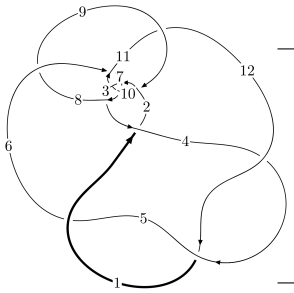
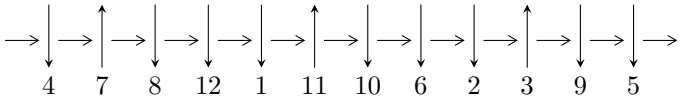
$12a_{1041}$ $(K12a_{1041})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u &= \langle -1038957476023u^{54} - 8812866915448u^{53} + \cdots + 12177825868b + 10129039394368, \\
&\quad - 1082675116975u^{54} - 10377141014923u^{53} + \cdots + 12177825868a + 22705250521701, \\
&\quad u^{55} + 10u^{54} + \cdots + 28u - 16\rangle \\
I_2^u &= \langle -2.57266 \times 10^{16}a^3u^{26} + 5.62861 \times 10^{16}a^2u^{26} + \cdots - 4.26253 \times 10^{17}a + 6.73935 \times 10^{17}, \\
&\quad - 3u^{26}a^2 + 14u^{26}a + \cdots + 26a + 20,\ u^{27} - 2u^{26} + \cdots - 4u^2 - 1\rangle \\
I_3^u &= \langle 91u^{26} - 160u^{25} + \cdots + 6b - 74,\ -185u^{26} + 296u^{25} + \cdots + 6a + 154,\ u^{27} - 3u^{26} + \cdots + 4u + 1\rangle \\
I_4^u &= \langle b + a - 1,\ a^2 - a + 1,\ u + 1\rangle \\
I_5^u &= \langle b^2 - b + 1,\ a + 1,\ u + 1\rangle
\end{aligned}$$

* 5 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 194 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. $\boldsymbol{I_1^u = \langle -1.04 \times 10^{12} u^{54} - 8.81 \times 10^{12} u^{53} + \cdots + 1.22 \times 10^{10} b + 1.01 \times 10^{13},\ -1.08 \times 10^{12} u^{54} - 1.04 \times 10^{13} u^{53} + \cdots + 1.22 \times 10^{10} a + 2.27 \times 10^{13},\ u^{55} + 10 u^{54} + \cdots + 28u - 16 \rangle}$

