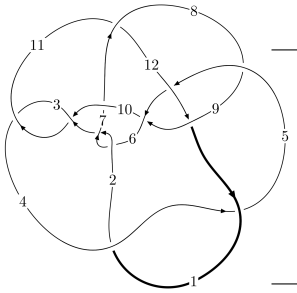
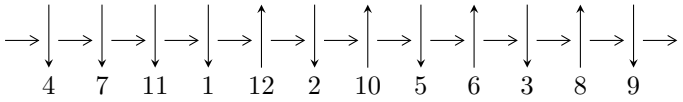
$12a_{1109}$ $(K12a_{1109})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle b+u,\ -5.51351\times 10^{20}u^{32} - 1.00345\times 10^{20}u^{31} + \cdots + 4.96956\times 10^{20}a - 2.61633\times 10^{21},$$
$$u^{33} - 13u^{31} + \cdots + 5u - 1\rangle$$
$$I_2^u = \langle -2.42889\times 10^{666}u^{125} + 3.63484\times 10^{665}u^{124} + \cdots + 2.10762\times 10^{666}b - 2.25797\times 10^{671},$$
$$-4.35538\times 10^{671}u^{125} + 2.72760\times 10^{670}u^{124} + \cdots + 1.67305\times 10^{671}a - 3.95770\times 10^{676},$$
$$u^{126} - u^{125} + \cdots + 445179u - 79381\rangle$$
$$I_3^u = \langle b+u,\ 188u^{17} - 64u^{16} + \cdots + 75a - 796,\ u^{18} - 7u^{16} + \cdots - 3u - 1\rangle$$
$$I_4^u = \langle 14246904u^{17} - 7271564u^{16} + \cdots + 21285647b - 49419894,$$
$$34578671u^{17} + 14037986u^{16} + \cdots + 21285647a + 25444982,\ u^{18} - 8u^{16} + \cdots - u - 1\rangle$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 195 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. $I_1^u = \langle b+u,\ -5.51\times 10^{20}u^{32} - 1.00\times 10^{20}u^{31} + \cdots + 4.97\times 10^{20}a - 2.62\times 10^{21},\ u^{33} - 13u^{31} + \cdots + 5u - 1\rangle$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} 1.10946u^{32} + 0.201920u^{31} + \cdots - 4.37332u + 5.26470 \\ -u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.201920u^{32} + 0.164749u^{31} + \cdots - 0.282581u + 2.10946 \\ -u^2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.255700u^{32} + 0.133298u^{31} + \cdots + 0.339246u + 1.94471 \\ 0.114568u^{32} + 0.000982119u^{31} + \cdots + 0.211036u - 0.0314510 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0.944707u^{32} + 0.255700u^{31} + \cdots - 5.47318u + 5.06278 \\ u^3 - u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u \\ u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.944707u^{32} + 0.255700u^{31} + \cdots - 4.47318u + 5.06278 \\ -0.164749u^{32} + 0.0537806u^{31} + \cdots - 1.09986u - 0.201920 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 1.10599u^{32} + 0.285758u^{31} + \cdots - 2.11902u + 5.03823 \\ -0.0881370u^{32} - 0.0855275u^{31} + \cdots + 1.99609u - 0.626985 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -0.185676u^{32} + 0.000949724u^{31} + \cdots + 0.432526u + 0.710133 \\ 0.208808u^{32} - 0.0230167u^{31} + \cdots - 0.144418u + 0.0874475 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -1.00512u^{32} - 0.235683u^{31} + \cdots + 2.95587u - 4.84331 \\ 0.100865u^{32} + 0.0500742u^{31} + \cdots + 0.836846u + 0.194913 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{1174205873799796303 3618}{44726044122211023821 25}u^{32} + \frac{4842323161366125049279}{4472604412221102382125}u^{31} + \cdots - \frac{8997333067824694571237 8}{4472604412221102382125}u + \frac{4430210918465010014305 6}{4472604412221102382125}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$3(3u^{33} - 68u^{32} + \cdots + 6656u - 512)$
