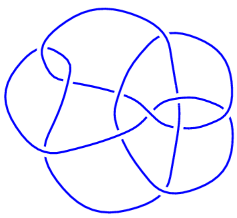
$11n_{133}$ $(K11n_{133})$



[1]

Arc Sequences

$$\rightarrow \underset{5}{\downarrow} \rightarrow \underset{1}{\downarrow} \rightarrow \underset{10}{\downarrow} \rightarrow \underset{11}{\uparrow} \rightarrow \underset{2}{\downarrow} \rightarrow \underset{9}{\downarrow} \rightarrow \underset{4}{\uparrow} \rightarrow \underset{5}{\downarrow} \rightarrow \underset{1}{\downarrow} \rightarrow \underset{8}{\downarrow} \rightarrow \underset{7}{\uparrow} \rightarrow$$

Solving Sequence

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

Representation Ideals

$$I = \bigcap_{i=1}^{8} I_i^u$$

$$\begin{aligned}
I_1^u &= \langle u^2 + u + 1,\ b + u + 1,\ a - u - 1\rangle \\
I_2^u &= \langle u^5 - 5u^4 + 7u^3 - 2u^2 + u - 1,\ a - 1,\ -u^2 + b + u\rangle \\
I_3^u &= \langle u^5 + 3u^4 + u^3 - 2u^2 - u + 1,\ a + 1,\ u^2 + b + u\rangle \\
I_4^u &= \langle u^6 - 4u^5 - u^4 + 18u^3 - 9u^2 - 20u + 16,\ -u^5 + 4u^4 - u^3 - 8u^2 + 4b + 7u, \\
&\quad - u^5 + 3u^4 + 3u^3 - 11u^2 + 4a - 3u + 9\rangle \\
I_5^u &= \langle b^2 + b + 1,\ a + 1,\ u - 1\rangle \\
I_6^u &= \langle b^2 + b + 1,\ u - 1,\ -b + a - 1\rangle \\
I_7^u &= \langle b^6 - 4b^5 - b^4 + 18b^3 - 9b^2 - 20b + 16,\ a - 1,\ -b^5 + 2b^4 + 7b^3 - 12b^2 - 11b + 4u + 16\rangle \\
I_8^u &= \langle b^6 + 7b^5 + 18b^4 + 27b^3 + 38b^2 + 11b + 1,\ -3b^5 - 21b^4 - 53b^3 - 75b^2 - 105b + 8u - 17, \\
&\quad 7b^5 + 47b^4 + 113b^3 + 161b^2 + 233b + 8a + 31\rangle
\end{aligned}$$

There are 8 irreducible components with 34 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. $I_1^u = \langle u^2 + u + 1,\ b + u + 1,\ a - u - 1 \rangle$

(i) Arc colorings

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

(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
$u = -0.500000 - 0.866025I$ $a = 0.500000 - 0.866025I$ $b = -0.500000 + 0.866025I$	$-1.64493 + 2.02988I$	$-9.00000 - 3.46410I$
$u = -0.500000 + 0.866025I$ $a = 0.500000 + 0.866025I$ $b = -0.500000 - 0.866025I$	$-1.64493 - 2.02988I$	$-9.00000 + 3.46410I$

II. $I_2^u = \langle u^5 - 5u^4 + 7u^3 - 2u^2 + u - 1,\ a - 1,\ -u^2 + b + u \rangle$

(i) Arc colorings

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

(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
$u = -0.181543 - 0.487016I$ $a = 1.00000$ $b = -0.022683 + 0.663845I$	$1.11858 + 1.59084I$	$0.80256 - 2.24828I$
$u = -0.181543 + 0.487016I$ $a = 1.00000$ $b = -0.022683 - 0.663845I$	$1.11858 - 1.59084I$	$0.80256 + 2.24828I$
$u = 0.668174$ $a = 1.00000$ $b = -0.221718$	-1.20060	-7.90698
$u = 2.34746 - 0.17191I$ $a = 1.00000$ $b = 3.13354 - 0.63521I$	$-18.6126 + 10.9920I$	$-8.84907 - 4.91483I$
$u = 2.34746 + 0.17191I$ $a = 1.00000$ $b = 3.13354 + 0.63521I$	$-18.6126 - 10.9920I$	$-8.84907 + 4.91483I$

