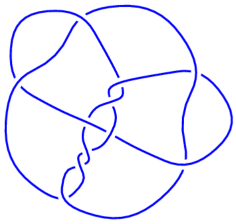
$11a_{280}$ $(K11a_{280})$



[1]

Arc Sequences

$\rightarrow \uparrow_{6} \rightarrow \uparrow_{9} \rightarrow \downarrow_{1} \rightarrow \uparrow_{10} \rightarrow \uparrow_{2} \rightarrow \downarrow_{4} \rightarrow \downarrow_{11} \rightarrow \uparrow_{3} \rightarrow \uparrow_{5} \rightarrow \downarrow_{8} \rightarrow \downarrow_{7} \rightarrow$

6 9 1 10 2 4 11 3 5 8 7

Solving Sequence

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

Representation Ideals

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

$$\begin{aligned}
I_1^u = \langle & u^{12} + u^{11} + 6u^{10} + 4u^9 + 15u^8 + 6u^7 + 18u^6 + 4u^5 + 12u^4 + u^3 + 6u^2 + u + 2, \\
& - u^9 - u^8 - 4u^7 - 2u^6 - 6u^5 - 2u^4 - 3u^3 - 2u^2 + b - 2u - 1, \\
& u^{11} + u^{10} + 6u^9 + 2u^8 + 13u^7 - 2u^6 + 14u^5 - 8u^4 + 8u^3 - 5u^2 + 2a + 2u - 3\rangle \\
I_2^u = \langle & u^{22} + 14u^{21} + \cdots + 1344u + 128,\ -41u^{21} - 534u^{20} + \cdots + 64b - 5184, \\
& - 81u^{21} - 1052u^{20} + \cdots + 128a - 3712\rangle \\
I_3^u = \langle & b^{18} + 5b^{16} + \cdots - 50b + 17, \\
& 2105832678b^{17} + 17708562289u + \cdots + 1084279271189b - 38848951730, \\
& 72700962062b^{17} + 4898934371b^{16} + \cdots + 761468178427a - 1480794843934\rangle \\
I_4^u = \langle & a^{24} + 5a^{22} + \cdots + 5a + 43,\ 3.16350 \times 10^{24}u - 8.10884 \times 10^{25}a^{23} + \cdots + 4.73544 \times 10^{27}a - 4.24757 \times 10^{27}, \\
& 4.96670 \times 10^{26}b + 1.86365 \times 10^{28}a^{23} + \cdots - 1.08774 \times 10^{30}a + 9.80615 \times 10^{29}\rangle
\end{aligned}$$

There are 4 irreducible components with 76 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.

$$I^u_1 = \langle u^{12} + u^{11} + \cdots + u + 2,\ -u^9 - u^8 + \cdots + b - 1,\ u^{11} + u^{10} + \cdots + 2a - 3\rangle$$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -\frac{1}{2}u^{11} - \frac{1}{2}u^{10} + \cdots - u + \frac{3}{2} \\ u^9 + u^8 + 4u^7 + 2u^6 + 6u^5 + 2u^4 + 3u^3 + 2u^2 + 2u + 1 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} \frac{1}{2}u^{11} + \frac{1}{2}u^{10} + \cdots - u + \frac{3}{2} \\ -u^{10} - u^9 - 5u^8 - 3u^7 - 10u^6 - 3u^5 - 8u^4 - u^3 - 4u^2 - 1 \end{pmatrix}$$

