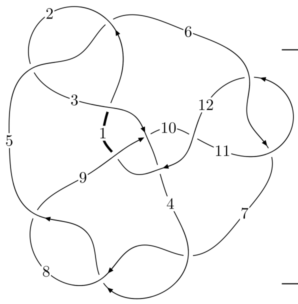
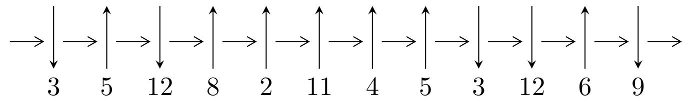
$12n_{0519}$ ($K12n_{0519}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

$$3,9 \xrightarrow[c_9]{} 5,10 \xrightarrow[c_2]{} 2 \xrightarrow[c_5]{} 6 \xrightarrow[c_1]{} 1 \xrightarrow[c_8]{} 8 \xrightarrow[c_4]{} 4 \xrightarrow[c_{12}]{} 12 \xrightarrow[c_{11}]{} 11 \xrightarrow[c_6]{} 7 \twoheadrightarrow c_3, c_7, c_{10}$$

Ideals for irreducible components[2] of $X_{\mathbf{par}}$

$$\begin{aligned}
I_1^u = \langle & 58u^9 - 249u^8 - 444u^7 + 2113u^6 + 1475u^5 - 7574u^4 + 2612u^3 + 2889u^2 + 349b - 1335u - 353, \\
& -2528u^9 + 8422u^8 + \cdots + 1745a - 16349, \\
& u^{10} - 4u^9 - 3u^8 + 29u^7 - 14u^6 - 89u^5 + 163u^4 - 109u^3 + 17u^2 + 13u - 5\rangle \\
I_2^u = \langle & -88u^6 + 345u^5 - 33u^4 - 837u^3 - 116u^2 + 719b + 189u + 50, \\
& 267u^6 - 1202u^5 + 909u^4 + 1747u^3 + 1169u^2 + 5033a - 5010u + 649, \\
& u^7 - 5u^6 + 6u^5 + 4u^4 - 7u^3 + 2u^2 + 5u - 7\rangle \\
I_3^u = \langle & u^3 + b - 3u - 2,\ u^3a - 3u^3 + a^2 - 3au - a + 10u,\ u^4 + u^3 - 3u^2 - 3u - 1\rangle \\
I_4^u = \langle & u^3 + 2u^2 + b - u - 2,\ u^3a + 2u^2a - 3u^3 + a^2 - au - 8u^2 - 3a + 10,\ u^4 + 3u^3 + u^2 - 3u - 1\rangle
\end{aligned}$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 33 representations.

[1] The image of knot diagram is generated by the software "**Draw programme**" developed by Andrew Bartholomew(`http://www.layer8.co.uk/maths/draw/index.htm#Running-draw`), where we modified some parts for our purpose(`https://github.com/CATsTAILs/LinksPainter`).

[2] All coefficients of polynomials are rational numbers. But the coefficients are sometimes approximated in decimal forms when there is not enough margin.

