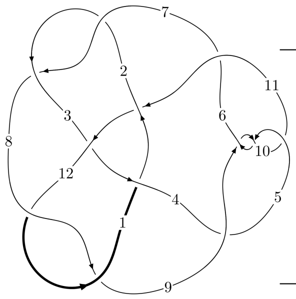
$12a_{1115}$ ($K12a_{1115}$)



A knot diagram[1]

Linearized knot diagam

$\rightarrow\downarrow\rightarrow\uparrow\rightarrow\downarrow\rightarrow\uparrow\rightarrow\uparrow\rightarrow\uparrow\rightarrow\uparrow\rightarrow\uparrow\rightarrow\uparrow\rightarrow\uparrow\rightarrow\downarrow\rightarrow\uparrow\rightarrow$

4 7 12 9 10 11 3 1 6 5 2 8

Solving Sequence

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

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

$$I_1^u = \langle 15u^{35} + 68u^{34} + \cdots + 2b - 38,\ -9u^{35} - 36u^{34} + \cdots + 4a + 72,\ u^{36} + 6u^{35} + \cdots - 10u - 4\rangle$$

$$I_2^u = \langle -415484u^5a^3 + 374659u^5a^2 + \cdots + 1141045a + 3493341,\ u^5a^3 - u^5a^2 + \cdots - 62a + 184,\ u^6 + 3u^4 + u^3 + 2u^2 + 2u - 1\rangle$$

$$I_3^u = \langle u^{16} + u^{15} + \cdots + b + 2,\ -2u^{17} - 2u^{16} + \cdots + a - 2,\ u^{18} + u^{17} + \cdots + 2u + 1\rangle$$