(i) Arc colorings

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

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_9 = \begin{pmatrix} 88.9055u^{54} + 852.134u^{53} + \cdots + 5279.95u - 1864.47 \\ 85.3155u^{54} + 723.681u^{53} + \cdots + 1897.57u - 831.761 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 174.221u^{54} + 1575.82u^{53} + \cdots + 7177.52u - 2696.24 \\ 85.3155u^{54} + 723.681u^{53} + \cdots + 1897.57u - 831.761 \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} -u^2 + 1 \\ u^4 - 2u^2 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -u^5 + 2u^3 - u \\ u^7 - 3u^5 + 2u^3 + u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -269.600u^{54} - 2341.42u^{53} + \cdots - 7855.04u + 3188.79 \\ 88.0029u^{54} + 793.741u^{53} + \cdots + 3533.07u - 1332.28 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -61.9160u^{54} - 496.097u^{53} + \cdots - 400.409u + 305.700 \\ 83.3237u^{54} + 724.917u^{53} + \cdots + 2398.06u - 978.347 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -164.576u^{54} - 1460.92u^{53} + \cdots - 6253.70u + 2370.92 \\ 4.37695u^{54} + 14.4846u^{53} + \cdots - 224.195u + 75.8068 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 323.741u^{54} + 2866.18u^{53} + \cdots + 11307.7u - 4391.19 \\ 137.759u^{54} + 1171.25u^{53} + \cdots + 3250.14u - 1393.09 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$$= -\frac{1497825036746}{3044456467}u^{54} - \frac{26024094545549}{6088912934}u^{53} + \cdots - \frac{46065090876200}{3044456467}u + \frac{18318351621698}{3044456467}$$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{55} - 33u^{54} + \cdots + 47308u - 3536$
c_2, c_{10}	$u^{55} + u^{54} + \cdots + u - 1$
c_3, c_9	$u^{55} - u^{54} + \cdots - 2u + 17$
c_4, c_5, c_{12}	$u^{55} + 10u^{54} + \cdots + 28u - 16$
c_6	$u^{55} - 48u^{54} + \cdots + 1543503872u - 67108864$
c_7	$u^{55} - 37u^{54} + \cdots + 6u - 4$
c_8, c_{11}	$u^{55} + 3u^{54} + \cdots + 5u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{55} - y^{54} + \cdots - 122155344y - 12503296$
c_2, c_{10}	$y^{55} - 11y^{54} + \cdots + 19y - 1$
c_3, c_9	$y^{55} - 21y^{54} + \cdots + 5512y - 289$
c_4, c_5, c_{12}	$y^{55} - 50y^{54} + \cdots - 2256y - 256$
c_6	$y^{55} + 6y^{54} + \cdots + 11258999068426240y - 4503599627370496$
c_7	$y^{55} - 11y^{54} + \cdots + 460y - 16$
c_8, c_{11}	$y^{55} + 15y^{54} + \cdots + 31y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.865135 + 0.489946I$ $a = -0.009635 + 0.729784I$ $b = 0.989454 - 0.989505I$	$-3.36781 + 11.67190I$	0
$u = 0.865135 - 0.489946I$ $a = -0.009635 - 0.729784I$ $b = 0.989454 + 0.989505I$	$-3.36781 - 11.67190I$	0
$u = 0.194788 + 0.987371I$ $a = 0.233850 + 0.082360I$ $b = 0.286557 - 0.259724I$	$-0.14104 + 4.95333I$	0
$u = 0.194788 - 0.987371I$ $a = 0.233850 - 0.082360I$ $b = 0.286557 + 0.259724I$	$-0.14104 - 4.95333I$	0
$u = 0.687485 + 0.564759I$ $a = -0.406895 - 0.392120I$ $b = -0.183677 + 0.875601I$	$1.19181 + 3.04870I$	$0. - 5.13971I$
$u = 0.687485 - 0.564759I$ $a = -0.406895 + 0.392120I$ $b = -0.183677 - 0.875601I$	$1.19181 - 3.04870I$	$0. + 5.13971I$
$u = 1.084940 + 0.286119I$ $a = 0.057965 + 0.485473I$ $b = 0.313932 - 1.110980I$	$2.57129 - 3.17552I$	0
$u = 1.084940 - 0.286119I$ $a = 0.057965 - 0.485473I$ $b = 0.313932 + 1.110980I$	$2.57129 + 3.17552I$	0
$u = 1.123340 + 0.120496I$ $a = 0.252541 + 0.419449I$ $b = -0.434609 - 1.093190I$	$-2.08272 - 4.14763I$	0
$u = 1.123340 - 0.120496I$ $a = 0.252541 - 0.419449I$ $b = -0.434609 + 1.093190I$	$-2.08272 + 4.14763I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.019870 + 0.509233I$ $a = -0.344470 - 0.036710I$ $b = 0.563453 + 0.599317I$	$-2.75248 - 10.11890I$	0
$u = 1.019870 - 0.509233I$ $a = -0.344470 + 0.036710I$ $b = 0.563453 - 0.599317I$	$-2.75248 + 10.11890I$	0
$u = 0.331802 + 0.792246I$ $a = 0.739296 - 0.448884I$ $b = -0.454290 - 1.057760I$	$2.44525 - 7.66184I$	$-1.72043 + 10.68695I$
$u = 0.331802 - 0.792246I$ $a = 0.739296 + 0.448884I$ $b = -0.454290 + 1.057760I$	$2.44525 + 7.66184I$	$-1.72043 - 10.68695I$
$u = 0.270945 + 0.813281I$ $a = -0.650696 + 1.064390I$ $b = 1.12841 + 1.15345I$	$-1.4883 - 16.2749I$	$-6.00000 + 9.94367I$
$u = 0.270945 - 0.813281I$ $a = -0.650696 - 1.064390I$ $b = 1.12841 - 1.15345I$	$-1.4883 + 16.2749I$	$-6.00000 - 9.94367I$
