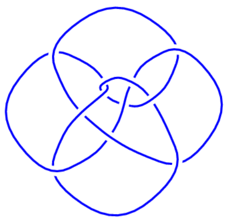
$11n_{178}$ ($K11n_{178}$)



[1]

Arc Sequences

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

Solving Sequence

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

Representation Ideals

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

$$\begin{aligned}
I_1^u &= \langle u^3 - u^2 - 1,\ b,\ -u^2 + a + u + 1\rangle \\
I_2^u &= \langle u^{20} + u^{19} + \cdots - 3u^2 + 1,\ 46828697u^{19} - 54942651u^{18} + \cdots + 189577510a + 280763093, \\
&\quad - 79952883u^{19} - 205733991u^{18} + \cdots + 189577510b + 247801268\rangle \\
I_3^u &= \langle u^{20} - 7u^{19} + \cdots + u - 1, \\
&\quad 12808910979u^{19} - 187846399454u^{18} + \cdots + 211373225743b + 195416963213, \\
&\quad 235855336050u^{19} - 1438883104988u^{18} + \cdots + 211373225743a + 397432811196\rangle \\
I_4^u &= \langle u^{50} + 4u^{49} + \cdots - 5u - 1,\ 3.69233 \times 10^{106}u^{49} + 3.00741 \times 10^{107}u^{48} + \cdots + 1.05238 \times 10^{108}b + 6.42727 \times 1 \\
&\quad - 2.77766 \times 10^{107}u^{49} - 1.90029 \times 10^{108}u^{48} + \cdots + 1.05238 \times 10^{108}a + 1.64293 \times 10^{109}\rangle
\end{aligned}$$

There are 4 irreducible components with 93 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. $I_1^u = \langle u^3 - u^2 - 1,\ b,\ -u^2 + a + u + 1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes =unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I^u_1	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.232786 - 0.792552I$ $a = -1.34116 + 1.16154I$ $b = 0$	$5.50124 + 1.58317I$	$0.22694 + 1.69425I$
$u = -0.232786 + 0.792552I$ $a = -1.34116 - 1.16154I$ $b = 0$	$5.50124 - 1.58317I$	$0.22694 - 1.69425I$
$u = 1.46557$ $a = -0.317672$ $b = 0$	-4.42273	-17.4539

II.

$\boldsymbol{I_2^u = \langle u^{20} + u^{19} + \cdots - 3u^2 + 1,\ 4.68 \times 10^7 u^{19} - 5.49 \times 10^7 u^{18} + \cdots + 1.90 \times 10^8 a + 2.81 \times 10^8,\ -8.00 \times 10^7 u^{19} - 2.06 \times 10^8 u^{18} + \cdots + 1.90 \times 10^8 b + 2.48 \times 10^8 \rangle}$

(i) Arc colorings

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

$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -0.247016u^{19} + 0.289816u^{18} + \cdots - 1.24916u - 1.48099 \\ 0.421742u^{19} + 1.08522u^{18} + \cdots - 0.180725u - 1.30712 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -0.652601u^{19} - 0.473340u^{18} + \cdots - 0.821423u - 0.710702 \\ 0.0595036u^{19} + 0.384754u^{18} + \cdots + 0.224860u - 0.949553 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0.280052u^{19} - 0.109905u^{18} + \cdots - 0.0971137u + 0.989874 \\ -0.188864u^{19} + 0.0142883u^{18} + \cdots + 0.0913839u - 0.291757 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -0.668759u^{19} - 0.795407u^{18} + \cdots - 1.06844u - 0.173870 \\ 0.421742u^{19} + 1.08522u^{18} + \cdots - 0.180725u - 1.30712 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -0.850268u^{19} - 0.523920u^{18} + \cdots - 0.352916u - 1.19703 \\ u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -0.326348u^{19} - 0.329964u^{18} + \cdots + 1.19703u + 0.149732 \\ -u^2 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.257171u^{19} + 0.435334u^{18} + \cdots - 1.24365u - 0.463228 \\ 0.0595036u^{19} + 0.384754u^{18} + \cdots + 0.224860u - 0.949553 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.234964u^{19} + 0.530337u^{18} + \cdots - 0.870679u - 0.146116 \\ -0.188864u^{19} + 0.0142883u^{18} + \cdots + 0.0913839u - 0.291757 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.234964u^{19} + 0.530337u^{18} + \cdots - 0.870679u - 0.146116 \\ -0.188864u^{19} + 0.0142883u^{18} + \cdots + 0.0913839u - 0.291757 \end{pmatrix}$$