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

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

$$a_{10} = \begin{pmatrix} -\frac{1}{2}u^{11} - \frac{1}{2}u^{10} + \cdots - u + \frac{3}{2} \\ -u^{10} - 3u^8 + 2u^7 - 4u^6 + 4u^5 - u^4 + u^3 + u + 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^2 + 1 \\ u^2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} \frac{1}{2}u^{11} + \frac{1}{2}u^{10} + \cdots - u + \frac{1}{2} \\ u^{11} + 4u^9 - 2u^8 + 7u^7 - 7u^6 + 5u^5 - 7u^4 + 3u^3 - 4u^2 + 2u - 1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -\frac{1}{2}u^{11} - \frac{3}{2}u^{10} + \cdots - \frac{7}{2}u^2 - \frac{5}{2} \\ -u^{11} - u^{10} + \cdots - 3u + 1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 2u^{10} + u^9 + 9u^8 + u^7 + 17u^6 - 3u^5 + 13u^4 - 4u^3 + 5u^2 - 2u + 2 \\ 2u^{11} + 2u^{10} + 10u^9 + 5u^8 + 19u^7 + 3u^6 + 15u^5 - u^4 + 7u^3 + 3u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -\frac{5}{2}u^{11} - \frac{5}{2}u^{10} + \cdots - 5u - \frac{1}{2} \\ u^{10} + 2u^9 + 7u^8 + 7u^7 + 15u^6 + 7u^5 + 14u^4 + 8u^2 + 2u + 5 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -\frac{5}{2}u^{11} - \frac{5}{2}u^{10} + \cdots - 5u - \frac{1}{2} \\ u^{10} + 2u^9 + 7u^8 + 7u^7 + 15u^6 + 7u^5 + 14u^4 + 8u^2 + 2u + 5 \end{pmatrix}$$

(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
$u = -0.68102 - 1.43177I$ $a = 0.325823 + 0.401631I$ $b = 0.353153 - 0.740023I$	$1.75746 - 2.66133I$	$12.8054 + 12.9695I$
$u = -0.68102 + 1.43177I$ $a = 0.325823 - 0.401631I$ $b = 0.353153 + 0.740023I$	$1.75746 + 2.66133I$	$12.8054 - 12.9695I$
$u = -0.483540 - 0.658126I$ $a = -0.659029 - 0.177955I$ $b = 0.201550 + 0.519773I$	$-1.60251 + 2.75174I$	$-4.88343 - 6.08146I$
$u = -0.483540 + 0.658126I$ $a = -0.659029 + 0.177955I$ $b = 0.201550 - 0.519773I$	$-1.60251 - 2.75174I$	$-4.88343 + 6.08146I$
$u = -0.304944 - 0.791823I$ $a = 0.710678 - 0.464685I$ $b = -0.584665 - 0.421028I$	$3.88659 + 5.94873I$	$0.46248 - 5.63778I$
$u = -0.304944 + 0.791823I$ $a = 0.710678 + 0.464685I$ $b = -0.584665 + 0.421028I$	$3.88659 - 5.94873I$	$0.46248 + 5.63778I$
$u = 0.177296 - 1.218928I$ $a = 1.305658 + 0.234374I$ $b = 0.51717 - 1.54995I$	$-4.20993 - 3.36477I$	$-1.14978 + 1.06937I$
$u = 0.177296 + 1.218928I$ $a = 1.305658 - 0.234374I$ $b = 0.51717 + 1.54995I$	$-4.20993 + 3.36477I$	$-1.14978 - 1.06937I$
$u = 0.250152 - 1.336197I$ $a = -1.057362 - 0.118244I$ $b = -0.42250 + 1.38326I$	$-7.83316 - 2.65596I$	$-1.52426 + 0.93584I$
$u = 0.250152 + 1.336197I$ $a = -1.057362 + 0.118244I$ $b = -0.42250 - 1.38326I$	$-7.83316 + 2.65596I$	$-1.52426 - 0.93584I$

Solution to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.542055 - 0.545095I$ $a = 1.12423 - 1.23668I$ $b = -0.064712 - 1.283162I$	$-1.86805 + 1.05670I$	$-2.71042 - 0.18734I$
$u = 0.542055 + 0.545095I$ $a = 1.12423 + 1.23668I$ $b = -0.064712 + 1.283162I$	$-1.86805 - 1.05670I$	$-2.71042 + 0.18734I$

