934I$	$-14.4745 - 3.5215I$
$u = -0.314976 - 0.745791I$ $a = -0.083118 + 0.257952I$ $b = 0.292411 - 1.122108I$	$0.61352 - 1.42597I$	$-11.17419 + 2.49743I$
$u = -0.314976 + 0.745791I$ $a = -0.083118 - 0.257952I$ $b = 0.292411 + 1.122108I$	$0.61352 + 1.42597I$	$-11.17419 - 2.49743I$
$u = -0.268160 - 0.812232I$ $a = 0.602597 - 0.643600I$ $b = 0.777098 + 0.128997I$	$-2.36749 - 5.37835I$	$-14.0557 + 6.0904I$
$u = -0.268160 + 0.812232I$ $a = 0.602597 + 0.643600I$ $b = 0.777098 - 0.128997I$	$-2.36749 + 5.37835I$	$-14.0557 - 6.0904I$

Solution to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.254741$ $a=\ \ 0.765895$ $b=-0.299163$	-0.616490	-16.5514
$u=-0.241290-0.847148I$ $a=\ \ 1.61512-1.15526I$ $b=\ \ 0.332926+1.345877I$	$2.27588-9.39250I$	$-9.20146+7.63091I$
$u=-0.241290+0.847148I$ $a=\ \ 1.61512+1.15526I$ $b=\ \ 0.332926-1.345877I$	$2.27588+9.39250I$	$-9.20146-7.63091I$
$u=-0.171490-0.615665I$ $a=\ \ 0.002971+0.651556I$ $b=-0.202172-0.562210I$	$1.12881-2.03777I$	$-7.78527+5.62795I$
$u=-0.171490+0.615665I$ $a=\ \ 0.002971-0.651556I$ $b=-0.202172+0.562210I$	$1.12881+2.03777I$	$-7.78527-5.62795I$
$u=-0.079525-0.749141I$ $a=\ \ 0.02801+2.28150I$ $b=-0.031726-1.385862I$	$7.10349-2.64910I$	$-4.03358+3.41831I$
$u=-0.079525+0.749141I$ $a=\ \ 0.02801-2.28150I$ $b=-0.031726+1.385862I$	$7.10349+2.64910I$	$-4.03358-3.41831I$
$u=\ \ 0.091742-0.486520I$ $a=-0.623257-1.176060I$ $b=-0.666165+0.120010I$	$-0.711738+0.697273I$	$-10.71279-1.15101I$
$u=\ \ 0.091742+0.486520I$ $a=-0.623257+1.176060I$ $b=-0.666165-0.120010I$	$-0.711738-0.697273I$	$-10.71279+1.15101I$
$u=\ \ 0.131513-0.599202I$ $a=-2.32061-1.43271I$ $b=-0.287032+1.337147I$	$3.88325+4.20193I$	$-5.74987-2.95437I$

Solution to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.131513 + 0.599202I$ $a = -2.32061 + 1.43271I$ $b = -0.287032 - 1.337147I$	$3.88325 - 4.20193I$	$-5.74987 + 2.95437I$
$u = 0.224526 - 0.262956I$ $a = 1.38836 - 1.23755I$ $b = -0.214240 - 1.257321I$	$2.72213 - 2.30998I$	$-4.83095 + 2.73383I$
$u = 0.224526 + 0.262956I$ $a = 1.38836 + 1.23755I$ $b = -0.214240 + 1.257321I$	$2.72213 + 2.30998I$	$-4.83095 - 2.73383I$
$u = 1.255562 - 0.159319I$ $a = -0.765886 + 0.233068I$ $b = -0.237505 - 1.383800I$	$0.55189 - 1.61966I$	$-13.09729 - 0.91495I$
$u = 1.255562 + 0.159319I$ $a = -0.765886 - 0.233068I$ $b = -0.237505 + 1.383800I$	$0.55189 + 1.61966I$	$-13.09729 + 0.91495I$
$u = 1.316220 - 0.301977I$ $a = -1.085195 - 0.703146I$ $b = -0.06826 + 1.41694I$	$2.73057 + 6.43368I$	$-9.43687 - 5.75913I$
$u = 1.316220 + 0.301977I$ $a = -1.085195 + 0.703146I$ $b = -0.06826 - 1.41694I$	$2.73057 - 6.43368I$	$-9.43687 + 5.75913I$
$u = 1.325178 - 0.170535I$ $a = -0.867882 - 0.049722I$ $b = -0.625043 - 0.306332I$	$-4.77278 + 1.48125I$	$-17.3142 - 0.2721I$
$u = 1.325178 + 0.170535I$ $a = -0.867882 + 0.049722I$ $b = -0.625043 + 0.306332I$	$-4.77278 - 1.48125I$	$-17.3142 + 0.2721I$
$u = 1.356679 - 0.239831I$ $a = -0.904726 - 0.022505I$ $b = -0.396406 + 0.624218I$	$-3.70738 + 5.14926I$	$-14.3632 - 6.3732I$