$$I_4^u = \langle -352079058u^9a^3 - 279641663u^9a^2 + \cdots + 597636419a - 889033224,\ 2u^9a^3 + 3u^9a^2 + \cdots + 2a + 4,\ u^{10} - u^9 + 4u^8 - 4u^7 + 6u^6 - 6u^5 + 3u^4 - 3u^3 + 1\rangle$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 118 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. $\boldsymbol{I_1^u = \langle 15u^{35} + 68u^{34} + \cdots + 2b - 38,\ -9u^{35} - 36u^{34} + \cdots + 4a + 72,\ u^{36} + 6u^{35} + \cdots - 10u - 4\rangle}$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} u^2 + 1 \\ -u^4 - 2u^2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u^5 + 2u^3 + u \\ -u^7 - 3u^5 - 2u^3 + u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} \frac{9}{4}u^{35} + 9u^{34} + \cdots - \frac{79}{4}u - 18 \\ -\frac{15}{2}u^{35} - 34u^{34} + \cdots + \frac{41}{2}u + 19 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -u^3 - 2u \\ u^3 + u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} \frac{49}{4}u^{35} + 56u^{34} + \cdots - \frac{247}{4}u - 66 \\ -\frac{35}{2}u^{35} - 84u^{34} + \cdots + \frac{113}{2}u + 49 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -4u^{35} - \frac{43}{2}u^{34} + \cdots + 25u + \frac{27}{2} \\ \frac{5}{2}u^{35} + 15u^{34} + \cdots - \frac{57}{2}u - 18 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} \frac{7}{2}u^{35} + \frac{33}{2}u^{34} + \cdots - \frac{43}{2}u - \frac{45}{2} \\ -\frac{9}{2}u^{35} - 21u^{34} + \cdots + \frac{23}{2}u + 14 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} \frac{1}{4}u^{35} + 3u^{34} + \cdots - \frac{31}{4}u - 8 \\ \frac{1}{2}u^{35} + u^{34} + \cdots - \frac{3}{2}u + 3 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 13u^{35} + 78u^{34} + \cdots - 156u - 78$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{11}	$u^{36} + 3u^{35} + \cdots + 10u - 1$
c_2, c_7, c_8 c_{12}	$u^{36} + u^{35} + \cdots - 4u^2 + 1$
c_3	$u^{36} + 36u^{35} + \cdots - 851968u - 65536$
c_4, c_6	$u^{36} + 6u^{35} + \cdots - 3456u - 712$
c_5, c_9, c_{10}	$u^{36} - 6u^{35} + \cdots + 10u - 4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{11}	$y^{36} + 13y^{35} + \cdots - 108y + 1$
c_2, c_7, c_8 c_{12}	$y^{36} - 31y^{35} + \cdots - 8y + 1$
c_3	$y^{36} + 8y^{35} + \cdots - 81604378624y + 4294967296$
c_4, c_6	$y^{36} - 26y^{35} + \cdots - 1429120y + 506944$
c_5, c_9, c_{10}	$y^{36} + 30y^{35} + \cdots - 108y + 16$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.918601+0.135473I$ $a=-2.16683-0.71703I$ $b=1.310650-0.016930I$	$11.86120-2.65850I$	$16.0062+3.1622I$
$u=-0.918601-0.135473I$ $a=-2.16683+0.71703I$ $b=1.310650+0.016930I$	$11.86120+2.65850I$	$16.0062-3.1622I$
$u=-0.886777+0.100899I$ $a=2.80734+0.39802I$ $b=-1.51502+0.47144I$	$13.5026-12.5111I$	$13.4715+6.4902I$
$u=-0.886777-0.100899I$ $a=2.80734-0.39802I$ $b=-1.51502-0.47144I$	$13.5026+12.5111I$	$13.4715-6.4902I$
$u=0.582328+0.632591I$ $a=1.065630-0.902416I$ $b=-1.302410+0.256154I$	$6.20237-3.57524I$	$13.30271+2.91674I$
$u=0.582328-0.632591I$ $a=1.065630+0.902416I$ $b=-1.302410-0.256154I$	$6.20237+3.57524I$	$13.30271-2.91674I$
$u=-0.805953+0.027041I$ $a=-0.345526+0.596121I$ $b=0.024838-0.844400I$	$3.39332-2.17431I$	$8.53831+3.28500I$