II. $I_2^u = \langle u^{22} + 14u^{21} + \cdots + 1344u + 128,\ -41u^{21} - 534u^{20} + \cdots + 64b - 5184,\ -81u^{21} - 1052u^{20} + \cdots + 128a - 3712\rangle$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} \frac{81}{128}u^{21} + \frac{263}{32}u^{20} + \cdots + 393u + 29 \\ \frac{41}{64}u^{21} + \frac{267}{32}u^{20} + \cdots + \frac{1643}{2}u + 81 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} \frac{59}{128}u^{21} + \frac{95}{16}u^{20} + \cdots + \frac{2283}{4}u + 61 \\ \frac{33}{64}u^{21} + \frac{53}{8}u^{20} + \cdots + \frac{1119}{2}u + 59 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} \frac{81}{128}u^{21} + \frac{263}{32}u^{20} + \cdots + 393u + 29 \\ \frac{1}{64}u^{21} + \frac{9}{32}u^{20} + \cdots + \frac{83}{2}u - 1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^2 + 1 \\ u^2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -\frac{59}{128}u^{21} - \frac{95}{16}u^{20} + \cdots - \frac{2283}{4}u - 60 \\ \frac{5}{64}u^{21} + \frac{9}{8}u^{20} + \cdots + \frac{151}{2}u + 7 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -\frac{131}{128}u^{21} - \frac{867}{64}u^{20} + \cdots - 1490u - 160 \\ \frac{5}{32}u^{21} + \frac{65}{32}u^{20} + \cdots + \frac{573}{2}u + 31 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} \frac{49}{64}u^{21} + \frac{655}{64}u^{20} + \cdots + \frac{1267}{2}u + 60 \\ \frac{71}{64}u^{21} + \frac{485}{32}u^{20} + \cdots + 1749u + 180 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1.24219u^{21} + 16.2813u^{20} + \cdots + 1386.25u + 141.500 \\ \frac{63}{64}u^{21} + \frac{431}{32}u^{20} + \cdots + 1752u + 189 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1.24219u^{21} + 16.2813u^{20} + \cdots + 1386.25u + 141.500 \\ \frac{63}{64}u^{21} + \frac{431}{32}u^{20} + \cdots + 1752u + 189 \end{pmatrix}$$

(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
$u = -1.37277 - 0.52957I$ $a = -0.418563 - 0.702720I$ $b = -0.202451 - 1.186335I$	$-3.56765 + 4.49595I$	$-1.80270 - 7.56758I$
$u = -1.37277 + 0.52957I$ $a = -0.418563 + 0.702720I$ $b = -0.202451 + 1.186335I$	$-3.56765 - 4.49595I$	$-1.80270 + 7.56758I$
$u = -1.201050 - 0.354294I$ $a = 0.572275 + 0.879915I$ $b = 0.375582 + 1.259576I$	$2.08640 + 9.42284I$	$1.11756 - 6.83027I$
$u = -1.201050 + 0.354294I$ $a = 0.572275 - 0.879915I$ $b = 0.375582 - 1.259576I$	$2.08640 - 9.42284I$	$1.11756 + 6.83027I$
$u = -1.15684 - 1.18640I$ $a = 0.492187 + 0.462754I$ $b = 0.020372 + 1.119264I$	$-0.15255 - 1.75803I$	$3.02278 + 3.33932I$
$u = -1.15684 + 1.18640I$ $a = 0.492187 - 0.462754I$ $b = 0.020372 - 1.119264I$	$-0.15255 + 1.75803I$	$3.02278 - 3.33932I$
$u = -0.721664 - 0.260594I$ $a = -1.170702 - 0.296451I$ $b = -0.767600 - 0.519015I$	$6.82374 - 0.02012I$	$7.10708 - 2.25648I$
$u = -0.721664 + 0.260594I$ $a = -1.170702 + 0.296451I$ $b = -0.767600 + 0.519015I$	$6.82374 + 0.02012I$	$7.10708 + 2.25648I$
$u = -0.49290 - 1.67050I$ $a = -0.802981 + 0.007620I$ $b = -0.408516 - 1.337621I$	$-8.96137 + 5.23240I$	$-4.36005 - 4.78438I$
$u = -0.49290 + 1.67050I$ $a = -0.802981 - 0.007620I$ $b = -0.408516 + 1.337621I$	$-8.96137 - 5.23240I$	$-4.36005 + 4.78438I$

