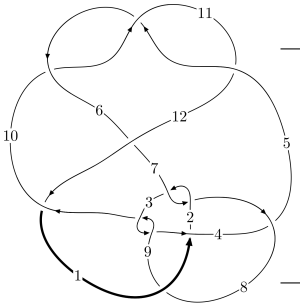
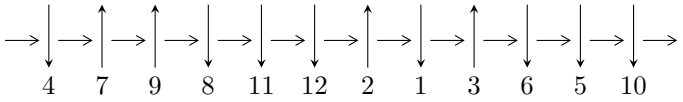
$12a_{1046}$ $(K12a_{1046})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 17u^{38} + 107u^{37} + \cdots + 4b - 260,\ 21u^{38} + 133u^{37} + \cdots + 8a - 60,\ u^{39} + 7u^{38} + \cdots - 60u - 8\rangle$$

$$\begin{aligned} I_2^u = \langle & 6.66973 \times 10^{28}a^5u^{13} + 1.23560 \times 10^{29}a^4u^{13} + \cdots - 4.72555 \times 10^{29}a + 3.07955 \times 10^{29}, \\ & 2u^{13}a^4 + 7u^{13}a^3 + \cdots - 6a - 15, \\ & u^{14} - u^{13} + 7u^{12} - 6u^{11} + 18u^{10} - 13u^9 + 19u^8 - 10u^7 + 4u^6 + 2u^5 - 4u^4 + 4u^3 - u + 1\rangle \end{aligned}$$

$$\begin{aligned} I_3^u = \langle & -u^{17} - 8u^{15} - 25u^{13} - 37u^{11} - u^{10} - 25u^9 - 5u^8 - 8u^7 - 8u^6 - 6u^5 - 3u^4 - 4u^3 + 2u^2 + b - u, \\ & u^{21} + u^{20} + \cdots + a + 1,\ u^{22} + 11u^{20} + \cdots + 2u + 1\rangle \end{aligned}$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 145 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. $I_1^u = \langle 17u^{38} + 107u^{37} + \cdots + 4b - 260,\ 21u^{38} + 133u^{37} + \cdots + 8a - 60,\ u^{39} + 7u^{38} + \cdots - 60u - 8 \rangle$