$u=-0.805953-0.027041I$ $a=-0.345526-0.596121I$ $b=0.024838+0.844400I$	$3.39332+2.17431I$	$8.53831-3.28500I$
$u=0.642311+0.449784I$ $a=-1.75182+0.80743I$ $b=1.347300+0.355724I$	$6.72630+7.92579I$	$12.1583-8.1491I$
$u=0.642311-0.449784I$ $a=-1.75182-0.80743I$ $b=1.347300-0.355724I$	$6.72630-7.92579I$	$12.1583+8.1491I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.501660+1.136970I$ $a=\ \ 1.286290+0.341993I$ $b=-1.326480+0.043785I$	$8.78940-2.36934I$	$14.1647+0.I$
$u=-0.501660-1.136970I$ $a=\ \ 1.286290-0.341993I$ $b=-1.326480-0.043785I$	$8.78940+2.36934I$	$14.1647+0.I$
$u=-0.452030+1.175710I$ $a=-1.302930-0.542898I$ $b=\ \ 1.50606+0.43598I$	$10.20350+7.73445I$	0
$u=-0.452030-1.175710I$ $a=-1.302930+0.542898I$ $b=\ \ 1.50606-0.43598I$	$10.20350-7.73445I$	0
$u=-0.084827+1.288850I$ $a=-0.259022-0.468223I$ $b=\ \ 0.470070-0.345741I$	$-3.34519-1.63537I$	0
$u=-0.084827-1.288850I$ $a=-0.259022+0.468223I$ $b=\ \ 0.470070+0.345741I$	$-3.34519+1.63537I$	0
$u=\ \ 0.235443+1.273080I$ $a=-1.35454+1.10271I$ $b=\ \ 0.631652+0.250784I$	$-4.21138+3.05086I$	0
$u=\ \ 0.235443-1.273080I$ $a=-1.35454-1.10271I$ $b=\ \ 0.631652-0.250784I$	$-4.21138-3.05086I$	0
$u=-0.349327+1.249240I$ $a=-0.335653-0.135529I$ $b=-0.108783-0.819825I$	$-0.38230-1.98485I$	0
$u=-0.349327-1.249240I$ $a=-0.335653+0.135529I$ $b=-0.108783+0.819825I$	$-0.38230+1.98485I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.071803 + 1.298360I$ $a = -0.143695 + 1.377620I$ $b = -0.296292 + 0.618271I$	$-5.96094 + 1.93016I$	0
$u = 0.071803 - 1.298360I$ $a = -0.143695 - 1.377620I$ $b = -0.296292 - 0.618271I$	$-5.96094 - 1.93016I$	0
$u = -0.358553 + 1.289720I$ $a = 0.899152 + 0.306766I$ $b = 0.043249 + 0.867682I$	$-0.71095 - 6.36900I$	0
$u = -0.358553 - 1.289720I$ $a = 0.899152 - 0.306766I$ $b = 0.043249 - 0.867682I$	$-0.71095 + 6.36900I$	0
$u = 0.610254$ $a = 2.40590$ $b = -0.572689$	-0.250744	18.0910
$u = -0.399118 + 1.345260I$ $a = -1.62048 - 1.69722I$ $b = 1.51341 - 0.49950I$	$8.9652 - 17.1215I$	0
$u = -0.399118 - 1.345260I$ $a = -1.62048 + 1.69722I$ $b = 1.51341 + 0.49950I$	$8.9652 + 17.1215I$	0
$u = 0.18895 + 1.40967I$ $a = 0.307536 - 1.289560I$ $b = -1.319040 - 0.457572I$	$0.76991 + 10.74510I$	0
$u = 0.18895 - 1.40967I$ $a = 0.307536 + 1.289560I$ $b = -1.319040 + 0.457572I$	$0.76991 - 10.74510I$	0
$u = -0.41508 + 1.37015I$ $a = 1.04177 + 1.33272I$ $b = -1.284840 + 0.058721I$	$7.13077 - 7.43744I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.41508-1.37015I$ $a=\ \ 1.04177-1.33272I$ $b=-1.284840-0.058721I$	$7.13077+7.43744I$	0
$u=\ \ 0.09158+1.50603I$ $a=\ \ 0.067556+0.267829I$ $b=\ \ 1.171500-0.194024I$	$-0.95947-1.45291I$	0
$u=\ \ 0.09158-1.50603I$ $a=\ \ 0.067556-0.267829I$ $b=\ \ 1.171500+0.194024I$	$-0.95947+1.45291I$	0
$u=-0.389978$ $a=\ \ 0.839038$ $b=-0.338534$	0.631815	16.0810
$u=\ \ 0.249379+0.255614I$ $a=\ \ 0.432749-1.105430I$ $b=\ \ 0.089749-0.497899I$	$-1.30214+0.83943I$	$-2.00109-3.97156I$
$u=\ \ 0.249379-0.255614I$ $a=\ \ 0.432749+1.105430I$ $b=\ \ 0.089749+0.497899I$	$-1.30214-0.83943I$	$-2.00109+3.97156I$