Solution to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.492780 - 1.057534I$ $a = 0.017774 - 0.652714I$ $b = 0.699025 - 0.302848I$	$4.51267 + 4.47073I$	$3.53570 - 1.33986I$
$u = -0.492780 + 1.057534I$ $a = 0.017774 + 0.652714I$ $b = 0.699025 + 0.302848I$	$4.51267 - 4.47073I$	$3.53570 + 1.33986I$
$u = -0.48500 - 1.56416I$ $a = 0.949139 - 0.027077I$ $b = 0.50268 + 1.47148I$	$-10.0188 + 10.9083I$	$-4.45406 - 7.18292I$
$u = -0.48500 + 1.56416I$ $a = 0.949139 + 0.027077I$ $b = 0.50268 - 1.47148I$	$-10.0188 - 10.9083I$	$-4.45406 + 7.18292I$
$u = -0.46789 - 1.52014I$ $a = -1.033322 + 0.076733I$ $b = -0.60013 - 1.53489I$	$-3.8405 + 15.3110I$	$-0.76212 - 7.48531I$
$u = -0.46789 + 1.52014I$ $a = -1.033322 - 0.076733I$ $b = -0.60013 + 1.53489I$	$-3.8405 - 15.3110I$	$-0.76212 + 7.48531I$
$u = -0.421704 - 0.476349I$ $a = 0.849185 - 0.106026I$ $b = 0.408610 + 0.359797I$	$0.735294 + 0.892872I$	$5.94617 - 4.93873I$
$u = -0.421704 + 0.476349I$ $a = 0.849185 + 0.106026I$ $b = 0.408610 - 0.359797I$	$0.735294 - 0.892872I$	$5.94617 + 4.93873I$
$u = -0.420259 - 0.946349I$ $a = -0.190053 + 0.410286I$ $b = -0.468145 - 0.007430I$	$-0.61105 + 2.59129I$	$5.45931 - 3.44339I$
$u = -0.420259 + 0.946349I$ $a = -0.190053 - 0.410286I$ $b = -0.468145 + 0.007430I$	$-0.61105 - 2.59129I$	$5.45931 + 3.44339I$

Solution to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.232862 - 1.365444I$ $a = 0.485061 - 0.405381I$ $b = 0.440574 + 0.756721I$	$1.47923 + 2.31516I$	$0.190328 + 0.743726I$
$u = 0.232862 + 1.365444I$ $a = 0.485061 + 0.405381I$ $b = 0.440574 - 0.756721I$	$1.47923 - 2.31516I$	$0.190328 - 0.743726I$

III.