$u = 0.287468 + 0.722004I$ $a = 0.908760 - 1.060260I$ $b = -1.06824 - 1.19365I$	$-1.19182 - 7.45004I$	$-11.7611 + 11.5246I$
$u = 0.287468 - 0.722004I$ $a = 0.908760 + 1.060260I$ $b = -1.06824 + 1.19365I$	$-1.19182 + 7.45004I$	$-11.7611 - 11.5246I$
$u = 0.135846 + 0.737771I$ $a = -0.709220 + 0.909769I$ $b = 0.576960 + 1.020220I$	$5.43093 - 0.61722I$	$1.76007 + 0.47509I$
$u = 0.135846 - 0.737771I$ $a = -0.709220 - 0.909769I$ $b = 0.576960 - 1.020220I$	$5.43093 + 0.61722I$	$1.76007 - 0.47509I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.633695 + 0.400897I$ $a = -0.051443 - 1.043900I$ $b = -0.903902 + 0.959696I$	$-2.55209 + 3.51896I$	$-13.4984 - 8.4809I$
$u = 0.633695 - 0.400897I$ $a = -0.051443 + 1.043900I$ $b = -0.903902 - 0.959696I$	$-2.55209 - 3.51896I$	$-13.4984 + 8.4809I$
$u = -1.240380 + 0.166032I$ $a = -1.44156 - 0.30688I$ $b = 0.465537 - 0.271371I$	$-1.87491 + 0.84683I$	0
$u = -1.240380 - 0.166032I$ $a = -1.44156 + 0.30688I$ $b = 0.465537 + 0.271371I$	$-1.87491 - 0.84683I$	0
$u = -1.233550 + 0.217515I$ $a = 0.435655 + 1.180210I$ $b = -0.481519 - 0.145146I$	$-2.88656 + 0.31842I$	0
$u = -1.233550 - 0.217515I$ $a = 0.435655 - 1.180210I$ $b = -0.481519 + 0.145146I$	$-2.88656 - 0.31842I$	0
$u = -1.299370 + 0.205216I$ $a = 2.76669 + 0.09017I$ $b = -0.989285 + 0.876437I$	$-2.98388 + 4.72159I$	0
$u = -1.299370 - 0.205216I$ $a = 2.76669 - 0.09017I$ $b = -0.989285 - 0.876437I$	$-2.98388 - 4.72159I$	0
$u = 1.316210 + 0.209610I$ $a = 0.098140 - 0.465825I$ $b = -0.64955 + 1.32493I$	$-3.15392 - 0.78981I$	0
$u = 1.316210 - 0.209610I$ $a = 0.098140 + 0.465825I$ $b = -0.64955 - 1.32493I$	$-3.15392 + 0.78981I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.322710 + 0.233818I$ $a = 0.062155 + 0.355937I$ $b = 0.115827 - 1.127050I$	$-2.84146 - 5.10387I$	0
$u = 1.322710 - 0.233818I$ $a = 0.062155 - 0.355937I$ $b = 0.115827 + 1.127050I$	$-2.84146 + 5.10387I$	0
$u = -0.075487 + 0.624794I$ $a = -0.651671 + 0.844506I$ $b = 0.148112 + 0.734294I$	$1.54361 + 2.01006I$	$-0.20716 - 4.90637I$
$u = -0.075487 - 0.624794I$ $a = -0.651671 - 0.844506I$ $b = 0.148112 - 0.734294I$	$1.54361 - 2.01006I$	$-0.20716 + 4.90637I$
$u = -1.343010 + 0.298025I$ $a = -1.92899 - 0.10958I$ $b = 0.772361 - 0.928529I$	$0.77382 + 4.35654I$	0
$u = -1.343010 - 0.298025I$ $a = -1.92899 + 0.10958I$ $b = 0.772361 + 0.928529I$	$0.77382 - 4.35654I$	0
$u = -0.014301 + 0.558017I$ $a = 0.82154 - 1.89062I$ $b = -0.757428 - 1.060680I$	$1.07100 - 1.97635I$	$-0.94464 + 3.33920I$
$u = -0.014301 - 0.558017I$ $a = 0.82154 + 1.89062I$ $b = -0.757428 + 1.060680I$	$1.07100 + 1.97635I$	$-0.94464 - 3.33920I$
$u = -1.41743 + 0.28838I$ $a = 2.38231 + 0.04181I$ $b = -1.23358 + 1.23929I$	$-6.63060 + 11.13070I$	0
$u = -1.41743 - 0.28838I$ $a = 2.38231 - 0.04181I$ $b = -1.23358 - 1.23929I$	$-6.63060 - 11.13070I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.42060+0.32988I$ $a=-2.22150-0.28707I$ $b=\ \ 1.25995-1.20900I$	$-6.8735+20.4083I$	0
$u=-1.42060-0.32988I$ $a=-2.22150+0.28707I$ $b=\ \ 1.25995+1.20900I$	$-6.8735-20.4083I$	0
$u=\ \ 1.46282$ $a=\ \ 0.172629$ $b=-0.621923$	-7.34651	0
$u=-1.47133+0.11388I$ $a=\ \ 1.16767+1.39875I$ $b=-1.104080-0.693535I$	$-9.23079-1.76541I$	0
$u=-1.47133-0.11388I$ $a=\ \ 1.16767-1.39875I$ $b=-1.104080+0.693535I$	$-9.23079+1.76541I$	0
$u=-1.44448+0.31710I$ $a=\ \ 1.54595-0.30583I$ $b=-0.653917+1.091600I$	$-3.22867+11.69550I$	0
$u=-1.44448-0.31710I$ $a=\ \ 1.54595+0.30583I$ $b=-0.653917-1.091600I$	$-3.22867-11.69550I$	0
$u=-0.505754$ $a=-0.901720$ $b=-0.225400$	-1.05728	-9.58490
$u=-1.51220+0.01188I$ $a=-1.49575-0.82415I$ $b=\ \ 1.178150+0.602251I$	$-11.4039-10.6429I$	0
$u=-1.51220-0.01188I$ $a=-1.49575+0.82415I$ $b=\ \ 1.178150-0.602251I$	$-11.4039+10.6429I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.51637+0.31039I$ $a=-0.593785+0.047436I$ $b=\ \ 0.377802-0.407209I$	$-6.09485+0.24577I$	0
$u=-1.51637-0.31039I$ $a=-0.593785-0.047436I$ $b=\ \ 0.377802+0.407209I$	$-6.09485-0.24577I$	0
$u=\ \ 0.092579+0.436564I$ $a=-1.46650-0.13148I$ $b=-0.199189+0.747006I$	$0.86993+1.84137I$	$-0.07341-2.74381I$
$u=\ \ 0.092579-0.436564I$ $a=-1.46650+0.13148I$ $b=-0.199189-0.747006I$	$0.86993-1.84137I$	$-0.07341+2.74381I$
$u=-1.71364$ $a=\ \ 0.228279$ $b=-0.279170$	-6.84786	0