II. $\boldsymbol{I_2^u = \langle -4.15 \times 10^5 a^3 u^5 + 3.75 \times 10^5 a^2 u^5 + \cdots + 1.14 \times 10^6 a + 3.49 \times 10^6,\ u^5 a^3 - u^5 a^2 + \cdots - 62a + 184,\ u^6 + 3u^4 + u^3 + 2u^2 + 2u - 1 \rangle}$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

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

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

$$a_{11} = \begin{pmatrix} u^2 + 1 \\ -u^4 - 2u^2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u^5 + 2u^3 + u \\ u^4 + 2u^2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} a \\ 0.126898a^3u^5 - 0.114429a^2u^5 + \cdots - 0.348501a - 1.06694 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} -0.00312508a^3u^5 + 0.0678169a^2u^5 + \cdots + 0.727219a + 1.00927 \\ 0.190720a^3u^5 - 0.341686a^2u^5 + \cdots + 0.335179a - 1.84361 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.140638a^3u^5 - 0.166994a^2u^5 + \cdots + 0.0966799a - 1.53356 \\ -0.221029a^3u^5 - 0.473050a^2u^5 + \cdots - 0.397307a + 1.62574 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 0.250573a^3u^5 + 0.178839a^2u^5 + \cdots + 0.777234a - 3.90996 \\ 0.447730a^3u^5 - 0.0123159a^2u^5 + \cdots - 0.381117a + 2.65314 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -0.423110a^3u^5 - 0.178982a^2u^5 + \cdots - 0.0812311a + 1.15365 \\ 0.0741663a^3u^5 - 0.382732a^2u^5 + \cdots + 0.0906915a - 1.83998 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{117036}{125929}u^5a^3 - \frac{112360}{125929}u^5a^2 + \cdots + \frac{188412}{125929}a + \frac{1819422}{125929}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{11}	$u^{24} - 6u^{23} + \cdots - 40u + 13$
c_2, c_7, c_8 c_{12}	$u^{24} - 9u^{22} + \cdots - 4u + 1$
c_3	$(u^2 - u + 1)^{12}$
c_4, c_6	$(u^6 - 3u^5 + 2u^4 - u^3 + 5u^2 - 3u - 2)^4$
c_5, c_9, c_{10}	$(u^6 + 3u^4 - u^3 + 2u^2 - 2u - 1)^4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{11}	$y^{24} + 6y^{23} + \cdots + 1260y + 169$
c_2, c_7, c_8 c_{12}	$y^{24} - 18y^{23} + \cdots + 108y + 1$
c_3	$(y^2 + y + 1)^{12}$
c_4, c_6	$(y^6 - 5y^5 + 8y^4 - 3y^3 + 11y^2 - 29y + 4)^4$
c_5, c_9, c_{10}	$(y^6 + 6y^5 + 13y^4 + 9y^3 - 6y^2 - 8y + 1)^4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.841864$ $a = -3.10867 + 0.50234I$ $b = 1.70590 - 0.70540I$	$11.46240 - 2.02988I$	$16.6818 + 3.4641I$
$u = -0.841864$ $a = -3.10867 - 0.50234I$ $b = 1.70590 + 0.70540I$	$11.46240 + 2.02988I$	$16.6818 - 3.4641I$
$u = -0.841864$ $a = 3.38289 + 0.97731I$ $b = -1.284970 + 0.023677I$	$11.46240 + 2.02988I$	$16.6818 - 3.4641I$
$u = -0.841864$ $a = 3.38289 - 0.97731I$ $b = -1.284970 - 0.023677I$	$11.46240 - 2.02988I$	$16.6818 + 3.4641I$
$u = -0.126468 + 1.352400I$ $a = -0.275034 - 0.878182I$ $b = 0.006754 - 1.081960I$	$-3.42893 - 5.42362I$	$3.63982 + 6.98172I$
$u = -0.126468 + 1.352400I$ $a = -0.756293 - 0.508483I$ $b = 0.332337 - 0.589055I$	$-3.42893 - 1.36386I$	$3.63982 + 0.05352I$
$u = -0.126468 + 1.352400I$ $a = 0.402484 - 0.343050I$ $b = 0.902109 + 0.022381I$	$-3.42893 - 1.36386I$	$3.63982 + 0.05352I$
$u = -0.126468 + 1.352400I$ $a = -0.28551 + 1.61036I$ $b = -1.114730 + 0.296237I$	$-3.42893 - 5.42362I$	$3.63982 + 6.98172I$
$u = -0.126468 - 1.352400I$ $a = -0.275034 + 0.878182I$ $b = 0.006754 + 1.081960I$	$-3.42893 + 5.42362I$	$3.63982 - 6.98172I$
$u = -0.126468 - 1.352400I$ $a = -0.756293 + 0.508483I$ $b = 0.332337 + 0.589055I$	$-3.42893 + 1.36386I$	$3.63982 - 0.05352I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.126468 - 1.352400I$ $a = 0.402484 + 0.343050I$ $b = 0.902109 - 0.022381I$	$-3.42893 + 1.36386I$	$3.63982 - 0.05352I$
$u = -0.126468 - 1.352400I$ $a = -0.28551 - 1.61036I$ $b = -1.114730 - 0.296237I$	$-3.42893 + 5.42362I$	$3.63982 - 6.98172I$
$u = 0.376468 + 1.319680I$ $a = 1.337000 - 0.149230I$ $b = -0.322326 - 1.361500I$	$3.16668 + 10.80330I$	$8.43784 - 9.36504I$
$u = 0.376468 + 1.319680I$ $a = 0.345851 + 0.454309I$ $b = -0.0385806 + 0.1120340I$	$3.16668 + 6.74357I$	$8.43784 - 2.43684I$
$u = 0.376468 + 1.319680I$ $a = 1.30610 - 1.33449I$ $b = -1.292530 - 0.445841I$	$3.16668 + 6.74357I$	$8.43784 - 2.43684I$
$u = 0.376468 + 1.319680I$ $a = -1.40072 + 2.01996I$ $b = 1.276970 + 0.375627I$	$3.16668 + 10.80330I$	$8.43784 - 9.36504I$
$u = 0.376468 - 1.319680I$ $a = 1.337000 + 0.149230I$ $b = -0.322326 + 1.361500I$	$3.16668 - 10.80330I$	$8.43784 + 9.36504I$
$u = 0.376468 - 1.319680I$ $a = 0.345851 - 0.454309I$ $b = -0.0385806 - 0.1120340I$	$3.16668 - 6.74357I$	$8.43784 + 2.43684I$
$u = 0.376468 - 1.319680I$ $a = 1.30610 + 1.33449I$ $b = -1.292530 + 0.445841I$	$3.16668 - 6.74357I$	$8.43784 + 2.43684I$
$u = 0.376468 - 1.319680I$ $a = -1.40072 - 2.01996I$ $b = 1.276970 - 0.375627I$	$3.16668 - 10.80330I$	$8.43784 + 9.36504I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.341865$ $a = 2.43368 + 1.17121I$ $b = -1.39615 + 0.48806I$	$5.51139 - 2.02988I$	$19.1629 + 3.4641I$
$u = 0.341865$ $a = 2.43368 - 1.17121I$ $b = -1.39615 - 0.48806I$	$5.51139 + 2.02988I$	$19.1629 - 3.4641I$
$u = 0.341865$ $a = -4.88179 + 3.06904I$ $b = 1.225210 - 0.191994I$	$5.51139 - 2.02988I$	$19.1629 + 3.4641I$
$u = 0.341865$ $a = -4.88179 - 3.06904I$ $b = 1.225210 + 0.191994I$	$5.51139 + 2.02988I$	$19.1629 - 3.4641I$