$\boldsymbol{I^u_3 = \langle b^{18}+5b^{16}+\cdots-50b+17,\ 1.77\times10^{10}u+2.11\times10^{9}b^{17}+\cdots+1.08\times10^{11}b-3.88\times10^{10},\ 7.27\times10^{10}b^{17}+4.90\times10^{9}b^{16}+\cdots+7.61\times10^{11}a-1.48\times10^{12}\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_9 = \begin{pmatrix}-0.0954747b^{17}-0.00643354b^{16}+\cdots-3.92168b+1.94466\\b\end{pmatrix}$$
$$a_3 = \begin{pmatrix}0.00643354b^{17}-0.0555628b^{16}+\cdots+2.82908b-0.623070\\-b^2\end{pmatrix}$$
$$a_5 = \begin{pmatrix}0\\-0.118916b^{17}-0.000946298b^{16}+\cdots-6.12291b+2.19379\end{pmatrix}$$
$$a_6 = \begin{pmatrix}-0.118916b^{17}-0.000946298b^{16}+\cdots-6.12291b+2.19379\\-0.118916b^{17}-0.000946298b^{16}+\cdots-6.12291b+2.19379\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}-0.0954747b^{17}-0.00643354b^{16}+\cdots-3.92168b+1.94466\\0.0513201b^{17}+0.0379460b^{16}+\cdots+0.584746b+1.26324\end{pmatrix}$$
$$a_1 = \begin{pmatrix}-0.113960b^{17}-0.0734896b^{16}+\cdots-2.32962b+0.408802\\-0.113960b^{17}-0.0734896b^{16}+\cdots-2.32962b-0.591198\end{pmatrix}$$
$$a_4 = \begin{pmatrix}0.0381529b^{17}-0.0628191b^{16}+\cdots+3.68251b-0.392744\\0.0319178b^{17}+0.00397222b^{16}+\cdots+1.09097b+0.444642\end{pmatrix}$$
$$a_7 = \begin{pmatrix}-0.185177b^{17}+0.0319163b^{16}+\cdots-12.3158b+4.82001\\-0.0837045b^{17}+0.0724798b^{16}+\cdots-9.54514b+3.51844\end{pmatrix}$$
$$a_8 = \begin{pmatrix}-0.0399119b^{17}-0.0950387b^{16}+\cdots-3.62029b+2.05403\\b^3+b\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}0.0605355b^{17}+0.0420447b^{16}+\cdots+2.41806b-0.00904618\\0.0170138b^{17}-0.0119503b^{16}+\cdots+0.364535b+0.858135\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}0.0605355b^{17}+0.0420447b^{16}+\cdots+2.41806b-0.00904618\\0.0170138b^{17}-0.0119503b^{16}+\cdots+0.364535b+0.858135\end{pmatrix}$$

(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
$u = 0.215080 + 1.307141I$ $a = -0.950698 + 0.063146I$ $b = -1.57917 - 0.11015I$	$1.48181 + 7.96606I$	$-0.19182 - 6.18847I$
$u = 0.215080 - 1.307141I$ $a = -0.950698 - 0.063146I$ $b = -1.57917 + 0.11015I$	$1.48181 - 7.96606I$	$-0.19182 + 6.18847I$
$u = 0.569840$ $a = -1.42461 + 0.28269I$ $b = -0.640673 - 0.946857I$	$5.61939 + 5.13794I$	$6.33744 - 3.20902I$
$u = 0.569840$ $a = -1.42461 - 0.28269I$ $b = -0.640673 + 0.946857I$	$5.61939 - 5.13794I$	$6.33744 + 3.20902I$
$u = 0.215080 + 1.307141I$ $a = -1.310457 + 0.291410I$ $b = -0.264938 - 1.312557I$	$-8.74613 + 2.82812I$	$-12.14562 - 2.97945I$
$u = 0.215080 - 1.307141I$ $a = -1.310457 - 0.291410I$ $b = -0.264938 + 1.312557I$	$-8.74613 - 2.82812I$	$-12.14562 + 2.97945I$
$u = 0.569840$ $a = 0.30031 - 2.22423I$ $b = -0.171130 - 1.267456I$	-4.60855	-5.61636
$u = 0.569840$ $a = 0.30031 + 2.22423I$ $b = -0.171130 + 1.267456I$	-4.60855	-5.61636
$u = 0.215080 - 1.307141I$ $a = 0.275589 + 1.162766I$ $b = 0.287016 - 1.229115I$	$1.48181 - 7.96606I$	$-0.19182 + 6.18847I$
$u = 0.215080 + 1.307141I$ $a = 0.275589 - 1.162766I$ $b = 0.287016 + 1.229115I$	$1.48181 + 7.96606I$	$-0.19182 - 6.18847I$

