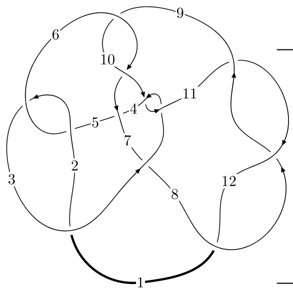
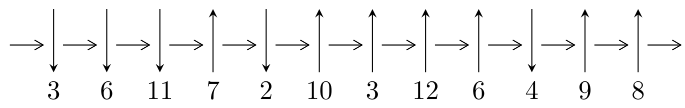
$12n_{0414}$ ($K12n_{0414}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -u^{14} - 6u^{13} + \cdots + 2b + 6,\ -5u^{14} - 28u^{13} + \cdots + 4a + 20,\ u^{15} + 6u^{14} + \cdots - 10u - 4 \rangle$$
$$I_2^u = \langle -u^{10} - u^9 - 5u^8 - 4u^7 - 9u^6 - 5u^5 - 6u^4 + b + 2u + 1,\ -u^9 - 4u^7 - 5u^5 - 2u^3 + u^2 + a - u + 1,$$
$$u^{11} + u^{10} + 6u^9 + 5u^8 + 13u^7 + 8u^6 + 11u^5 + 2u^4 + u^3 - 4u^2 - 2u - 1 \rangle$$
$$I_3^u = \langle b - u + 1,\ a^2 - 5au + a + u - 4,\ u^2 - u + 1 \rangle$$
$$I_4^u = \langle b + u,\ a^2 + 3au + 2u,\ u^2 - u + 1 \rangle$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 34 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. $\boldsymbol{I_1^u} =$
$\langle -u^{14}-6u^{13}+\cdots+2b+6,\ -5u^{14}-28u^{13}+\cdots+4a+20,\ u^{15}+6u^{14}+\cdots-10u-4\rangle$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u \\ u^3+u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} \frac{5}{4}u^{14}+7u^{13}+\cdots-\frac{29}{4}u-5 \\ \frac{1}{2}u^{14}+3u^{13}+\cdots-\frac{7}{2}u-3 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} \frac{3}{4}u^{14}+4u^{13}+\cdots-\frac{15}{4}u-2 \\ \frac{1}{2}u^{14}+3u^{13}+\cdots-\frac{7}{2}u-3 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -\frac{1}{2}u^{13}-2u^{12}+\cdots+\frac{5}{2}u+\frac{3}{2} \\ \frac{1}{2}u^{14}+2u^{13}+\cdots-\frac{1}{2}u^2-\frac{1}{2}u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -\frac{1}{2}u^{13}-4u^{12}+\cdots+\frac{11}{2}u+\frac{7}{2} \\ -\frac{3}{2}u^{14}-5u^{13}+\cdots+\frac{5}{2}u+2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -\frac{3}{2}u^{14}-\frac{17}{2}u^{13}+\cdots+12u+\frac{15}{2} \\ -\frac{1}{2}u^{14}-3u^{13}+\cdots+\frac{15}{2}u+4 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} \frac{1}{2}u^{14}+\frac{5}{2}u^{13}+\cdots-u-\frac{1}{2} \\ \frac{1}{2}u^{14}+3u^{13}+\cdots-\frac{7}{2}u-2 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} \frac{1}{4}u^{14}+u^{13}+\cdots-\frac{1}{4}u+1 \\ -\frac{1}{2}u^{14}-2u^{13}+\cdots+\frac{1}{2}u+1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -\frac{7}{4}u^{14}-8u^{13}+\cdots+\frac{19}{4}u+1 \\ -\frac{5}{2}u^{14}-15u^{13}+\cdots+\frac{53}{2}u+15 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= u^{14}+6u^{13}+24u^{12}+69u^{11}+155u^{10}+287u^9+438u^8+568u^7+616u^6+556u^5+409u^4+223u^3+82u^2+4u-10$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{15} + 30u^{14} + \cdots + 116u + 1$
c_2, c_5	$u^{15} + 2u^{14} + \cdots + 16u - 1$
c_3, c_{10}	$u^{15} + 6u^{14} + \cdots - 10u - 4$
c_4	$u^{15} + 3u^{14} + \cdots + 147u - 167$