I. $I_1^u = \langle 58u^9 - 249u^8 + \cdots + 349b - 353,\ -2528u^9 + 8422u^8 + \cdots + 1745a - 16349,\ u^{10} - 4u^9 + \cdots + 13u - 5\rangle$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1.44871u^9 - 4.82636u^8 + \cdots - 13.0281u + 9.36905 \\ -0.166189u^9 + 0.713467u^8 + \cdots + 3.82521u + 1.01146 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 0.0710602u^9 - 0.436103u^8 + \cdots - 1.40802u + 1.50544 \\ -0.260745u^9 + 0.446991u^8 + \cdots + 1.43266u + 0.742120 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1.07736u^9 - 3.41834u^8 + \cdots - 8.31519u + 5.85673 \\ 0.00286533u^9 + 0.280802u^8 + \cdots + 1.95129u - 0.931232 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 0.0710602u^9 - 0.436103u^8 + \cdots - 1.40802u + 1.50544 \\ 0.229226u^9 - 0.535817u^8 + \cdots - 0.896848u + 1.50143 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -0.148424u^9 + 0.854441u^8 + \cdots + 1.72321u - 1.36218 \\ 1.39542u^9 - 4.24928u^8 + \cdots - 12.7221u + 5.48997 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -0.0108883u^9 - 0.667049u^8 + \cdots - 2.61490u - 0.0613181 \\ -0.710602u^9 + 0.361032u^8 + \cdots + 1.08023u - 0.0544413 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 0.300287u^9 - 0.971920u^8 + \cdots - 2.30487u + 3.00688 \\ 0.229226u^9 - 0.535817u^8 + \cdots - 0.896848u + 1.50143 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -0.699713u^9 + 1.02808u^8 + \cdots + 2.69513u + 1.00688 \\ -1.77077u^9 + 3.46418u^8 + \cdots + 9.10315u - 3.49857 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 1.40802u^9 - 3.21375u^8 + \cdots - 6.53639u + 1.19255 \\ 1.23496u^9 - 2.97421u^8 + \cdots - 6.99427u + 1.63897 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= \frac{150}{349}u^9 + \frac{391}{349}u^8 - \frac{3146}{349}u^7 - \frac{2093}{349}u^6 + \frac{18942}{349}u^5 - \frac{417}{349}u^4 - \frac{51937}{349}u^3 + \frac{49159}{349}u^2 - \frac{6389}{349}u - \frac{6172}{349}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{10}	$u^{10} + 6u^9 + \cdots + 4u + 1$
c_2, c_5, c_6 c_{11}	$u^{10} + 3u^8 - 6u^7 + 4u^6 - 17u^5 + 4u^4 - 11u^3 + 4u^2 - 2u + 1$
c_3, c_{12}	$u^{10} + 2u^9 + 29u^7 + 73u^6 + 119u^5 + 136u^4 + 94u^3 + 32u^2 + 2u - 1$
c_4, c_7, c_8	$u^{10} - 7u^9 + \cdots + 8u - 8$
c_9	$u^{10} + 4u^9 + \cdots - 13u - 5$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{10}	$y^{10} - 2y^9 + \cdots - 56y + 1$
c_2, c_5, c_6 c_{11}	$y^{10} + 6y^9 + \cdots + 4y + 1$
c_3, c_{12}	$y^{10} - 4y^9 + \cdots - 68y + 1$
c_4, c_7, c_8	$y^{10} - 19y^9 + \cdots - 352y + 64$
c_9	$y^{10} - 22y^9 + \cdots - 339y + 25$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.710716 + 0.441346I$ $a = 0.304205 + 0.895172I$ $b = -1.53379 - 0.01592I$	$5.27109 - 1.67493I$	$4.82619 + 2.79664I$
$u = 0.710716 - 0.441346I$ $a = 0.304205 - 0.895172I$ $b = -1.53379 + 0.01592I$	$5.27109 + 1.67493I$	$4.82619 - 2.79664I$
$u = 0.610288 + 0.265211I$ $a = -0.344245 - 0.794267I$ $b = 0.382201 - 0.301034I$	$-1.12041 - 1.07831I$	$-3.35767 + 4.98904I$
$u = 0.610288 - 0.265211I$ $a = -0.344245 + 0.794267I$ $b = 0.382201 + 0.301034I$	$-1.12041 + 1.07831I$	$-3.35767 - 4.98904I$
$u = -0.348971$ $a = -1.18540$ $b = -0.681296$	0.925697	11.8780
$u = 1.85552$ $a = 0.910166$ $b = 2.25830$	1.90296	4.31530
$u = 2.12102 + 0.16943I$ $a = -0.392434 + 0.798856I$ $b = -2.19435 + 0.73311I$	$15.2945 - 10.5947I$	$2.32893 + 3.81440I$
$u = 2.12102 - 0.16943I$ $a = -0.392434 - 0.798856I$ $b = -2.19435 - 0.73311I$	$15.2945 + 10.5947I$	$2.32893 - 3.81440I$
$u = -2.19529 + 0.82711I$ $a = 0.170094 - 0.566049I$ $b = -0.942562 - 0.925156I$	$-8.52247 + 3.39717I$	$0.10586 - 5.05917I$
$u = -2.19529 - 0.82711I$ $a = 0.170094 + 0.566049I$ $b = -0.942562 + 0.925156I$	$-8.52247 - 3.39717I$	$0.10586 + 5.05917I$