II. $\boldsymbol{I_2^u = \langle -2.57\times 10^{16}a^3u^{26} + 5.63\times 10^{16}a^2u^{26} + \cdots - 4.26\times 10^{17}a + 6.74\times 10^{17},\ -3u^{26}a^2 + 14u^{26}a + \cdots + 26a + 20,\ u^{27} - 2u^{26} + \cdots - 4u^2 - 1\rangle}$

(i) Arc colorings

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

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_9 = \begin{pmatrix} a \\ 0.176060a^3u^{26} - 0.385193a^2u^{26} + \cdots + 2.91706a - 4.61207 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.176060a^3u^{26} - 0.385193a^2u^{26} + \cdots + 3.91706a - 4.61207 \\ 0.176060a^3u^{26} - 0.385193a^2u^{26} + \cdots + 2.91706a - 4.61207 \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} -u^2 + 1 \\ u^4 - 2u^2 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -u^5 + 2u^3 - u \\ u^7 - 3u^5 + 2u^3 + u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 0.443539a^3u^{26} + 0.0267099a^2u^{26} + \cdots - 5.19958a + 1.23689 \\ 0.115832a^3u^{26} + 0.0266748a^2u^{26} + \cdots - 1.26000a - 0.651394 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0.548648a^3u^{26} + 0.0825110a^2u^{26} + \cdots - 2.35342a + 0.892170 \\ -0.182292a^3u^{26} + 0.233760a^2u^{26} + \cdots - 0.843751a - 0.545393 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -0.220946a^3u^{26} - 0.143290a^2u^{26} + \cdots + 3.15493a + 1.19899 \\ -0.182292a^3u^{26} + 0.233760a^2u^{26} + \cdots - 0.843751a + 0.454607 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.183066a^3u^{26} - 0.934784a^2u^{26} + \cdots + 3.70027a + 0.243925 \\ 0.225356a^3u^{26} - 0.510726a^2u^{26} + \cdots + 1.33445a - 3.13156 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{26637209800522575}{36531051645049508}u^{26}a^3 + \frac{170790324722509 79}{18265525822524754}u^{26}a^2 + \cdots - \frac{30823107423947660}{9132762911262377}a - \frac{335412553972972235}{36531051645049508}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^{27}+9u^{26}+\cdots+37u+8)^4$
c_2, c_{10}	$u^{108}+4u^{107}+\cdots+5u+1$
c_3, c_9	$u^{108}+2u^{107}+\cdots-100507749u+41406721$
c_4, c_5, c_{12}	$(u^{27}-2u^{26}+\cdots-4u^2-1)^4$
c_6	$(u^2+u+1)^{54}$
c_7	$(u^{27}+13u^{26}+\cdots-u-2)^4$
c_8, c_{11}	$u^{108}+3u^{107}+\cdots-1614u+97$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^{27}+5y^{26}+\cdots-375y-64)^4$
c_2, c_{10}	$y^{108}+38y^{107}+\cdots-117y+1$
c_3, c_9	$y^{108}-38y^{107}+\cdots-55012811704519381y+1714516543971841$
c_4, c_5, c_{12}	$(y^{27}-24y^{26}+\cdots-8y-1)^4$
c_6	$(y^2+y+1)^{54}$
c_7	$(y^{27}-3y^{26}+\cdots+53y-4)^4$
c_8, c_{11}	$y^{108}-31y^{107}+\cdots-144882y+9409$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.895940+0.471258I$ $a=-0.316996-0.787472I$ $b=\ \ 0.919277+0.629136I$	$-2.77585-2.71444I$	$-19.8481+8.7534I$
$u=-0.895940+0.471258I$ $a=\ \ 0.271094+0.389251I$ $b=-0.720925+0.346701I$	$-2.77585+1.34533I$	$-19.8481+1.8252I$
$u=-0.895940+0.471258I$ $a=-0.140733+0.416627I$ $b=-0.925214-0.916885I$	$-2.77585-2.71444I$	$-19.8481+8.7534I$
$u=-0.895940+0.471258I$ $a=-0.363391+0.192576I$ $b=\ \ 0.474696-0.197685I$	$-2.77585+1.34533I$	$-19.8481+1.8252I$
$u=-0.895940-0.471258I$ $a=-0.316996+0.787472I$ $b=\ \ 0.919277-0.629136I$	$-2.77585+2.71444I$	$-19.8481-8.7534I$
$u=-0.895940-0.471258I$ $a=\ \ 0.271094-0.389251I$ $b=-0.720925-0.346701I$	$-2.77585-1.34533I$	$-19.8481-1.8252I$
$u=-0.895940-0.471258I$ $a=-0.140733-0.416627I$ $b=-0.925214+0.916885I$	$-2.77585+2.71444I$	$-19.8481-8.7534I$
$u=-0.895940-0.471258I$ $a=-0.363391-0.192576I$ $b=\ \ 0.474696+0.197685I$	$-2.77585-1.34533I$	$-19.8481-1.8252I$
$u=-1.100980+0.299749I$ $a=-0.842989+0.602127I$ $b=-0.074853-0.969653I$	$-0.748134+1.194470I$	$-2.37245+1.25863I$
$u=-1.100980+0.299749I$ $a=-0.080788-1.306890I$ $b=\ \ 1.09923+1.05154I$	$-0.74813-2.86529I$	$-2.37245+8.18684I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.100980+0.299749I$ $a=-0.587687+0.078440I$ $b=-0.139835+0.439686I$	$-0.748134+1.194470I$	$-2.37245+1.25863I$
$u=-1.100980+0.299749I$ $a=0.206737-0.272392I$ $b=-0.532919-0.972485I$	$-0.74813-2.86529I$	$-2.37245+8.18684I$
$u=-1.100980-0.299749I$ $a=-0.842989-0.602127I$ $b=-0.074853+0.969653I$	$-0.748134-1.194470I$	$-2.37245-1.25863I$
$u=-1.100980-0.299749I$ $a=-0.080788+1.306890I$ $b=1.09923-1.05154I$	$-0.74813+2.86529I$	$-2.37245-8.18684I$
$u=-1.100980-0.299749I$ $a=-0.587687-0.078440I$ $b=-0.139835-0.439686I$	$-0.748134-1.194470I$	$-2.37245-1.25863I$
$u=-1.100980-0.299749I$ $a=0.206737+0.272392I$ $b=-0.532919+0.972485I$	$-0.74813+2.86529I$	$-2.37245-8.18684I$
$u=-0.258632+0.812574I$ $a=-0.538970-0.790372I$ $b=1.115490-0.762972I$	$-0.78316+7.28385I$	$-12.4696-13.4772I$
$u=-0.258632+0.812574I$ $a=0.467701+1.208680I$ $b=-1.01213+1.14733I$	$-0.78316+7.28385I$	$-12.4696-13.4772I$
$u=-0.258632+0.812574I$ $a=-0.232781-0.635527I$ $b=0.401028-0.304384I$	$-0.78316+3.22409I$	$-12.46955-6.54904I$
$u=-0.258632+0.812574I$ $a=-0.093848+0.364653I$ $b=-0.785574+0.201718I$	$-0.78316+3.22409I$	$-12.46955-6.54904I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.258632-0.812574I$ $a=-0.538970+0.790372I$ $b=\ \ 1.115490+0.762972I$	$-0.78316-7.28385I$	$-12.4696+13.4772I$
$u=-0.258632-0.812574I$ $a=\ \ 0.467701-1.208680I$ $b=-1.01213-1.14733I$	$-0.78316-7.28385I$	$-12.4696+13.4772I$