c_6, c_9	$u^{15} - 8u^{14} + \cdots + 10u - 4$
c_7	$u^{15} - u^{14} + \cdots + 504u - 821$
c_8, c_{11}, c_{12}	$u^{15} + 12u^{13} + \cdots + 2u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{15} - 126y^{14} + \cdots + 10676y - 1$
c_2, c_5	$y^{15} - 30y^{14} + \cdots + 116y - 1$
c_3, c_{10}	$y^{15} + 12y^{14} + \cdots + 172y - 16$
c_4	$y^{15} + 7y^{14} + \cdots + 36973y - 27889$
c_6, c_9	$y^{15} - 2y^{14} + \cdots - 20y - 16$
c_7	$y^{15} + 93y^{14} + \cdots + 6938598y - 674041$
c_8, c_{11}, c_{12}	$y^{15} + 24y^{14} + \cdots - 4y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.155852 + 1.083570I$ $a = 0.034406 + 0.857462I$ $b = 0.175953 + 0.734858I$	$1.28315 + 1.86492I$	$2.71830 - 4.33042I$
$u = -0.155852 - 1.083570I$ $a = 0.034406 - 0.857462I$ $b = 0.175953 - 0.734858I$	$1.28315 - 1.86492I$	$2.71830 + 4.33042I$
$u = 0.259042 + 1.188320I$ $a = -0.462640 - 1.221370I$ $b = 1.117260 - 0.423512I$	$4.14035 - 2.21303I$	$4.08061 - 1.06114I$
$u = 0.259042 - 1.188320I$ $a = -0.462640 + 1.221370I$ $b = 1.117260 + 0.423512I$	$4.14035 + 2.21303I$	$4.08061 + 1.06114I$
$u = -1.222820 + 0.037634I$ $a = 0.85572 - 1.76718I$ $b = 1.14186 - 1.14785I$	$18.7646 - 4.2382I$	$-2.01730 + 1.87492I$
$u = -1.222820 - 0.037634I$ $a = 0.85572 + 1.76718I$ $b = 1.14186 + 1.14785I$	$18.7646 + 4.2382I$	$-2.01730 - 1.87492I$
$u = -0.598605 + 0.209178I$ $a = 0.372970 - 1.207580I$ $b = -0.361721 - 0.520276I$	$-1.20899 + 0.97971I$	$-3.43147 - 3.17255I$
$u = -0.598605 - 0.209178I$ $a = 0.372970 + 1.207580I$ $b = -0.361721 + 0.520276I$	$-1.20899 - 0.97971I$	$-3.43147 + 3.17255I$
$u = -0.229749 + 1.394560I$ $a = 0.797940 - 0.746930I$ $b = -0.762956 - 0.521556I$	$3.94947 + 4.00013I$	$0.81375 - 5.52037I$
$u = -0.229749 - 1.394560I$ $a = 0.797940 + 0.746930I$ $b = -0.762956 + 0.521556I$	$3.94947 - 4.00013I$	$0.81375 + 5.52037I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.62184 + 1.42460I$ $a = -0.48987 + 1.78057I$ $b = 1.09118 + 1.20044I$	$-16.3948 + 10.7667I$	$0.20728 - 4.66775I$
$u = -0.62184 - 1.42460I$ $a = -0.48987 - 1.78057I$ $b = 1.09118 - 1.20044I$	$-16.3948 - 10.7667I$	$0.20728 + 4.66775I$
$u = -0.58488 + 1.47267I$ $a = 0.767227 - 0.411092I$ $b = 1.21709 - 1.11271I$	$-15.9766 + 2.2090I$	$0.250029 - 0.743127I$
$u = -0.58488 - 1.47267I$ $a = 0.767227 + 0.411092I$ $b = 1.21709 + 1.11271I$	$-15.9766 - 2.2090I$	$0.250029 + 0.743127I$
$u = 0.309403$ $a = 1.74849$ $b = 0.762664$	1.01627	11.7580

II. $I_2^u = \langle -u^{10} - u^9 + \cdots + b + 1,\ -u^9 - 4u^7 - 5u^5 - 2u^3 + u^2 + a - u + 1,\ u^{11} + u^{10} + \cdots - 2u - 1 \rangle$

(i) Arc colorings

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