(i) Arc colorings

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

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

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

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

$$a_{12} = \begin{pmatrix} u^2 + 1 \\ u^4 + 2u^2 \end{pmatrix}$$

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

$$a_1 = \begin{pmatrix} -u^4 - u^2 + 1 \\ u^4 + 2u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -2.62500u^{38} - 16.6250u^{37} + \cdots + 105.750u + 7.50000 \\ -\frac{17}{4}u^{38} - \frac{107}{4}u^{37} + \cdots + 388u + 65 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 2.37500u^{38} + 18.3750u^{37} + \cdots - 176.250u - 22.5000 \\ \frac{11}{4}u^{38} + \frac{57}{4}u^{37} + \cdots - 210u - 33 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -\frac{55}{8}u^{38} - \frac{371}{8}u^{37} + \cdots + \frac{1737}{4}u + 66 \\ \frac{17}{4}u^{38} + \frac{105}{4}u^{37} + \cdots - \frac{243}{2}u - 13 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -\frac{29}{8}u^{38} - \frac{207}{8}u^{37} + \cdots + \frac{421}{2}u + 24 \\ -4u^{38} - \frac{47}{2}u^{37} + \cdots + \frac{747}{2}u + 61 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -\frac{13}{8}u^{38} - \frac{65}{8}u^{37} + \cdots + \frac{3}{4}u + 1 \\ -\frac{19}{4}u^{38} - \frac{127}{4}u^{37} + \cdots + \frac{661}{2}u + 51 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 6u^{38} + 36u^{37} + \cdots - 148u - 10$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{39} - 33u^{38} + \cdots + 352256u - 16384$
c_2, c_3, c_7 c_9	$u^{39} + 13u^{37} + \cdots - 2u + 1$
c_4, c_8	$u^{39} + u^{38} + \cdots + 3u + 1$
c_5, c_{10}, c_{11}	$u^{39} - 7u^{38} + \cdots - 60u + 8$
c_6	$u^{39} + 7u^{38} + \cdots - 1596u + 2088$
c_{12}	$u^{39} - 9u^{38} + \cdots - 43968u + 9728$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{39} - 9y^{38} + \cdots + 3019898880y - 268435456$
c_2, c_3, c_7 c_9	$y^{39} + 26y^{38} + \cdots + 8y - 1$
c_4, c_8	$y^{39} + 9y^{38} + \cdots - 23y - 1$
c_5, c_{10}, c_{11}	$y^{39} + 35y^{38} + \cdots - 48y - 64$
c_6	$y^{39} + 5y^{38} + \cdots - 35220528y - 4359744$
c_{12}	$y^{39} + 15y^{38} + \cdots - 1741041664y - 94633984$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.402641+0.923218I$ $a=\ \ 0.123865+0.173423I$ $b=-0.313293+0.898902I$	$-0.83222-1.74805I$	$1.85163+7.08327I$
$u=-0.402641-0.923218I$ $a=\ \ 0.123865-0.173423I$ $b=-0.313293-0.898902I$	$-0.83222+1.74805I$	$1.85163-7.08327I$
$u=-0.711880+0.543145I$ $a=-0.596131-0.139383I$ $b=\ \ 0.047860+0.975188I$	$-0.45441+2.42357I$	$-6.62342-4.26652I$
$u=-0.711880-0.543145I$ $a=-0.596131+0.139383I$ $b=\ \ 0.047860-0.975188I$	$-0.45441-2.42357I$	$-6.62342+4.26652I$
$u=-0.477289+0.710961I$ $a=-0.147405+0.420958I$ $b=\ \ 0.54795-1.36232I$	$-4.43014-10.11780I$	$-6.08524+4.54583I$
$u=-0.477289-0.710961I$ $a=-0.147405-0.420958I$ $b=\ \ 0.54795+1.36232I$	$-4.43014+10.11780I$	$-6.08524-4.54583I$
$u=-0.790989+0.257645I$ $a=-1.01138+1.09144I$ $b=\ \ 0.403002+0.993100I$	$-2.87677+6.11596I$	$-5.61902-11.75200I$
$u=-0.790989-0.257645I$ $a=-1.01138-1.09144I$ $b=\ \ 0.403002-0.993100I$	$-2.87677-6.11596I$	$-5.61902+11.75200I$
$u=\ \ 0.342776+1.125240I$ $a=-1.077400-0.136141I$ $b=\ \ 0.39377-1.36577I$	$-5.82056-9.89475I$	$-7.41952+7.73819I$
$u=\ \ 0.342776-1.125240I$ $a=-1.077400+0.136141I$ $b=\ \ 0.39377+1.36577I$	$-5.82056+9.89475I$	$-7.41952-7.73819I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.755894+0.317559I$ $a=1.61018-1.04698I$ $b=-0.59395-1.40684I$	$-5.7809+14.4369I$	$-8.07183-9.36551I$
$u=-0.755894-0.317559I$ $a=1.61018+1.04698I$ $b=-0.59395+1.40684I$	$-5.7809-14.4369I$	$-8.07183+9.36551I$
$u=0.798444+0.067462I$ $a=-0.366765-1.043450I$ $b=-0.305676-1.327300I$	$-9.06750+5.75506I$	$-11.48705-4.63489I$
$u=0.798444-0.067462I$ $a=-0.366765+1.043450I$ $b=-0.305676+1.327300I$	$-9.06750-5.75506I$	$-11.48705+4.63489I$
$u=-0.624159+0.368707I$ $a=-0.309607+0.944919I$ $b=0.742260-0.072896I$	$2.43896+3.63567I$	$0.57871-5.66121I$
$u=-0.624159-0.368707I$ $a=-0.309607-0.944919I$ $b=0.742260+0.072896I$	$2.43896-3.63567I$	$0.57871+5.66121I$
$u=0.141393+1.269230I$ $a=0.171501+0.444677I$ $b=-0.487698-0.033283I$	$2.67445-2.43754I$	0
$u=0.141393-1.269230I$ $a=0.171501-0.444677I$ $b=-0.487698+0.033283I$	$2.67445+2.43754I$	0
$u=0.359384+1.271690I$ $a=0.786179-0.431294I$ $b=0.228282+1.275960I$	$-4.91124+1.59162I$	0
$u=0.359384-1.271690I$ $a=0.786179+0.431294I$ $b=0.228282-1.275960I$	$-4.91124-1.59162I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.513565+0.443254I$ $a=\ \ 0.813961-0.283065I$ $b=-0.740571-0.193624I$	$2.83998+0.06866I$	$1.72690-2.02626I$
$u=-0.513565-0.443254I$ $a=\ \ 0.813961+0.283065I$ $b=-0.740571+0.193624I$	$2.83998-0.06866I$	$1.72690+2.02626I$
$u=\ \ 0.286826+0.574932I$ $a=\ \ 0.705124+0.432129I$ $b=-0.204549+0.657112I$	$-0.221784-1.394250I$	$-2.01573+3.25063I$
$u=\ \ 0.286826-0.574932I$ $a=\ \ 0.705124-0.432129I$ $b=-0.204549-0.657112I$	$-0.221784+1.394250I$	$-2.01573-3.25063I$
$u=-0.06245+1.42153I$ $a=-1.195630+0.599024I$ $b=\ \ 0.571644-0.706847I$	$6.09815-1.32183I$	0
$u=-0.06245-1.42153I$ $a=-1.195630-0.599024I$ $b=\ \ 0.571644+0.706847I$	$6.09815+1.32183I$	0
$u=-0.31542+1.41590I$ $a=\ \ 1.78095-0.15255I$ $b=-0.470372-1.030310I$	$2.46313+10.11530I$	0
$u=-0.31542-1.41590I$ $a=\ \ 1.78095+0.15255I$ $b=-0.470372+1.030310I$	$2.46313-10.11530I$	0
$u=-0.19256+1.44129I$ $a=-1.64680+0.08898I$ $b=\ \ 0.847538+0.236025I$	$8.83636+2.66799I$	0
$u=-0.19256-1.44129I$ $a=-1.64680-0.08898I$ $b=\ \ 0.847538-0.236025I$	$8.83636-2.66799I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.23418+1.44082I$ $a=\ \ 1.16879-0.89698I$ $b=-0.802572+0.020537I$	$8.24829+6.77910I$	0
$u=-0.23418-1.44082I$ $a=\ \ 1.16879+0.89698I$ $b=-0.802572-0.020537I$	$8.24829-6.77910I$	0
$u=-0.29621+1.43559I$ $a=-2.41476-0.26767I$ $b=\ \ 0.63351+1.41710I$	$-0.1721+18.2585I$	0
$u=-0.29621-1.43559I$ $a=-2.41476+0.26767I$ $b=\ \ 0.63351-1.41710I$	$-0.1721-18.2585I$	0
$u=\ \ 0.534008$ $a=\ \ 0.570035$ $b=\ \ 0.419240$	-1.19215	-7.70730
$u=-0.09732+1.48612I$ $a=\ \ 0.92868-1.50124I$ $b=-0.583941+1.263340I$	$2.68660-8.37607I$	0
$u=-0.09732-1.48612I$ $a=\ \ 0.92868+1.50124I$ $b=-0.583941-1.263340I$	$2.68660+8.37607I$	0
$u=-0.22127+1.51243I$ $a=\ \ 0.641621+0.918434I$ $b=-0.122823-0.904781I$	$6.27991+5.75991I$	0
$u=-0.22127-1.51243I$ $a=\ \ 0.641621-0.918434I$ $b=-0.122823+0.904781I$	$6.27991-5.75991I$	0