Solution to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.356679 + 0.239831I$ $a = -0.904726 + 0.022505I$ $b = -0.396406 - 0.624218I$	$-3.70738 - 5.14926I$	$-14.3632 + 6.3732I$
$u = 1.41244 - 0.34853I$ $a = 2.36904 - 0.06189I$ $b = 0.350812 - 1.359942I$	$-2.97930 + 13.70142I$	$-12.8277 - 8.3385I$
$u = 1.41244 + 0.34853I$ $a = 2.36904 + 0.06189I$ $b = 0.350812 + 1.359942I$	$-2.97930 - 13.70142I$	$-12.8277 + 8.3385I$
$u = 1.41770 - 0.32777I$ $a = 1.45674 + 0.74032I$ $b = 0.815626 - 0.148361I$	$-7.73338 + 9.49487I$	$-17.3734 - 6.5886I$
$u = 1.41770 + 0.32777I$ $a = 1.45674 - 0.74032I$ $b = 0.815626 + 0.148361I$	$-7.73338 - 9.49487I$	$-17.3734 + 6.5886I$
$u = 1.41793 - 0.29464I$ $a = 0.063774 + 1.003663I$ $b = 0.367759 + 1.080262I$	$-4.88671 + 5.18577I$	$-14.7099 - 2.7132I$
$u = 1.41793 + 0.29464I$ $a = 0.063774 - 1.003663I$ $b = 0.367759 - 1.080262I$	$-4.88671 - 5.18577I$	$-14.7099 + 2.7132I$
$u = 1.49175 - 0.03659I$ $a = 1.42650 - 1.15493I$ $b = 0.380094 - 1.257643I$	$-8.44132 + 4.36522I$	$-16.7897 - 3.3870I$
$u = 1.49175 + 0.03659I$ $a = 1.42650 + 1.15493I$ $b = 0.380094 + 1.257643I$	$-8.44132 - 4.36522I$	$-16.7897 + 3.3870I$
$u = 1.49338$ $a = 1.77503$ $b = 0.835547$	-12.3381	-20.6748

III. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1, c_7	$u^3(u^{50} + u^{49} + \cdots + 20u + 8)$
c_2	$u^3(u^{50} + 21u^{49} + \cdots + 592u + 64)$
c_3, c_4, c_{10}	$(u^3 - u^2 + 2u - 1)(u^{50} + 2u^{49} + \cdots + 2u - 1)$
c_5, c_6, c_8	$(u + 1)^3(u^{50} + 4u^{49} + \cdots + 3u - 1)$
c_9, c_{11}	$(u^3 - u^2 + 1)(u^{50} + 2u^{49} + \cdots - 92u - 17)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_7	$y^3(y^{50} - 21y^{49} + \cdots - 592y + 64)$
c_2	$y^3(y^{50} + 11y^{49} + \cdots - 19712y + 4096)$
c_3, c_4, c_{10}	$(y^3 + 3y^2 + 2y - 1)(y^{50} + 42y^{49} + \cdots - 2y + 1)$
c_5, c_6, c_8	$(y-1)^3(y^{50} - 44y^{49} + \cdots - 3y + 1)$
c_9, c_{11}	$(y^3 - y^2 + 2y - 1)(y^{50} - 30y^{49} + \cdots + 70y + 289)$