$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u^9 + 4u^7 + 5u^5 + 2u^3 - u^2 + u - 1 \\ u^{10} + u^9 + 5u^8 + 4u^7 + 9u^6 + 5u^5 + 6u^4 - 2u - 1 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -u^{10} - 5u^8 - 9u^6 - 6u^4 + 2u^3 - u^2 + 3u \\ u^{10} + u^9 + 5u^8 + 4u^7 + 9u^6 + 5u^5 + 6u^4 - 2u - 1 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u^{10} + u^9 + 6u^8 + 4u^7 + 12u^6 + 4u^5 + 8u^4 - 2u^3 - u^2 - 3u \\ -u^8 - u^7 - 4u^6 - 3u^5 - 5u^4 - u^3 - u^2 + 3u + 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u^9 + u^8 - 4u^7 + 4u^6 - 5u^5 + 5u^4 - 2u^3 + 2u^2 - 2u + 1 \\ u^{10} + u^9 + 4u^8 + 3u^7 + 4u^6 + u^5 - 2u^4 - 3u^3 - 3u^2 + u + 1 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -u^{10} - 2u^9 - 6u^8 - 9u^7 - 12u^6 - 13u^5 - 7u^4 - 3u^3 + 4u^2 + 4u + 2 \\ -u^{10} - u^9 - 5u^8 - 4u^7 - 8u^6 - 4u^5 - 3u^4 + 2u^3 + 2u^2 + 3u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u^{10} + u^9 + 5u^8 + 3u^7 + 8u^6 + u^5 + 3u^4 - 4u^3 - u^2 - 2u + 2 \\ -u^{10} - 2u^9 - 6u^8 - 8u^7 - 12u^6 - 9u^5 - 7u^4 + u^3 + 3u^2 + 4u + 1 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 2u^{10} + 3u^9 + 12u^8 + 14u^7 + 25u^6 + 20u^5 + 18u^4 + 3u^3 - 3u^2 - 9u - 3 \\ -u^9 - u^8 - 5u^7 - 4u^6 - 8u^5 - 4u^4 - 4u^3 + 3u^2 + u + 2 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -2u^{10} - u^9 - 9u^8 - 3u^7 - 13u^6 - u^5 - 4u^4 + 5u^3 + 2u^2 + 3u - 1 \\ 2u^{10} + 2u^9 + 9u^8 + 7u^7 + 14u^6 + 6u^5 + 7u^4 - 3u^3 - u^2 - 2u - 1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 2u^{10} + u^9 + 9u^8 + 4u^7 + 16u^6 + 4u^5 + 12u^4 - 5u^3 + u^2 - 7u - 1$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{11} - 8u^{10} + \cdots + 6u - 1$
c_2	$u^{11} + 2u^{10} - 2u^9 - 5u^8 + 2u^7 + 6u^6 - u^5 - 5u^4 + u^3 + 3u^2 - 1$
c_3	$u^{11} - u^{10} + 6u^9 - 5u^8 + 13u^7 - 8u^6 + 11u^5 - 2u^4 + u^3 + 4u^2 - 2u + 1$
c_4	$u^{11} + 3u^{10} + \cdots + 5u + 1$
c_5	$u^{11} - 2u^{10} - 2u^9 + 5u^8 + 2u^7 - 6u^6 - u^5 + 5u^4 + u^3 - 3u^2 + 1$
c_6	$u^{11} - 3u^{10} + 3u^9 + 2u^8 - 8u^7 + 7u^6 + 3u^5 - 9u^4 + 5u^3 + 2u^2 - 3u + 1$
c_7	$u^{11} + u^{10} + \cdots + 20u^2 - 1$
c_8	$u^{11} + 7u^9 - u^8 + 19u^7 - 4u^6 + 24u^5 - 5u^4 + 12u^3 - u^2 + 1$
c_9	$u^{11} + 3u^{10} + 3u^9 - 2u^8 - 8u^7 - 7u^6 + 3u^5 + 9u^4 + 5u^3 - 2u^2 - 3u - 1$
c_{10}	$u^{11} + u^{10} + 6u^9 + 5u^8 + 13u^7 + 8u^6 + 11u^5 + 2u^4 + u^3 - 4u^2 - 2u - 1$
c_{11}, c_{12}	$u^{11} + 7u^9 + u^8 + 19u^7 + 4u^6 + 24u^5 + 5u^4 + 12u^3 + u^2 - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{11} - 8y^{10} + \cdots - 2y - 1$
c_2, c_5	$y^{11} - 8y^{10} + \cdots + 6y - 1$
c_3, c_{10}	$y^{11} + 11y^{10} + \cdots - 4y - 1$
c_4	$y^{11} - 3y^{10} + \cdots - y - 1$