c_2, c_3, c_6 c_{10}	$u^{33} - 13u^{31} + \cdots + 5u - 1$
c_5	$3(3u^{33} - 83u^{32} + \cdots + 416u - 64)$
c_7	$3(3u^{33} + 83u^{32} + \cdots + 19456u + 4096)$
c_8, c_{12}	$u^{33} + u^{32} + \cdots + 8u + 3$
c_9, c_{11}	$u^{33} + u^{32} + \cdots + 8u - 29$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$9(9y^{33} + 26y^{32} + \cdots + 1.25829 \times 10^7 y - 262144)$
c_2, c_3, c_6 c_{10}	$y^{33} - 26y^{32} + \cdots + 7y - 1$
c_5	$9(9y^{33} - 181y^{32} + \cdots - 89088y - 4096)$
c_7	$9(9y^{33} - 187y^{32} + \cdots + 4.39353 \times 10^8 y - 1.67772 \times 10^7)$
c_8, c_{12}	$y^{33} + 5y^{32} + \cdots + 220y - 9$
c_9, c_{11}	$y^{33} - 17y^{32} + \cdots + 10620y - 841$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.988042$ $a=\ \ 5.69224$ $b=\ \ 0.988042$	0.389613	-30.4490
$u=-0.738304+0.649893I$ $a=\ \ 0.098544+0.662865I$ $b=\ \ 0.738304-0.649893I$	$5.00094-3.09470I$	$0.408039+0.525523I$
$u=-0.738304-0.649893I$ $a=\ \ 0.098544-0.662865I$ $b=\ \ 0.738304+0.649893I$	$5.00094+3.09470I$	$0.408039-0.525523I$
$u=\ \ 1.002920+0.182034I$ $a=-3.32561-0.46867I$ $b=-1.002920-0.182034I$	$3.90996-10.24170I$	$-4.98610+7.85593I$
$u=\ \ 1.002920-0.182034I$ $a=-3.32561+0.46867I$ $b=-1.002920+0.182034I$	$3.90996+10.24170I$	$-4.98610-7.85593I$
$u=\ \ 0.354707+0.838712I$ $a=-0.949703+0.077776I$ $b=-0.354707-0.838712I$	$7.49019+0.59025I$	$6.83489-0.22860I$
$u=\ \ 0.354707-0.838712I$ $a=-0.949703-0.077776I$ $b=-0.354707+0.838712I$	$7.49019-0.59025I$	$6.83489+0.22860I$
$u=-0.305032+0.831776I$ $a=\ \ 1.269700+0.160717I$ $b=\ \ 0.305032-0.831776I$	$8.03993-9.04618I$	$2.12985+4.01485I$
$u=-0.305032-0.831776I$ $a=\ \ 1.269700-0.160717I$ $b=\ \ 0.305032+0.831776I$	$8.03993+9.04618I$	$2.12985-4.01485I$
$u=-0.015597+0.759933I$ $a=-0.276956+0.620225I$ $b=\ \ 0.015597-0.759933I$	$3.45596+4.59127I$	$2.60162-5.91506I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.015597-0.759933I$ $a=-0.276956-0.620225I$ $b=\ \ 0.015597+0.759933I$	$3.45596-4.59127I$	$2.60162+5.91506I$
$u=\ \ 1.185980+0.380637I$ $a=-1.77450+1.34872I$ $b=-1.185980-0.380637I$	$-3.31674-2.54544I$	$-5.71023+1.18268I$
$u=\ \ 1.185980-0.380637I$ $a=-1.77450-1.34872I$ $b=-1.185980+0.380637I$	$-3.31674+2.54544I$	$-5.71023-1.18268I$
$u=-0.710776$ $a=\ \ 0.439454$ $b=\ \ 0.710776$	-1.12251	-6.37110
$u=\ \ 0.505026+0.474040I$ $a=\ \ 0.398174-0.651892I$ $b=-0.505026-0.474040I$	$3.18560-1.37010I$	$-2.46667+3.82678I$
$u=\ \ 0.505026-0.474040I$ $a=\ \ 0.398174+0.651892I$ $b=-0.505026+0.474040I$	$3.18560+1.37010I$	$-2.46667-3.82678I$
