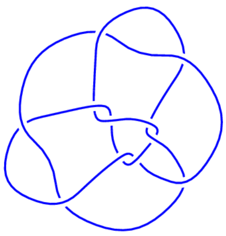
$11n_{179}$ $(K11n_{179})$



[1]

Arc Sequences

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

Solving Sequence

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

Representation Ideals

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

$$I_1^u = \langle a^6 + 4a^5 + 8a^4 + 6a^3 + 3a^2 + 1,\ a^4 + 3a^3 + 5a^2 + 2a + 2u + 3,\ -a^5 - 4a^4 - 8a^3 - 7a^2 + 2b - 5a - 1\rangle$$

$$\begin{aligned} I_2^u = \langle & u^7 - 3u^6 + 7u^5 - 13u^4 + 18u^3 - 10u^2 + 2u + 1, \\ & -u^6 + 55u^5 - 142u^4 + 312u^3 - 546u^2 + 109a + 716u - 174, \\ & 52u^6 - 135u^5 + 299u^4 - 528u^3 + 706u^2 + 109b - 172u + 1\rangle \end{aligned}$$

$$\begin{aligned} I_3^u = \langle & u^{15} + 14u^{14} + \cdots + 464u + 32,\ 991u^{14} + 44316u^{13} + \cdots + 44456a + 908664, \\ & -30442u^{14} - 342325u^{13} + \cdots + 44456b + 31712\rangle \end{aligned}$$

$$\begin{aligned} I_4^u = \langle & b^{36} - 2b^{35} + \cdots - 151b + 47, \\ & 9.61987 \times 10^{32}b^{35} - 7.90636 \times 10^{33}b^{34} + \cdots + 2.38862 \times 10^{34}a - 3.32637 \times 10^{35}, \\ & 2.38862 \times 10^{34}u + 7.83496 \times 10^{33}b^{35} + \cdots + 2.38324 \times 10^{35}b + 1.27422 \times 10^{35}\rangle \end{aligned}$$

There are 4 irreducible components with 64 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. $\boldsymbol{I^u_1 = \langle a^6 + 4a^5 + 8a^4 + 6a^3 + 3a^2 + 1,\ a^4 + 3a^3 + 5a^2 + 2a + 2u + 3,\ -a^5 - 4a^4 - 8a^3 - 7a^2 + 2b - 5a - 1\rangle}$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0 \\ -\frac{1}{2}a^4 - \frac{3}{2}a^3 - \frac{5}{2}a^2 - a - \frac{3}{2} \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -\frac{1}{2}a^4 - \frac{3}{2}a^3 - \frac{5}{2}a^2 - a - \frac{3}{2} \\ -\frac{1}{2}a^4 - \frac{3}{2}a^3 - \frac{5}{2}a^2 - a - \frac{3}{2} \end{pmatrix}$$
$$a_8 = \begin{pmatrix} a \\ \frac{1}{2}a^5 + 2a^4 + \cdots + \frac{5}{2}a + \frac{1}{2} \end{pmatrix}$$
$$a_7 = \begin{pmatrix} a \\ -\frac{1}{2}a^5 - \frac{3}{2}a^4 - 2a^3 + a^2 + a + \frac{1}{2} \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -\frac{1}{2}a^5 - \frac{3}{2}a^4 - 2a^3 - \frac{1}{2} \\ \frac{1}{2}a^5 + 2a^4 + \frac{7}{2}a^3 + \frac{3}{2}a^2 - a - 1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} \frac{1}{2}a^4 + \frac{3}{2}a^3 + \frac{3}{2}a^2 - a - \frac{3}{2} \\ \frac{1}{2}a^5 + 2a^4 + \frac{7}{2}a^3 + \frac{3}{2}a^2 - a - 1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -\frac{1}{2}a^3 - a^2 - \frac{1}{2}a + \frac{3}{2} \\ -\frac{1}{2}a^5 - 2a^4 + \cdots - \frac{1}{2}a + \frac{3}{2} \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -\frac{1}{2}a^5 - 2a^4 - \frac{9}{2}a^3 - \frac{9}{2}a^2 - 3a - 1 \\ -\frac{1}{2}a^4 - 2a^3 - \frac{7}{2}a^2 - \frac{5}{2}a - 1 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} a^5 + \frac{7}{2}a^4 + \cdots - 2a - \frac{3}{2} \\ \frac{1}{2}a^5 + \frac{3}{2}a^4 + 2a^3 - a^2 - 2a - \frac{5}{2} \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -a^5 - 4a^4 - 8a^3 - 6a^2 - 3a - 1 \\ -\frac{1}{2}a^5 - 2a^4 - \frac{9}{2}a^3 - \frac{9}{2}a^2 - 4a \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -a^5 - 4a^4 - 8a^3 - 6a^2 - 3a - 1 \\ -\frac{1}{2}a^5 - 2a^4 - \frac{9}{2}a^3 - \frac{9}{2}a^2 - 4a \end{pmatrix}$$