(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
$u = -1.07532 - 1.15008I$ $a = 0.427727 - 0.361275I$ $b = 1.107319 - 0.183145I$	$8.00588 + 0.27607I$	$1.56028 + 0.31134I$
$u = -1.07532 + 1.15008I$ $a = 0.427727 + 0.361275I$ $b = 1.107319 + 0.183145I$	$8.00588 - 0.27607I$	$1.56028 - 0.31134I$
$u = -1.04163 - 1.16843I$ $a = 0.094034 - 1.110667I$ $b = 1.50238 - 0.86086I$	$8.5745 - 16.9983I$	$-2.67254 + 8.37996I$
$u = -1.04163 + 1.16843I$ $a = 0.094034 + 1.110667I$ $b = 1.50238 + 0.86086I$	$8.5745 + 16.9983I$	$-2.67254 - 8.37996I$
$u = -0.874690 - 0.121688I$ $a = -0.25690 + 1.39198I$ $b = -0.719775 + 0.411937I$	$3.02537 - 1.86293I$	$-7.79633 + 3.80746I$
$u = -0.874690 + 0.121688I$ $a = -0.25690 - 1.39198I$ $b = -0.719775 - 0.411937I$	$3.02537 + 1.86293I$	$-7.79633 - 3.80746I$
$u = -0.737850 - 0.581872I$ $a = 0.069363 + 1.260481I$ $b = 0.11248 + 2.29679I$	$4.37107 - 7.54282I$	$-5.65623 + 11.11643I$
$u = -0.737850 + 0.581872I$ $a = 0.069363 - 1.260481I$ $b = 0.11248 - 2.29679I$	$4.37107 + 7.54282I$	$-5.65623 - 11.11643I$
$u = -0.412967 - 0.477285I$ $a = 0.06854 + 1.67406I$ $b = -1.096943 + 0.496517I$	$1.66626 - 1.83421I$	$-0.60394 + 1.52765I$
$u = -0.412967 + 0.477285I$ $a = 0.06854 - 1.67406I$ $b = -1.096943 - 0.496517I$	$1.66626 + 1.83421I$	$-0.60394 - 1.52765I$

Solution to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.060088 - 0.658881I$ $a = -1.91392 + 2.16870I$ $b = 0.730173 + 0.354779I$	$5.89336 + 2.36950I$	$5.34088 - 5.91566I$
$u = 0.060088 + 0.658881I$ $a = -1.91392 - 2.16870I$ $b = 0.730173 - 0.354779I$	$5.89336 - 2.36950I$	$5.34088 + 5.91566I$
$u = 0.453381$ $a = -0.253392$ $b = 0.510362$	-0.861131	-11.6542
$u = 0.720650 - 0.888114I$ $a = -0.411874 + 0.878693I$ $b = 1.080596 + 0.595862I$	$-0.02958 + 4.97799I$	$-5.29605 - 5.59335I$
$u = 0.720650 + 0.888114I$ $a = -0.411874 - 0.878693I$ $b = 1.080596 - 0.595862I$	$-0.02958 - 4.97799I$	$-5.29605 + 5.59335I$
$u = 0.756224 - 0.030600I$ $a = 0.518686 + 0.553890I$ $b = 0.59721 + 1.53378I$	$-1.50701 + 0.96018I$	$-11.18870 - 6.49006I$
$u = 0.756224 + 0.030600I$ $a = 0.518686 - 0.553890I$ $b = 0.59721 - 1.53378I$	$-1.50701 - 0.96018I$	$-11.18870 + 6.49006I$
$u = 1.08428 - 1.16800I$ $a = -0.182421 - 0.741894I$ $b = -1.32568 - 0.70366I$	$2.91415 + 8.59875I$	$-1.50122 - 6.80502I$
$u = 1.08428 + 1.16800I$ $a = -0.182421 + 0.741894I$ $b = -1.32568 + 0.70366I$	$2.91415 - 8.59875I$	$-1.50122 + 6.80502I$
$u = 1.58903$ $a = 0.426907$ $b = 0.514124$	-4.10423	8.28188

III.