c_6, c_9	$y^{11} - 3y^{10} + \cdots + 5y - 1$
c_7	$y^{11} - 13y^{10} + \cdots + 40y - 1$
c_8, c_{11}, c_{12}	$y^{11} + 14y^{10} + \cdots + 2y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.555245 + 0.715930I$ $a = -1.365260 - 0.336962I$ $b = -0.541266 - 0.326647I$	$-4.78843 + 2.37248I$	$-1.75049 - 2.45336I$
$u = -0.555245 - 0.715930I$ $a = -1.365260 + 0.336962I$ $b = -0.541266 + 0.326647I$	$-4.78843 - 2.37248I$	$-1.75049 + 2.45336I$
$u = -0.038740 + 1.275640I$ $a = 0.634053 + 1.055000I$ $b = -0.481027 + 1.188790I$	$-1.63477 - 1.57892I$	$0.09382 + 1.50767I$
$u = -0.038740 - 1.275640I$ $a = 0.634053 - 1.055000I$ $b = -0.481027 - 1.188790I$	$-1.63477 + 1.57892I$	$0.09382 - 1.50767I$
$u = 0.671399$ $a = 0.781778$ $b = 0.881691$	0.262796	-1.63010
$u = 0.261659 + 1.352930I$ $a = -0.528351 - 0.791252I$ $b = 0.983118 - 0.233645I$	$4.64860 - 3.37974I$	$7.26008 + 1.85613I$
$u = 0.261659 - 1.352930I$ $a = -0.528351 + 0.791252I$ $b = 0.983118 + 0.233645I$	$4.64860 + 3.37974I$	$7.26008 - 1.85613I$
$u = -0.20259 + 1.44175I$ $a = 0.349549 - 0.489012I$ $b = -1.265600 - 0.591843I$	$1.36871 + 4.84258I$	$1.85800 - 4.12088I$
$u = -0.20259 - 1.44175I$ $a = 0.349549 + 0.489012I$ $b = -1.265600 + 0.591843I$	$1.36871 - 4.84258I$	$1.85800 + 4.12088I$
$u = -0.300781 + 0.431635I$ $a = -0.980876 + 0.585854I$ $b = -0.636073 - 0.679052I$	$-4.66031 + 2.37297I$	$-0.14637 - 2.89222I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.300781 - 0.431635I$ $a = -0.980876 - 0.585854I$ $b = -0.636073 + 0.679052I$	$-4.66031 - 2.37297I$	$-0.14637 + 2.89222I$

III. $I^u_3 = \langle b - u + 1,\ a^2 - 5au + a + u - 4,\ u^2 - u + 1\rangle$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ u-1 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u \\ u-1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} a \\ u-1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} a-u+1 \\ u-1 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} au-3a+4u-1 \\ -au+2u-3 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 2au-5a+5u-1 \\ -2au-a+3u-4 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 4au-5a+3u+1 \\ -a+u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} au-a+u+1 \\ -u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} au+u+1 \\ au-a+u+1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 2a-u \\ au \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 8u - 6$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^4 + 11u^3 + 45u^2 + 44u + 16$
c_2, c_5	$u^4 + 3u^3 - u^2 - 6u + 4$
c_3, c_{10}	$(u^2 - u + 1)^2$
c_4	$u^4 + 6u^3 + 23u^2 + 30u + 13$
c_6, c_9	$(u^2 + u + 1)^2$
c_7	$u^4 + 5u^3 + 5u^2 - 2u + 4$