(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
$u = 0.465571$ $a = -1.57395 - 1.46156I$ $b = -0.732786 + 0.680460I$	-1.13287	-2.66045
$u = 0.465571$ $a = -1.57395 + 1.46156I$ $b = -0.732786 - 0.680460I$	-1.13287	-2.66045
$u = -1.23279 - 0.79255I$ $a = -0.632657 - 0.782837I$ $b = 0.073295 - 0.673932I$	$8.79110 + 1.58317I$	$4.83023 - 3.06106I$
$u = -1.23279 + 0.79255I$ $a = -0.632657 + 0.782837I$ $b = 0.073295 + 0.673932I$	$8.79110 - 1.58317I$	$4.83023 + 3.06106I$
$u = -1.23279 + 0.79255I$ $a = 0.206606 - 0.413848I$ $b = 0.15949 - 1.46648I$	$8.79110 - 1.58317I$	$4.83023 + 3.06106I$
$u = -1.23279 - 0.79255I$ $a = 0.206606 + 0.413848I$ $b = 0.15949 + 1.46648I$	$8.79110 + 1.58317I$	$4.83023 - 3.06106I$

II. $I_2^u = \langle u^7 - 3u^6 + 7u^5 - 13u^4 + 18u^3 - 10u^2 + 2u + 1,\ -u^6 + 55u^5 + \cdots + 109a - 174,\ 52u^6 - 135u^5 + \cdots + 109b + 1\rangle$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 0.00917431u^6 - 0.504587u^5 + \cdots - 6.56881u + 1.59633 \\ -0.477064u^6 + 1.23853u^5 + \cdots + 1.57798u - 0.00917431 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0.00917431u^6 - 0.504587u^5 + \cdots - 6.56881u + 1.59633 \\ -0.284404u^6 + 0.642202u^5 + \cdots + 0.633028u - 0.486239 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -0.440367u^6 + 1.22018u^5 + \cdots + 0.302752u + 2.37615 \\ -0.348624u^6 + 1.17431u^5 + \cdots + 3.61468u + 0.339450 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -0.788991u^6 + 2.39450u^5 + \cdots + 3.91743u + 2.71560 \\ -0.348624u^6 + 1.17431u^5 + \cdots + 3.61468u + 0.339450 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -0.440367u^6 + 1.22018u^5 + \cdots + 0.302752u + 3.37615 \\ -0.100917u^6 + 0.550459u^5 + \cdots + 3.25688u + 0.440367 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1.37615u^6 - 3.68807u^5 + \cdots - 8.32110u + 2.44954 \\ 0.247706u^6 - 0.623853u^5 + \cdots + 0.642202u - 0.899083 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 1.68807u^6 - 4.84404u^5 + \cdots - 9.66055u - 1.27523 \\ 0.348624u^6 - 1.17431u^5 + \cdots - 2.61468u - 1.33945 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1.71560u^6 - 4.35780u^5 + \cdots - 5.36697u - 0.486239 \\ 0.724771u^6 - 1.86239u^5 + \cdots - 1.93578u - 0.889908 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1.71560u^6 - 4.35780u^5 + \cdots - 5.36697u - 0.486239 \\ 0.724771u^6 - 1.86239u^5 + \cdots - 1.93578u - 0.889908 \end{pmatrix}$$