III. $I_3^u = \langle u^5 + 3u^4 + u^3 - 2u^2 - u + 1,\ a + 1,\ u^2 + b + u \rangle$

(i) Arc colorings

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

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

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

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

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

$$a_9 = \begin{pmatrix} -1 \\ -u^2 - u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^2 - 2u \\ -u^4 - 3u^3 - u^2 + u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u^2 + u - 1 \\ -u^2 - u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -1 \\ -u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} u^3 + 3u^2 + u - 1 \\ u^4 + 2u^3 - u^2 - u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u^3 - 2u^2 + u + 1 \\ u^3 + 2u^2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u^3 - 2u^2 + u + 1 \\ u^3 + 2u^2 \end{pmatrix}$$

(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
$u = -2.30777$ $a = -1.00000$ $b = -3.01803$	-16.3055	-8.85728
$u = -0.921567 - 0.544227I$ $a = -1.00000$ $b = \ \ 0.368464 - 0.458856I$	$-2.41702 - 7.42796I$	$-6.48635 + 7.69371I$
$u = -0.921567 + 0.544227I$ $a = -1.00000$ $b = \ \ 0.368464 + 0.458856I$	$-2.41702 + 7.42796I$	$-6.48635 - 7.69371I$
$u = \ \ 0.575451 - 0.217130I$ $a = -1.00000$ $b = -0.859450 + 0.467025I$	$-2.58971 + 1.95896I$	$-10.08501 - 4.98123I$
$u = \ \ 0.575451 + 0.217130I$ $a = -1.00000$ $b = -0.859450 - 0.467025I$	$-2.58971 - 1.95896I$	$-10.08501 + 4.98123I$

IV. $\boldsymbol{I_4^u = \langle u^6 - 4u^5 - u^4 + 18u^3 - 9u^2 - 20u + 16,\ -u^5 + 4u^4 - u^3 - 8u^2 + 4b + 7u,\ -u^5 + 3u^4 + 3u^3 - 11u^2 + 4a - 3u + 9\rangle}$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u^2 + 1 \\ u^2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} \frac{1}{4}u^5 - \frac{3}{4}u^4 + \cdots + \frac{3}{4}u - \frac{9}{4} \\ \frac{1}{4}u^5 - u^4 + \frac{1}{4}u^3 + 2u^2 - \frac{7}{4}u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -\frac{3}{16}u^5 + \frac{1}{2}u^4 + \cdots - \frac{21}{16}u + 1 \\ -\frac{1}{4}u^5 + u^4 - \frac{1}{4}u^3 - 3u^2 + \frac{7}{4}u + 1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} \frac{1}{4}u^4 - u^3 + \frac{3}{4}u^2 + \frac{5}{2}u - \frac{9}{4} \\ \frac{1}{4}u^5 - u^4 + \frac{1}{4}u^3 + 2u^2 - \frac{7}{4}u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} \frac{1}{4}u^5 - \frac{3}{4}u^4 + \cdots + \frac{3}{4}u - \frac{9}{4} \\ -\frac{1}{4}u^5 + \frac{1}{2}u^4 + \cdots - \frac{11}{4}u + 4 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} \frac{1}{8}u^5 - \frac{1}{4}u^4 + \cdots + \frac{19}{8}u - \frac{11}{4} \\ \frac{1}{4}u^5 - u^4 + \frac{5}{4}u^3 + u^2 - \frac{15}{4}u + 2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -\frac{3}{16}u^5 + \frac{1}{2}u^4 + \cdots - \frac{29}{16}u + 4 \\ \frac{1}{4}u^5 - \frac{1}{2}u^4 + \cdots + \frac{11}{4}u - 3 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -\frac{3}{16}u^5 + \frac{1}{2}u^4 + \cdots - \frac{29}{16}u + 4 \\ \frac{1}{4}u^5 - \frac{1}{2}u^4 + \cdots + \frac{11}{4}u - 3 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes =unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.48721 - 0.12793I$ $a = -0.106812 - 0.438266I$ $b = -0.17052 - 1.66828I$	$-2.25297 - 4.59885I$	$-9.12391 + 5.59727I$
$u = -1.48721 + 0.12793I$ $a = -0.106812 + 0.438266I$ $b = -0.17052 + 1.66828I$	$-2.25297 + 4.59885I$	$-9.12391 - 5.59727I$
$u = 1.054941 - 0.264726I$ $a = 0.240575 - 0.570430I$ $b = -0.170516 - 0.063771I$	$-2.25297 + 0.53909I$	$-9.12391 + 1.33093I$
$u = 1.054941 + 0.264726I$ $a = 0.240575 + 0.570430I$ $b = -0.170516 + 0.063771I$	$-2.25297 - 0.53909I$	$-9.12391 - 1.33093I$
$u = 2.43227 - 0.39265I$ $a = -0.883763 - 0.142671I$ $b = -3.15897 + 0.86603I$	$-16.8782 + 2.0299I$	$-10.75217 - 3.46410I$
$u = 2.43227 + 0.39265I$ $a = -0.883763 + 0.142671I$ $b = -3.15897 - 0.86603I$	$-16.8782 - 2.0299I$	$-10.75217 + 3.46410I$