III.
$\boldsymbol{I_3^u = \langle u^{16}+u^{15}+\cdots+b+2,\ -2u^{17}-2u^{16}+\cdots+a-2,\ u^{18}+u^{17}+\cdots+2u+1\rangle}$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -u \\ u^3+u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} u^2+1 \\ -u^4-2u^2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u^5+2u^3+u \\ -u^7-3u^5-2u^3+u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 2u^{17}+2u^{16}+\cdots+9u+2 \\ -u^{16}-u^{15}+\cdots-2u-2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -u^3-2u \\ u^3+u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 2u^{17}+u^{16}+\cdots+8u+1 \\ -u^{17}-2u^{16}+\cdots-3u-2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} u^{16}-u^{15}+\cdots+10u^2-8u \\ u^{17}+7u^{15}+\cdots+u+1 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -u^{17}-u^{16}+\cdots-5u+2 \\ u^{15}+u^{14}+\cdots+3u+1 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 2u^{17}+u^{16}+\cdots+9u+1 \\ -u^{16}-u^{15}+\cdots-u-2 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -u^{16}-u^{15}-7u^{14}-2u^{13}-17u^{12}+10u^{11}-12u^{10}+39u^9+16u^8+42u^7+27u^6-4u^5+2u^4-26u^3-10u^2-4u+7$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{11}	$u^{18} + 3u^{17} + \cdots - 3u - 1$
c_2, c_8	$u^{18} + u^{17} + \cdots - u - 1$
c_3	$u^{18} - 3u^{17} + \cdots + 3u - 1$
c_4, c_6	$u^{18} + u^{17} + \cdots + 7u^2 + 1$
c_5	$u^{18} - u^{17} + \cdots - 2u + 1$
c_7, c_{12}	$u^{18} - u^{17} + \cdots + u - 1$
c_9, c_{10}	$u^{18} + u^{17} + \cdots + 2u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{11}	$y^{18} + 3y^{17} + \cdots + 7y + 1$
c_2, c_7, c_8 c_{12}	$y^{18} - 21y^{17} + \cdots - 29y + 1$
c_3	$y^{18} + 7y^{17} + \cdots + 3y + 1$
c_4, c_6	$y^{18} - 11y^{17} + \cdots + 14y + 1$
c_5, c_9, c_{10}	$y^{18} + 17y^{17} + \cdots + 8y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.863058$ $a = -3.08851$ $b = 1.47146$	10.9241	14.9390
$u = -0.811794 + 0.086746I$ $a = -1.66812 - 0.06489I$ $b = 1.106420 - 0.516453I$	$8.19254 - 4.11062I$	$15.0302 + 4.4552I$
$u = -0.811794 - 0.086746I$ $a = -1.66812 + 0.06489I$ $b = 1.106420 + 0.516453I$	$8.19254 + 4.11062I$	$15.0302 - 4.4552I$
$u = -0.037936 + 1.201190I$ $a = -0.67412 - 1.88976I$ $b = 1.359340 - 0.368138I$	$1.99280 - 2.42184I$	$8.62527 + 0.56589I$
$u = -0.037936 - 1.201190I$ $a = -0.67412 + 1.88976I$ $b = 1.359340 + 0.368138I$	$1.99280 + 2.42184I$	$8.62527 - 0.56589I$
$u = -0.346661 + 1.200250I$ $a = 0.135968 + 0.447764I$ $b = -1.186850 - 0.513231I$	$4.79445 - 0.07036I$	$11.73338 - 0.07459I$
$u = -0.346661 - 1.200250I$ $a = 0.135968 - 0.447764I$ $b = -1.186850 + 0.513231I$	$4.79445 + 0.07036I$	$11.73338 + 0.07459I$
$u = 0.175966 + 1.280820I$ $a = -0.806426 + 1.002530I$ $b = 0.228924 + 0.234817I$	$-4.68984 + 2.45101I$	$0.705670 - 1.175054I$
$u = 0.175966 - 1.280820I$ $a = -0.806426 - 1.002530I$ $b = 0.228924 - 0.234817I$	$-4.68984 - 2.45101I$	$0.705670 + 1.175054I$
$u = 0.400557 + 1.266130I$ $a = 1.79737 - 1.11786I$ $b = -1.47149 - 0.06981I$	$6.99702 + 4.52950I$	$11.21141 - 3.10762I$

Solutions to I_3^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.400557 - 1.266130I$ $a = 1.79737 + 1.11786I$ $b = -1.47149 + 0.06981I$	$6.99702 - 4.52950I$	$11.21141 + 3.10762I$
$u = -0.361990 + 1.332230I$ $a = 0.81927 + 1.15450I$ $b = -1.037050 + 0.524649I$	$3.73552 - 8.34686I$	$10.33759 + 7.17460I$
$u = -0.361990 - 1.332230I$ $a = 0.81927 - 1.15450I$ $b = -1.037050 - 0.524649I$	$3.73552 + 8.34686I$	$10.33759 - 7.17460I$
$u = -0.04839 + 1.45535I$ $a = 0.145310 - 0.301991I$ $b = 1.107200 + 0.202918I$	$-1.25223 + 1.02332I$	$5.08940 + 3.59240I$
$u = -0.04839 - 1.45535I$ $a = 0.145310 + 0.301991I$ $b = 1.107200 - 0.202918I$	$-1.25223 - 1.02332I$	$5.08940 - 3.59240I$
$u = 0.507807$ $a = 1.87659$ $b = -0.212766$	-0.692851	-0.0433770
$u = -0.155186 + 0.321559I$ $a = 0.85670 + 2.76375I$ $b = -1.235840 - 0.300145I$	$4.72294 + 1.80776I$	$7.31942 + 0.02100I$
$u = -0.155186 - 0.321559I$ $a = 0.85670 - 2.76375I$ $b = -1.235840 + 0.300145I$	$4.72294 - 1.80776I$	$7.31942 - 0.02100I$

IV. $I_4^u = \langle -3.52\times 10^8 a^3u^9 - 2.80\times 10^8 a^2u^9 + \cdots + 5.98\times 10^8 a - 8.89\times 10^8,\ 2u^9a^3 + 3u^9a^2 + \cdots + 2a + 4,\ u^{10} - u^9 + \cdots - 3u^3 + 1\rangle$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