$u=-1.291930+0.311595I$ $a=\ \ 1.46041+0.85218I$ $b=\ \ 1.291930-0.311595I$	$-7.56174-0.61747I$	$-11.13526+2.09611I$
$u=-1.291930-0.311595I$ $a=\ \ 1.46041-0.85218I$ $b=\ \ 1.291930+0.311595I$	$-7.56174+0.61747I$	$-11.13526-2.09611I$
$u=\ \ 1.324490+0.182144I$ $a=-1.75789+0.39816I$ $b=-1.324490-0.182144I$	$-6.90993-0.81575I$	$-13.00695-0.18547I$
$u=\ \ 1.324490-0.182144I$ $a=-1.75789-0.39816I$ $b=-1.324490+0.182144I$	$-6.90993+0.81575I$	$-13.00695+0.18547I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.32813+0.48664I$ $a=\ 1.67278+0.89038I$ $b=\ 1.32813-0.48664I$	$-4.6785+13.5930I$	$-6.98219-10.34778I$
$u=-1.32813-0.48664I$ $a=\ 1.67278-0.89038I$ $b=\ 1.32813+0.48664I$	$-4.6785-13.5930I$	$-6.98219+10.34778I$
$u=\ 1.38591+0.41952I$ $a=-1.65623+0.48889I$ $b=-1.38591-0.41952I$	$-8.37796-5.05371I$	$-12.03006+2.98505I$
$u=\ 1.38591-0.41952I$ $a=-1.65623-0.48889I$ $b=-1.38591+0.41952I$	$-8.37796+5.05371I$	$-12.03006-2.98505I$
$u=-1.42702+0.32964I$ $a=\ 1.67206+0.08112I$ $b=\ 1.42702-0.32964I$	$-3.55978+5.14975I$	$-8.65604-3.93341I$
$u=-1.42702-0.32964I$ $a=\ 1.67206-0.08112I$ $b=\ 1.42702+0.32964I$	$-3.55978-5.14975I$	$-8.65604+3.93341I$
$u=-1.38771+0.56081I$ $a=\ 1.76185+0.49558I$ $b=\ 1.38771-0.56081I$	$0.76112+11.54690I$	$0.-8.50232I$
$u=-1.38771-0.56081I$ $a=\ 1.76185-0.49558I$ $b=\ 1.38771+0.56081I$	$0.76112-11.54690I$	$0.+8.50232I$
$u=\ 1.41446+0.61544I$ $a=-1.63169+0.52570I$ $b=-1.41446-0.61544I$	$0.9133-20.5211I$	$0.+10.13871I$
$u=\ 1.41446-0.61544I$ $a=-1.63169-0.52570I$ $b=-1.41446+0.61544I$	$0.9133+20.5211I$	$0.-10.13871I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \quad 0.045978 + 0.364709I$ $a = \quad 1.56117 - 0.41807I$ $b = -0.045978 - 0.364709I$	$-0.09428 + 1.57059I$	$-1.17905 - 4.36541I$
$u = \quad 0.045978 - 0.364709I$ $a = \quad 1.56117 + 0.41807I$ $b = -0.045978 + 0.364709I$	$-0.09428 - 1.57059I$	$-1.17905 + 4.36541I$
$u = \quad 0.247344$ $a = \quad 5.15743$ $b = -0.247344$	2.57187	8.03110

II. $\boldsymbol{I_2^u = \langle -2.43 \times 10^{666} u^{125} + 3.63 \times 10^{665} u^{124} + \cdots + 2.11 \times 10^{666} b - 2.26 \times 10^{671},\ -4.36 \times 10^{671} u^{125} + 2.73 \times 10^{670} u^{124} + \cdots + 1.67 \times 10^{671} a - 3.96 \times 10^{676},\ u^{126} - u^{125} + \cdots + 445179u - 79381 \rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} 2.60326u^{125} - 0.163032u^{124} + \cdots - 1.07321 \times 10^6 u + 236556. \\ 1.15243u^{125} - 0.172462u^{124} + \cdots - 476233.u + 107134. \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 3.60912u^{125} - 0.273875u^{124} + \cdots - 1.49893 \times 10^6 u + 331671. \\ 1.98933u^{125} - 0.303058u^{124} + \cdots - 845433.u + 190405. \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 