Solution to I_3^u		$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=$	$0.215080+1.307141I$		
$a=$	$0.571834+0.467184I$	$1.48181-2.30982I$	$-0.191821+0.229571I$
$b=$	$0.406642-0.608737I$		
$u=$	$0.215080-1.307141I$		
$a=$	$0.571834-0.467184I$	$1.48181+2.30982I$	$-0.191821-0.229571I$
$b=$	$0.406642+0.608737I$		
$u=$	$0.215080+1.307141I$		
$a=$	$0.403586+0.377500I$	$1.48181-2.30982I$	$-0.191821+0.229571I$
$b=$	$0.487685-0.847949I$		
$u=$	$0.215080-1.307141I$		
$a=$	$0.403586-0.377500I$	$1.48181+2.30982I$	$-0.191821-0.229571I$
$b=$	$0.487685+0.847949I$		
$u=$	$0.215080-1.307141I$		
$a=$	$1.010145+0.036474I$	$-8.74613-2.82812I$	$-12.14562+2.97945I$
$b=$	$0.66277-1.65028I$		
$u=$	$0.215080+1.307141I$		
$a=$	$1.010145-0.036474I$	$-8.74613+2.82812I$	$-12.14562-2.97945I$
$b=$	$0.66277+1.65028I$		
$u=$	0.569840		
$a=$	$1.12430+1.66162I$	$5.61939+5.13794I$	$6.33744-3.20902I$
$b=$	$0.811802-0.161086I$		
$u=$	0.569840		
$a=$	$1.12430-1.66162I$	$5.61939-5.13794I$	$6.33744+3.20902I$
$b=$	$0.811802+0.161086I$		

IV.

$\boldsymbol{I_4^u = \langle a^{24} + 5a^{22} + \cdots + 5a + 43,\ 3.16 \times 10^{24} u - 8.11 \times 10^{25} a^{23} + \cdots + 4.74 \times 10^{27} a - 4.25 \times 10^{27},\ 4.97 \times 10^{26} b + 1.86 \times 10^{28} a^{23} + \cdots - 1.09 \times 10^{30} a + 9.81 \times 10^{29} \rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} a \\ -37.5229a^{23} + 30.6202a^{22} + \cdots + 2190.06a - 1974.38 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -30.6202a^{23} + 24.9915a^{22} + \cdots + 1786.76a - 1612.48 \\ -29.6058a^{23} + 24.1788a^{22} + \cdots + 1723.45a - 1557.56 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 0 \\ 25.6325a^{23} - 20.7625a^{22} + \cdots - 1496.90a + 1342.68 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 25.6325a^{23} - 20.7625a^{22} + \cdots - 1496.90a + 1342.68 \\ 25.6325a^{23} - 20.7625a^{22} + \cdots - 1496.90a + 1342.68 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} a \\ -28.6127a^{23} + 23.2540a^{22} + \cdots + 1670.26a - 1499.33 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 11.0475a^{23} - 8.91015a^{22} + \cdots - 644.397a + 576.032 \\ 11.0475a^{23} - 8.91015a^{22} + \cdots - 644.397a + 575.032 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -17.0819a^{23} + 13.7744a^{22} + \cdots + 998.384a - 892.786 \\ -16.1051a^{23} + 12.8787a^{22} + \cdots + 940.053a - 836.890 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 14.9296a^{23} - 12.2110a^{22} + \cdots - 870.804a + 785.326 \\ 81.7409a^{23} - 66.9105a^{22} + \cdots - 4763.56a + 4302.81 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 13.3441a^{23} - 10.8715a^{22} + \cdots - 779.520a + 701.329 \\ 83.0792a^{23} - 67.8258a^{22} + \cdots - 4845.01a + 4371.47 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 64.4728a^{23} - 52.6389a^{22} + \cdots - 3756.83a + 3390.20 \\ 81.6449a^{23} - 66.8402a^{22} + \cdots - 4742.18a + 4288.72 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 64.4728a^{23} - 52.6389a^{22} + \cdots - 3756.83a + 3390.20 \\ 81.6449a^{23} - 66.8402a^{22} + \cdots - 4742.18a + 4288.72 \end{pmatrix}$$