(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
$u = -0.26392 - 1.89105I$ $a = 0.317866 + 0.254422I$ $b = 0.397234 - 0.668248I$	$5.40832 + 4.21557I$	$-0.78856 - 7.31442I$
$u = -0.26392 + 1.89105I$ $a = 0.317866 - 0.254422I$ $b = 0.397234 + 0.668248I$	$5.40832 - 4.21557I$	$-0.78856 + 7.31442I$
$u = -0.203752$ $a = 3.16933$ $b = -0.645755$	-0.607992	3.49113
$u = 0.508137 - 0.486029I$ $a = -1.22583 + 1.38607I$ $b = 0.050784 + 1.300105I$	$11.34657 + 1.05141I$	$8.13453 - 0.52743I$
$u = 0.508137 + 0.486029I$ $a = -1.22583 - 1.38607I$ $b = 0.050784 - 1.300105I$	$11.34657 - 1.05141I$	$8.13453 + 0.52743I$
$u = 1.35766 - 0.93784I$ $a = -0.676700 + 0.313046I$ $b = -0.625140 + 1.059644I$	$-0.00156 + 5.16496I$	$0.90846 - 5.47109I$
$u = 1.35766 + 0.93784I$ $a = -0.676700 - 0.313046I$ $b = -0.625140 - 1.059644I$	$-0.00156 - 5.16496I$	$0.90846 + 5.47109I$

III. $\boldsymbol{I_3^u = \langle u^{15} + 14u^{14} + \cdots + 464u + 32,\ 991u^{14} + 44316u^{13} + \cdots + 44456a + 908664,\ -3.04 \times 10^4 u^{14} - 3.42 \times 10^5 u^{13} + \cdots + 4.45 \times 10^4 b + 3.17 \times 10^4 \rangle}$

(i) Arc colorings

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

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

$$a_3 = \begin{pmatrix} u \\ u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.0222917u^{14} - 0.996851u^{13} + \cdots - 194.288u - 20.4396 \\ 0.684767u^{14} + 7.70031u^{13} + \cdots + 10.0963u - 0.713335 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -0.0222917u^{14} - 0.996851u^{13} + \cdots - 194.288u - 20.4396 \\ -1.20166u^{14} - 14.9293u^{13} + \cdots - 308.349u - 22.6259 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -0.396459u^{14} - 5.03367u^{13} + \cdots - 94.8459u - 3.24915 \\ 0.0268580u^{14} + 0.551579u^{13} + \cdots + 47.3811u + 3.84956 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.369601u^{14} - 4.48209u^{13} + \cdots - 47.4649u + 0.600414 \\ 0.0268580u^{14} + 0.551579u^{13} + \cdots + 47.3811u + 3.84956 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0.396459u^{14} + 5.03367u^{13} + \cdots + 94.8459u + 4.24915 \\ 0.516758u^{14} + 6.69100u^{13} + \cdots + 180.708u + 12.6867 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 1.67223u^{14} + 21.5389u^{13} + \cdots + 540.283u + 31.9909 \\ 3.75867u^{14} + 47.0944u^{13} + \cdots + 1062.37u + 75.4238 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.469250u^{14} - 5.83343u^{13} + \cdots - 122.999u - 8.50306 \\ -0.911643u^{14} - 11.1153u^{13} + \cdots - 199.617u - 14.1566 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 1.33223u^{14} + 16.8035u^{13} + \cdots + 380.108u + 24.9858 \\ 3.09752u^{14} + 38.9099u^{13} + \cdots + 912.081u + 65.3264 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 1.33223u^{14} + 16.8035u^{13} + \cdots + 380.108u + 24.9858 \\ 3.09752u^{14} + 38.9099u^{13} + \cdots + 912.081u + 65.3264 \end{pmatrix}$$