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

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

$$a_{11} = \begin{pmatrix} u^2 + 1 \\ -u^4 - 2u^2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u^5 + 2u^3 + u \\ -u^7 - 3u^5 - 2u^3 + u \end{pmatrix}$$

$$a_1 = \begin{pmatrix} a \\ 0.394132a^3u^9 + 0.313043a^2u^9 + \cdots - 0.669019a + 0.995221 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} 0.198848a^3u^9 - 1.61597a^2u^9 + \cdots + 0.322034a - 4.36671 \\ 0.624336a^3u^9 + 1.68297a^2u^9 + \cdots - 0.641178a + 4.12350 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.139537a^3u^9 + 0.126621a^2u^9 + \cdots - 1.16026a + 0.198975 \\ 0.137288a^3u^9 - 0.949133a^2u^9 + \cdots + 2.17072a + 0.562076 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -0.176443a^3u^9 - 0.622692a^2u^9 + \cdots + 2.44767a - 0.594951 \\ 0.512002a^3u^9 + 0.204390a^2u^9 + \cdots - 0.220227a + 0.220345 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -0.144321a^3u^9 - 0.0728304a^2u^9 + \cdots - 4.82417a - 3.30781 \\ -0.228457a^3u^9 + 0.463402a^2u^9 + \cdots + 1.58033a + 2.20288 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{23189728}{893302351}u^9a^3 - \frac{17608364}{893302351}u^9a^2 + \cdots - \frac{2297249516}{893302351}a + \frac{5202904734}{893302351}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{11}	$u^{40} - 13u^{39} + \cdots - 5772u + 757$
c_2, c_7, c_8 c_{12}	$u^{40} - u^{39} + \cdots + 18u^2 + 1$
c_3	$(u^2 - u + 1)^{20}$
c_4, c_6	$(u^5 + u^4 - 2u^3 - u^2 + u - 1)^8$
c_5, c_9, c_{10}	$(u^{10} + u^9 + 4u^8 + 4u^7 + 6u^6 + 6u^5 + 3u^4 + 3u^3 + 1)^4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{11}	$y^{40} + 21y^{39} + \cdots + 22553644y + 573049$
c_2, c_7, c_8 c_{12}	$y^{40} - 39y^{39} + \cdots + 36y + 1$
c_3	$(y^2 + y + 1)^{20}$
c_4, c_6	$(y^5 - 5y^4 + 8y^3 - 3y^2 - y - 1)^8$
c_5, c_9, c_{10}	$(y^{10} + 7y^9 + 20y^8 + 26y^7 + 6y^6 - 22y^5 - 19y^4 + 3y^3 + 6y^2 + 1)^4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.839548 + 0.070481I$ $a = -0.402562 - 0.505149I$ $b = -0.0439825 - 0.0696372I$	$7.51750 + 2.37095I$	$12.74431 - 0.03448I$
$u = 0.839548 + 0.070481I$ $a = -0.87672 - 1.40077I$ $b = 0.384497 + 1.319600I$	$7.51750 + 6.43072I$	$12.7443 - 6.9627I$
$u = 0.839548 + 0.070481I$ $a = -2.42644 + 0.17767I$ $b = 1.336310 + 0.372529I$	$7.51750 + 2.37095I$	$12.74431 - 0.03448I$
$u = 0.839548 + 0.070481I$ $a = 2.57482 - 0.88548I$ $b = -1.292970 - 0.351858I$	$7.51750 + 6.43072I$	$12.7443 - 6.9627I$
$u = 0.839548 - 0.070481I$ $a = -0.402562 + 0.505149I$ $b = -0.0439825 + 0.0696372I$	$7.51750 - 2.37095I$	$12.74431 + 0.03448I$
$u = 0.839548 - 0.070481I$ $a = -0.87672 + 1.40077I$ $b = 0.384497 - 1.319600I$	$7.51750 - 6.43072I$	$12.7443 + 6.9627I$
$u = 0.839548 - 0.070481I$ $a = -2.42644 - 0.17767I$ $b = 1.336310 - 0.372529I$	$7.51750 - 2.37095I$	$12.74431 + 0.03448I$
$u = 0.839548 - 0.070481I$ $a = 2.57482 + 0.88548I$ $b = -1.292970 + 0.351858I$	$7.51750 - 6.43072I$	$12.7443 + 6.9627I$
$u = 0.090539 + 1.215350I$ $a = -0.225264 + 0.093412I$ $b = 1.56209 - 0.31243I$	$1.97403 - 0.49930I$	$8.51511 - 0.96655I$
$u = 0.090539 + 1.215350I$ $a = 0.66256 + 1.78010I$ $b = 1.22523 + 0.73772I$	$1.97403 + 3.56046I$	$8.51511 - 7.89475I$

