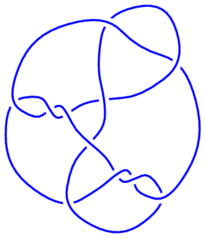
$11n_{137}$ ($K11n_{137}$)



[1]

Arc Sequences

$$\rightarrow \underset{8}{\uparrow} \rightarrow \underset{1}{\downarrow} \rightarrow \underset{9}{\uparrow} \rightarrow \underset{8}{\uparrow} \rightarrow \underset{11}{\uparrow} \rightarrow \underset{10}{\uparrow} \rightarrow \underset{2}{\uparrow} \rightarrow \underset{4}{\uparrow} \rightarrow \underset{6}{\uparrow} \rightarrow \underset{7}{\uparrow} \rightarrow \underset{9}{\downarrow} \rightarrow$$

Solving Sequence

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

Representation Ideals

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

$$\begin{aligned}
I_1^u = \langle & u^6 - 6u^5 + 16u^4 - 24u^3 + 23u^2 - 14u + 5,\ u^5 - 5u^4 + 10u^3 - 10u^2 + b + 6u - 2, \\
& 3u^5 - 13u^4 + 23u^3 - 17u^2 + 5a + 4u + 3\rangle \\
I_2^u = \langle & u^{16} + 2u^{15} + \cdots - 10u + 1, \\
& -1.73365 \times 10^{15}u^{15} - 4.00311 \times 10^{15}u^{14} + \cdots + 6.06510 \times 10^{14}b + 6.17175 \times 10^{15}, \\
& 2431814551962578u^{15} + 5014581106198658u^{14} + \cdots + 606509508209333a - 16828491642260893\rangle \\
I_3^u = \langle & u^{18} - u^{17} + \cdots - 3598u + 589, \\
& -1.09339 \times 10^{32}u^{17} - 1.03004 \times 10^{31}u^{16} + \cdots + 2.96925 \times 10^{32}b + 5.87333 \times 10^{34}, \\
& -2.31921 \times 10^{34}u^{17} - 1.62455 \times 10^{33}u^{16} + \cdots + 1.74889 \times 10^{35}a + 1.33772 \times 10^{37}\rangle
\end{aligned}$$

There are 3 irreducible components with 40 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. $I_1^u = \langle u^6 - 6u^5 + 16u^4 - 24u^3 + 23u^2 - 14u + 5,\ u^5 - 5u^4 + 10u^3 - 10u^2 + b + 6u - 2,\ 3u^5 - 13u^4 + 23u^3 - 17u^2 + 5a + 4u + 3\rangle$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -\frac{3}{5}u^5 + \frac{13}{5}u^4 + \cdots - \frac{4}{5}u - \frac{3}{5} \\ -u^5 + 5u^4 - 10u^3 + 10u^2 - 6u + 2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -\frac{3}{5}u^5 + \frac{13}{5}u^4 + \cdots - \frac{4}{5}u - \frac{3}{5} \\ u^3 - 4u^2 + 5u - 3 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} \frac{1}{5}u^5 - \frac{6}{5}u^4 + \cdots - \frac{7}{5}u + \frac{6}{5} \\ u^5 - 4u^4 + 6u^3 - 3u^2 + 1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -\frac{1}{5}u^5 + \frac{6}{5}u^4 + \cdots - \frac{23}{5}u + \frac{9}{5} \\ -1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -\frac{2}{5}u^5 + \frac{12}{5}u^4 + \cdots - \frac{31}{5}u + \frac{8}{5} \\ u - 2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -\frac{1}{5}u^5 + \frac{6}{5}u^4 + \cdots - \frac{18}{5}u + \frac{9}{5} \\ -1 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -\frac{3}{5}u^5 + \frac{18}{5}u^4 + \cdots - \frac{49}{5}u + \frac{17}{5} \\ u - 3 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} \frac{1}{5}u^5 - \frac{6}{5}u^4 + \cdots + \frac{18}{5}u - \frac{4}{5} \\ 1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} \frac{2}{5}u^5 - \frac{12}{5}u^4 + \cdots + \frac{26}{5}u - \frac{13}{5} \\ -u^5 + 5u^4 - 10u^3 + 10u^2 - 6u + 2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} \frac{2}{5}u^5 - \frac{12}{5}u^4 + \cdots + \frac{26}{5}u - \frac{13}{5} \\ -u^5 + 5u^4 - 10u^3 + 10u^2 - 6u + 2 \end{pmatrix}$$