2.75193u^{125} - 0.382917u^{124} + \cdots - 1.14608 \times 10^6 u + 257320. \\ 1.12658u^{125} - 0.399171u^{124} + \cdots - 483331.u + 113705. \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.0908361u^{125} + 0.138689u^{124} + \cdots + 91584.7u - 23023.8 \\ 0.960737u^{125} + 0.0952325u^{124} + \cdots - 288454.u + 60008.7 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u \\ u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 1.32650u^{125} - 0.178769u^{124} + \cdots - 538299.u + 120639. \\ -0.124328u^{125} - 0.188199u^{124} + \cdots + 58675.8u - 8782.80 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -2.02791u^{125} + 0.315409u^{124} + \cdots + 824363.u - 185723. \\ -0.0189666u^{125} + 0.105342u^{124} + \cdots + 105576.u - 26189.8 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 7.08729u^{125} - 0.363708u^{124} + \cdots - 2.76880 \times 10^6 u + 608251. \\ 5.64107u^{125} + 0.170762u^{124} + \cdots - 2.39045 \times 10^6 u + 516688. \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 13.5383u^{125} - 1.09910u^{124} + \cdots - 5.28559 \times 10^6 u + 1.16915 \times 10^6 \\ 14.3116u^{125} - 1.33426u^{124} + \cdots - 5.61938 \times 10^6 u + 1.24685 \times 10^6 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 13.1438u^{125} - 2.17406u^{124} + \cdots - 4.54071 \times 10^6 u + 1.02447 \times 10^6$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$(u^{63} + 11u^{62} + \cdots + 159u - 1)^2$
c_2, c_3, c_6 c_{10}	$u^{126} - u^{125} + \cdots + 445179u - 79381$
c_5	$(u^{63} + 16u^{62} + \cdots + 5u + 1)^2$
c_7	$(u^{63} - 14u^{62} + \cdots - 694u + 39)^2$
c_8, c_{12}	$u^{126} + 8u^{125} + \cdots - 23405u - 2473$
c_9, c_{11}	$u^{126} - 2u^{125} + \cdots - 81829844u - 30650633$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$(y^{63} + 35y^{62} + \cdots + 29501y - 1)^2$
c_2, c_3, c_6 c_{10}	$y^{126} - 85y^{125} + \cdots - 14924889155y + 6301343161$
c_5	$(y^{63} - 26y^{62} + \cdots + 47y - 1)^2$
c_7	$(y^{63} - 104y^{61} + \cdots + 27910y - 1521)^2$
c_8, c_{12}	$y^{126} + 32y^{125} + \cdots - 362675137y + 6115729$
c_9, c_{11}	$y^{126} - 58y^{125} + \cdots - 22519621465061486y + 939461303300689$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.231017 + 0.974102I$ $a = -0.161333 + 0.201744I$ $b = -1.223380 + 0.555574I$	$2.80266 + 5.31618I$	0
$u = 0.231017 - 0.974102I$ $a = -0.161333 - 0.201744I$ $b = -1.223380 - 0.555574I$	$2.80266 - 5.31618I$	0
$u = -0.726101 + 0.685259I$ $a = -0.712122 + 0.711786I$ $b = 0.475020 + 0.495981I$	$4.00952 - 1.59909I$	0
$u = -0.726101 - 0.685259I$ $a = -0.712122 - 0.711786I$ $b = 0.475020 - 0.495981I$	$4.00952 + 1.59909I$	0
$u = -0.945676 + 0.299992I$ $a = -2.86713 - 0.06400I$ $b = -0.958414 + 0.093245I$	$2.80740 + 1.73216I$	0