c_8, c_{11}, c_{12}	$u^4 + 2u^3 + 5u^2 + 4u + 7$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^4 - 31y^3 + 1089y^2 - 496y + 256$
c_2, c_5	$y^4 - 11y^3 + 45y^2 - 44y + 16$
c_3, c_6, c_9 c_{10}	$(y^2 + y + 1)^2$
c_4	$y^4 + 10y^3 + 195y^2 - 302y + 169$
c_7	$y^4 - 15y^3 + 53y^2 + 36y + 16$
c_8, c_{11}, c_{12}	$y^4 + 6y^3 + 23y^2 + 54y + 49$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.500000 + 0.866025I$ $a = -0.208440 + 0.922644I$ $b = -0.500000 + 0.866025I$	$-4.93480 - 4.05977I$	$-2.00000 + 6.92820I$
$u = 0.500000 + 0.866025I$ $a = 1.70844 + 3.40748I$ $b = -0.500000 + 0.866025I$	$-4.93480 - 4.05977I$	$-2.00000 + 6.92820I$
$u = 0.500000 - 0.866025I$ $a = -0.208440 - 0.922644I$ $b = -0.500000 - 0.866025I$	$-4.93480 + 4.05977I$	$-2.00000 - 6.92820I$
$u = 0.500000 - 0.866025I$ $a = 1.70844 - 3.40748I$ $b = -0.500000 - 0.866025I$	$-4.93480 + 4.05977I$	$-2.00000 - 6.92820I$

IV. $I_4^u = \langle b+u,\ a^2+3au+2u,\ u^2-u+1\rangle$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ u-1 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u \\ u-1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} a \\ -u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} a+u \\ -u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} au+1 \\ a+2u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 3au-a \\ au-a+u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -3au+3a-2u+2 \\ -au+a+u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -au-u+2 \\ u-1 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} au+3u \\ au-a+u-2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 2a+1 \\ au \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -2$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^4 + 2u^3 + 15u^2 + 50u + 49$
c_2, c_5	$u^4 - u^2 + 6u + 7$
c_3, c_{10}	$(u^2 - u + 1)^2$
c_4	$u^4 - 3u^3 + 5u^2 + 6u + 4$
c_6, c_9	$(u^2 + u + 1)^2$
c_7	$u^4 - 4u^3 + 5u^2 + 4u + 1$
c_8, c_{11}, c_{12}	$u^4 - u^3 + 5u^2 - 2u + 4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^4 + 26y^3 + 123y^2 - 1030y + 2401$
c_2, c_5	$y^4 - 2y^3 + 15y^2 - 50y + 49$
c_3, c_6, c_9 c_{10}	$(y^2 + y + 1)^2$
c_4	$y^4 + y^3 + 69y^2 + 4y + 16$
c_7	$y^4 - 6y^3 + 59y^2 - 6y + 1$
c_8, c_{11}, c_{12}	$y^4 + 9y^3 + 29y^2 + 36y + 16$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \quad 0.500000 + 0.866025I$ $a = -0.675835 + 0.160585I$ $b = -0.500000 - 0.866025I$	-4.93480	-2.00000
$u = \quad 0.500000 + 0.866025I$ $a = -0.82417 - 2.75866I$ $b = -0.500000 - 0.866025I$	-4.93480	-2.00000
$u = \quad 0.500000 - 0.866025I$ $a = -0.675835 - 0.160585I$ $b = -0.500000 + 0.866025I$	-4.93480	-2.00000