V. $I_5^u = \langle b^2+b+1,\ a+1,\ u-1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes =unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I_5^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \quad 1.00000$ $a = -1.00000$ $b = -0.500000 - 0.866025I$	$-1.64493 - 2.02988I$	$-9.00000 + 3.46410I$
$u = \quad 1.00000$ $a = -1.00000$ $b = -0.500000 + 0.866025I$	$-1.64493 + 2.02988I$	$-9.00000 - 3.46410I$

VI. $I_6^u = \langle b^2+b+1,\ u-1,\ -b+a-1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $=1$

(iii) Cusp Shapes =unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I^u_6	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.00000$ $a = 0.500000 - 0.866025I$ $b = -0.500000 - 0.866025I$	$-1.64493 - 2.02988I$	$-9.00000 + 3.46410I$
$u = 1.00000$ $a = 0.500000 + 0.866025I$ $b = -0.500000 + 0.866025I$	$-1.64493 + 2.02988I$	$-9.00000 - 3.46410I$

VII. $\boldsymbol{I_7^u} =$
$\langle b^6-4b^5-b^4+18b^3-9b^2-20b+16,\ a-1,\ -b^5+2b^4+7b^3-12b^2-11b+4u+16\rangle$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0 \\ \frac{1}{4}b^5 - \frac{1}{2}b^4 + \cdots + \frac{11}{4}b - 4 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 1 \\ -\frac{1}{4}b^5 + \frac{1}{2}b^4 + \cdots - \frac{5}{4}b + 1 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} \frac{1}{4}b^5 - \frac{1}{2}b^4 + \cdots + \frac{3}{2}b^2 + \frac{5}{4}b \\ -\frac{1}{4}b^5 + \frac{1}{2}b^4 + \cdots - \frac{5}{4}b + 1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -\frac{1}{4}b^5 + \frac{1}{2}b^4 + \cdots - \frac{11}{4}b + 4 \\ -\frac{1}{4}b^5 + \frac{1}{2}b^4 + \cdots + \frac{1}{4}b - 1 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ b \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -\frac{1}{2}b^5 + \frac{3}{2}b^4 + \frac{5}{2}b^3 - 8b^2 - 4b + 9 \\ -\frac{1}{4}b^5 + b^4 + \cdots + \frac{1}{4}b + 3 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -b + 1 \\ b \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ \frac{1}{4}b^5 - \frac{1}{2}b^4 + \cdots + \frac{9}{4}b - 1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -\frac{1}{4}b^5 + \frac{1}{2}b^4 + \cdots - \frac{15}{4}b + 4 \\ -\frac{1}{4}b^5 + b^4 + \cdots + \frac{1}{4}b + 2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} \frac{1}{2}b^3 - \frac{3}{2}b^2 - \frac{1}{2}b + 3 \\ \frac{1}{4}b^5 - \frac{1}{2}b^4 + \cdots + \frac{11}{4}b - 3 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} \frac{1}{2}b^3 - \frac{3}{2}b^2 - \frac{1}{2}b + 3 \\ \frac{1}{4}b^5 - \frac{1}{2}b^4 + \cdots + \frac{11}{4}b - 3 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes =**unknown**