(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
$u = 0.255138 - 0.877439I$ $a = -0.17339 - 1.43930I$ $b = -1.00000I$	$-0.26574 + 2.82812I$	$3.50976 - 2.97945I$
$u = 0.255138 + 0.877439I$ $a = -0.17339 + 1.43930I$ $b = 1.00000I$	$-0.26574 - 2.82812I$	$3.50976 + 2.97945I$
$u = 1.000000 - 0.754878I$ $a = -0.274015 + 0.362993I$ $b = 1.00000I$	-4.40332	-3.01951
$u = 1.000000 + 0.754878I$ $a = -0.274015 - 0.362993I$ $b = -1.00000I$	-4.40332	-3.01951
$u = 1.74486 - 0.87744I$ $a = 0.647408 + 0.202297I$ $b = -1.00000I$	$-0.26574 - 2.82812I$	$3.50976 + 2.97945I$
$u = 1.74486 + 0.87744I$ $a = 0.647408 - 0.202297I$ $b = 1.00000I$	$-0.26574 + 2.82812I$	$3.50976 - 2.97945I$

II. $I^u_2 =$
$$\langle u^{16}+2u^{15}+\cdots-10u+1,\ -1.73\times10^{15}u^{15}-4.00\times10^{15}u^{14}+\cdots+6.07\times10^{14}b+6.17\times10^{15},\ 2.43\times10^{15}u^{15}+5.01\times10^{15}u^{14}+\cdots+6.07\times10^{14}a-1.68\times10^{16}\rangle$$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -4.00952u^{15} - 8.26793u^{14} + \cdots - 126.612u + 27.7465 \\ 2.85841u^{15} + 6.60025u^{14} + \cdots + 65.1455u - 10.1759 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -4.00952u^{15} - 8.26793u^{14} + \cdots - 126.612u + 27.7465 \\ 2.73115u^{15} + 6.27741u^{14} + \cdots + 63.6248u - 10.4247 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -8.99316u^{15} - 20.3369u^{14} + \cdots - 210.155u + 35.1290 \\ 1.28618u^{15} + 2.77910u^{14} + \cdots + 35.1160u - 4.08796 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -1.97679u^{15} - 4.31360u^{14} + \cdots - 49.5922u + 15.1411 \\ 3.61529u^{15} + 7.99868u^{14} + \cdots + 90.9157u - 16.5704 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -12.3027u^{15} - 27.3952u^{14} + \cdots - 316.275u + 59.4225 \\ 3.71417u^{15} + 8.49770u^{14} + \cdots + 84.1430u - 11.9117 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1.73738u^{15} + 4.18410u^{14} + \cdots + 34.5508u + 3.22948 \\ 3.61529u^{15} + 7.99868u^{14} + \cdots + 90.9157u - 16.5704 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -10.4247u^{15} - 23.5806u^{14} + \cdots - 259.910u + 40.6225 \\ 0.0988785u^{15} + 0.499021u^{14} + \cdots - 6.77273u + 4.65877 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1.87792u^{15} + 3.81458u^{14} + \cdots + 56.3649u - 17.7999 \\ -3.61529u^{15} - 7.99868u^{14} + \cdots - 90.9157u + 16.5704 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -6.86793u^{15} - 14.8682u^{14} + \cdots - 191.758u + 37.9223 \\ 2.85841u^{15} + 6.60025u^{14} + \cdots + 65.1455u - 10.1759 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -6.86793u^{15} - 14.8682u^{14} + \cdots - 191.758u + 37.9223 \\ 2.85841u^{15} + 6.60025u^{14} + \cdots + 65.1455u - 10.1759 \end{pmatrix}$$