(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
$u=-1.41089-1.28897I$ $a=\ \ 0.730743+0.221034I$ $b=\ \ 0.74609+1.25376I$	$4.8601-14.7989I$	$2.41187+8.28326I$
$u=-1.41089+1.28897I$ $a=\ \ 0.730743-0.221034I$ $b=\ \ 0.74609-1.25376I$	$4.8601+14.7989I$	$2.41187-8.28326I$
$u=-1.38613-0.32674I$ $a=-0.553085-0.614738I$ $b=-0.565792-1.032821I$	$0.37742-3.22470I$	$1.69059+1.81692I$
$u=-1.38613+0.32674I$ $a=-0.553085+0.614738I$ $b=-0.565792+1.032821I$	$0.37742+3.22470I$	$1.69059-1.81692I$
$u=-1.360540-0.261249I$ $a=\ \ 0.645886+0.354688I$ $b=\ \ 0.786092+0.651305I$	$1.20190+2.43151I$	$-0.902369-0.814710I$
$u=-1.360540+0.261249I$ $a=\ \ 0.645886-0.354688I$ $b=\ \ 0.786092-0.651305I$	$1.20190-2.43151I$	$-0.902369+0.814710I$
$u=-1.07386-2.16285I$ $a=-0.293966-0.146746I$ $b=\ \ 0.001713-0.793388I$	$6.23698+3.49716I$	$6.18530-1.96585I$
$u=-1.07386+2.16285I$ $a=-0.293966+0.146746I$ $b=\ \ 0.001713+0.793388I$	$6.23698-3.49716I$	$6.18530+1.96585I$
$u=-1.03444-1.15733I$ $a=-0.878543-0.103476I$ $b=-0.789042-1.123807I$	$0.98276-7.96105I$	$1.19655+6.90467I$
$u=-1.03444+1.15733I$ $a=-0.878543+0.103476I$ $b=-0.789042+1.123807I$	$0.98276+7.96105I$	$1.19655-6.90467I$

Solution to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.441017 - 0.682615I$ $a = 0.626506 + 0.383690I$ $b = 0.014387 + 0.596876I$	$1.16432 + 1.11480I$	$3.42758 - 4.27035I$
$u = -0.441017 + 0.682615I$ $a = 0.626506 - 0.383690I$ $b = 0.014387 - 0.596876I$	$1.16432 - 1.11480I$	$3.42758 + 4.27035I$
$u = -0.231740 - 1.386456I$ $a = 0.727304 - 0.321329I$ $b = 0.614054 + 0.933909I$	$7.18561 - 1.74581I$	$4.31703 + 3.15532I$
$u = -0.231740 + 1.386456I$ $a = 0.727304 + 0.321329I$ $b = 0.614054 - 0.933909I$	$7.18561 + 1.74581I$	$4.31703 - 3.15532I$
$u = -0.122764$ $a = -5.00969$ $b = -0.615011$	-1.24987	-10.6531

IV.

$\boldsymbol{I_4^u = \langle b^{36} - 2b^{35} + \cdots - 151b + 47,\ 9.62\times 10^{32} b^{35} - 7.91\times 10^{33} b^{34} + \cdots + 2.39\times 10^{34} a - 3.33\times 10^{35},\ 2.39\times 10^{34} u + 7.83\times 10^{33} b^{35} + \cdots + 2.38\times 10^{35} b + 1.27\times 10^{35}\rangle}$