II. $\boldsymbol{I_2^u = \langle 6.67 \times 10^{28} a^5 u^{13} + 1.24 \times 10^{29} a^4 u^{13} + \cdots - 4.73 \times 10^{29} a + 3.08 \times 10^{29},\ 2u^{13}a^4 + 7u^{13}a^3 + \cdots - 6a - 15,\ u^{14} - u^{13} + \cdots - u + 1\rangle}$

(i) Arc colorings

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

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

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

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

$$a_{12} = \begin{pmatrix} u^2 + 1 \\ u^4 + 2u^2 \end{pmatrix}$$

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

$$a_1 = \begin{pmatrix} -u^4 - u^2 + 1 \\ u^4 + 2u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} a \\ -0.245209a^5u^{13} - 0.454264a^4u^{13} + \cdots + 1.73733a - 1.13218 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.244193a^5u^{13} - 0.0145692a^4u^{13} + \cdots + 1.26898a + 0.587986 \\ -0.257700a^5u^{13} + 0.00989329a^4u^{13} + \cdots - 2.42319a + 0.0658441 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.101522a^5u^{13} + 0.763635a^4u^{13} + \cdots - 1.41580a + 1.73128 \\ -0.908162a^5u^{13} + 0.543108a^4u^{13} + \cdots + 4.56138a - 0.000383679 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -0.0131242a^5u^{13} - 2.73898a^4u^{13} + \cdots + 0.426251a - 2.89019 \\ -1.89539a^5u^{13} + 3.65697a^4u^{13} + \cdots - 3.10276a + 2.14280 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.506926a^5u^{13} - 0.840778a^4u^{13} + \cdots + 0.949870a - 0.503640 \\ -0.706277a^5u^{13} + 1.21318a^4u^{13} + \cdots + 2.35526a - 0.00134333 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -2.95641a^5u^{13} - 3.40270a^4u^{13} + \cdots + 16.5559a - 6.06062$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^3+u^2-1)^{28}$
c_2, c_3, c_7 c_9	$u^{84}+u^{83}+\cdots-48112u+6329$
c_4, c_8	$u^{84}+3u^{83}+\cdots+8u+1$
c_5, c_{10}, c_{11}	$(u^{14}+u^{13}+\cdots+u+1)^6$
c_6	$(u^{14}-u^{13}+\cdots+3u+1)^6$
c_{12}	$(u^{14}-3u^{13}+\cdots-7u+3)^6$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^3-y^2+2y-1)^{28}$
c_2, c_3, c_7 c_9	$y^{84}+63y^{83}+\cdots+237164204y+40056241$
c_4, c_8	$y^{84}-21y^{83}+\cdots+340y+1$
c_5, c_{10}, c_{11}	$(y^{14}+13y^{13}+\cdots-y+1)^6$
c_6	$(y^{14}+y^{13}+\cdots-y+1)^6$
c_{12}	$(y^{14}+5y^{13}+\cdots+23y+9)^6$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.135360+1.128160I$ $a=-1.182850-0.200988I$ $b=\ \ 0.50647+1.63628I$	$-4.60787+2.19128I$	$-12.25870-3.85718I$
$u=-0.135360+1.128160I$ $a=-1.212890-0.250606I$ $b=\ \ 1.121890+0.329288I$	$-0.47029+5.01941I$	$-5.72943-6.83663I$
$u=-0.135360+1.128160I$ $a=\ \ 0.481585-1.273240I$ $b=-0.232519-1.160780I$	$-0.47029+5.01941I$	$-5.72943-6.83663I$
$u=-0.135360+1.128160I$ $a=\ \ 1.133950+0.759588I$ $b=-0.240320-0.036674I$	$-0.470291-0.636839I$	$-5.72943-0.87773I$
$u=-0.135360+1.128160I$ $a=\ \ 0.047054+0.449604I$ $b=-0.335746+1.109290I$	$-0.470291-0.636839I$	$-5.72943-0.87773I$
$u=-0.135360+1.128160I$ $a=\ \ 1.77857-0.21584I$ $b=-0.091428-1.316860I$	$-4.60787+2.19128I$	$-12.25870-3.85718I$
$u=-0.135360-1.128160I$ $a=-1.182850+0.200988I$ $b=\ \ 0.50647-1.63628I$	$-4.60787-2.19128I$	$-12.25870+3.85718I$