$u = -0.945676 - 0.299992I$ $a = -2.86713 + 0.06400I$ $b = -0.958414 - 0.093245I$	$2.80740 - 1.73216I$	0
$u = -1.01420$ $a = 3.19187$ $b = -0.739216$	0.282990	0
$u = 0.186212 + 1.003630I$ $a = 1.198480 - 0.372593I$ $b = 0.560041 + 0.609185I$	$6.05015 - 0.21785I$	0
$u = 0.186212 - 1.003630I$ $a = 1.198480 + 0.372593I$ $b = 0.560041 - 0.609185I$	$6.05015 + 0.21785I$	0
$u = -0.968483 + 0.034921I$ $a = -2.52345 - 0.92440I$ $b = -1.382910 + 0.259862I$	$-1.14077 + 1.10990I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.968483-0.034921I$ $a=-2.52345+0.92440I$ $b=-1.382910-0.259862I$	$-1.14077-1.10990I$	0
$u=0.933812+0.255135I$ $a=0.515557-0.310399I$ $b=0.022124+0.753927I$	$0.72649-2.79094I$	0
$u=0.933812-0.255135I$ $a=0.515557+0.310399I$ $b=0.022124-0.753927I$	$0.72649+2.79094I$	0
$u=-0.383512+0.887504I$ $a=0.0706374+0.0522425I$ $b=1.153240+0.239311I$	$-0.93547-2.28826I$	0
$u=-0.383512-0.887504I$ $a=0.0706374-0.0522425I$ $b=1.153240-0.239311I$	$-0.93547+2.28826I$	0
$u=0.958414+0.093245I$ $a=2.90275+0.55187I$ $b=0.945676+0.299992I$	$2.80740-1.73216I$	0
$u=0.958414-0.093245I$ $a=2.90275-0.55187I$ $b=0.945676-0.299992I$	$2.80740+1.73216I$	0
$u=1.048070+0.054620I$ $a=2.44274+0.18348I$ $b=2.02951-0.22269I$	$-0.91409-5.95546I$	0
$u=1.048070-0.054620I$ $a=2.44274-0.18348I$ $b=2.02951+0.22269I$	$-0.91409+5.95546I$	0
$u=-1.056660+0.048917I$ $a=1.47570-0.45195I$ $b=1.228370+0.454325I$	$-1.71117+1.03772I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.056660-0.048917I$ $a=\ \ 1.47570+0.45195I$ $b=\ \ 1.228370-0.454325I$	$-1.71117-1.03772I$	0
$u=\ \ 0.092151+0.931553I$ $a=-0.434887+0.576532I$ $b=-1.222610-0.329948I$	$-0.38295-8.49628I$	0
$u=\ \ 0.092151-0.931553I$ $a=-0.434887-0.576532I$ $b=-1.222610+0.329948I$	$-0.38295+8.49628I$	0
$u=-0.990794+0.406870I$ $a=-0.565079+0.557528I$ $b=-0.23128+1.45237I$	$4.70571+3.83850I$	0
$u=-0.990794-0.406870I$ $a=-0.565079-0.557528I$ $b=-0.23128-1.45237I$	$4.70571-3.83850I$	0
$u=\ \ 0.926911+0.015610I$ $a=-2.55747+0.29813I$ $b=-1.95135-0.38954I$	$-0.31440-5.74271I$	0
$u=\ \ 0.926911-0.015610I$ $a=-2.55747-0.29813I$ $b=-1.95135+0.38954I$	$-0.31440+5.74271I$	0
$u=-0.969437+0.465037I$ $a=-0.589741-0.268638I$ $b=-0.700197+1.005260I$	$3.18701+6.15547I$	0
$u=-0.969437-0.465037I$ $a=-0.589741+0.268638I$ $b=-0.700197-1.005260I$	$3.18701-6.15547I$	0
$u=\ \ 0.960150+0.537279I$ $a=\ \ 0.527575-0.156061I$ $b=-0.036489-0.560410I$	$3.14161-1.66960I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \quad 0.960150 - 0.537279I$ $a = \quad 0.527575 + 0.156061I$ $b = -0.036489 + 0.560410I$	$3.14161 + 1.66960I$	0
$u = -0.873818 + 0.684520I$ $a = \quad 0.524809 - 0.616571I$ $b = -0.721317 - 0.270053I$	$4.68388 + 8.26965I$	0
$u = -0.873818 - 0.684520I$ $a = \quad 0.524809 + 0.616571I$ $b = -0.721317 + 0.270053I$	$4.68388 - 8.26965I$	0