$u=-0.258632-0.812574I$ $a=-0.232781+0.635527I$ $b=\ \ 0.401028+0.304384I$	$-0.78316-3.22409I$	$-12.46955+6.54904I$
$u=-0.258632-0.812574I$ $a=-0.093848-0.364653I$ $b=-0.785574-0.201718I$	$-0.78316-3.22409I$	$-12.46955+6.54904I$
$u=-0.135996+0.743408I$ $a=-0.909197-0.188369I$ $b=\ \ 0.154931-0.189391I$	$2.15459+2.64686I$	$-0.08758-3.62009I$
$u=-0.135996+0.743408I$ $a=-0.023813-1.077820I$ $b=\ \ 1.48580-1.11777I$	$2.15459+6.70663I$	$-0.08758-10.54829I$
$u=-0.135996+0.743408I$ $a=\ \ 0.019719+0.806849I$ $b=-0.416295+1.085260I$	$2.15459+2.64686I$	$-0.08758-3.62009I$
$u=-0.135996+0.743408I$ $a=\ \ 1.00417+1.53889I$ $b=-0.579271+0.896181I$	$2.15459+6.70663I$	$-0.08758-10.54829I$
$u=-0.135996-0.743408I$ $a=-0.909197+0.188369I$ $b=\ \ 0.154931+0.189391I$	$2.15459-2.64686I$	$-0.08758+3.62009I$
$u=-0.135996-0.743408I$ $a=-0.023813+1.077820I$ $b=\ \ 1.48580+1.11777I$	$2.15459-6.70663I$	$-0.08758+10.54829I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.135996-0.743408I$ $a=\ \ 0.019719-0.806849I$ $b=-0.416295-1.085260I$	$2.15459-2.64686I$	$-0.08758+3.62009I$
$u=-0.135996-0.743408I$ $a=\ \ 1.00417-1.53889I$ $b=-0.579271-0.896181I$	$2.15459-6.70663I$	$-0.08758+10.54829I$
$u=\ \ 1.275050+0.128798I$ $a=-1.267010-0.118323I$ $b=-0.213665+0.986243I$	$-5.25746+0.72192I$	$-10.02480-2.16737I$
$u=\ \ 1.275050+0.128798I$ $a=\ \ 1.68880-0.46838I$ $b=-1.271140+0.513073I$	$-5.25746+0.72192I$	$-10.02480-2.16737I$
$u=\ \ 1.275050+0.128798I$ $a=\ \ 2.17374-1.30704I$ $b=-0.079746+0.187033I$	$-5.25746+4.78168I$	$-10.02480-9.09557I$
$u=\ \ 1.275050+0.128798I$ $a=-2.89274+1.23511I$ $b=\ \ 2.12059+0.34918I$	$-5.25746+4.78168I$	$-10.02480-9.09557I$
$u=\ \ 1.275050-0.128798I$ $a=-1.267010+0.118323I$ $b=-0.213665-0.986243I$	$-5.25746-0.72192I$	$-10.02480+2.16737I$
$u=\ \ 1.275050-0.128798I$ $a=\ \ 1.68880+0.46838I$ $b=-1.271140-0.513073I$	$-5.25746-0.72192I$	$-10.02480+2.16737I$
$u=\ \ 1.275050-0.128798I$ $a=\ \ 2.17374+1.30704I$ $b=-0.079746-0.187033I$	$-5.25746-4.78168I$	$-10.02480+9.09557I$
$u=\ \ 1.275050-0.128798I$ $a=-2.89274-1.23511I$ $b=\ \ 2.12059-0.34918I$	$-5.25746-4.78168I$	$-10.02480+9.09557I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.426561+0.478609I$ $a=-0.804686+0.379765I$ $b=-0.996790-0.658673I$	$-2.08998-0.29093I$	$-13.45580-2.31430I$
$u=-0.426561+0.478609I$ $a=-1.134850+0.340853I$ $b=0.783400-0.399434I$	$-2.08998+3.76884I$	$-13.4558-9.2425I$
$u=-0.426561+0.478609I$ $a=-0.428980-1.297160I$ $b=0.347946+0.310853I$	$-2.08998-0.29093I$	$-13.45580-2.31430I$
$u=-0.426561+0.478609I$ $a=0.95719+1.18623I$ $b=-0.760199+1.135260I$	$-2.08998+3.76884I$	$-13.4558-9.2425I$
$u=-0.426561-0.478609I$ $a=-0.804686-0.379765I$ $b=-0.996790+0.658673I$	$-2.08998+0.29093I$	$-13.45580+2.31430I$
$u=-0.426561-0.478609I$ $a=-1.134850-0.340853I$ $b=0.783400+0.399434I$	$-2.08998-3.76884I$	$-13.4558+9.2425I$
$u=-0.426561-0.478609I$ $a=-0.428980+1.297160I$ $b=0.347946-0.310853I$	$-2.08998+0.29093I$	$-13.45580+2.31430I$
$u=-0.426561-0.478609I$ $a=0.95719-1.18623I$ $b=-0.760199-1.135260I$	$-2.08998-3.76884I$	$-13.4558+9.2425I$
$u=-1.361910+0.175704I$ $a=1.43574+1.40559I$ $b=-0.719715+0.349547I$	$-7.56483+1.30963I$	$-17.0249-2.8244I$
$u=-1.361910+0.175704I$ $a=-2.11646+0.13476I$ $b=0.900281+0.376228I$	$-7.56483-2.75014I$	$-17.0249+4.1038I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.361910+0.175704I$ $a=-2.24358+0.91101I$ $b=\ \ 0.79737-2.17995I$	$-7.56483-2.75014I$	$-17.0249+4.1038I$
$u=-1.361910+0.175704I$ $a=\ \ 1.64993+1.84742I$ $b=-1.69118-0.91789I$	$-7.56483+1.30963I$	$-17.0249-2.8244I$
$u=-1.361910-0.175704I$ $a=\ \ 1.43574-1.40559I$ $b=-0.719715-0.349547I$	$-7.56483-1.30963I$	$-17.0249+2.8244I$
$u=-1.361910-0.175704I$ $a=-2.11646-0.13476I$ $b=\ \ 0.900281-0.376228I$	$-7.56483+2.75014I$	$-17.0249-4.1038I$
$u=-1.361910-0.175704I$ $a=-2.24358-0.91101I$ $b=\ \ 0.79737+2.17995I$	$-7.56483+2.75014I$	$-17.0249-4.1038I$
$u=-1.361910-0.175704I$ $a=\ \ 1.64993-1.84742I$ $b=-1.69118+0.91789I$	$-7.56483-1.30963I$	$-17.0249+2.8244I$
$u=\ \ 1.346310+0.301034I$ $a=-1.134500+0.245507I$ $b=\ \ 0.368928+0.011255I$	$-2.51876-6.41615I$	$-5.70105+4.93466I$
$u=\ \ 1.346310+0.301034I$ $a=\ \ 1.338540+0.061389I$ $b=-0.653810-1.179690I$	$-2.51876-6.41615I$	$-5.70105+4.93466I$
$u=\ \ 1.346310+0.301034I$ $a=\ \ 2.19472-0.62293I$ $b=-0.639614-0.804892I$	$-2.51876-10.47590I$	$-5.70105+11.86286I$
$u=\ \ 1.346310+0.301034I$ $a=-2.56252+0.64618I$ $b=\ \ 1.79395+1.14240I$	$-2.51876-10.47590I$	$-5.70105+11.86286I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.346310 - 0.301034I$ $a = -1.134500 - 0.245507I$ $b = 0.368928 - 0.011255I$	$-2.51876 + 6.41615I$	$-5.70105 - 4.93466I$
$u = 1.346310 - 0.301034I$ $a = 1.338540 - 0.061389I$ $b = -0.653810 + 1.179690I$	$-2.51876 + 6.41615I$	$-5.70105 - 4.93466I$
$u = 1.346310 - 0.301034I$ $a = 2.19472 + 0.62293I$ $b = -0.639614 + 0.804892I$	$-2.51876 + 10.47590I$	$-5.70105 - 11.86286I$
$u = 1.346310 - 0.301034I$ $a = -2.56252 - 0.64618I$ $b = 1.79395 - 1.14240I$	$-2.51876 + 10.47590I$	$-5.70105 - 11.86286I$
$u = -1.361280 + 0.230867I$ $a = -0.60208 - 1.79313I$ $b = 0.375544 - 0.403549I$	$-6.82147 + 9.92301I$	$-14.6204 - 12.6800I$
$u = -1.361280 + 0.230867I$ $a = 2.27373 + 0.18008I$ $b = -0.99764 + 1.50439I$	$-6.82147 + 5.86324I$	$-14.6204 - 5.7518I$