$u=-0.135360-1.128160I$ $a=-1.212890+0.250606I$ $b=\ \ 1.121890-0.329288I$	$-0.47029-5.01941I$	$-5.72943+6.83663I$
$u=-0.135360-1.128160I$ $a=\ \ 0.481585+1.273240I$ $b=-0.232519+1.160780I$	$-0.47029-5.01941I$	$-5.72943+6.83663I$
$u=-0.135360-1.128160I$ $a=\ \ 1.133950-0.759588I$ $b=-0.240320+0.036674I$	$-0.470291+0.636839I$	$-5.72943+0.87773I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.135360-1.128160I$ $a=\ \ 0.047054-0.449604I$ $b=-0.335746-1.109290I$	$-0.470291+0.636839I$	$-5.72943+0.87773I$
$u=-0.135360-1.128160I$ $a=\ \ 1.77857+0.21584I$ $b=-0.091428+1.316860I$	$-4.60787-2.19128I$	$-12.25870+3.85718I$
$u=\ \ 0.681829+0.299736I$ $a=\ \ 0.421363+1.011630I$ $b=-1.312900-0.004296I$	$-1.34687-7.89997I$	$-6.16177+9.31071I$
$u=\ \ 0.681829+0.299736I$ $a=\ \ 1.05793+0.99307I$ $b=-0.109335+1.070390I$	$-1.34687-2.24373I$	$-6.16177+3.35182I$
$u=\ \ 0.681829+0.299736I$ $a=\ \ 0.0026716-0.0183627I$ $b=\ \ 0.562454+0.438542I$	$-1.34687-2.24373I$	$-6.16177+3.35182I$
$u=\ \ 0.681829+0.299736I$ $a=\ \ 1.87861+0.90732I$ $b=-0.77979+1.41836I$	$-5.48445-5.07185I$	$-12.6910+6.3313I$
$u=\ \ 0.681829+0.299736I$ $a=-2.21826-0.38907I$ $b=\ \ 0.170971-1.120650I$	$-5.48445-5.07185I$	$-12.6910+6.3313I$
$u=\ \ 0.681829+0.299736I$ $a=-1.73836-1.59512I$ $b=\ \ 0.400190-1.279900I$	$-1.34687-7.89997I$	$-6.16177+9.31071I$
$u=\ \ 0.681829-0.299736I$ $a=\ \ 0.421363-1.011630I$ $b=-1.312900+0.004296I$	$-1.34687+7.89997I$	$-6.16177-9.31071I$
$u=\ \ 0.681829-0.299736I$ $a=\ \ 1.05793-0.99307I$ $b=-0.109335-1.070390I$	$-1.34687+2.24373I$	$-6.16177-3.35182I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.681829 - 0.299736I$ $a = 0.0026716 + 0.0183627I$ $b = 0.562454 - 0.438542I$	$-1.34687 + 2.24373I$	$-6.16177 - 3.35182I$
$u = 0.681829 - 0.299736I$ $a = 1.87861 - 0.90732I$ $b = -0.77979 - 1.41836I$	$-5.48445 + 5.07185I$	$-12.6910 - 6.3313I$
$u = 0.681829 - 0.299736I$ $a = -2.21826 + 0.38907I$ $b = 0.170971 + 1.120650I$	$-5.48445 + 5.07185I$	$-12.6910 - 6.3313I$
$u = 0.681829 - 0.299736I$ $a = -1.73836 + 1.59512I$ $b = 0.400190 + 1.279900I$	$-1.34687 + 7.89997I$	$-6.16177 - 9.31071I$
$u = 0.373222 + 0.543854I$ $a = 0.692825 + 0.790769I$ $b = -0.048180 - 1.129020I$	$-4.35354 + 1.40484I$	$-9.51024 - 0.52948I$
$u = 0.373222 + 0.543854I$ $a = 0.849025 + 0.419614I$ $b = -0.351546 + 0.695691I$	$-0.21596 - 1.42329I$	$-2.98097 + 2.44997I$
$u = 0.373222 + 0.543854I$ $a = -0.214244 - 1.293790I$ $b = 0.61220 + 1.34667I$	$-4.35354 + 1.40484I$	$-9.51024 - 0.52948I$
$u = 0.373222 + 0.543854I$ $a = 0.485465 + 0.488331I$ $b = 0.065184 + 0.680242I$	$-0.21596 - 1.42329I$	$-2.98097 + 2.44997I$
$u = 0.373222 + 0.543854I$ $a = -1.23667 - 1.04892I$ $b = 1.123860 - 0.028241I$	$-0.21596 + 4.23296I$	$-2.98097 - 3.50893I$
$u = 0.373222 + 0.543854I$ $a = 0.263447 - 0.238744I$ $b = -0.411734 - 1.183400I$	$-0.21596 + 4.23296I$	$-2.98097 - 3.50893I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.373222 - 0.543854I$ $a = 0.692825 - 0.790769I$ $b = -0.048180 + 1.129020I$	$-4.35354 - 1.40484I$	$-9.51024 + 0.52948I$
$u = 0.373222 - 0.543854I$ $a = 0.849025 - 0.419614I$ $b = -0.351546 - 0.695691I$	$-0.21596 + 1.42329I$	$-2.98097 - 2.44997I$