(iv) Complex Volumes and Cusp Shapes

Solution to I_7^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.102785 + 0.665457I$ $a = 1.00000$ $b = -1.48721 - 0.12793I$	$-2.25297 - 0.53909I$	$-9.12391 - 1.33093I$
$u = 0.102785 - 0.665457I$ $a = 1.00000$ $b = -1.48721 + 0.12793I$	$-2.25297 + 0.53909I$	$-9.12391 + 1.33093I$
$u = 0.102785 - 0.665457I$ $a = 1.00000$ $b = 1.054941 - 0.264726I$	$-2.25297 + 4.59885I$	$-9.12391 - 5.59727I$
$u = 0.102785 + 0.665457I$ $a = 1.00000$ $b = 1.054941 + 0.264726I$	$-2.25297 - 4.59885I$	$-9.12391 + 5.59727I$
$u = -2.20557$ $a = 1.00000$ $b = 2.43227 - 0.39265I$	$-16.8782 - 2.0299I$	$-10.75217 + 3.46410I$
$u = -2.20557$ $a = 1.00000$ $b = 2.43227 + 0.39265I$	$-16.8782 + 2.0299I$	$-10.75217 - 3.46410I$

VIII. $\boldsymbol{I_8^u = \langle b^6 + 7b^5 + 18b^4 + 27b^3 + 38b^2 + 11b + 1,\ -3b^5 + 8u + \cdots - 105b - 17,\ 7b^5 + 47b^4 + \cdots + 8a + 31\rangle}$

(i) Arc colorings

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

$$a_5 = \begin{pmatrix} 0 \\ \frac{3}{8}b^5 + \frac{21}{8}b^4 + \cdots + \frac{105}{8}b + \frac{17}{8} \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 1 \\ \frac{1}{8}b^5 + \frac{3}{4}b^4 + \cdots + \frac{5}{2}b^2 + \frac{23}{8}b \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -\frac{1}{8}b^5 - \frac{3}{4}b^4 + \cdots - \frac{23}{8}b + 1 \\ \frac{1}{8}b^5 + \frac{3}{4}b^4 + \cdots + \frac{5}{2}b^2 + \frac{23}{8}b \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -\frac{3}{8}b^5 - \frac{21}{8}b^4 + \cdots - \frac{105}{8}b - \frac{17}{8} \\ \frac{5}{8}b^5 + \frac{33}{8}b^4 + \cdots + \frac{151}{8}b + \frac{25}{8} \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -\frac{7}{8}b^5 - \frac{47}{8}b^4 + \cdots - \frac{233}{8}b - \frac{31}{8} \\ b \end{pmatrix}$$

$$a_7 = \begin{pmatrix} \frac{7}{8}b^5 + 6b^4 + \cdots + \frac{233}{8}b + \frac{13}{4} \\ \frac{1}{2}b^5 + \frac{27}{8}b^4 + \cdots + 17b + \frac{25}{8} \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -\frac{7}{8}b^5 - \frac{47}{8}b^4 + \cdots - \frac{241}{8}b - \frac{31}{8} \\ b \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -\frac{7}{8}b^5 - \frac{47}{8}b^4 + \cdots - \frac{233}{8}b - \frac{31}{8} \\ -\frac{3}{8}b^5 - \frac{21}{8}b^4 + \cdots - \frac{105}{8}b - \frac{17}{8} \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -\frac{1}{8}b^5 - \frac{7}{8}b^4 + \cdots - \frac{51}{8}b - \frac{15}{8} \\ \frac{1}{2}b^5 + \frac{27}{8}b^4 + \cdots + 17b + \frac{17}{8} \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -\frac{1}{4}b^5 - \frac{7}{4}b^4 + \cdots - \frac{41}{4}b - \frac{5}{4} \\ \frac{1}{8}b^5 + \frac{7}{8}b^4 + \cdots + \frac{39}{8}b + \frac{3}{8} \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -\frac{1}{4}b^5 - \frac{7}{4}b^4 + \cdots - \frac{41}{4}b - \frac{5}{4} \\ \frac{1}{8}b^5 + \frac{7}{8}b^4 + \cdots + \frac{39}{8}b + \frac{3}{8} \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes =unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I_8^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -2.20557$ $a = -1.102785 - 0.178028I$ $b = -3.15897 - 0.86603I$	$-16.8782 - 2.0299I$	$-10.75217 + 3.46410I$
$u = -2.20557$ $a = -1.102785 + 0.178028I$ $b = -3.15897 + 0.86603I$	$-16.8782 + 2.0299I$	$-10.75217 - 3.46410I$
$u = 0.102785 + 0.665457I$ $a = -0.52491 + 2.15379I$ $b = -0.17052 - 1.66828I$	$-2.25297 - 4.59885I$	$-9.12391 + 5.59727I$
$u = 0.102785 - 0.665457I$ $a = -0.52491 - 2.15379I$ $b = -0.17052 + 1.66828I$	$-2.25297 + 4.59885I$	$-9.12391 - 5.59727I$
$u = 0.102785 - 0.665457I$ $a = 0.62769 + 1.48834I$ $b = -0.170516 - 0.063771I$	$-2.25297 + 0.53909I$	$-9.12391 + 1.33093I$
$u = 0.102785 + 0.665457I$ $a = 0.62769 - 1.48834I$ $b = -0.170516 + 0.063771I$	$-2.25297 - 0.53909I$	$-9.12391 - 1.33093I$