(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
$u = 0.215080 + 1.307141I$ $a = -1.099456 - 0.027472I$ $b = -1.07429 - 1.51957I$	$-4.66906 + 4.85801I$	$-3.50976 - 6.44355I$
$u = 0.215080 - 1.307141I$ $a = -1.099456 + 0.027472I$ $b = -1.07429 + 1.51957I$	$-4.66906 - 4.85801I$	$-3.50976 + 6.44355I$
$u = 0.215080 + 1.307141I$ $a = -0.929016 - 0.214301I$ $b = -0.786120 - 0.023283I$	$-4.66906 + 0.79824I$	$-3.50976 + 0.48465I$
$u = 0.215080 - 1.307141I$ $a = -0.929016 + 0.214301I$ $b = -0.786120 + 0.023283I$	$-4.66906 - 0.79824I$	$-3.50976 - 0.48465I$
$u = 0.215080 - 1.307141I$ $a = -0.816868 - 0.000713I$ $b = -0.39398 + 1.91732I$	$-4.66906 - 0.79824I$	$-3.50976 - 0.48465I$
$u = 0.215080 + 1.307141I$ $a = -0.816868 + 0.000713I$ $b = -0.39398 - 1.91732I$	$-4.66906 + 0.79824I$	$-3.50976 + 0.48465I$
$u = 0.569840$ $a = -0.73481 - 1.94800I$ $b = 0.05062 - 1.44264I$	$-0.53148 + 2.02988I$	$3.01951 - 3.46410I$
$u = 0.569840$ $a = -0.73481 + 1.94800I$ $b = 0.05062 + 1.44264I$	$-0.53148 - 2.02988I$	$3.01951 + 3.46410I$
$u = 0.569840$ $a = -0.59313 - 1.48895I$ $b = -0.429892 + 0.137875I$	$-0.53148 + 2.02988I$	$3.01951 - 3.46410I$
$u = 0.569840$ $a = -0.59313 + 1.48895I$ $b = -0.429892 - 0.137875I$	$-0.53148 - 2.02988I$	$3.01951 + 3.46410I$

Solution to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.215080 - 1.307141I$ $a = -0.320479 - 0.895547I$ $b = -0.159459 + 1.282096I$	$-4.66906 - 4.85801I$	$-3.50976 + 6.44355I$
$u = 0.215080 + 1.307141I$ $a = -0.320479 + 0.895547I$ $b = -0.159459 - 1.282096I$	$-4.66906 + 4.85801I$	$-3.50976 - 6.44355I$
$u = 0.569840$ $a = -0.08883 - 2.53167I$ $b = 0.418722 - 1.110048I$	$-0.53148 - 2.02988I$	$3.01951 + 3.46410I$
$u = 0.569840$ $a = -0.08883 + 2.53167I$ $b = 0.418722 + 1.110048I$	$-0.53148 + 2.02988I$	$3.01951 - 3.46410I$
$u = 0.215080 + 1.307141I$ $a = 0.113690 - 0.582697I$ $b = -0.080309 + 1.260447I$	$-4.66906 + 0.79824I$	$-3.50976 + 0.48465I$
$u = 0.215080 - 1.307141I$ $a = 0.113690 + 0.582697I$ $b = -0.080309 - 1.260447I$	$-4.66906 - 0.79824I$	$-3.50976 - 0.48465I$
$u = 0.569840$ $a = 0.754407 - 0.241953I$ $b = 0.337989 + 0.848465I$	$-0.53148 + 2.02988I$	$3.01951 - 3.46410I$
$u = 0.569840$ $a = 0.754407 + 0.241953I$ $b = 0.337989 - 0.848465I$	$-0.53148 - 2.02988I$	$3.01951 + 3.46410I$
$u = 0.215080 - 1.307141I$ $a = 0.974528 - 0.038360I$ $b = 1.239536 - 0.226298I$	$-4.66906 - 4.85801I$	$-3.50976 + 6.44355I$
$u = 0.215080 + 1.307141I$ $a = 0.974528 + 0.038360I$ $b = 1.239536 + 0.226298I$	$-4.66906 + 4.85801I$	$-3.50976 - 6.44355I$