$u = 0.373222 - 0.543854I$ $a = -0.214244 + 1.293790I$ $b = 0.61220 - 1.34667I$	$-4.35354 - 1.40484I$	$-9.51024 + 0.52948I$
$u = 0.373222 - 0.543854I$ $a = 0.485465 - 0.488331I$ $b = 0.065184 - 0.680242I$	$-0.21596 + 1.42329I$	$-2.98097 - 2.44997I$
$u = 0.373222 - 0.543854I$ $a = -1.23667 + 1.04892I$ $b = 1.123860 + 0.028241I$	$-0.21596 - 4.23296I$	$-2.98097 + 3.50893I$
$u = 0.373222 - 0.543854I$ $a = 0.263447 + 0.238744I$ $b = -0.411734 + 1.183400I$	$-0.21596 - 4.23296I$	$-2.98097 + 3.50893I$
$u = -0.600586 + 0.155632I$ $a = 0.093028 - 0.974701I$ $b = -0.957198 + 0.611128I$	$-3.27332 - 2.19954I$	$-10.80675 + 1.55694I$
$u = -0.600586 + 0.155632I$ $a = -1.39938 + 0.39091I$ $b = 0.129079 - 0.417151I$	$-3.27332 + 3.45671I$	$-10.80675 - 4.40196I$
$u = -0.600586 + 0.155632I$ $a = -1.37824 + 1.14291I$ $b = -0.27466 + 1.76171I$	$-7.41091 + 0.62859I$	$-17.3360 - 1.4225I$
$u = -0.600586 + 0.155632I$ $a = 0.10116 - 2.18604I$ $b = 0.04494 - 1.42846I$	$-7.41091 + 0.62859I$	$-17.3360 - 1.4225I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.600586+0.155632I$ $a=-1.47545+2.14482I$ $b=\ \ 0.548640+1.069890I$	$-3.27332+3.45671I$	$-10.80675-4.40196I$
$u=-0.600586+0.155632I$ $a=\ \ 1.81776-2.34846I$ $b=\ \ 0.106065-1.012300I$	$-3.27332-2.19954I$	$-10.80675+1.55694I$
$u=-0.600586-0.155632I$ $a=\ \ 0.093028+0.974701I$ $b=-0.957198-0.611128I$	$-3.27332+2.19954I$	$-10.80675-1.55694I$
$u=-0.600586-0.155632I$ $a=-1.39938-0.39091I$ $b=\ \ 0.129079+0.417151I$	$-3.27332-3.45671I$	$-10.80675+4.40196I$
$u=-0.600586-0.155632I$ $a=-1.37824-1.14291I$ $b=-0.27466-1.76171I$	$-7.41091-0.62859I$	$-17.3360+1.4225I$
$u=-0.600586-0.155632I$ $a=\ \ 0.10116+2.18604I$ $b=\ \ 0.04494+1.42846I$	$-7.41091-0.62859I$	$-17.3360+1.4225I$
$u=-0.600586-0.155632I$ $a=-1.47545-2.14482I$ $b=\ \ 0.548640-1.069890I$	$-3.27332-3.45671I$	$-10.80675+4.40196I$
$u=-0.600586-0.155632I$ $a=\ \ 1.81776+2.34846I$ $b=\ \ 0.106065+1.012300I$	$-3.27332+2.19954I$	$-10.80675-1.55694I$
$u=-0.228017+1.369790I$ $a=-0.717201+0.015902I$ $b=-0.05295+1.48253I$	$-2.53577+3.62879I$	$-11.35334-2.63226I$
$u=-0.228017+1.369790I$ $a=\ \ 1.32318-0.69746I$ $b=-0.236834+0.604250I$	$1.60181+6.45691I$	$-4.82407-5.61170I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.228017+1.369790I$ $a=\ \ 1.41047+1.60107I$ $b=\ \ 0.20568-1.91441I$	$-2.53577+3.62879I$	$-11.35334-2.63226I$
$u=-0.228017+1.369790I$ $a=-2.11383+0.40726I$ $b=\ \ 0.040174+0.992834I$	$1.60181+0.80067I$	$-4.82407+0.34719I$
$u=-0.228017+1.369790I$ $a=-1.33363+1.79333I$ $b=\ \ 1.008160-0.805477I$	$1.60181+0.80067I$	$-4.82407+0.34719I$
$u=-0.228017+1.369790I$ $a=\ \ 2.64763-0.28251I$ $b=-0.696197-1.117620I$	$1.60181+6.45691I$	$-4.82407-5.61170I$
$u=-0.228017-1.369790I$ $a=-0.717201-0.015902I$ $b=-0.05295-1.48253I$	$-2.53577-3.62879I$	$-11.35334+2.63226I$
$u=-0.228017-1.369790I$ $a=\ \ 1.32318+0.69746I$ $b=-0.236834-0.604250I$	$1.60181-6.45691I$	$-4.82407+5.61170I$
$u=-0.228017-1.369790I$ $a=\ \ 1.41047-1.60107I$ $b=\ \ 0.20568+1.91441I$	$-2.53577-3.62879I$	$-11.35334+2.63226I$
$u=-0.228017-1.369790I$ $a=-2.11383-0.40726I$ $b=\ \ 0.040174-0.992834I$	$1.60181-0.80067I$	$-4.82407-0.34719I$
$u=-0.228017-1.369790I$ $a=-1.33363-1.79333I$ $b=\ \ 1.008160+0.805477I$	$1.60181-0.80067I$	$-4.82407-0.34719I$