(i) Arc colorings

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

$$a_4 = \begin{pmatrix} 0 \\ -0.328012b^{35} + 0.385558b^{34} + \cdots - 9.97748b - 5.33455 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -0.328012b^{35} + 0.385558b^{34} + \cdots - 9.97748b - 5.33455 \\ -0.328012b^{35} + 0.385558b^{34} + \cdots - 9.97748b - 5.33455 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.0402737b^{35} + 0.331001b^{34} + \cdots - 38.7844b + 13.9259 \\ b \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -0.0402737b^{35} + 0.331001b^{34} + \cdots - 38.7844b + 13.9259 \\ 0.00828442b^{35} + 0.222719b^{34} + \cdots - 36.3623b + 14.0111 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -0.887148b^{35} + 1.45532b^{34} + \cdots - 62.8575b + 2.90056 \\ 0.0114837b^{35} - 0.0694659b^{34} + \cdots + 8.68076b + 0.0974858 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.875664b^{35} + 1.38585b^{34} + \cdots - 54.1767b + 2.99805 \\ 0.0114837b^{35} - 0.0694659b^{34} + \cdots + 8.68076b + 0.0974858 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -0.250453b^{35} + 0.340002b^{34} + \cdots - 7.84455b - 0.892865 \\ -b^2 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.120631b^{35} - 0.154805b^{34} + \cdots - 0.0730998b + 2.15457 \\ b^3 + b \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.899901b^{35} - 1.17955b^{34} + \cdots + 24.5791b + 12.5140 \\ -0.206127b^{35} + 0.384466b^{34} + \cdots - 34.6868b + 9.39768 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.382428b^{35} - 0.386063b^{34} + \cdots - 15.2423b + 11.3695 \\ 0.203833b^{35} - 0.330403b^{34} + \cdots + 23.6744b - 1.69295 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.382428b^{35} - 0.386063b^{34} + \cdots - 15.2423b + 11.3695 \\ 0.203833b^{35} - 0.330403b^{34} + \cdots + 23.6744b - 1.69295 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes =unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.550574 + 0.534542I$ $a = -1.151547 + 0.184083I$ $b = -1.137441 - 0.607496I$	$-0.695457 + 1.211150I$	$2.01684 - 5.97065I$
$u = -0.550574 - 0.534542I$ $a = -1.151547 - 0.184083I$ $b = -1.137441 + 0.607496I$	$-0.695457 - 1.211150I$	$2.01684 + 5.97065I$
$u = 0.559442 + 0.038809I$ $a = -0.97669 + 1.89819I$ $b = -0.848848 - 0.737023I$	$0.388234 + 1.127972I$	$1.85464 - 1.58148I$
$u = 0.559442 - 0.038809I$ $a = -0.97669 - 1.89819I$ $b = -0.848848 + 0.737023I$	$0.388234 - 1.127972I$	$1.85464 + 1.58148I$
$u = 0.950537 + 0.162221I$ $a = -0.697241 + 0.431990I$ $b = -0.832013 - 0.692310I$	$-1.79766 - 2.11512I$	$-3.46832 + 4.22083I$
$u = 0.950537 - 0.162221I$ $a = -0.697241 - 0.431990I$ $b = -0.832013 + 0.692310I$	$-1.79766 + 2.11512I$	$-3.46832 - 4.22083I$
$u = 1.59445 + 1.02172I$ $a = -0.595268 - 0.396932I$ $b = -0.754617 - 0.978635I$	$1.11892 - 7.08645I$	$2.27907 + 7.07165I$
$u = 1.59445 - 1.02172I$ $a = -0.595268 + 0.396932I$ $b = -0.754617 + 0.978635I$	$1.11892 + 7.08645I$	$2.27907 - 7.07165I$
$u = 1.20149 + 0.95062I$ $a = -0.601110 - 0.138403I$ $b = -0.700489 - 1.075933I$	$-0.58133 - 3.63224I$	$-1.22357 + 0.72654I$
$u = 1.20149 - 0.95062I$ $a = -0.601110 + 0.138403I$ $b = -0.700489 + 1.075933I$	$-0.58133 + 3.63224I$	$-1.22357 - 0.72654I$