$u = -1.361280 + 0.230867I$ $a = 2.24219 + 0.67363I$ $b = -1.322100 - 0.082847I$	$-6.82147 + 5.86324I$	$-14.6204 - 5.7518I$
$u = -1.361280 + 0.230867I$ $a = -0.91654 - 2.54463I$ $b = 2.01542 + 1.70173I$	$-6.82147 + 9.92301I$	$-14.6204 - 12.6800I$
$u = -1.361280 - 0.230867I$ $a = -0.60208 + 1.79313I$ $b = 0.375544 + 0.403549I$	$-6.82147 - 9.92301I$	$-14.6204 + 12.6800I$
$u = -1.361280 - 0.230867I$ $a = 2.27373 - 0.18008I$ $b = -0.99764 - 1.50439I$	$-6.82147 - 5.86324I$	$-14.6204 + 5.7518I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.361280-0.230867I$ $a=\ \ 2.24219-0.67363I$ $b=-1.322100+0.082847I$	$-6.82147-5.86324I$	$-14.6204+5.7518I$
$u=-1.361280-0.230867I$ $a=-0.91654+2.54463I$ $b=\ \ 2.01542-1.70173I$	$-6.82147-9.92301I$	$-14.6204+12.6800I$
$u=\ \ 1.392250+0.184425I$ $a=-1.00121+1.08496I$ $b=\ \ 0.343664+0.141207I$	$-7.68995-2.05560I$	$-16.8022+0.1601I$
$u=\ \ 1.392250+0.184425I$ $a=\ \ 1.33824-1.39343I$ $b=-1.67000+0.64045I$	$-7.68995-2.05560I$	$-16.8022+0.I$
$u=\ \ 1.392250+0.184425I$ $a=-2.08919-0.19656I$ $b=\ \ 0.950129+0.148939I$	$-7.68995-6.11537I$	$-16.8022+7.0883I$
$u=\ \ 1.392250+0.184425I$ $a=\ \ 2.18781+0.64267I$ $b=-0.96390-1.68841I$	$-7.68995-6.11537I$	$-16.8022+7.0883I$
$u=\ \ 1.392250-0.184425I$ $a=-1.00121-1.08496I$ $b=\ \ 0.343664-0.141207I$	$-7.68995+2.05560I$	$-16.8022-0.1601I$
$u=\ \ 1.392250-0.184425I$ $a=\ \ 1.33824+1.39343I$ $b=-1.67000-0.64045I$	$-7.68995+2.05560I$	$-16.8022+0.I$
$u=\ \ 1.392250-0.184425I$ $a=-2.08919+0.19656I$ $b=\ \ 0.950129-0.148939I$	$-7.68995+6.11537I$	$-16.8022-7.0883I$
$u=\ \ 1.392250-0.184425I$ $a=\ \ 2.18781-0.64267I$ $b=-0.96390+1.68841I$	$-7.68995+6.11537I$	$-16.8022-7.0883I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.162222 + 0.561060I$ $a = 0.969046 - 0.551992I$ $b = -1.208870 - 0.134733I$	$-1.97298 - 2.92252I$	$-8.66900 + 6.94780I$
$u = 0.162222 + 0.561060I$ $a = 1.148280 - 0.385564I$ $b = 1.81040 - 1.21825I$	$-1.97298 - 6.98228I$	$-8.6690 + 13.8760I$
$u = 0.162222 + 0.561060I$ $a = 0.32963 - 2.37846I$ $b = -0.80477 - 1.20027I$	$-1.97298 - 2.92252I$	$-8.66900 + 6.94780I$
$u = 0.162222 + 0.561060I$ $a = 0.74023 + 2.97547I$ $b = 0.352570 + 0.141889I$	$-1.97298 - 6.98228I$	$-8.6690 + 13.8760I$
$u = 0.162222 - 0.561060I$ $a = 0.969046 + 0.551992I$ $b = -1.208870 + 0.134733I$	$-1.97298 + 2.92252I$	$-8.66900 - 6.94780I$
$u = 0.162222 - 0.561060I$ $a = 1.148280 + 0.385564I$ $b = 1.81040 + 1.21825I$	$-1.97298 + 6.98228I$	$-8.6690 - 13.8760I$
$u = 0.162222 - 0.561060I$ $a = 0.32963 + 2.37846I$ $b = -0.80477 + 1.20027I$	$-1.97298 + 2.92252I$	$-8.66900 - 6.94780I$
$u = 0.162222 - 0.561060I$ $a = 0.74023 - 2.97547I$ $b = 0.352570 - 0.141889I$	$-1.97298 + 6.98228I$	$-8.6690 - 13.8760I$
$u = 1.41446 + 0.33004I$ $a = -1.053820 + 0.460495I$ $b = 0.591561 + 0.493700I$	$-6.10599 - 7.35173I$	$-15.0667 + 6.2019I$
$u = 1.41446 + 0.33004I$ $a = 1.168710 - 0.542011I$ $b = -1.074410 - 0.369369I$	$-6.10599 - 7.35173I$	$-15.0667 + 6.2019I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.41446 + 0.33004I$ $a = 2.01384 - 0.33111I$ $b = -1.13340 - 1.26029I$	$-6.10599 - 11.41150I$	$-15.0667 + 13.1301I$
$u = 1.41446 + 0.33004I$ $a = -2.00069 + 0.47136I$ $b = 1.26716 + 0.77996I$	$-6.10599 - 11.41150I$	$-15.0667 + 13.1301I$
$u = 1.41446 - 0.33004I$ $a = -1.053820 - 0.460495I$ $b = 0.591561 - 0.493700I$	$-6.10599 + 7.35173I$	$-15.0667 - 6.2019I$
$u = 1.41446 - 0.33004I$ $a = 1.168710 + 0.542011I$ $b = -1.074410 + 0.369369I$	$-6.10599 + 7.35173I$	$-15.0667 - 6.2019I$
$u = 1.41446 - 0.33004I$ $a = 2.01384 + 0.33111I$ $b = -1.13340 + 1.26029I$	$-6.10599 + 11.41150I$	$-15.0667 - 13.1301I$
$u = 1.41446 - 0.33004I$ $a = -2.00069 - 0.47136I$ $b = 1.26716 - 0.77996I$	$-6.10599 + 11.41150I$	$-15.0667 - 13.1301I$
$u = 1.48928$ $a = -1.61041 + 0.46911I$ $b = 1.078730 - 0.177724I$	$-10.74910 + 2.02988I$	$-20.2145 - 3.4641I$
$u = 1.48928$ $a = -1.61041 - 0.46911I$ $b = 1.078730 + 0.177724I$	$-10.74910 - 2.02988I$	$-20.2145 + 3.4641I$
$u = 1.48928$ $a = 1.67403 + 0.57931I$ $b = -1.31458 - 0.58624I$	$-10.74910 - 2.02988I$	$-20.2145 + 3.4641I$
$u = 1.48928$ $a = 1.67403 - 0.57931I$ $b = -1.31458 + 0.58624I$	$-10.74910 + 2.02988I$	$-20.2145 - 3.4641I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.206359 + 0.377187I$ $a = -0.492086 - 0.710392I$ $b = -1.27194 + 0.65875I$	$-2.62198 + 0.87662I$	$-12.25021 + 5.01241I$
$u = 0.206359 + 0.377187I$ $a = -2.37122 - 0.72695I$ $b = 0.927860 - 0.132933I$	$-2.62198 + 4.93638I$	$-12.25021 - 1.91580I$
$u = 0.206359 + 0.377187I$ $a = -0.09064 - 2.99853I$ $b = -0.642227 + 0.047404I$	$-2.62198 + 0.87662I$	$-12.25021 + 5.01241I$
$u = 0.206359 + 0.377187I$ $a = -0.54943 + 3.08606I$ $b = 0.64077 + 1.43757I$	$-2.62198 + 4.93638I$	$-12.25021 - 1.91580I$
$u = 0.206359 - 0.377187I$ $a = -0.492086 + 0.710392I$ $b = -1.27194 - 0.65875I$	$-2.62198 - 0.87662I$	$-12.25021 - 5.01241I$
$u = 0.206359 - 0.377187I$ $a = -2.37122 + 0.72695I$ $b = 0.927860 + 0.132933I$	$-2.62198 - 4.93638I$	$-12.25021 + 1.91580I$
$u = 0.206359 - 0.377187I$ $a = -0.09064 + 2.99853I$ $b = -0.642227 - 0.047404I$	$-2.62198 - 0.87662I$	$-12.25021 - 5.01241I$
$u = 0.206359 - 0.377187I$ $a = -0.54943 - 3.08606I$ $b = 0.64077 - 1.43757I$	$-2.62198 - 4.93638I$	$-12.25021 + 1.91580I$