Solution to I_4^u		$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u =$	$0.215080 + 1.307141I$		
$a =$	$1.263535 - 0.613955I$	$-4.66906 + 4.85801I$	$-3.50976 - 6.44355I$
$b =$	$0.20056 + 1.44305I$		
$u =$	$0.215080 - 1.307141I$		
$a =$	$1.263535 + 0.613955I$	$-4.66906 - 4.85801I$	$-3.50976 + 6.44355I$
$b =$	$0.20056 - 1.44305I$		
$u =$	$0.215080 + 1.307141I$		
$a =$	$1.47642 - 0.05847I$	$-4.66906 + 0.79824I$	$-3.50976 + 0.48465I$
$b =$	$0.176624 + 1.067609I$		
$u =$	$0.215080 - 1.307141I$		
$a =$	$1.47642 + 0.05847I$	$-4.66906 - 0.79824I$	$-3.50976 - 0.48465I$
$b =$	$0.176624 - 1.067609I$		

V. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1	$(u^3-u^2+2u-1)^{14}(u^{12}+u^{11}+\cdots+u+2)$ $(u^{22}+14u^{21}+\cdots+1344u+128)$
c_2, c_9	$(u^{12}+6u^{10}+u^9+15u^8+4u^7+17u^6+6u^5+9u^4+4u^3+4u^2+1)$ $(u^{18}+5u^{16}+\cdots-50u+17)(u^{22}+9u^{20}+\cdots-3u^2+1)$ $(u^{24}+u^{23}+\cdots+188u+43)$
c_3, c_6	$(u^{12}+u^{11}+7u^8+8u^7+2u^6+7u^4+7u^3+3u^2+u+1)$ $(u^{18}+2u^{17}+\cdots-4u+1)(u^{22}+u^{21}+\cdots-3u+1)$ $(u^{24}+5u^{23}+\cdots+16u+1)$
c_4, c_8	$(u^{12}+6u^{10}-u^9+15u^8-4u^7+17u^6-6u^5+9u^4-4u^3+4u^2+1)$ $(u^{18}+5u^{16}+\cdots-50u+17)(u^{22}+9u^{20}+\cdots-3u^2+1)$ $(u^{24}+u^{23}+\cdots+188u+43)$
c_5	$(u^3-u^2+2u-1)^{14}(u^{12}-u^{11}+\cdots-u+2)$ $(u^{22}+14u^{21}+\cdots+1344u+128)$
c_7	$(u^3+2u+1)^6(1-2u+2u^2-u^3+u^4)^6(u^{12}-2u^{11}+\cdots+5u^2+1)$ $(u^{22}+9u^{21}+\cdots+88u+8)$
c_{10}, c_{11}	$(u^3+2u+1)^6(1-2u+2u^2-u^3+u^4)^6(u^{12}+2u^{11}+\cdots+5u^2+1)$ $(u^{22}+9u^{21}+\cdots+88u+8)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_5	$(y^3+3y^2+2y-1)^{14}(y^{12}+11y^{11}+\cdots+23y+4)$ $(y^{22}+14y^{21}+\cdots+20480y+16384)$
c_2, c_4, c_8 c_9	$(y^{12}+12y^{11}+\cdots+8y+1)(y^{18}+10y^{17}+\cdots+968y+289)$ $(y^{22}+18y^{21}+\cdots-6y+1)(y^{24}+25y^{23}+\cdots-5588y+1849)$
c_3, c_6	$(y^{12}-y^{11}+\cdots+5y+1)(y^{18}+2y^{17}+\cdots+8y+1)$ $(y^{22}+5y^{21}+\cdots+11y+1)(y^{24}-7y^{23}+\cdots-64y+1)$
c_7, c_{10}, c_{11}	$(y^3+4y^2+4y-1)^6(y^4+3y^3+2y^2+1)^6$ $(y^{12}+14y^{11}+\cdots+10y+1)(y^{22}+21y^{21}+\cdots+224y+64)$