(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
$u = -3.13152 - 0.31808I$ $a = 0.473846 + 0.041423I$ $b = 0.82217 + 1.15830I$	$8.6109 + 12.3641I$	$9.35094 - 7.14528I$
$u = -3.13152 + 0.31808I$ $a = 0.473846 - 0.041423I$ $b = 0.82217 - 1.15830I$	$8.6109 - 12.3641I$	$9.35094 + 7.14528I$
$u = -1.97730$ $a = -0.724290$ $b = -0.888414$	6.54271	14.4518
$u = -1.38608 - 0.45928I$ $a = -0.416903 - 0.397672I$ $b = -0.797243 - 1.086111I$	$2.59863 + 8.63192I$	$5.90792 - 7.27043I$
$u = -1.38608 + 0.45928I$ $a = -0.416903 + 0.397672I$ $b = -0.797243 + 1.086111I$	$2.59863 - 8.63192I$	$5.90792 + 7.27043I$
$u = -0.239470$ $a = 1.67118$ $b = 0.423356$	0.656537	15.0457
$u = 0.216557 - 0.046304I$ $a = 2.13510 + 3.15314I$ $b = 0.826528 - 0.979522I$	$3.36394 - 4.13872I$	$7.73528 + 1.97260I$
$u = 0.216557 + 0.046304I$ $a = 2.13510 - 3.15314I$ $b = 0.826528 + 0.979522I$	$3.36394 + 4.13872I$	$7.73528 - 1.97260I$
$u = 0.467500 - 0.213512I$ $a = -2.03947 - 1.48957I$ $b = 0.232716 - 0.644221I$	$1.24387 + 2.05073I$	$9.21244 + 1.11358I$
$u = 0.467500 + 0.213512I$ $a = -2.03947 + 1.48957I$ $b = 0.232716 + 0.644221I$	$1.24387 - 2.05073I$	$9.21244 - 1.11358I$

Solution to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.857887 - 0.159297I$ $a = 0.163729 - 0.801451I$ $b = -0.379775 - 0.677130I$	$-2.70658 + 1.45405I$	$3.73411 - 4.71917I$
$u = 0.857887 + 0.159297I$ $a = 0.163729 + 0.801451I$ $b = -0.379775 + 0.677130I$	$-2.70658 - 1.45405I$	$3.73411 + 4.71917I$
$u = 1.231701 - 0.623882I$ $a = 0.690658 + 0.586962I$ $b = 0.494247 + 0.784033I$	$0.99780 + 5.12268I$	$7.85223 - 7.82309I$
$u = 1.231701 + 0.623882I$ $a = 0.690658 - 0.586962I$ $b = 0.494247 - 0.784033I$	$0.99780 - 5.12268I$	$7.85223 + 7.82309I$
$u = 1.85234 - 1.37345I$ $a = -0.480404 - 0.449368I$ $b = -0.966111 + 0.941274I$	$10.25569 - 1.47993I$	$11.45831 + 1.74331I$
$u = 1.85234 + 1.37345I$ $a = -0.480404 + 0.449368I$ $b = -0.966111 - 0.941274I$	$10.25569 + 1.47993I$	$11.45831 - 1.74331I$