$\boldsymbol{I_3^u = \langle u^{20} - 7u^{19} + \cdots + u - 1,\ 1.28\times10^{10}u^{19} - 1.88\times10^{11}u^{18} + \cdots + 2.11\times10^{11}b + 1.95\times10^{11},\ 2.36\times10^{11}u^{19} - 1.44\times10^{12}u^{18} + \cdots + 2.11\times10^{11}a + 3.97\times10^{11}\rangle}$

(i) Arc colorings

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

$$a_7 = \begin{pmatrix}0\\u\end{pmatrix}$$

$$a_5 = \begin{pmatrix}1\\u^2\end{pmatrix}$$

$$a_{10} = \begin{pmatrix}-1.11582u^{19} + 6.80731u^{18} + \cdots + 3.46901u - 1.88024\\-0.0605985u^{19} + 0.888695u^{18} + \cdots - 2.07325u - 0.924511\end{pmatrix}$$

$$a_{11} = \begin{pmatrix}-1.27837u^{19} + 8.16669u^{18} + \cdots + 5.42989u - 1.95919\\0.195449u^{19} - 0.930912u^{18} + \cdots - 2.45735u - 0.702959\end{pmatrix}$$

$$a_6 = \begin{pmatrix}-0.988398u^{19} + 7.87202u^{18} + \cdots - 1.60648u + 1.50662\\1.06059u^{19} - 7.16971u^{18} + \cdots - 1.68393u + 1.33634\end{pmatrix}$$

$$a_9 = \begin{pmatrix}-1.05523u^{19} + 5.91861u^{18} + \cdots + 5.54226u - 0.955731\\-0.0605985u^{19} + 0.888695u^{18} + \cdots - 2.07325u - 0.924511\end{pmatrix}$$

$$a_1 = \begin{pmatrix}-1.37942u^{19} + 9.15896u^{18} + \cdots - 2.50703u - 2.25588\\1.06111u^{19} - 6.21434u^{18} + \cdots + 0.406269u - 0.235392\end{pmatrix}$$

$$a_3 = \begin{pmatrix}1.38328u^{19} - 8.01967u^{18} + \cdots + 2.25789u + 0.0441760\\1.27161u^{19} - 8.30581u^{18} + \cdots - 1.24047u + 1.57666\end{pmatrix}$$

$$a_8 = \begin{pmatrix}-0.0712245u^{19} + 1.10922u^{18} + \cdots - 3.10032u + 1.83259\\1.14705u^{19} - 7.53453u^{18} + \cdots - 0.433420u + 0.553509\end{pmatrix}$$

$$a_2 = \begin{pmatrix}1.30606u^{19} - 7.78190u^{18} + \cdots + 1.29741u - 0.0424310\\0.743014u^{19} - 5.19477u^{18} + \cdots - 1.01495u + 1.27393\end{pmatrix}$$

$$a_2 = \begin{pmatrix}1.30606u^{19} - 7.78190u^{18} + \cdots + 1.29741u - 0.0424310\\0.743014u^{19} - 5.19477u^{18} + \cdots - 1.01495u + 1.27393\end{pmatrix}$$