II. $I_2^u = \langle -88u^6 + 345u^5 + \cdots + 719b + 50,\ 267u^6 - 1202u^5 + \cdots + 5033a + 649,\ u^7 - 5u^6 + 6u^5 + 4u^4 - 7u^3 + 2u^2 + 5u - 7\rangle$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -0.0530499u^6 + 0.238824u^5 + \cdots + 0.995430u - 0.128949 \\ 0.122392u^6 - 0.479833u^5 + \cdots - 0.262865u - 0.0695410 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 0.0202662u^6 - 0.271011u^5 + \cdots + 0.271409u + 0.397576 \\ -0.0792768u^6 + 0.413074u^5 + \cdots + 1.40890u - 1.11405 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -0.0103318u^6 + 0.0989470u^5 + \cdots - 0.412875u + 0.914961 \\ -0.0152990u^6 + 0.184979u^5 + \cdots + 0.657858u + 0.258693 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 0.0202662u^6 - 0.271011u^5 + \cdots + 0.271409u + 0.397576 \\ -0.00973574u^6 + 0.208623u^5 + \cdots + 0.418637u + 0.0737135 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 0.159150u^6 - 0.716471u^5 + \cdots - 0.986290u + 1.38685 \\ -0.0695410u^6 + 0.204451u^5 + \cdots + 0.990264u + 0.812239 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0.00993443u^6 - 0.172064u^5 + \cdots - 0.141466u + 0.312537 \\ -0.122392u^6 + 0.479833u^5 + \cdots + 1.26287u + 0.0695410 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 0.0105305u^6 - 0.0623882u^5 + \cdots + 0.690046u + 0.471289 \\ -0.00973574u^6 + 0.208623u^5 + \cdots + 0.418637u + 0.0737135 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -0.132327u^6 + 0.651897u^5 + \cdots + 0.404331u + 0.757004 \\ -0.00973574u^6 + 0.208623u^5 + \cdots + 0.418637u - 0.926287 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0.0431154u^6 - 0.0667594u^5 + \cdots - 0.853964u - 0.183588 \\ 0.132128u^6 - 0.688456u^5 + \cdots - 0.681502u + 0.856745 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -\frac{334}{719}u^6 + \frac{1816}{719}u^5 - \frac{2462}{719}u^4 - \frac{742}{719}u^3 + \frac{148}{719}u^2 + \frac{2139}{719}u - \frac{39}{719}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{10}	$u^7 - 7u^6 + 22u^5 - 41u^4 + 48u^3 - 33u^2 + 10u + 1$
c_2, c_6	$u^7 + u^6 + 4u^5 + 3u^4 + 6u^3 + 3u^2 + 4u + 1$
c_3, c_{12}	$u^7 - u^6 + u^5 - u^4 - u^3 + u^2 + 1$
c_4	$u^7 - u^6 - 3u^5 + u^4 + 5u^3 - u^2 - 2u + 1$
c_5, c_{11}	$u^7 - u^6 + 4u^5 - 3u^4 + 6u^3 - 3u^2 + 4u - 1$
c_7, c_8	$u^7 + u^6 - 3u^5 - u^4 + 5u^3 + u^2 - 2u - 1$
c_9	$u^7 - 5u^6 + 6u^5 + 4u^4 - 7u^3 + 2u^2 + 5u - 7$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{10}	$y^7 - 5y^6 + 6y^5 - 11y^4 + 52y^3 - 47y^2 + 166y - 1$
c_2, c_5, c_6 c_{11}	$y^7 + 7y^6 + 22y^5 + 41y^4 + 48y^3 + 33y^2 + 10y - 1$
c_3, c_{12}	$y^7 + y^6 - 3y^5 - y^4 + 5y^3 + y^2 - 2y - 1$
c_4, c_7, c_8	$y^7 - 7y^6 + 21y^5 - 37y^4 + 41y^3 - 23y^2 + 6y - 1$
c_9	$y^7 - 13y^6 + 62y^5 - 70y^4 + 23y^3 - 18y^2 + 53y - 49$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.942087 + 0.385621I$ $a = -0.961712 + 0.696018I$ $b = -0.470376 + 0.273309I$	$0.08815 - 5.09905I$	$-0.97794 + 6.62021I$
$u = -0.942087 - 0.385621I$ $a = -0.961712 - 0.696018I$ $b = -0.470376 - 0.273309I$	$0.08815 + 5.09905I$	$-0.97794 - 6.62021I$
$u = 0.401929 + 0.876655I$ $a = 0.865092 + 0.818149I$ $b = -1.53400 - 0.17432I$	$4.42380 - 3.02243I$	$3.79268 + 4.58771I$
$u = 0.401929 - 0.876655I$ $a = 0.865092 - 0.818149I$ $b = -1.53400 + 0.17432I$	$4.42380 + 3.02243I$	$3.79268 - 4.58771I$
$u = 1.08372$ $a = 0.257183$ $b = 0.861033$	-0.272703	0.397920
$u = 2.49830 + 0.67865I$ $a = -0.103399 - 0.517020I$ $b = 1.073860 - 0.702292I$	$-9.31040 - 2.64371I$	$-5.01371 + 0.82640I$
$u = 2.49830 - 0.67865I$ $a = -0.103399 + 0.517020I$ $b = 1.073860 + 0.702292I$	$-9.31040 + 2.64371I$	$-5.01371 - 0.82640I$

III.