III. $\boldsymbol{I^u_3 = \langle u^{18} - u^{17} + \cdots - 3598u + 589,\ -1.09 \times 10^{32}u^{17} - 1.03 \times 10^{31}u^{16} + \cdots + 2.97 \times 10^{32}b + 5.87 \times 10^{34},\ -2.32 \times 10^{34}u^{17} - 1.62 \times 10^{33}u^{16} + \cdots + 1.75 \times 10^{35}a + 1.34 \times 10^{37}\rangle}$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.132611u^{17} + 0.00928906u^{16} + \cdots + 387.873u - 76.4899 \\ 0.368238u^{17} + 0.0346903u^{16} + \cdots + 1025.48u - 197.805 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.132611u^{17} + 0.00928906u^{16} + \cdots + 387.873u - 76.4899 \\ 0.213184u^{17} + 0.0191754u^{16} + \cdots + 593.028u - 114.226 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0.0565071u^{17} + 0.00633907u^{16} + \cdots + 149.592u - 29.2688 \\ 0.0105699u^{17} + 0.00149785u^{16} + \cdots + 30.8052u - 4.95031 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0.137014u^{17} + 0.00852612u^{16} + \cdots + 403.219u - 81.0893 \\ 0.109001u^{17} + 0.0112857u^{16} + \cdots + 295.446u - 55.7058 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.134708u^{17} + 0.00583225u^{16} + \cdots + 403.872u - 78.2342 \\ -1 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 0.0712508u^{17} + 0.00713066u^{16} + \cdots + 190.044u - 32.7172 \\ -0.0200358u^{17} - 0.00511484u^{16} + \cdots - 42.0777u + 7.20075 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.119299u^{17} + 0.00948594u^{16} + \cdots + 339.894u - 67.3015 \\ 0.0889654u^{17} + 0.00617084u^{16} + \cdots + 253.368u - 48.5050 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -0.0912866u^{17} - 0.0122455u^{16} + \cdots - 232.122u + 41.9180 \\ 0.0200358u^{17} + 0.00511484u^{16} + \cdots + 42.0777u - 7.20075 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.235627u^{17} - 0.0254012u^{16} + \cdots - 637.603u + 121.316 \\ 0.368238u^{17} + 0.0346903u^{16} + \cdots + 1025.48u - 197.805 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.235627u^{17} - 0.0254012u^{16} + \cdots - 637.603u + 121.316 \\ 0.368238u^{17} + 0.0346903u^{16} + \cdots + 1025.48u - 197.805 \end{pmatrix}$$

(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
$u = -2.93425 - 0.48080I$ $a = -0.507686 + 0.003340I$ $b = -0.945590 - 0.965095I$	$10.17134 + 5.50049I$	$11.48937 - 2.97298I$
$u = -2.93425 + 0.48080I$ $a = -0.507686 - 0.003340I$ $b = -0.945590 + 0.965095I$	$10.17134 - 5.50049I$	$11.48937 + 2.97298I$
$u = -1.99207 - 1.47309I$ $a = 0.486905 - 0.278515I$ $b = 0.505863 + 0.476260I$	$1.87293 + 3.41073I$	$9.88238 - 4.39642I$
$u = -1.99207 + 1.47309I$ $a = 0.486905 + 0.278515I$ $b = 0.505863 - 0.476260I$	$1.87293 - 3.41073I$	$9.88238 + 4.39642I$
$u = -1.096551 - 0.344363I$ $a = 0.574173 + 0.427943I$ $b = 0.881705 + 0.851729I$	$3.77376 + 2.21388I$	$8.24115 - 3.04598I$
$u = -1.096551 + 0.344363I$ $a = 0.574173 - 0.427943I$ $b = 0.881705 - 0.851729I$	$3.77376 - 2.21388I$	$8.24115 + 3.04598I$
$u = -0.047733 - 1.069326I$ $a = -0.435880 + 0.196481I$ $b = -0.257033 - 0.703723I$	$-3.25448 + 1.10969I$	$4.55374 - 6.23947I$
$u = -0.047733 + 1.069326I$ $a = -0.435880 - 0.196481I$ $b = -0.257033 + 0.703723I$	$-3.25448 - 1.10969I$	$4.55374 + 6.23947I$
$u = 0.318103 - 0.220761I$ $a = -0.04108 - 2.12527I$ $b = -0.937576 + 0.708026I$	$3.77376 + 2.21388I$	$8.24115 - 3.04598I$
$u = 0.318103 + 0.220761I$ $a = -0.04108 + 2.12527I$ $b = -0.937576 - 0.708026I$	$3.77376 - 2.21388I$	$8.24115 + 3.04598I$