III. $I_3^u = \langle 91u^{26} - 160u^{25} + \cdots + 6b - 74,\ -185u^{26} + 296u^{25} + \cdots + 6a + 154,\ u^{27} - 3u^{26} + \cdots + 4u + 1\rangle$

(i) Arc colorings

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

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_9 = \begin{pmatrix} 30.8333u^{26} - 49.3333u^{25} + \cdots - 113.500u - 25.6667 \\ -15.1667u^{26} + 26.6667u^{25} + \cdots + 54.5000u + 12.3333 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} \frac{47}{3}u^{26} - \frac{68}{3}u^{25} + \cdots - 59u - \frac{40}{3} \\ -15.1667u^{26} + 26.6667u^{25} + \cdots + 54.5000u + 12.3333 \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} -u^2 + 1 \\ u^4 - 2u^2 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -u^5 + 2u^3 - u \\ u^7 - 3u^5 + 2u^3 + u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -\frac{13}{3}u^{26} + \frac{13}{3}u^{25} + \cdots + 18u + \frac{17}{3} \\ \frac{25}{3}u^{26} - \frac{89}{6}u^{25} + \cdots - \frac{53}{2}u - \frac{37}{6} \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -\frac{73}{6}u^{26} + \frac{127}{6}u^{25} + \cdots + 46u + \frac{41}{6} \\ \frac{17}{6}u^{26} - \frac{29}{6}u^{25} + \cdots - 17u - \frac{19}{6} \end{pmatrix}$$

$$a_7 = \begin{pmatrix} \frac{17}{3}u^{26} - \frac{61}{6}u^{25} + \cdots - \frac{79}{2}u - \frac{35}{6} \\ \frac{5}{6}u^{26} - \frac{4}{3}u^{25} + \cdots + \frac{1}{2}u + \frac{1}{3} \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 17.3333u^{26} - 25.8333u^{25} + \cdots - 64.5000u - 15.1667 \\ -\frac{22}{3}u^{26} + \frac{40}{3}u^{25} + \cdots + 28u + \frac{20}{3} \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= \frac{94}{3}u^{26} - \frac{257}{6}u^{25} + \cdots - \frac{241}{2}u - \frac{217}{6}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{27} - 6u^{26} + \cdots - 102u + 9$
c_2, c_{10}	$u^{27} - u^{26} + \cdots + u - 1$
c_3, c_9	$u^{27} - u^{26} + \cdots - 7u^2 + 1$
c_4, c_5	$u^{27} - 3u^{26} + \cdots + 4u + 1$
c_6	$u^{27} - 5u^{26} + \cdots + 8u - 1$
c_7	$u^{27} - 16u^{26} + \cdots + 39u - 9$
c_8, c_{11}	$u^{27} + 7u^{26} + \cdots + 5u + 1$
c_{12}	$u^{27} + 3u^{26} + \cdots + 4u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{27} - 6y^{26} + \cdots - 90y - 81$
c_2, c_{10}	$y^{27} + 11y^{26} + \cdots - 15y - 1$
c_3, c_9	$y^{27} - 11y^{26} + \cdots + 14y - 1$
c_4, c_5, c_{12}	$y^{27} - 27y^{26} + \cdots - 8y - 1$
c_6	$y^{27} + 5y^{26} + \cdots - 2y - 1$
c_7	$y^{27} - 8y^{26} + \cdots + 207y - 81$
c_8, c_{11}	$y^{27} - 11y^{26} + \cdots + 41y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.853016+0.354625I$ $a=-0.143361-0.644625I$ $b=\ \ 0.827175+0.800288I$	$-2.08630-2.33845I$	$-7.99756+1.72353I$
$u=-0.853016-0.354625I$ $a=-0.143361+0.644625I$ $b=\ \ 0.827175-0.800288I$	$-2.08630+2.33845I$	$-7.99756-1.72353I$
$u=\ \ 0.085686+0.866106I$ $a=-0.298049+0.210716I$ $b=-0.398154-0.039329I$	$-0.26491+4.66029I$	$-11.46761-1.46133I$
$u=\ \ 0.085686-0.866106I$ $a=-0.298049-0.210716I$ $b=-0.398154+0.039329I$	$-0.26491-4.66029I$	$-11.46761+1.46133I$
$u=-0.253272+0.773514I$ $a=-0.601020-1.011480I$ $b=\ \ 1.009880-0.984517I$	$-0.15299+6.52246I$	$-5.19116-5.34197I$
$u=-0.253272-0.773514I$ $a=-0.601020+1.011480I$ $b=\ \ 1.009880+0.984517I$	$-0.15299-6.52246I$	$-5.19116+5.34197I$
$u=-0.651227+0.357480I$ $a=-0.643213-0.113075I$ $b=\ \ 0.702535-0.422275I$	$-2.28135+1.93745I$	$-11.33304-7.12825I$
$u=-0.651227-0.357480I$ $a=-0.643213+0.113075I$ $b=\ \ 0.702535+0.422275I$	$-2.28135-1.93745I$	$-11.33304+7.12825I$
$u=\ \ 1.292370+0.165730I$ $a=\ \ 3.02520-0.61031I$ $b=-1.220290-0.580694I$	$-5.65816+3.74883I$	$-12.60504-0.91347I$
$u=\ \ 1.292370-0.165730I$ $a=\ \ 3.02520+0.61031I$ $b=-1.220290+0.580694I$	$-5.65816-3.74883I$	$-12.60504+0.91347I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.284730 + 0.310009I$ $a = 0.84591 - 1.24453I$ $b = -0.833662 - 0.075930I$	$-4.07460 - 8.72759I$	$-10.75217 + 8.77108I$
$u = 1.284730 - 0.310009I$ $a = 0.84591 + 1.24453I$ $b = -0.833662 + 0.075930I$	$-4.07460 + 8.72759I$	$-10.75217 - 8.77108I$
$u = -1.358460 + 0.208245I$ $a = 0.161561 + 0.357612I$ $b = -0.787417 - 1.005180I$	$-6.54862 + 8.67864I$	$-12.16190 - 6.08678I$
$u = -1.358460 - 0.208245I$ $a = 0.161561 - 0.357612I$ $b = -0.787417 + 1.005180I$	$-6.54862 - 8.67864I$	$-12.16190 + 6.08678I$
$u = -1.384270 + 0.119045I$ $a = -0.152195 - 0.226744I$ $b = 0.601880 + 0.676868I$	$-6.77957 - 0.56842I$	$-15.4866 + 4.1498I$
$u = -1.384270 - 0.119045I$ $a = -0.152195 + 0.226744I$ $b = 0.601880 - 0.676868I$	$-6.77957 + 0.56842I$	$-15.4866 - 4.1498I$
$u = 1.383310 + 0.189796I$ $a = -2.15406 + 0.60920I$ $b = 1.268840 + 0.421175I$	$-7.64502 - 3.98387I$	$-17.1030 + 3.7006I$
$u = 1.383310 - 0.189796I$ $a = -2.15406 - 0.60920I$ $b = 1.268840 - 0.421175I$	$-7.64502 + 3.98387I$	$-17.1030 - 3.7006I$
$u = 1.40974 + 0.31383I$ $a = -2.05792 + 0.29448I$ $b = 1.15419 + 1.03398I$	$-5.44866 - 10.46400I$	$-9.56556 + 5.97787I$
$u = 1.40974 - 0.31383I$ $a = -2.05792 - 0.29448I$ $b = 1.15419 - 1.03398I$	$-5.44866 + 10.46400I$	$-9.56556 - 5.97787I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.46124 + 0.08138I$ $a = -1.37967 + 1.09604I$ $b = 1.092220 - 0.515594I$	$-8.96775 + 1.37304I$	$-12.24810 + 1.40712I$
$u = 1.46124 - 0.08138I$ $a = -1.37967 - 1.09604I$ $b = 1.092220 + 0.515594I$	$-8.96775 - 1.37304I$	$-12.24810 - 1.40712I$
$u = 0.093061 + 0.496676I$ $a = -0.06092 + 2.26760I$ $b = -0.936808 + 0.726148I$	$-1.84343 - 6.05672I$	$-5.36038 + 4.07426I$
$u = 0.093061 - 0.496676I$ $a = -0.06092 - 2.26760I$ $b = -0.936808 - 0.726148I$	$-1.84343 + 6.05672I$	$-5.36038 - 4.07426I$
$u = -1.64818$ $a = -0.0498316$ $b = 0.217499$	-6.77052	24.5800
$u = -0.185817 + 0.268768I$ $a = -2.01736 - 1.66031I$ $b = 0.910864 - 0.497797I$	$-2.43609 + 1.79985I$	$-11.01770 - 3.85036I$
$u = -0.185817 - 0.268768I$ $a = -2.01736 + 1.66031I$ $b = 0.910864 + 0.497797I$	$-2.43609 - 1.79985I$	$-11.01770 + 3.85036I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4a - 7$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_7	u^2
c_2, c_3, c_{12}	$(u-1)^2$
c_4, c_5	$(u+1)^2$
c_6, c_8, c_9 c_{10}, c_{11}	u^2+u+1