$\boldsymbol{I^u_3 = \langle u^3 + b - 3u - 2,\ u^3a - 3u^3 + a^2 - 3au - a + 10u,\ u^4 + u^3 - 3u^2 - 3u - 1\rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} a \\ -u^3 + 3u + 2 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} -u^3a + 3u^3 + 2au + u^2 + a - 9u - 3 \\ -u^3a + au + a + u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 2u^2a + u^3 - 3au - 2u^2 - a - u + 1 \\ -3u^3a + 2u^2a + 2u^3 + 5au - 2u^2 + 2a - 4u \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u^3a + 3u^3 + 2au + u^2 + a - 9u - 3 \\ u^3a - u^2a - 2u^3 - au + 4u + 2 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u^3a + 3au + 2a + 1 \\ -2u^3 + u^2 + 5u + 2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 2u^3a - u^2a + u^3 - 5au - a - 3u - 2 \\ 3u^3 - 4u^2 - 4u \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -u^2a + u^3 + au + u^2 + a - 5u - 1 \\ u^3a - u^2a - 2u^3 - au + 4u + 2 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -3u^3a + u^2a - u^3 + 5au - 3u^2 + 2a + 5u + 7 \\ -3u^3a + u^2a - 2u^3 + 5au + u^2 + 2a + 4u + 1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -2u^3a + 4u^2a - 2u^3 + au + u^2 - 2a + 5u + 1 \\ -7u^3 + 10u^2 + 5u + 1 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -2u^3 - u^2 + 6u + 5$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{10}	$u^8 - u^7 + 16u^6 + 69u^5 + 299u^4 + 497u^3 + 868u^2 + 535u + 841$
c_2, c_5, c_6 c_{11}	$u^8 + 3u^7 + 4u^6 + 7u^5 + 21u^4 + 15u^3 + 20u^2 + 25u + 29$
c_3, c_{12}	$u^8 - 6u^7 + 38u^6 - 114u^5 + 133u^4 - 82u^3 + 227u^2 - 449u + 431$
c_4, c_7, c_8	$(u^4 + 6u^3 + 12u^2 + 11u + 5)^2$
c_9	$(u^4 - u^3 - 3u^2 + 3u - 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{10}	$y^8 + 31y^7 + \cdots + 1173751y + 707281$
c_2, c_5, c_6 c_{11}	$y^8 - y^7 + 16y^6 + 69y^5 + 299y^4 + 497y^3 + 868y^2 + 535y + 841$
c_3, c_{12}	$y^8 + 40y^7 + \cdots - 5927y + 185761$
c_4, c_7, c_8	$(y^4 - 12y^3 + 22y^2 - y + 25)^2$
c_9	$(y^4 - 7y^3 + 13y^2 - 3y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.447135 + 0.308371I$ $a = 2.01612 - 0.24150I$ $b = 0.620433 + 0.769480I$	$0.96275 - 3.58171I$	$2.13603 + 1.81473I$
$u = -0.447135 + 0.308371I$ $a = -2.39569 + 1.01098I$ $b = 0.620433 + 0.769480I$	$0.96275 - 3.58171I$	$2.13603 + 1.81473I$
$u = -0.447135 - 0.308371I$ $a = 2.01612 + 0.24150I$ $b = 0.620433 - 0.769480I$	$0.96275 + 3.58171I$	$2.13603 - 1.81473I$
$u = -0.447135 - 0.308371I$ $a = -2.39569 - 1.01098I$ $b = 0.620433 - 0.769480I$	$0.96275 + 3.58171I$	$2.13603 - 1.81473I$
$u = 1.78897$ $a = 0.320723 + 0.781310I$ $b = 1.64145$	-7.09598	1.08250
$u = 1.78897$ $a = 0.320723 - 0.781310I$ $b = 1.64145$	-7.09598	1.08250
$u = -1.89470$ $a = 1.058840 + 0.580699I$ $b = 3.11769$	18.3299	3.64550
$u = -1.89470$ $a = 1.058840 - 0.580699I$ $b = 3.11769$	18.3299	3.64550