$u = -1.107760 + 0.086604I$ $a = \quad 0.187691 - 0.538217I$ $b = \quad 0.244907 - 1.237800I$	$-3.04963 - 0.18332I$	0
$u = -1.107760 - 0.086604I$ $a = \quad 0.187691 + 0.538217I$ $b = \quad 0.244907 + 1.237800I$	$-3.04963 + 0.18332I$	0
$u = \quad 0.882048 + 0.019394I$ $a = -0.0941606 + 0.0415742I$ $b = -0.705452 + 1.009270I$	$3.20385 + 0.81417I$	0
$u = \quad 0.882048 - 0.019394I$ $a = -0.0941606 - 0.0415742I$ $b = -0.705452 - 1.009270I$	$3.20385 - 0.81417I$	0
$u = \quad 1.151890 + 0.193176I$ $a = -0.244501 - 0.415125I$ $b = -0.051266 + 0.545218I$	$-3.26702 - 3.89641I$	0
$u = \quad 1.151890 - 0.193176I$ $a = -0.244501 + 0.415125I$ $b = -0.051266 - 0.545218I$	$-3.26702 + 3.89641I$	0
$u = \quad 1.073500 + 0.469067I$ $a = -0.321729 - 0.595620I$ $b = -0.061776 - 1.241670I$	$5.25739 - 5.36322I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.073500 - 0.469067I$ $a = -0.321729 + 0.595620I$ $b = -0.061776 + 1.241670I$	$5.25739 + 5.36322I$	0
$u = -0.560041 + 0.609185I$ $a = -1.49673 + 0.39580I$ $b = -0.186212 + 1.003630I$	$6.05015 + 0.21785I$	0
$u = -0.560041 - 0.609185I$ $a = -1.49673 - 0.39580I$ $b = -0.186212 - 1.003630I$	$6.05015 - 0.21785I$	0
$u = -1.172060 + 0.069673I$ $a = -1.81051 - 0.54262I$ $b = -1.53503 - 0.89173I$	$-3.42898 + 2.30117I$	0
$u = -1.172060 - 0.069673I$ $a = -1.81051 + 0.54262I$ $b = -1.53503 + 0.89173I$	$-3.42898 - 2.30117I$	0
$u = 1.161000 + 0.193168I$ $a = 2.20920 + 0.10935I$ $b = 1.50555 + 0.73851I$	$0.20473 - 6.15765I$	0
$u = 1.161000 - 0.193168I$ $a = 2.20920 - 0.10935I$ $b = 1.50555 - 0.73851I$	$0.20473 + 6.15765I$	0
$u = -1.153240 + 0.239311I$ $a = 0.0537071 + 0.0481322I$ $b = 0.383512 + 0.887504I$	$-0.93547 + 2.28826I$	0
$u = -1.153240 - 0.239311I$ $a = 0.0537071 - 0.0481322I$ $b = 0.383512 - 0.887504I$	$-0.93547 - 2.28826I$	0
$u = -1.146770 + 0.277757I$ $a = 0.697238 - 0.020965I$ $b = -0.058951 - 0.436078I$	$-0.131859 - 0.845720I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.146770-0.277757I$ $a=\ \ 0.697238+0.020965I$ $b=-0.058951+0.436078I$	$-0.131859+0.845720I$	0
$u=-1.160410+0.245312I$ $a=\ \ 2.07907-0.09023I$ $b=\ \ 1.69972-0.75102I$	$-0.24112+4.51482I$	0
$u=-1.160410-0.245312I$ $a=\ \ 2.07907+0.09023I$ $b=\ \ 1.69972+0.75102I$	$-0.24112-4.51482I$	0
$u=\ \ 0.700197+1.005260I$ $a=\ \ 0.334272-0.460166I$ $b=\ \ 0.969437+0.465037I$	$3.18701-6.15547I$	0
$u=\ \ 0.700197-1.005260I$ $a=\ \ 0.334272+0.460166I$ $b=\ \ 0.969437-0.465037I$	$3.18701+6.15547I$	0
$u=\ \ 0.721317+0.270053I$ $a=\ \ 0.364380+1.108540I$ $b=\ \ 0.873818-0.684520I$	$4.68388+8.26965I$	0
$u=\ \ 0.721317-0.270053I$ $a=\ \ 0.364380-1.108540I$ $b=\ \ 0.873818+0.684520I$	$4.68388-8.26965I$	0
$u=\ \ 0.705452+1.009270I$ $a=-0.0622091+0.0396078I$ $b=-0.882048+0.019394I$	$3.20385-0.81417I$	0