$u=-0.228017-1.369790I$ $a=\ \ 2.64763+0.28251I$ $b=-0.696197+1.117620I$	$1.60181-6.45691I$	$-4.82407+5.61170I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.14277 + 1.43183I$ $a = 0.491219 + 0.403021I$ $b = -0.487921 - 0.789356I$	$5.91560 - 3.29867I$	$0.83805 + 2.79596I$
$u = 0.14277 + 1.43183I$ $a = -0.930393 - 1.042580I$ $b = 0.526535 + 1.186800I$	$5.91560 + 2.35757I$	$0.83805 - 3.16294I$
$u = 0.14277 + 1.43183I$ $a = -1.52778 + 0.44557I$ $b = 0.614000 - 0.784990I$	$5.91560 - 3.29867I$	$0.83805 + 2.79596I$
$u = 0.14277 + 1.43183I$ $a = -0.53527 - 1.64257I$ $b = 0.014918 + 0.959706I$	$1.77801 - 0.47055I$	$-5.69122 - 0.18349I$
$u = 0.14277 + 1.43183I$ $a = 2.18420 + 0.57085I$ $b = -1.150400 + 0.264150I$	$5.91560 + 2.35757I$	$0.83805 - 3.16294I$
$u = 0.14277 + 1.43183I$ $a = 0.82306 + 2.14180I$ $b = -0.674348 - 1.123170I$	$1.77801 - 0.47055I$	$-5.69122 - 0.18349I$
$u = 0.14277 - 1.43183I$ $a = 0.491219 - 0.403021I$ $b = -0.487921 + 0.789356I$	$5.91560 + 3.29867I$	$0.83805 - 2.79596I$
$u = 0.14277 - 1.43183I$ $a = -0.930393 + 1.042580I$ $b = 0.526535 - 1.186800I$	$5.91560 - 2.35757I$	$0.83805 + 3.16294I$
$u = 0.14277 - 1.43183I$ $a = -1.52778 - 0.44557I$ $b = 0.614000 + 0.784990I$	$5.91560 + 3.29867I$	$0.83805 - 2.79596I$
$u = 0.14277 - 1.43183I$ $a = -0.53527 + 1.64257I$ $b = 0.014918 - 0.959706I$	$1.77801 + 0.47055I$	$-5.69122 + 0.18349I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.14277 - 1.43183I$ $a = 2.18420 - 0.57085I$ $b = -1.150400 - 0.264150I$	$5.91560 - 2.35757I$	$0.83805 + 3.16294I$
$u = 0.14277 - 1.43183I$ $a = 0.82306 - 2.14180I$ $b = -0.674348 + 1.123170I$	$1.77801 + 0.47055I$	$-5.69122 + 0.18349I$
$u = 0.26614 + 1.42034I$ $a = 0.693509 + 0.729241I$ $b = -0.677947 - 0.456718I$	$4.15353 - 5.70311I$	$-1.76676 + 3.20086I$
$u = 0.26614 + 1.42034I$ $a = -1.43185 + 0.18273I$ $b = 0.209000 - 1.154410I$	$4.15353 - 5.70311I$	$-1.76676 + 3.20086I$
$u = 0.26614 + 1.42034I$ $a = -1.84803 - 1.20778I$ $b = 1.389510 + 0.055067I$	$4.15353 - 11.35940I$	$-1.76676 + 9.15975I$
$u = 0.26614 + 1.42034I$ $a = 2.25524 + 0.10732I$ $b = -0.429068 + 1.320870I$	$4.15353 - 11.35940I$	$-1.76676 + 9.15975I$
$u = 0.26614 + 1.42034I$ $a = 2.33826 - 0.74470I$ $b = -0.219826 + 1.082710I$	$0.01595 - 8.53123I$	$-8.29603 + 6.18031I$
$u = 0.26614 + 1.42034I$ $a = -2.77691 + 0.49501I$ $b = 0.87092 - 1.39428I$	$0.01595 - 8.53123I$	$-8.29603 + 6.18031I$
$u = 0.26614 - 1.42034I$ $a = 0.693509 - 0.729241I$ $b = -0.677947 + 0.456718I$	$4.15353 + 5.70311I$	$-1.76676 - 3.20086I$
$u = 0.26614 - 1.42034I$ $a = -1.43185 - 0.18273I$ $b = 0.209000 + 1.154410I$	$4.15353 + 5.70311I$	$-1.76676 - 3.20086I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.26614 - 1.42034I$ $a = -1.84803 + 1.20778I$ $b = 1.389510 - 0.055067I$	$4.15353 + 11.35940I$	$-1.76676 - 9.15975I$
$u = 0.26614 - 1.42034I$ $a = 2.25524 - 0.10732I$ $b = -0.429068 - 1.320870I$	$4.15353 + 11.35940I$	$-1.76676 - 9.15975I$
$u = 0.26614 - 1.42034I$ $a = 2.33826 + 0.74470I$ $b = -0.219826 - 1.082710I$	$0.01595 + 8.53123I$	$-8.29603 - 6.18031I$
$u = 0.26614 - 1.42034I$ $a = -2.77691 - 0.49501I$ $b = 0.87092 + 1.39428I$	$0.01595 + 8.53123I$	$-8.29603 - 6.18031I$