IX. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1	$(u-1)^4(u^2+u+1)(u^3-2u^2-1)^4(u^5+3u^4+u^3-2u^2-u+1)$ $(u^5+5u^4+\cdots+u+1)(u^6+4u^5+\cdots+20u+16)$
c_2	$(u+1)^4(u^2-u+1)(u^3+4u^2-4u+1)^4$ $(u^5+7u^4+11u^3+12u^2+5u+1)(u^5+11u^4+31u^3-3u+1)$ $(u^6+18u^5+127u^4+434u^3+769u^2+688u+256)$
c_3, c_5, c_8	$(u+1)^4(u^2-u+1)(u^3-2u^2-1)^4(u^5-3u^4+u^3+2u^2-u-1)$ $(u^5+5u^4+\cdots+u+1)(u^6+4u^5+\cdots+20u+16)$
c_4, c_7, c_{11}	$(u+1)^2(u^2-u+1)^8(u^5+u^4+\cdots-u^2-1)(u^5+3u^4+\cdots+3u^2-1)$ $(u^6+5u^5+12u^4+15u^3+11u^2+4u+4)$
c_6, c_9	$(u^2-u+1)^3(u^5-6u^4+9u^3+4u+1)(u^5-4u^4+3u^3-1)$ $(u^6-4u^5-u^4+18u^3-9u^2-20u+16)$ $(u^6+7u^5+18u^4+27u^3+38u^2+11u+1)^2$
c_{10}	$u^4(u^2+3u+3)(u^3-u^2-u+2)^4(u^5+2u^4-5u^2-6u-3)$ $(u^5+4u^4+\cdots-2u-1)(u^6+8u^5+\cdots+22u+4)$

X. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_3, c_5 c_8	$(y-1)^4(y^2+y+1)(-1-4y-4y^2+y^3)^4(y^5-11y^4+\cdots-3y-1)$ $(y^5-7y^4+11y^3-12y^2+5y-1)$ $(y^6-18y^5+127y^4-434y^3+769y^2-688y+256)$
c_2	$(y-1)^4(y^2+y+1)(y^3-24y^2+8y-1)^4$ $(y^5-59y^4+\cdots+9y-1)(y^5-27y^4+\cdots+y-1)$ $(y^6-70y^5+2043y^4-17286y^3+59201y^2-79616y+65536)$
c_4, c_7, c_{11}	$(y-1)^2(y^2+y+1)^8(y^5+y^4+3y^3+y^2-2y-1)$ $(y^5+y^4+\cdots+6y-1)(y^6-y^5+\cdots+72y+16)$
c_6, c_9	$(y^2+y+1)^3(y^5-18y^4+89y^3+84y^2+16y-1)$ $(y^5-10y^4+9y^3-8y^2-1)$ $(y^6-18y^5+127y^4-434y^3+769y^2-688y+256)$ $(y^6-13y^5+22y^4+487y^3+886y^2-45y+1)^2$
c_{10}	$y^4(y^2-3y+9)(-4+5y-3y^2+y^3)^4(y^5-4y^4+\cdots+6y-9)$ $(y^5-4y^4+24y^3-17y^2+6y-1)$ $(y^6-6y^5+79y^4-302y^3+457y^2-76y+16)$