IV. $\boldsymbol{I_4^u = \langle u^3+2u^2+b-u-2,\ u^3a+2u^2a-3u^3+a^2-au-8u^2-3a+10,\ u^4+3u^3+u^2-3u-1\rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} a \\ -u^3-2u^2+u+2 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} -u^3a-2u^2a+u^3+3u^2+a+u-3 \\ -u^3a-2u^2a+au+a+u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} u^3+au+2u^2+a-u-3 \\ u^3a-au \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u^3a-2u^2a+u^3+3u^2+a+u-3 \\ u^3a+u^2a-au \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u^3a-2u^2a+au+2a+1 \\ -u^2-u+2 \end{pmatrix}$$

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

$$a_{12} = \begin{pmatrix} -u^2a+u^3-au+3u^2+a+u-3 \\ u^3a+u^2a-au \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} au+u^2+u-1 \\ u^3+2u^2-u-1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -2u^3-3u^2+2u+5$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{10}	$u^8 - 7u^7 + 20u^6 - 33u^5 + 39u^4 - 33u^3 + 20u^2 - 7u + 1$
c_2, c_6	$u^8 + u^7 + 4u^6 + 3u^5 + 5u^4 + 3u^3 + 4u^2 + u + 1$
c_3, c_{12}	$u^8 + 4u^7 + 6u^6 + 4u^5 - u^4 - 4u^3 - u^2 + u + 1$
c_4	$(u^4 - 2u^2 + u + 1)^2$
c_5, c_{11}	$u^8 - u^7 + 4u^6 - 3u^5 + 5u^4 - 3u^3 + 4u^2 - u + 1$
c_7, c_8	$(u^4 - 2u^2 - u + 1)^2$
c_9	$(u^4 + 3u^3 + u^2 - 3u - 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{10}	$y^8 - 9y^7 + 16y^6 + 49y^5 + 47y^4 + 49y^3 + 16y^2 - 9y + 1$
c_2, c_5, c_6 c_{11}	$y^8 + 7y^7 + 20y^6 + 33y^5 + 39y^4 + 33y^3 + 20y^2 + 7y + 1$
c_3, c_{12}	$y^8 - 4y^7 + 2y^6 + 2y^5 + 15y^4 - 10y^3 + 7y^2 - 3y + 1$
c_4, c_7, c_8	$(y^4 - 4y^3 + 6y^2 - 5y + 1)^2$
c_9	$(y^4 - 7y^3 + 17y^2 - 11y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.905166$ $a = 0.762444 + 0.799496I$ $b = 0.524889$	1.00996	2.86910
$u = 0.905166$ $a = 0.762444 - 0.799496I$ $b = 0.524889$	1.00996	2.86910
$u = -0.328956$ $a = 1.24511 + 2.77323I$ $b = 1.49022$	5.07273	4.08860
$u = -0.328956$ $a = 1.24511 - 2.77323I$ $b = 1.49022$	5.07273	4.08860
$u = -1.78810 + 0.40136I$ $a = 0.102698 - 0.845065I$ $b = -1.007550 - 0.513116I$	$-6.33121 + 1.96274I$	$2.02113 - 2.46157I$
$u = -1.78810 + 0.40136I$ $a = -0.110250 + 0.331949I$ $b = -1.007550 - 0.513116I$	$-6.33121 + 1.96274I$	$2.02113 - 2.46157I$
$u = -1.78810 - 0.40136I$ $a = 0.102698 + 0.845065I$ $b = -1.007550 + 0.513116I$	$-6.33121 - 1.96274I$	$2.02113 + 2.46157I$
$u = -1.78810 - 0.40136I$ $a = -0.110250 - 0.331949I$ $b = -1.007550 + 0.513116I$	$-6.33121 - 1.96274I$	$2.02113 + 2.46157I$