III.

$\boldsymbol{I_3^u = \langle -u^{17}-8u^{15}+\cdots+b-u,\ u^{21}+u^{20}+\cdots+a+1,\ u^{22}+11u^{20}+\cdots+2u+1\rangle}$

(i) Arc colorings

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

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

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

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

$$a_{12} = \begin{pmatrix} u^2+1 \\ u^4+2u^2 \end{pmatrix}$$

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

$$a_1 = \begin{pmatrix} -u^4-u^2+1 \\ u^4+2u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -u^{21}-u^{20}+\cdots-5u-1 \\ u^{17}+8u^{15}+\cdots-2u^2+u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -u^{21}-10u^{19}+\cdots+9u^2-3u \\ u^{17}+8u^{15}+\cdots+4u^3+u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u^{20}+2u^{19}+\cdots-2u+2 \\ 2u^{20}+19u^{18}+\cdots-10u^3-u^2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -2u^{21}-20u^{19}+\cdots-3u-2 \\ u^{21}+u^{20}+\cdots+2u+1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u^{21}-u^{20}+\cdots-2u+1 \\ u^{21}+2u^{20}+\cdots-u^2+u \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes

$= -3u^{20}+4u^{19}-27u^{18}+36u^{17}-99u^{16}+133u^{15}-181u^{14}+248u^{13}-148u^{12}+$
$224u^{11}+10u^{10}+60u^9+99u^8-14u^7+44u^6+34u^5-7u^4+32u^3-2u^2-2u-4$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{22} - 10u^{21} + \cdots - 6u^2 + 1$
c_2, c_9	$u^{22} + 11u^{20} + \cdots - u + 1$
c_3, c_7	$u^{22} + 11u^{20} + \cdots + u + 1$
c_4, c_8	$u^{22} + u^{21} + \cdots - 2u + 1$
c_5	$u^{22} + 11u^{20} + \cdots - 2u + 1$
c_6	$u^{22} + 2u^{20} + \cdots - 3u^2 + 1$
c_{10}, c_{11}	$u^{22} + 11u^{20} + \cdots + 2u + 1$
c_{12}	$u^{22} - 6u^{21} + \cdots - 4u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{22} - 8y^{21} + \cdots - 12y + 1$
c_2, c_3, c_7 c_9	$y^{22} + 22y^{21} + \cdots + 19y + 1$
c_4, c_8	$y^{22} - 3y^{21} + \cdots - 2y + 1$
c_5, c_{10}, c_{11}	$y^{22} + 22y^{21} + \cdots - 6y + 1$
c_6	$y^{22} + 4y^{21} + \cdots - 6y + 1$
c_{12}	$y^{22} + 10y^{21} + \cdots + 10y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.259397+0.999924I$ $a=\ \ 0.403550+0.486577I$ $b=-0.304119+0.895039I$	$-1.41357-1.59707I$	$-11.85494+3.44026I$
$u=-0.259397-0.999924I$ $a=\ \ 0.403550-0.486577I$ $b=-0.304119-0.895039I$	$-1.41357+1.59707I$	$-11.85494-3.44026I$
$u=\ \ 0.662501+0.516350I$ $a=\ \ 0.385947+0.387492I$ $b=-0.056717+0.666796I$	$0.49372-2.27838I$	$3.57779+5.27864I$
$u=\ \ 0.662501-0.516350I$ $a=\ \ 0.385947-0.387492I$ $b=-0.056717-0.666796I$	$0.49372+2.27838I$	$3.57779-5.27864I$
$u=\ \ 0.135330+1.210060I$ $a=\ \ 1.44433-0.33008I$ $b=-0.14738+1.48110I$	$-3.70412-1.43318I$	$-5.69627-1.82767I$
$u=\ \ 0.135330-1.210060I$ $a=\ \ 1.44433+0.33008I$ $b=-0.14738-1.48110I$	$-3.70412+1.43318I$	$-5.69627+1.82767I$
$u=-0.697043+0.245240I$ $a=-1.65574+1.15508I$ $b=\ \ 0.473834+0.951302I$	$-3.55163+5.19653I$	$-9.50600-6.97947I$
$u=-0.697043-0.245240I$ $a=-1.65574-1.15508I$ $b=\ \ 0.473834-0.951302I$	$-3.55163-5.19653I$	$-9.50600+6.97947I$
$u=-0.060545+1.309960I$ $a=\ \ 0.478021-1.243140I$ $b=\ \ 0.398745+0.596266I$	$1.65745+3.59571I$	$-4.08616-4.43056I$
$u=-0.060545-1.309960I$ $a=\ \ 0.478021+1.243140I$ $b=\ \ 0.398745-0.596266I$	$1.65745-3.59571I$	$-4.08616+4.43056I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.220301 + 1.378170I$ $a = -1.058610 + 0.785024I$ $b = -0.08899 - 1.68101I$	$-1.76052 - 3.79602I$	$1.23938 + 5.13081I$
$u = 0.220301 - 1.378170I$ $a = -1.058610 - 0.785024I$ $b = -0.08899 + 1.68101I$	$-1.76052 + 3.79602I$	$1.23938 - 5.13081I$
$u = -0.164237 + 1.400690I$ $a = -1.36111 + 1.79236I$ $b = 0.576875 - 0.719921I$	$3.34543 - 0.42922I$	$0.04986 + 3.20072I$
$u = -0.164237 - 1.400690I$ $a = -1.36111 - 1.79236I$ $b = 0.576875 + 0.719921I$	$3.34543 + 0.42922I$	$0.04986 - 3.20072I$
$u = 0.550752 + 0.175998I$ $a = 0.84547 + 1.80880I$ $b = 0.08633 + 1.60277I$	$-6.75198 - 0.94572I$	$-4.30296 + 7.78747I$
$u = 0.550752 - 0.175998I$ $a = 0.84547 - 1.80880I$ $b = 0.08633 - 1.60277I$	$-6.75198 + 0.94572I$	$-4.30296 - 7.78747I$
$u = -0.27114 + 1.40480I$ $a = 2.38401 + 0.03846I$ $b = -0.565883 - 0.966661I$	$1.72759 + 8.71032I$	$-3.35702 - 7.30358I$
$u = -0.27114 - 1.40480I$ $a = 2.38401 - 0.03846I$ $b = -0.565883 + 0.966661I$	$1.72759 - 8.71032I$	$-3.35702 + 7.30358I$
$u = 0.22089 + 1.48696I$ $a = -0.336133 + 0.233099I$ $b = 0.088677 - 0.583152I$	$6.96984 - 5.43299I$	$4.43669 + 2.53235I$
$u = 0.22089 - 1.48696I$ $a = -0.336133 - 0.233099I$ $b = 0.088677 + 0.583152I$	$6.96984 + 5.43299I$	$4.43669 - 2.53235I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.337416+0.213092I$		
$a=\ \ 1.47025-2.54603I$	$-1.94701-2.47156I$	$-3.00036+2.23747I$
$b=-0.461373+0.709036I$		
$u=-0.337416-0.213092I$		
$a=\ \ 1.47025+2.54603I$	$-1.94701+2.47156I$	$-3.00036-2.23747I$
$b=-0.461373-0.709036I$		