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_7	y^2
c_2, c_3, c_4 c_5, c_{12}	$(y-1)^2$
c_6, c_8, c_9 c_{10}, c_{11}	y^2+y+1

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.00000$		
$a=\quad 0.500000+0.866025I$	$-1.64493+2.02988I$	$-9.00000-3.46410I$
$b=\quad 0.500000-0.866025I$		
$u=-1.00000$		
$a=\quad 0.500000-0.866025I$	$-1.64493-2.02988I$	$-9.00000+3.46410I$
$b=\quad 0.500000+0.866025I$		

V. $I_5^u = \langle b^2 - b + 1,\ a + 1,\ u + 1 \rangle$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ -1 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -1 \\ b \end{pmatrix}$$
$$a_8 = \begin{pmatrix} b-1 \\ b \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} b \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -b-1 \\ b-1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} b-1 \\ b \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -1 \\ b-1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4b - 11$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_7	u^2
c_2, c_3, c_6 c_8, c_{11}	$u^2 + u + 1$
c_4, c_5	$(u+1)^2$
c_9, c_{10}, c_{12}	$(u-1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_7	y^2
c_2, c_3, c_6 c_8, c_{11}	$y^2 + y + 1$
c_4, c_5, c_9 c_{10}, c_{12}	$(y-1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.00000$ $a=-1.00000$ $b=\ \ 0.500000+0.866025I$	$-1.64493-2.02988I$	$-9.00000+3.46410I$
$u=-1.00000$ $a=-1.00000$ $b=\ \ 0.500000-0.866025I$	$-1.64493+2.02988I$	$-9.00000-3.46410I$

VI. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$u^4(u^{27}-6u^{26}+\cdots-102u+9)(u^{27}+9u^{26}+\cdots+37u+8)^4$ $\cdot(u^{55}-33u^{54}+\cdots+47308u-3536)$
c_2, c_{10}	$((u-1)^2)(u^2+u+1)(u^{27}-u^{26}+\cdots+u-1)(u^{55}+u^{54}+\cdots+u-1)$ $\cdot(u^{108}+4u^{107}+\cdots+5u+1)$
c_3, c_9	$((u-1)^2)(u^2+u+1)(u^{27}-u^{26}+\cdots-7u^2+1)(u^{55}-u^{54}+\cdots-2u+17)$ $\cdot(u^{108}+2u^{107}+\cdots-100507749u+41406721)$
c_4, c_5	$((u+1)^4)(u^{27}-3u^{26}+\cdots+4u+1)(u^{27}-2u^{26}+\cdots-4u^2-1)^4$ $\cdot(u^{55}+10u^{54}+\cdots+28u-16)$
c_6	$((u^2+u+1)^{56})(u^{27}-5u^{26}+\cdots+8u-1)$ $\cdot(u^{55}-48u^{54}+\cdots+1543503872u-67108864)$
c_7	$u^4(u^{27}-16u^{26}+\cdots+39u-9)(u^{27}+13u^{26}+\cdots-u-2)^4$ $\cdot(u^{55}-37u^{54}+\cdots+6u-4)$
c_8, c_{11}	$((u^2+u+1)^2)(u^{27}+7u^{26}+\cdots+5u+1)(u^{55}+3u^{54}+\cdots+5u+1)$ $\cdot(u^{108}+3u^{107}+\cdots-1614u+97)$
c_{12}	$((u-1)^4)(u^{27}-2u^{26}+\cdots-4u^2-1)^4(u^{27}+3u^{26}+\cdots+4u-1)$ $\cdot(u^{55}+10u^{54}+\cdots+28u-16)$

VII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$y^4(y^{27}-6y^{26}+\cdots-90y-81)(y^{27}+5y^{26}+\cdots-375y-64)^4$ $\cdot(y^{55}-y^{54}+\cdots-122155344y-12503296)$
c_2, c_{10}	$((y-1)^2)(y^2+y+1)(y^{27}+11y^{26}+\cdots-15y-1)$ $\cdot(y^{55}-11y^{54}+\cdots+19y-1)(y^{108}+38y^{107}+\cdots-117y+1)$
c_3, c_9	$((y-1)^2)(y^2+y+1)(y^{27}-11y^{26}+\cdots+14y-1)$ $\cdot(y^{55}-21y^{54}+\cdots+5512y-289)$ $\cdot(y^{108}-38y^{107}+\cdots-55012811704519381y+1714516543971841)$
c_4, c_5, c_{12}	$((y-1)^4)(y^{27}-27y^{26}+\cdots-8y-1)(y^{27}-24y^{26}+\cdots-8y-1)^4$ $\cdot(y^{55}-50y^{54}+\cdots-2256y-256)$
c_6	$((y^2+y+1)^{56})(y^{27}+5y^{26}+\cdots-2y-1)$ $\cdot(y^{55}+6y^{54}+\cdots+11258999068426240y-4503599627370496)$
c_7	$y^4(y^{27}-8y^{26}+\cdots+207y-81)(y^{27}-3y^{26}+\cdots+53y-4)^4$ $\cdot(y^{55}-11y^{54}+\cdots+460y-16)$
c_8, c_{11}	$((y^2+y+1)^2)(y^{27}-11y^{26}+\cdots+41y-1)$ $\cdot(y^{55}+15y^{54}+\cdots+31y-1)(y^{108}-31y^{107}+\cdots-144882y+9409)$