$u = \quad 0.500000 - 0.866025I$ $a = -0.82417 + 2.75866I$ $b = -0.500000 + 0.866025I$	-4.93480	-2.00000

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^4+2u^3+15u^2+50u+49)(u^4+11u^3+45u^2+44u+16)$ $\cdot(u^{11}-8u^{10}+\cdots+6u-1)(u^{15}+30u^{14}+\cdots+116u+1)$
c_2	$(u^4-u^2+6u+7)(u^4+3u^3-u^2-6u+4)$ $\cdot(u^{11}+2u^{10}-2u^9-5u^8+2u^7+6u^6-u^5-5u^4+u^3+3u^2-1)$ $\cdot(u^{15}+2u^{14}+\cdots+16u-1)$
c_3	$(u^2-u+1)^4$ $\cdot(u^{11}-u^{10}+6u^9-5u^8+13u^7-8u^6+11u^5-2u^4+u^3+4u^2-2u+1)$ $\cdot(u^{15}+6u^{14}+\cdots-10u-4)$
c_4	$(u^4-3u^3+5u^2+6u+4)(u^4+6u^3+23u^2+30u+13)$ $\cdot(u^{11}+3u^{10}+\cdots+5u+1)(u^{15}+3u^{14}+\cdots+147u-167)$
c_5	$(u^4-u^2+6u+7)(u^4+3u^3-u^2-6u+4)$ $\cdot(u^{11}-2u^{10}-2u^9+5u^8+2u^7-6u^6-u^5+5u^4+u^3-3u^2+1)$ $\cdot(u^{15}+2u^{14}+\cdots+16u-1)$
c_6	$(u^2+u+1)^4$ $\cdot(u^{11}-3u^{10}+3u^9+2u^8-8u^7+7u^6+3u^5-9u^4+5u^3+2u^2-3u+1)$ $\cdot(u^{15}-8u^{14}+\cdots+10u-4)$
c_7	$(u^4-4u^3+5u^2+4u+1)(u^4+5u^3+5u^2-2u+4)$ $\cdot(u^{11}+u^{10}+\cdots+20u^2-1)(u^{15}-u^{14}+\cdots+504u-821)$
c_8	$(u^4-u^3+5u^2-2u+4)(u^4+2u^3+5u^2+4u+7)$ $\cdot(u^{11}+7u^9-u^8+19u^7-4u^6+24u^5-5u^4+12u^3-u^2+1)$ $\cdot(u^{15}+12u^{13}+\cdots+2u-1)$
c_9	$(u^2+u+1)^4$ $\cdot(u^{11}+3u^{10}+3u^9-2u^8-8u^7-7u^6+3u^5+9u^4+5u^3-2u^2-3u-1)$ $\cdot(u^{15}-8u^{14}+\cdots+10u-4)$
c_{10}	$(u^2-u+1)^4$ $\cdot(u^{11}+u^{10}+6u^9+5u^8+13u^7+8u^6+11u^5+2u^4+u^3-4u^2-2u-1)$ $\cdot(u^{15}+6u^{14}+\cdots-10u-4)$
c_{11}, c_{12}	$(u^4-u^3+5u^2-2u+4)(u^4+2u^3+5u^2+4u+7)$ $\cdot(u^{11}+7u^9+u^8+19u^7+4u^6+24u^5+5u^4+12u^3+u^2-1)$ $\cdot(u^{15}+12u^{13}+\cdots+2u-1)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y^4 - 31y^3 + 1089y^2 - 496y + 256)$ $\cdot (y^4 + 26y^3 + \cdots - 1030y + 2401)(y^{11} - 8y^{10} + \cdots - 2y - 1)$ $\cdot (y^{15} - 126y^{14} + \cdots + 10676y - 1)$
c_2, c_5	$(y^4 - 11y^3 + 45y^2 - 44y + 16)(y^4 - 2y^3 + 15y^2 - 50y + 49)$ $\cdot (y^{11} - 8y^{10} + \cdots + 6y - 1)(y^{15} - 30y^{14} + \cdots + 116y - 1)$
c_3, c_{10}	$((y^2 + y + 1)^4)(y^{11} + 11y^{10} + \cdots - 4y - 1)$ $\cdot (y^{15} + 12y^{14} + \cdots + 172y - 16)$
c_4	$(y^4 + y^3 + 69y^2 + 4y + 16)(y^4 + 10y^3 + 195y^2 - 302y + 169)$ $\cdot (y^{11} - 3y^{10} + \cdots - y - 1)(y^{15} + 7y^{14} + \cdots + 36973y - 27889)$
c_6, c_9	$((y^2 + y + 1)^4)(y^{11} - 3y^{10} + \cdots + 5y - 1)(y^{15} - 2y^{14} + \cdots - 20y - 16)$
c_7	$(y^4 - 15y^3 + 53y^2 + 36y + 16)(y^4 - 6y^3 + 59y^2 - 6y + 1)$ $\cdot (y^{11} - 13y^{10} + \cdots + 40y - 1)$ $\cdot (y^{15} + 93y^{14} + \cdots + 6938598y - 674041)$
c_8, c_{11}, c_{12}	$(y^4 + 6y^3 + 23y^2 + 54y + 49)(y^4 + 9y^3 + 29y^2 + 36y + 16)$ $\cdot (y^{11} + 14y^{10} + \cdots + 2y - 1)(y^{15} + 24y^{14} + \cdots - 4y - 1)$