(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
$u=-1.35926$ $a=-1.03268$ $b=-0.640698$	-6.51752	34.8666
$u=-0.752208-1.075587I$ $a=\ \ 0.035408+1.145995I$ $b=-0.914221+0.878707I$	$6.26864-5.98904I$	$-2.92384+3.18632I$
$u=-0.752208+1.075587I$ $a=\ \ 0.035408-1.145995I$ $b=-0.914221-0.878707I$	$6.26864+5.98904I$	$-2.92384-3.18632I$
$u=-0.583311-1.128419I$ $a=\ \ 0.403746-0.037961I$ $b=-0.881751+0.097352I$	$3.13638-3.94572I$	$-1.58269+5.47828I$
$u=-0.583311+1.128419I$ $a=\ \ 0.403746+0.037961I$ $b=-0.881751-0.097352I$	$3.13638+3.94572I$	$-1.58269-5.47828I$
$u=-0.287929-0.259537I$ $a=-0.69091-3.70285I$ $b=\ \ 0.914221+0.878707I$	$6.26864+5.98904I$	$-2.92384-3.18632I$
$u=-0.287929+0.259537I$ $a=-0.69091+3.70285I$ $b=\ \ 0.914221-0.878707I$	$6.26864-5.98904I$	$-2.92384+3.18632I$
$u=-0.032242-0.434826I$ $a=\ \ 0.347049+0.942227I$ $b=-1.56236+1.19198I$	$-0.91356-1.34180I$	$8.0489+15.8298I$
$u=-0.032242+0.434826I$ $a=\ \ 0.347049-0.942227I$ $b=-1.56236-1.19198I$	$-0.91356+1.34180I$	$8.0489-15.8298I$
$u=\ \ 0.662948-0.707050I$ $a=\ \ 0.36817+1.99368I$ $b=\ \ 0.881751+0.097352I$	$3.13638+3.94572I$	$-1.58269-5.47828I$

Solution to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.662948 + 0.707050I$ $a = 0.36817 - 1.99368I$ $b = 0.881751 - 0.097352I$	$3.13638 - 3.94572I$	$-1.58269 + 5.47828I$
$u = 0.725233 - 0.556341I$ $a = -0.18291 - 1.58525I$ $b = -1.039935 - 0.726914I$	$-0.98335 + 6.94564I$	$-13.6667 - 10.0962I$
$u = 0.725233 + 0.556341I$ $a = -0.18291 + 1.58525I$ $b = -1.039935 + 0.726914I$	$-0.98335 - 6.94564I$	$-13.6667 + 10.0962I$
$u = 0.88767 - 1.29926I$ $a = -0.399875 + 0.751699I$ $b = 1.039935 + 0.726914I$	$-0.98335 + 6.94564I$	$-13.6667 - 10.0962I$
$u = 0.88767 + 1.29926I$ $a = -0.399875 - 0.751699I$ $b = 1.039935 - 0.726914I$	$-0.98335 - 6.94564I$	$-13.6667 + 10.0962I$
$u = 0.931227 - 0.495139I$ $a = 0.035100 - 0.879838I$ $b = - 1.10466I$	-3.56392	-13.6180
$u = 0.931227 + 0.495139I$ $a = 0.035100 + 0.879838I$ $b = 1.10466I$	-3.56392	-13.6180
$u = 1.234799 - 0.114679I$ $a = 0.545903 + 0.434597I$ $b = 1.56236 + 1.19198I$	$-0.91356 + 1.34180I$	$8.0489 - 15.8298I$
$u = 1.234799 + 0.114679I$ $a = 0.545903 - 0.434597I$ $b = 1.56236 - 1.19198I$	$-0.91356 - 1.34180I$	$8.0489 + 15.8298I$
$u = 2.78688$ $a = 0.109314$ $b = 0.640698$	-6.51752	34.8666