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_{10}	$(u^7-7u^6+22u^5-41u^4+48u^3-33u^2+10u+1)$ $\cdot(u^8-7u^7+20u^6-33u^5+39u^4-33u^3+20u^2-7u+1)$ $\cdot(u^8-u^7+16u^6+69u^5+299u^4+497u^3+868u^2+535u+841)$ $\cdot(u^{10}+6u^9+\cdots+4u+1)$
c_2, c_6	$(u^7+u^6+4u^5+3u^4+6u^3+3u^2+4u+1)$ $\cdot(u^8+u^7+4u^6+3u^5+5u^4+3u^3+4u^2+u+1)$ $\cdot(u^8+3u^7+4u^6+7u^5+21u^4+15u^3+20u^2+25u+29)$ $\cdot(u^{10}+3u^8-6u^7+4u^6-17u^5+4u^4-11u^3+4u^2-2u+1)$
c_3, c_{12}	$(u^7-u^6+u^5-u^4-u^3+u^2+1)$ $\cdot(u^8-6u^7+38u^6-114u^5+133u^4-82u^3+227u^2-449u+431)$ $\cdot(u^8+4u^7+6u^6+4u^5-u^4-4u^3-u^2+u+1)$ $\cdot(u^{10}+2u^9+29u^7+73u^6+119u^5+136u^4+94u^3+32u^2+2u-1)$
c_4	$(u^4-2u^2+u+1)^2(u^4+6u^3+12u^2+11u+5)^2$ $\cdot(u^7-u^6+\cdots-2u+1)(u^{10}-7u^9+\cdots+8u-8)$
c_5, c_{11}	$(u^7-u^6+4u^5-3u^4+6u^3-3u^2+4u-1)$ $\cdot(u^8-u^7+4u^6-3u^5+5u^4-3u^3+4u^2-u+1)$ $\cdot(u^8+3u^7+4u^6+7u^5+21u^4+15u^3+20u^2+25u+29)$ $\cdot(u^{10}+3u^8-6u^7+4u^6-17u^5+4u^4-11u^3+4u^2-2u+1)$
c_7, c_8	$(u^4-2u^2-u+1)^2(u^4+6u^3+12u^2+11u+5)^2$ $\cdot(u^7+u^6+\cdots-2u-1)(u^{10}-7u^9+\cdots+8u-8)$
c_9	$(u^4-u^3-3u^2+3u-1)^2(u^4+3u^3+u^2-3u-1)^2$ $\cdot(u^7-5u^6+\cdots+5u-7)(u^{10}+4u^9+\cdots-13u-5)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_{10}	$(y^7 - 5y^6 + 6y^5 - 11y^4 + 52y^3 - 47y^2 + 166y - 1)$ $\cdot (y^8 - 9y^7 + 16y^6 + 49y^5 + 47y^4 + 49y^3 + 16y^2 - 9y + 1)$ $\cdot (y^8 + 31y^7 + \cdots + 1173751y + 707281)(y^{10} - 2y^9 + \cdots - 56y + 1)$
c_2, c_5, c_6 c_{11}	$(y^7 + 7y^6 + 22y^5 + 41y^4 + 48y^3 + 33y^2 + 10y - 1)$ $\cdot (y^8 - y^7 + 16y^6 + 69y^5 + 299y^4 + 497y^3 + 868y^2 + 535y + 841)$ $\cdot (y^8 + 7y^7 + 20y^6 + 33y^5 + 39y^4 + 33y^3 + 20y^2 + 7y + 1)$ $\cdot (y^{10} + 6y^9 + \cdots + 4y + 1)$
c_3, c_{12}	$(y^7 + y^6 - 3y^5 - y^4 + 5y^3 + y^2 - 2y - 1)$ $\cdot (y^8 - 4y^7 + 2y^6 + 2y^5 + 15y^4 - 10y^3 + 7y^2 - 3y + 1)$ $\cdot (y^8 + 40y^7 + \cdots - 5927y + 185761)(y^{10} - 4y^9 + \cdots - 68y + 1)$
c_4, c_7, c_8	$(y^4 - 12y^3 + 22y^2 - y + 25)^2(y^4 - 4y^3 + 6y^2 - 5y + 1)^2$ $\cdot (y^7 - 7y^6 + 21y^5 - 37y^4 + 41y^3 - 23y^2 + 6y - 1)$ $\cdot (y^{10} - 19y^9 + \cdots - 352y + 64)$
c_9	$(y^4 - 7y^3 + 13y^2 - 3y + 1)^2(y^4 - 7y^3 + 17y^2 - 11y + 1)^2$ $\cdot (y^7 - 13y^6 + 62y^5 - 70y^4 + 23y^3 - 18y^2 + 53y - 49)$ $\cdot (y^{10} - 22y^9 + \cdots - 339y + 25)$