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.090539 + 1.215350I$ $a = 1.99879 - 0.95641I$ $b = -1.350730 - 0.169147I$	$1.97403 + 3.56046I$	$8.51511 - 7.89475I$
$u = 0.090539 + 1.215350I$ $a = -0.39206 - 2.81005I$ $b = -1.006940 + 0.136833I$	$1.97403 - 0.49930I$	$8.51511 - 0.96655I$
$u = 0.090539 - 1.215350I$ $a = -0.225264 - 0.093412I$ $b = 1.56209 + 0.31243I$	$1.97403 + 0.49930I$	$8.51511 + 0.96655I$
$u = 0.090539 - 1.215350I$ $a = 0.66256 - 1.78010I$ $b = 1.22523 - 0.73772I$	$1.97403 - 3.56046I$	$8.51511 + 7.89475I$
$u = 0.090539 - 1.215350I$ $a = 1.99879 + 0.95641I$ $b = -1.350730 + 0.169147I$	$1.97403 - 3.56046I$	$8.51511 + 7.89475I$
$u = 0.090539 - 1.215350I$ $a = -0.39206 + 2.81005I$ $b = -1.006940 - 0.136833I$	$1.97403 + 0.49930I$	$8.51511 + 0.96655I$
$u = 0.383413 + 1.200420I$ $a = -0.604285 - 0.632212I$ $b = -0.462034 + 1.251310I$	$4.04602 - 2.02988I$	$9.48114 + 3.46410I$
$u = 0.383413 + 1.200420I$ $a = 0.478064 - 0.583666I$ $b = 0.150869 - 0.009153I$	$4.04602 + 2.02988I$	$9.48114 - 3.46410I$
$u = 0.383413 + 1.200420I$ $a = 1.045730 - 0.689743I$ $b = -1.382170 + 0.277320I$	$4.04602 + 2.02988I$	$9.48114 - 3.46410I$
$u = 0.383413 + 1.200420I$ $a = -1.260420 - 0.050726I$ $b = 1.309920 - 0.319057I$	$4.04602 - 2.02988I$	$9.48114 + 3.46410I$

Solutions to I_4^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.383413 - 1.200420I$ $a = -0.604285 + 0.632212I$ $b = -0.462034 - 1.251310I$	$4.04602 + 2.02988I$	$9.48114 - 3.46410I$
$u = 0.383413 - 1.200420I$ $a = 0.478064 + 0.583666I$ $b = 0.150869 + 0.009153I$	$4.04602 - 2.02988I$	$9.48114 + 3.46410I$
$u = 0.383413 - 1.200420I$ $a = 1.045730 + 0.689743I$ $b = -1.382170 - 0.277320I$	$4.04602 - 2.02988I$	$9.48114 + 3.46410I$
$u = 0.383413 - 1.200420I$ $a = -1.260420 + 0.050726I$ $b = 1.309920 + 0.319057I$	$4.04602 + 2.02988I$	$9.48114 - 3.46410I$
$u = -0.383851 + 1.270630I$ $a = 0.98145 + 1.21602I$ $b = -1.73426 - 0.65183I$	$7.51750 - 2.37095I$	$12.74431 + 0.03448I$
$u = -0.383851 + 1.270630I$ $a = -2.23007 - 0.18057I$ $b = 1.313220 + 0.005597I$	$7.51750 - 6.43072I$	$12.7443 + 6.9627I$
$u = -0.383851 + 1.270630I$ $a = 1.96754 + 1.53952I$ $b = -1.67195 + 0.75671I$	$7.51750 - 6.43072I$	$12.7443 + 6.9627I$
$u = -0.383851 + 1.270630I$ $a = -2.02707 - 2.12285I$ $b = 1.253450 - 0.039994I$	$7.51750 - 2.37095I$	$12.74431 + 0.03448I$
$u = -0.383851 - 1.270630I$ $a = 0.98145 - 1.21602I$ $b = -1.73426 + 0.65183I$	$7.51750 + 2.37095I$	$12.74431 - 0.03448I$
$u = -0.383851 - 1.270630I$ $a = -2.23007 + 0.18057I$ $b = 1.313220 - 0.005597I$	$7.51750 + 6.43072I$	$12.7443 - 6.9627I$