IV. $\boldsymbol{I^u_4 = \langle u^{50} + 4u^{49} + \cdots - 5u - 1,\ 3.69 \times 10^{106}u^{49} + 3.01 \times 10^{107}u^{48} + \cdots + 1.05 \times 10^{108}b + 6.43 \times 10^{107},\ -2.78 \times 10^{107}u^{49} - 1.90 \times 10^{108}u^{48} + \cdots + 1.05 \times 10^{108}a + 1.64 \times 10^{109}\rangle}$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0.263942u^{49} + 1.80571u^{48} + \cdots - 105.289u - 15.6116 \\ -0.0350856u^{49} - 0.285774u^{48} + \cdots - 0.795935u - 0.610739 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0.100100u^{49} + 1.19168u^{48} + \cdots - 100.480u - 14.2509 \\ 0.0470703u^{49} - 0.00881835u^{48} + \cdots - 0.753096u - 0.569402 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1.81124u^{49} + 7.18452u^{48} + \cdots - 64.7876u - 22.2422 \\ -0.678743u^{49} - 2.50349u^{48} + \cdots + 9.00031u - 0.681446 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0.299028u^{49} + 2.09148u^{48} + \cdots - 104.493u - 15.0009 \\ -0.0350856u^{49} - 0.285774u^{48} + \cdots - 0.795935u - 0.610739 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -0.0861240u^{49} - 0.377836u^{48} + \cdots - 126.434u - 10.5080 \\ 0.383313u^{49} + 1.49128u^{48} + \cdots - 8.06993u - 1.47201 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 2.65707u^{49} + 9.50646u^{48} + \cdots - 138.280u - 0.552256 \\ 0.258326u^{49} + 1.17738u^{48} + \cdots - 14.9385u - 1.82411 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1.78125u^{49} + 6.55058u^{48} + \cdots - 50.6879u - 23.5270 \\ -0.646907u^{49} - 2.22907u^{48} + \cdots + 7.51769u - 1.23819 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -2.55404u^{49} - 9.06240u^{48} + \cdots + 150.266u + 1.25455 \\ -0.367905u^{49} - 1.60545u^{48} + \cdots + 15.2013u + 1.85607 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -2.55404u^{49} - 9.06240u^{48} + \cdots + 150.266u + 1.25455 \\ -0.367905u^{49} - 1.60545u^{48} + \cdots + 15.2013u + 1.85607 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes =unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I^u_4	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.32989$ $a = \quad 1.02637$ $b = \quad 0.580269$	-6.61075	-51.2604
$u = -1.31226 - 1.16752I$ $a = \quad 0.528719 - 0.167342I$ $b = \quad 1.114156 + 0.510756I$	$8.00509 + 8.45240I$	$-0.75796 - 6.49999I$
$u = -1.31226 + 1.16752I$ $a = \quad 0.528719 + 0.167342I$ $b = \quad 1.114156 - 0.510756I$	$8.00509 - 8.45240I$	$-0.75796 + 6.49999I$
$u = -1.16461 - 1.50318I$ $a = -0.047379 + 0.462652I$ $b = -0.993457 + 0.311354I$	$3.52121 - 5.29385I$	$-3.74916 + 8.30350I$
$u = -1.16461 + 1.50318I$ $a = -0.047379 - 0.462652I$ $b = -0.993457 - 0.311354I$	$3.52121 + 5.29385I$	$-3.74916 - 8.30350I$
$u = -1.07701 - 0.98508I$ $a = -0.873099 + 0.474832I$ $b = -1.183821 - 0.678601I$	$7.41514 - 1.27639I$	$2.55128 + 0.67478I$
$u = -1.07701 + 0.98508I$ $a = -0.873099 - 0.474832I$ $b = -1.183821 + 0.678601I$	$7.41514 + 1.27639I$	$2.55128 - 0.67478I$
$u = -1.06616 - 1.11382I$ $a = \quad 0.291602 - 0.962467I$ $b = \quad 1.114156 - 0.510756I$	$8.00509 - 8.45240I$	$-0.75796 + 6.49999I$
$u = -1.06616 + 1.11382I$ $a = \quad 0.291602 + 0.962467I$ $b = \quad 1.114156 + 0.510756I$	$8.00509 + 8.45240I$	$-0.75796 - 6.49999I$
$u = -1.00189 - 1.04693I$ $a = -0.178154 + 1.185471I$ $b = -1.84091 + 1.17791I$	$7.66608 - 6.24371I$	$4.09267 + 6.21663I$