Solution to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.088453 - 0.004751I$ $a = 0.213971 - 0.418670I$ $b = -0.033137 - 1.191065I$	$-3.25448 - 1.10969I$	$4.55374 + 6.23947I$
$u = 1.088453 + 0.004751I$ $a = 0.213971 + 0.418670I$ $b = -0.033137 + 1.191065I$	$-3.25448 + 1.10969I$	$4.55374 - 6.23947I$
$u = 1.258469 - 0.377137I$ $a = -1.041864 - 0.183155I$ $b = -0.076831 + 1.264199I$	$1.87293 - 3.41073I$	$9.88238 + 4.39642I$
$u = 1.258469 + 0.377137I$ $a = -1.041864 + 0.183155I$ $b = -0.076831 - 1.264199I$	$1.87293 + 3.41073I$	$9.88238 - 4.39642I$
$u = 1.76892 - 1.40654I$ $a = 0.451971 + 0.491832I$ $b = 1.067290 - 0.668745I$	$10.17134 + 5.50049I$	$11.48937 - 2.97298I$
$u = 1.76892 + 1.40654I$ $a = 0.451971 - 0.491832I$ $b = 1.067290 + 0.668745I$	$10.17134 - 5.50049I$	$11.48937 + 2.97298I$
$u = 2.13666 - 0.11985I$ $a = 0.597448 + 0.033512I$ $b = 0.295309 + 1.123219I$	-0.453072	5.66670
$u = 2.13666 + 0.11985I$ $a = 0.597448 - 0.033512I$ $b = 0.295309 - 1.123219I$	-0.453072	5.66670

IV. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1, c_3, c_4 c_7, c_8	$(u^2+1)^3(u^{16}+2u^{14}+\cdots-2u-1)(u^{18}+u^{17}+\cdots+8u+5)$
c_2	$(u+1)^6(u^{16}+4u^{15}+\cdots-14u^2+1)(u^{18}+7u^{17}+\cdots+136u+25)$
c_5	$(u^6+u^4+2u^2+1)$ $(u^9-3u^8+2u^7+5u^6-u^5-13u^4+10u^3+2u^2+u-3)^2$ $(u^{16}+9u^{15}+\cdots+31u+22)$
c_6, c_9, c_{10}	$(u^6-3u^4+2u^2+1)$ $(u^9-u^8-4u^7+3u^6+5u^5-u^4-2u^3-2u^2+u-1)^2$ $(u^{16}+3u^{15}+\cdots-3u-2)$
c_{11}	$(u^3-u^2+1)^2(1+u+2u^2+6u^3+7u^4+11u^5+5u^6+6u^7+u^8+u^9)^2$ $(u^{16}+3u^{15}+\cdots+41u-8)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_3, c_4 c_7, c_8	$(y+1)^6(y^{16}+4y^{15}+\cdots-14y^2+1)(y^{18}+7y^{17}+\cdots+136y+25)$
c_2	$(y-1)^6(y^{16}+24y^{15}+\cdots-28y+1)(y^{18}+7y^{17}+\cdots+5004y+625)$
c_5	$(y^3+y^2+2y+1)^2$ $(-9+13y-62y^2+180y^3-223y^4+185y^5-87y^6+32y^7-5y^8+y^9)^2$ $(y^{16}-3y^{15}+\cdots-3557y+484)$
c_6, c_9, c_{10}	$(y^3-3y^2+2y+1)^2$ $(y^9-9y^8+32y^7-55y^6+45y^5-19y^4+16y^3-10y^2-3y-1)^2$ $(y^{16}-15y^{15}+\cdots-21y+4)$
c_{11}	$(y^3-y^2+2y-1)^2$ $(y^9+11y^8+48y^7+105y^6+121y^5+73y^4+20y^3-6y^2-3y-1)^2$ $(y^{16}+9y^{15}+\cdots-6561y+64)$