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^3+u^2-1)^{28})(u^{22}-10u^{21}+\cdots-6u^2+1)$ $\cdot(u^{39}-33u^{38}+\cdots+352256u-16384)$
c_2, c_9	$(u^{22}+11u^{20}+\cdots-u+1)(u^{39}+13u^{37}+\cdots-2u+1)$ $\cdot(u^{84}+u^{83}+\cdots-48112u+6329)$
c_3, c_7	$(u^{22}+11u^{20}+\cdots+u+1)(u^{39}+13u^{37}+\cdots-2u+1)$ $\cdot(u^{84}+u^{83}+\cdots-48112u+6329)$
c_4, c_8	$(u^{22}+u^{21}+\cdots-2u+1)(u^{39}+u^{38}+\cdots+3u+1)$ $\cdot(u^{84}+3u^{83}+\cdots+8u+1)$
c_5	$((u^{14}+u^{13}+\cdots+u+1)^6)(u^{22}+11u^{20}+\cdots-2u+1)$ $\cdot(u^{39}-7u^{38}+\cdots-60u+8)$
c_6	$((u^{14}-u^{13}+\cdots+3u+1)^6)(u^{22}+2u^{20}+\cdots-3u^2+1)$ $\cdot(u^{39}+7u^{38}+\cdots-1596u+2088)$
c_{10}, c_{11}	$((u^{14}+u^{13}+\cdots+u+1)^6)(u^{22}+11u^{20}+\cdots+2u+1)$ $\cdot(u^{39}-7u^{38}+\cdots-60u+8)$
c_{12}	$((u^{14}-3u^{13}+\cdots-7u+3)^6)(u^{22}-6u^{21}+\cdots-4u+1)$ $\cdot(u^{39}-9u^{38}+\cdots-43968u+9728)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y^3-y^2+2y-1)^{28})(y^{22}-8y^{21}+\cdots-12y+1)$ $\cdot(y^{39}-9y^{38}+\cdots+3019898880y-268435456)$
c_2, c_3, c_7 c_9	$(y^{22}+22y^{21}+\cdots+19y+1)(y^{39}+26y^{38}+\cdots+8y-1)$ $\cdot(y^{84}+63y^{83}+\cdots+237164204y+40056241)$
c_4, c_8	$(y^{22}-3y^{21}+\cdots-2y+1)(y^{39}+9y^{38}+\cdots-23y-1)$ $\cdot(y^{84}-21y^{83}+\cdots+340y+1)$
c_5, c_{10}, c_{11}	$((y^{14}+13y^{13}+\cdots-y+1)^6)(y^{22}+22y^{21}+\cdots-6y+1)$ $\cdot(y^{39}+35y^{38}+\cdots-48y-64)$
c_6	$((y^{14}+y^{13}+\cdots-y+1)^6)(y^{22}+4y^{21}+\cdots-6y+1)$ $\cdot(y^{39}+5y^{38}+\cdots-35220528y-4359744)$
c_{12}	$((y^{14}+5y^{13}+\cdots+23y+9)^6)(y^{22}+10y^{21}+\cdots+10y+1)$ $\cdot(y^{39}+15y^{38}+\cdots-1741041664y-94633984)$