$u=\ \ 0.705452-1.009270I$ $a=-0.0622091-0.0396078I$ $b=-0.882048-0.019394I$	$3.20385+0.81417I$	0
$u=-0.759979$ $a=\ \ 0.415564$ $b=\ \ 0.631645$	-1.12173	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.061776 + 1.241670I$ $a = -0.637555 + 0.021425I$ $b = -1.073500 - 0.469067I$	$5.25739 - 5.36322I$	0
$u = 0.061776 - 1.241670I$ $a = -0.637555 - 0.021425I$ $b = -1.073500 + 0.469067I$	$5.25739 + 5.36322I$	0
$u = -0.022124 + 0.753927I$ $a = 0.188008 - 0.749126I$ $b = -0.933812 + 0.255135I$	$0.72649 + 2.79094I$	0
$u = -0.022124 - 0.753927I$ $a = 0.188008 + 0.749126I$ $b = -0.933812 - 0.255135I$	$0.72649 - 2.79094I$	0
$u = -1.169410 + 0.466173I$ $a = 0.215838 - 0.511817I$ $b = -0.023556 - 1.346520I$	$5.3085 + 13.7961I$	0
$u = -1.169410 - 0.466173I$ $a = 0.215838 + 0.511817I$ $b = -0.023556 + 1.346520I$	$5.3085 - 13.7961I$	0
$u = 0.739216$ $a = -4.37922$ $b = 1.01420$	0.282990	0
$u = -0.244907 + 1.237800I$ $a = 0.500977 + 0.031194I$ $b = 1.107760 - 0.086604I$	$-3.04963 - 0.18332I$	0
$u = -0.244907 - 1.237800I$ $a = 0.500977 - 0.031194I$ $b = 1.107760 + 0.086604I$	$-3.04963 + 0.18332I$	0
$u = 1.222610 + 0.329948I$ $a = -0.512435 - 0.149610I$ $b = -0.092151 - 0.931553I$	$-0.38295 - 8.49628I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.222610 - 0.329948I$ $a = -0.512435 + 0.149610I$ $b = -0.092151 + 0.931553I$	$-0.38295 + 8.49628I$	0
$u = -1.151610 + 0.532353I$ $a = -1.39892 - 0.98201I$ $b = -1.315840 + 0.477195I$	$-3.35885 + 7.50906I$	0
$u = -1.151610 - 0.532353I$ $a = -1.39892 + 0.98201I$ $b = -1.315840 - 0.477195I$	$-3.35885 - 7.50906I$	0
$u = 1.017080 + 0.766078I$ $a = -0.223433 - 0.144013I$ $b = -0.203048 + 0.285531I$	$3.11818 - 4.10927I$	0
$u = 1.017080 - 0.766078I$ $a = -0.223433 + 0.144013I$ $b = -0.203048 - 0.285531I$	$3.11818 + 4.10927I$	0
$u = 1.260050 + 0.248723I$ $a = 1.68332 - 0.52135I$ $b = 1.39597 + 0.57738I$	$-7.11081 - 6.68152I$	0
$u = 1.260050 - 0.248723I$ $a = 1.68332 + 0.52135I$ $b = 1.39597 - 0.57738I$	$-7.11081 + 6.68152I$	0
$u = 1.297650 + 0.036904I$ $a = -1.203950 + 0.622431I$ $b = -1.02574 + 1.28472I$	$-1.63041 - 2.72909I$	0
$u = 1.297650 - 0.036904I$ $a = -1.203950 - 0.622431I$ $b = -1.02574 - 1.28472I$	$-1.63041 + 2.72909I$	0
$u = -1.228370 + 0.454325I$ $a = 0.955228 + 0.800841I$ $b = 1.056660 + 0.048917I$	$-1.71117 - 1.03772I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.228370-0.454325I$ $a=\ 0.955228-0.800841I$ $b=\ 1.056660-0.048917I$	$-1.71117+1.03772I$	0
$u=-0.475020+0.495981I$ $a=\ 1.02715-1.04284I$ $b=\ 0.726101+0.685259I$	$4.00952+1.59909I$	0
$u=-0.475020-0.495981I$ $a=\ 1.02715+1.04284I$ $b=\ 0.726101-0.685259I$	$4.00952-1.59909I$	0
$u=\ 1.223380+0.555574I$ $a=-0.124408+0.146861I$ $b=-0.231017+0.974102I$	$2.80266-5.31618I$	0