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.383851 - 1.270630I$ $a = 1.96754 - 1.53952I$ $b = -1.67195 - 0.75671I$	$7.51750 + 6.43072I$	$12.7443 - 6.9627I$
$u = -0.383851 - 1.270630I$ $a = -2.02707 + 2.12285I$ $b = 1.253450 + 0.039994I$	$7.51750 + 2.37095I$	$12.74431 - 0.03448I$
$u = -0.429649 + 0.392970I$ $a = 0.786631 + 0.807814I$ $b = -1.142270 - 0.034877I$	$1.97403 + 0.49930I$	$8.51511 + 0.96655I$
$u = -0.429649 + 0.392970I$ $a = 1.29731 - 0.58385I$ $b = 0.044480 + 0.564141I$	$1.97403 + 0.49930I$	$8.51511 + 0.96655I$
$u = -0.429649 + 0.392970I$ $a = 0.266316 - 0.274622I$ $b = -0.176919 + 0.887142I$	$1.97403 - 3.56046I$	$8.51511 + 7.89475I$
$u = -0.429649 + 0.392970I$ $a = -1.11432 - 1.64211I$ $b = 1.184170 - 0.201060I$	$1.97403 - 3.56046I$	$8.51511 + 7.89475I$
$u = -0.429649 - 0.392970I$ $a = 0.786631 - 0.807814I$ $b = -1.142270 + 0.034877I$	$1.97403 - 0.49930I$	$8.51511 - 0.96655I$
$u = -0.429649 - 0.392970I$ $a = 1.29731 + 0.58385I$ $b = 0.044480 - 0.564141I$	$1.97403 - 0.49930I$	$8.51511 - 0.96655I$
$u = -0.429649 - 0.392970I$ $a = 0.266316 + 0.274622I$ $b = -0.176919 - 0.887142I$	$1.97403 + 3.56046I$	$8.51511 - 7.89475I$
$u = -0.429649 - 0.392970I$ $a = -1.11432 + 1.64211I$ $b = 1.184170 + 0.201060I$	$1.97403 + 3.56046I$	$8.51511 - 7.89475I$

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_{11}	$(u^{18}+3u^{17}+\cdots-3u-1)(u^{24}-6u^{23}+\cdots-40u+13)$ $\cdot(u^{36}+3u^{35}+\cdots+10u-1)(u^{40}-13u^{39}+\cdots-5772u+757)$
c_2, c_8	$(u^{18}+u^{17}+\cdots-u-1)(u^{24}-9u^{22}+\cdots-4u+1)$ $\cdot(u^{36}+u^{35}+\cdots-4u^2+1)(u^{40}-u^{39}+\cdots+18u^2+1)$
c_3	$((u^2-u+1)^{32})(u^{18}-3u^{17}+\cdots+3u-1)$ $\cdot(u^{36}+36u^{35}+\cdots-851968u-65536)$
c_4, c_6	$(u^5+u^4-2u^3-u^2+u-1)^8(u^6-3u^5+2u^4-u^3+5u^2-3u-2)^4$ $\cdot(u^{18}+u^{17}+\cdots+7u^2+1)(u^{36}+6u^{35}+\cdots-3456u-712)$
c_5	$(u^6+3u^4-u^3+2u^2-2u-1)^4$ $\cdot(u^{10}+u^9+4u^8+4u^7+6u^6+6u^5+3u^4+3u^3+1)^4$ $\cdot(u^{18}-u^{17}+\cdots-2u+1)(u^{36}-6u^{35}+\cdots+10u-4)$
c_7, c_{12}	$(u^{18}-u^{17}+\cdots+u-1)(u^{24}-9u^{22}+\cdots-4u+1)$ $\cdot(u^{36}+u^{35}+\cdots-4u^2+1)(u^{40}-u^{39}+\cdots+18u^2+1)$
c_9, c_{10}	$(u^6+3u^4-u^3+2u^2-2u-1)^4$ $\cdot(u^{10}+u^9+4u^8+4u^7+6u^6+6u^5+3u^4+3u^3+1)^4$ $\cdot(u^{18}+u^{17}+\cdots+2u+1)(u^{36}-6u^{35}+\cdots+10u-4)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_{11}	$(y^{18}+3y^{17}+\cdots+7y+1)(y^{24}+6y^{23}+\cdots+1260y+169)$ $\cdot\,(y^{36}+13y^{35}+\cdots-108y+1)$ $\cdot\,(y^{40}+21y^{39}+\cdots+22553644y+573049)$
c_2, c_7, c_8 c_{12}	$(y^{18}-21y^{17}+\cdots-29y+1)(y^{24}-18y^{23}+\cdots+108y+1)$ $\cdot\,(y^{36}-31y^{35}+\cdots-8y+1)(y^{40}-39y^{39}+\cdots+36y+1)$
c_3	$((y^2+y+1)^{32})(y^{18}+7y^{17}+\cdots+3y+1)$ $\cdot\,(y^{36}+8y^{35}+\cdots-81604378624y+4294967296)$
c_4, c_6	$(y^5-5y^4+8y^3-3y^2-y-1)^8$ $\cdot\,(y^6-5y^5+8y^4-3y^3+11y^2-29y+4)^4$ $\cdot\,(y^{18}-11y^{17}+\cdots+14y+1)$ $\cdot\,(y^{36}-26y^{35}+\cdots-1429120y+506944)$
c_5, c_9, c_{10}	$(y^6+6y^5+13y^4+9y^3-6y^2-8y+1)^4$ $\cdot\,(y^{10}+7y^9+20y^8+26y^7+6y^6-22y^5-19y^4+3y^3+6y^2+1)^4$ $\cdot\,(y^{18}+17y^{17}+\cdots+8y+1)(y^{36}+30y^{35}+\cdots-108y+16)$