Solution to I_4^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.00189+1.04693I$ $a=-0.178154-1.185471I$ $b=-1.84091-1.17791I$	$7.66608+6.24371I$	$4.09267-6.21663I$
$u=-0.818849-0.635675I$ $a=\ \ 0.291954+0.232325I$ $b=-0.834873-0.287723I$	$2.89680-2.76831I$	$-5.67436+1.24863I$
$u=-0.818849+0.635675I$ $a=\ \ 0.291954-0.232325I$ $b=-0.834873+0.287723I$	$2.89680+2.76831I$	$-5.67436-1.24863I$
$u=-0.604668-1.191679I$ $a=\ \ 0.272899+1.177371I$ $b=-0.856520+0.586940I$	$6.70056-6.60168I$	$4.95046+12.30292I$
$u=-0.604668+1.191679I$ $a=\ \ 0.272899-1.177371I$ $b=-0.856520-0.586940I$	$6.70056+6.60168I$	$4.95046-12.30292I$
$u=-0.570225-0.516565I$ $a=\ \ 0.16891-1.90970I$ $b=\ \ 1.060721-0.762806I$	$-0.56308-6.78110I$	$3.38343+3.19298I$
$u=-0.570225+0.516565I$ $a=\ \ 0.16891+1.90970I$ $b=\ \ 1.060721+0.762806I$	$-0.56308+6.78110I$	$3.38343-3.19298I$
$u=-0.560955-0.411759I$ $a=-0.00679-1.47326I$ $b=\ \ 0.427772-1.014275I$	$-2.53372+0.16719I$	$-3.64574-0.21536I$
$u=-0.560955+0.411759I$ $a=-0.00679+1.47326I$ $b=\ \ 0.427772+1.014275I$	$-2.53372-0.16719I$	$-3.64574+0.21536I$
$u=-0.305442-0.745648I$ $a=-0.171255+1.367643I$ $b=\ \ 0.710713+0.790919I$	$6.24414-3.55600I$	$4.03991+3.49531I$

Solution to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.305442 + 0.745648I$ $a = -0.171255 - 1.367643I$ $b = 0.710713 - 0.790919I$	$6.24414 + 3.55600I$	$4.03991 - 3.49531I$
$u = -0.236451 - 0.531026I$ $a = 4.59557 - 0.86880I$ $b = -0.856520 + 0.586940I$	$6.70056 - 6.60168I$	$4.95046 + 12.30292I$
$u = -0.236451 + 0.531026I$ $a = 4.59557 + 0.86880I$ $b = -0.856520 - 0.586940I$	$6.70056 + 6.60168I$	$4.95046 - 12.30292I$
$u = -0.223288 - 0.942582I$ $a = -1.88683 + 0.99818I$ $b = 0.710713 - 0.790919I$	$6.24414 + 3.55600I$	$4.03991 - 3.49531I$
$u = -0.223288 + 0.942582I$ $a = -1.88683 - 0.99818I$ $b = 0.710713 + 0.790919I$	$6.24414 - 3.55600I$	$4.03991 + 3.49531I$
$u = -0.049351 - 0.717898I$ $a = 0.39422 + 1.63257I$ $b = -0.748569$	2.81112	0.202278
$u = -0.049351 + 0.717898I$ $a = 0.39422 - 1.63257I$ $b = -0.748569$	2.81112	0.202278
$u = -0.0014594 - 0.1290826I$ $a = -7.70492 + 9.68373I$ $b = -0.834873 + 0.287723I$	$2.89680 + 2.76831I$	$-5.67436 - 1.24863I$
$u = -0.0014594 + 0.1290826I$ $a = -7.70492 - 9.68373I$ $b = -0.834873 - 0.287723I$	$2.89680 - 2.76831I$	$-5.67436 + 1.24863I$
$u = 0.057422 - 1.022710I$ $a = -0.316941 - 0.699314I$ $b = -1.183821 - 0.678601I$	$7.41514 - 1.27639I$	$2.55128 + 0.67478I$

Solution to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.057422 + 1.022710I$ $a = -0.316941 + 0.699314I$ $b = -1.183821 + 0.678601I$	$7.41514 + 1.27639I$	$2.55128 - 0.67478I$
$u = 0.079430 - 0.878574I$ $a = -0.370193 - 0.750739I$ $b = 0.914450 + 0.194844I$	$1.53850 + 4.51240I$	$-4.65188 - 7.14304I$
$u = 0.079430 + 0.878574I$ $a = -0.370193 + 0.750739I$ $b = 0.914450 - 0.194844I$	$1.53850 - 4.51240I$	$-4.65188 + 7.14304I$
$u = 0.136170 - 0.736576I$ $a = -0.329394 - 1.001407I$ $b = -1.84091 - 1.17791I$	$7.66608 + 6.24371I$	$4.09267 - 6.21663I$
$u = 0.136170 + 0.736576I$ $a = -0.329394 + 1.001407I$ $b = -1.84091 + 1.17791I$	$7.66608 - 6.24371I$	$4.09267 + 6.21663I$
$u = 0.140564 - 0.434686I$ $a = -0.0970679 + 0.0835883I$ $b = 1.51893 - 0.92610I$	$-1.03856 - 1.14326I$	$-10.5893 - 12.6521I$
$u = 0.140564 + 0.434686I$ $a = -0.0970679 - 0.0835883I$ $b = 1.51893 + 0.92610I$	$-1.03856 + 1.14326I$	$-10.5893 + 12.6521I$
$u = 0.747108 - 1.066289I$ $a = -0.102953 + 1.064056I$ $b = 0.914450 + 0.194844I$	$1.53850 + 4.51240I$	$-4.65188 - 7.14304I$
$u = 0.747108 + 1.066289I$ $a = -0.102953 - 1.064056I$ $b = 0.914450 - 0.194844I$	$1.53850 - 4.51240I$	$-4.65188 + 7.14304I$
$u = 0.86987 - 1.24327I$ $a = -0.437552 + 0.872178I$ $b = 1.060721 + 0.762806I$	$-0.56308 + 6.78110I$	$3.38343 - 3.19298I$