Solution to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.550574 - 0.534542I$ $a = -0.51202 + 1.60050I$ $b = -0.535612 - 0.716902I$	$-0.695457 - 1.211150I$	$2.01684 + 5.97065I$
$u = -0.550574 + 0.534542I$ $a = -0.51202 - 1.60050I$ $b = -0.535612 + 0.716902I$	$-0.695457 + 1.211150I$	$2.01684 - 5.97065I$
$u = -1.57847 + 0.07406I$ $a = 0.182614 - 0.464051I$ $b = 0.01910 - 1.49587I$	$8.78344 - 0.53962I$	$4.04425 - 2.43806I$
$u = -1.57847 - 0.07406I$ $a = 0.182614 + 0.464051I$ $b = 0.01910 + 1.49587I$	$8.78344 + 0.53962I$	$4.04425 + 2.43806I$
$u = -0.08820 + 1.71388I$ $a = -0.440400 + 0.416925I$ $b = 0.047819 - 0.888995I$	$6.66136 - 3.28569I$	$5.54170 + 2.88739I$
$u = -0.08820 - 1.71388I$ $a = -0.440400 - 0.416925I$ $b = 0.047819 + 0.888995I$	$6.66136 + 3.28569I$	$5.54170 - 2.88739I$
$u = 0.305821 - 0.029607I$ $a = -0.52691 - 2.98749I$ $b = 0.20657 - 1.64071I$	$9.40827 - 2.73362I$	$5.19032 + 6.28765I$
$u = 0.305821 + 0.029607I$ $a = -0.52691 + 2.98749I$ $b = 0.20657 + 1.64071I$	$9.40827 + 2.73362I$	$5.19032 - 6.28765I$
$u = 0.305821 + 0.029607I$ $a = -1.18377 - 5.25035I$ $b = 0.249590 - 0.898036I$	$9.40827 + 2.73362I$	$5.19032 - 6.28765I$
$u = 0.305821 - 0.029607I$ $a = -1.18377 + 5.25035I$ $b = 0.249590 + 0.898036I$	$9.40827 - 2.73362I$	$5.19032 + 6.28765I$

Solution to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.57847+0.07406I$ $a=0.056442-0.945021I$ $b=0.253884-0.746014I$	$8.78344-0.53962I$	$4.04425-2.43806I$
$u=-1.57847-0.07406I$ $a=0.056442+0.945021I$ $b=0.253884+0.746014I$	$8.78344+0.53962I$	$4.04425+2.43806I$
$u=1.59445-1.02172I$ $a=0.614327-0.220117I$ $b=0.543574-1.241085I$	$1.11892+7.08645I$	$2.27907-7.07165I$
$u=1.59445+1.02172I$ $a=0.614327+0.220117I$ $b=0.543574+1.241085I$	$1.11892-7.08645I$	$2.27907+7.07165I$
$u=1.20149-0.95062I$ $a=0.794303-0.267048I$ $b=0.590660-0.737715I$	$-0.58133+3.63224I$	$-1.22357-0.72654I$
$u=1.20149+0.95062I$ $a=0.794303+0.267048I$ $b=0.590660+0.737715I$	$-0.58133-3.63224I$	$-1.22357+0.72654I$
$u=0.559442+0.038809I$ $a=1.60100+1.20636I$ $b=0.620068-1.024026I$	$0.388234+1.127972I$	$1.85464-1.58148I$
$u=0.559442-0.038809I$ $a=1.60100-1.20636I$ $b=0.620068+1.024026I$	$0.388234-1.127972I$	$1.85464+1.58148I$
$u=-0.08820-1.71388I$ $a=0.518764-0.001204I$ $b=0.675718-0.791567I$	$6.66136+3.28569I$	$5.54170-2.88739I$
$u=-0.08820+1.71388I$ $a=0.518764+0.001204I$ $b=0.675718+0.791567I$	$6.66136-3.28569I$	$5.54170+2.88739I$

Solution to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.894501 + 0.439989I$ $a = 0.877218 + 0.880723I$ $b = 0.697017 - 0.997253I$	$2.21070 + 8.01702I$	$0.26506 - 6.04046I$
$u = -0.894501 - 0.439989I$ $a = 0.877218 - 0.880723I$ $b = 0.697017 + 0.997253I$	$2.21070 - 8.01702I$	$0.26506 + 6.04046I$
$u = 0.950537 + 0.162221I$ $a = 0.971317 + 0.562568I$ $b = 0.732831 - 0.297516I$	$-1.79766 - 2.11512I$	$-3.46832 + 4.22083I$
$u = 0.950537 - 0.162221I$ $a = 0.971317 - 0.562568I$ $b = 0.732831 + 0.297516I$	$-1.79766 + 2.11512I$	$-3.46832 - 4.22083I$
$u = -0.894501 - 0.439989I$ $a = 1.068973 + 0.589062I$ $b = 1.172181 - 0.401841I$	$2.21070 - 8.01702I$	$0.26506 + 6.04046I$
$u = -0.894501 + 0.439989I$ $a = 1.068973 - 0.589062I$ $b = 1.172181 + 0.401841I$	$2.21070 + 8.01702I$	$0.26506 - 6.04046I$

V. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1, c_{10}	$(u^6+3u^5+\cdots+u+1)(u^7-2u^5+\cdots+2u+1)$ $(u^{15}-5u^{13}+\cdots+3u+1)(u^{36}-10u^{34}+\cdots+503u+161)$
c_2, c_5	$(u^6-3u^5+\cdots-u+1)(u^7-2u^5+\cdots+2u-1)$ $(u^{15}-5u^{13}+\cdots+3u+1)(u^{36}-10u^{34}+\cdots+503u+161)$
c_3	$(u^3-2u^2+u+1)^2(u^7+3u^6+7u^5+13u^4+18u^3+10u^2+2u-1)$ $(u^{15}+14u^{14}+\cdots+464u+32)$ $(1-9u+25u^2-9u^3-47u^4-u^5+129u^6-36u^7-139u^8+51u^9+91u^{10}-65u^{11}+18u^{13}-$
c_4, c_8	$(u^6-u^5+3u^4-3u^3+3u^2-u+1)$ $(u^7-u^6+\cdots+u-1)(u^{15}+u^{14}+\cdots-4u^2-1)$ $(u^{36}+2u^{35}+\cdots+151u+47)$
c_6	$(u^3+u-1)^2(u^7-u^6+3u^5-2u^4+u^3-u^2-u-1)$ $(u^{15}+8u^{14}+\cdots-56u-8)$ $(5-4u+19u^2-16u^3+47u^4-53u^5+97u^6-110u^7+139u^8-140u^9+135u^{10}-115u^{11}+$
c_7, c_{11}	$(u^6+u^5+3u^4+3u^3+3u^2+u+1)$ $(u^7+u^6+\cdots+u+1)(u^{15}+u^{14}+\cdots-4u^2-1)$ $(u^{36}+2u^{35}+\cdots+151u+47)$
c_9	$(u^3+u+1)^2(u^7+u^6+3u^5+2u^4+u^3+u^2-u+1)$ $(u^{15}+8u^{14}+\cdots-56u-8)$ $(5-4u+19u^2-16u^3+47u^4-53u^5+97u^6-110u^7+139u^8-140u^9+135u^{10}-115u^{11}+$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_2, c_5 c_{10}	$(y^6 - 7y^5 + 17y^4 - 15y^3 + 9y^2 - 3y + 1)$ $(y^7 - 4y^6 + \cdots + 4y^2 - 1)(y^{15} - 10y^{14} + \cdots + 29y - 1)$ $(y^{36} - 20y^{35} + \cdots - 295835y + 25921)$
c_3	$(y^3 - 2y^2 + 5y - 1)^2(y^7 + 5y^6 + \cdots + 24y - 1)$ $(y^{15} + 4y^{14} + \cdots + 67328y - 1024)$ $(1 - 31y + 369y^2 - 2191y^3 + 7715y^4 - 1.86 \times 10^4y^5 + 3.39 \times 10^4y^6 - 4.65 \times 10^4y^7 + 4.60 \times$
c_4, c_7, c_8 c_{11}	$(y^6 + 5y^5 + 9y^4 + 9y^3 + 9y^2 + 5y + 1)$ $(y^7 + 5y^6 + \cdots - y - 1)(y^{15} + 7y^{14} + \cdots - 8y - 1)$ $(y^{36} + 16y^{35} + \cdots + 18277y + 2209)$
c_6, c_9	$(y^3 + 2y^2 + y - 1)^2(y^7 + 5y^6 + 7y^5 - 2y^4 - 11y^3 - 7y^2 - y - 1)$ $(y^{15} + 8y^{14} + \cdots + 224y - 64)$ $(25 + 174y + 703y^2 + 2076y^3 + 4709y^4 + 8301y^5 + 1.14 \times 10^4y^6 + 1.23 \times 10^4y^7 + 1.04 \times 10^4$