Solution to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.86987 + 1.24327I$ $a = -0.437552 - 0.872178I$ $b = 1.060721 - 0.762806I$	$-0.56308 - 6.78110I$	$3.38343 + 3.19298I$
$u = 0.997029 - 0.367394I$ $a = -1.45085 - 1.23993I$ $b = -0.993457 - 0.311354I$	$3.52121 + 5.29385I$	$-3.74916 - 8.30350I$
$u = 0.997029 + 0.367394I$ $a = -1.45085 + 1.23993I$ $b = -0.993457 + 0.311354I$	$3.52121 - 5.29385I$	$-3.74916 + 8.30350I$
$u = 1.018437 - 0.608250I$ $a = 0.230012 - 0.681084I$ $b = 0.427772 - 1.014275I$	$-2.53372 + 0.16719I$	$-3.64574 - 0.21536I$
$u = 1.018437 + 0.608250I$ $a = 0.230012 + 0.681084I$ $b = 0.427772 + 1.014275I$	$-2.53372 - 0.16719I$	$-3.64574 + 0.21536I$
$u = 1.03424 - 1.23977I$ $a = -0.288537 - 0.627682I$ $b = -0.906013$	3.05217	0.159533
$u = 1.03424 + 1.23977I$ $a = -0.288537 + 0.627682I$ $b = -0.906013$	3.05217	0.159533
$u = 1.217959 - 0.245792I$ $a = 0.460317 + 0.384323I$ $b = 1.51893 + 0.92610I$	$-1.03856 + 1.14326I$	$-10.5893 + 12.6521I$
$u = 1.217959 + 0.245792I$ $a = 0.460317 - 0.384323I$ $b = 1.51893 - 0.92610I$	$-1.03856 - 1.14326I$	$-10.5893 - 12.6521I$
$u = 2.71865$ $a = 0.0290438$ $b = 0.580269$	-6.61075	-51.2604

V. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1	$(u^3+u^2+1)(u^{20}-5u^{19}+\cdots+24u-8)(u^{20}-4u^{19}+\cdots+24u+8)$ $(u^{50}+5u^{49}+\cdots+337800u+93608)$
c_2	$(u^3+u-1)(u^{10}-u^9+u^8+u^7-7u^6+6u^5-4u^4+u^3+4u^2-1)^2$ $(u^{20}-3u^{19}+\cdots+50u+28)$ $(5-18u+66u^2-220u^3+296u^4-563u^5+1021u^6+14u^7+405u^8-87u^9-1694u^{10}-162$
c_3	$(u^3+u^2+1)(u^{20}+u^{19}+\cdots-3u^2+1)(u^{20}+7u^{19}+\cdots-u-1)$ $(u^{50}+4u^{49}+\cdots-5u-1)$
c_4	$(u^3-u^2-1)(u^{20}-7u^{19}+\cdots+u-1)(u^{20}+u^{19}+\cdots-3u^2+1)$ $(u^{50}+4u^{49}+\cdots-5u-1)$
c_5	$(u^3+u+1)(u^{10}+u^9+u^8-u^7-7u^6-6u^5-4u^4-u^3+4u^2-1)^2$ $(u^{20}-3u^{19}+\cdots+50u+28)$ $(5-18u+66u^2-220u^3+296u^4-563u^5+1021u^6+14u^7+405u^8-87u^9-1694u^{10}-162$
c_6	$(u^3-u^2-1)(u^{20}-5u^{19}+\cdots+24u-8)(u^{20}+4u^{19}+\cdots-24u+8)$ $(u^{50}+5u^{49}+\cdots+337800u+93608)$
c_7	$(u^3+2u^2+u-1)(u^{20}+2u^{19}+\cdots+5u-1)(u^{20}+6u^{19}+\cdots+8u+1)$ $(u^{50}+u^{49}+\cdots-22u-1)$
c_8	$(u^3+u-1)(u^{20}+9u^{18}+\cdots-5u-1)(u^{20}+u^{19}+\cdots-4u-1)$ $(u^{50}+3u^{48}+\cdots+10342u-3931)$
c_9	$u^3(u^{20}-4u^{18}+\cdots+146u^2-31)(u^{20}+5u^{19}+\cdots+192u+32)$ $(31-18u-199u^2+101u^3+550u^4-144u^5-999u^6-44u^7+1320u^8+449u^9-1275u^{10}-$
c_{10}	$(u^3+u+1)(u^{20}+9u^{18}+\cdots-5u-1)(u^{20}-u^{19}+\cdots+4u-1)$ $(u^{50}+3u^{48}+\cdots+10342u-3931)$
c_{11}	$(u^3-2u^2+u+1)(u^{20}-6u^{19}+\cdots-8u+1)(u^{20}+2u^{19}+\cdots+5u-1)$ $(u^{50}+u^{49}+\cdots-22u-1)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1	$(y^3 - y^2 - 2y - 1)(y^{20} - 10y^{19} + \cdots + 832y + 64)$ $(y^{20} + 19y^{19} + \cdots + 384y + 64)$ $(y^{50} + 13y^{49} + \cdots + 42553508800y + 8762457664)$
c_2, c_5	$(y^3 + 2y^2 + y - 1)$ $(1 - 8y + 24y^2 - 19y^3 - 54y^4 + 24y^5 + 39y^6 - 11y^7 - 11y^8 + y^9 + y^{10})^2$ $(y^{20} + 11y^{19} + \cdots + 6180y + 784)$ $(-25 - 336y + 604y^2 + 1.94 \times 10^4y^3 + 2.08 \times 10^4y^4 - 3.27 \times 10^5y^5 - 9.53 \times 10^5y^6 + 1.41 \times$
c_3, c_4	$(y^3 - y^2 - 2y - 1)(y^{20} - 9y^{19} + \cdots + 7y + 1)(y^{20} - 3y^{19} + \cdots - 6y + 1)$ $(y^{50} + 18y^{48} + \cdots + 143y + 1)$
c_6	$(y^3 - y^2 - 2y - 1)(y^{20} - 10y^{19} + \cdots + 832y + 64)$ $(y^{20} + 19y^{19} + \cdots + 384y + 64)$ $(y^{50} + 13y^{49} + \cdots + 42553508800y + 8762457664)$
c_7, c_{11}	$(y^3 - 2y^2 + 5y - 1)(y^{20} + 24y^{18} + \cdots - 79y + 1)$ $(y^{20} - 2y^{19} + \cdots - 14y + 1)(y^{50} - 21y^{49} + \cdots + 244y + 1)$
c_8, c_{10}	$(y^3 + 2y^2 + y - 1)(y^{20} - y^{19} + \cdots - 22y + 1)$ $(y^{20} + 18y^{19} + \cdots + 13y + 1)$ $(y^{50} + 6y^{49} + \cdots + 33112428y + 15452761)$
c_9	y^3 $(-31 + 146y - 219y^2 + 124y^3 - 8y^4 - 62y^5 + 86y^6 - 44y^7 + 24y^8 - 4y^9 + y^{10})^2$ $(y^{20} + y^{19} + \cdots - 14336y + 1024)$ $(-961 + 1.27 \times 10^4y - 7.73 \times 10^4y^2 + 2.96 \times 10^5y^3 - 8.09 \times 10^5y^4 + 1.70 \times 10^6y^5 - 2.88 \times 1$