$u=\ 1.223380-0.555574I$ $a=-0.124408-0.146861I$ $b=-0.231017-0.974102I$	$2.80266+5.31618I$	0
$u=\ 0.023556+1.346520I$ $a=\ 0.518883+0.019332I$ $b=\ 1.169410-0.466173I$	$5.3085+13.7961I$	0
$u=\ 0.023556-1.346520I$ $a=\ 0.518883-0.019332I$ $b=\ 1.169410+0.466173I$	$5.3085-13.7961I$	0
$u=-0.631645$ $a=\ 0.499996$ $b=\ 0.759979$	-1.12173	0
$u=\ 1.315840+0.477195I$ $a=\ 1.33907-0.77910I$ $b=\ 1.151610+0.532353I$	$-3.35885-7.50906I$	0
$u=\ 1.315840-0.477195I$ $a=\ 1.33907+0.77910I$ $b=\ 1.151610-0.532353I$	$-3.35885+7.50906I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.382910 + 0.259862I$ $a = 1.62357 - 0.88874I$ $b = 0.968483 + 0.034921I$	$-1.14077 - 1.10990I$	0
$u = 1.382910 - 0.259862I$ $a = 1.62357 + 0.88874I$ $b = 0.968483 - 0.034921I$	$-1.14077 + 1.10990I$	0
$u = 1.284620 + 0.580625I$ $a = 1.68564 - 0.57116I$ $b = 1.49430 + 0.65030I$	$-0.50826 - 11.03970I$	0
$u = 1.284620 - 0.580625I$ $a = 1.68564 + 0.57116I$ $b = 1.49430 - 0.65030I$	$-0.50826 + 11.03970I$	0
$u = 0.036489 + 0.560410I$ $a = 0.305719 - 1.033610I$ $b = -0.960150 - 0.537279I$	$3.14161 - 1.66960I$	0
$u = 0.036489 - 0.560410I$ $a = 0.305719 + 1.033610I$ $b = -0.960150 + 0.537279I$	$3.14161 + 1.66960I$	0
$u = 0.051266 + 0.545218I$ $a = 0.920783 + 0.456056I$ $b = -1.151890 + 0.193176I$	$-3.26702 + 3.89641I$	$-9.04905 - 7.09358I$
$u = 0.051266 - 0.545218I$ $a = 0.920783 - 0.456056I$ $b = -1.151890 - 0.193176I$	$-3.26702 - 3.89641I$	$-9.04905 + 7.09358I$
$u = 0.23128 + 1.45237I$ $a = 0.560935 - 0.139980I$ $b = 0.990794 + 0.406870I$	$4.70571 - 3.83850I$	0
$u = 0.23128 - 1.45237I$ $a = 0.560935 + 0.139980I$ $b = 0.990794 - 0.406870I$	$4.70571 + 3.83850I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.39597+0.57738I$ $a=-1.31651-0.71518I$ $b=-1.260050+0.248723I$	$-7.11081+6.68152I$	0
$u=-1.39597-0.57738I$ $a=-1.31651+0.71518I$ $b=-1.260050-0.248723I$	$-7.11081-6.68152I$	0
$u=-1.48355+0.31884I$ $a=-1.56840-0.12801I$ $b=-1.34212+0.75474I$	$-3.81852+10.56760I$	0
$u=-1.48355-0.31884I$ $a=-1.56840+0.12801I$ $b=-1.34212-0.75474I$	$-3.81852-10.56760I$	0
$u=1.34212+0.75474I$ $a=1.43898-0.57811I$ $b=1.48355+0.31884I$	$-3.81852-10.56760I$	0
$u=1.34212-0.75474I$ $a=1.43898+0.57811I$ $b=1.48355-0.31884I$	$-3.81852+10.56760I$	0
$u=0.058951+0.436078I$ $a=0.24863+1.85380I$ $b=1.146770-0.277757I$	$-0.131859-0.845720I$	$0.54565+5.75487I$
$u=0.058951-0.436078I$ $a=0.24863-1.85380I$ $b=1.146770+0.277757I$	$-0.131859+0.845720I$	$0.54565-5.75487I$
$u=0.191208+0.342488I$ $a=1.25723-2.25192I$ $b=-0.191208+0.342488I$	2.50167	$4.01178+0.I$
$u=0.191208-0.342488I$ $a=1.25723+2.25192I$ $b=-0.191208-0.342488I$	2.50167	$4.01178+0.I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.49430+0.65030I$ $a=-1.46495-0.47357I$ $b=-1.284620+0.580625I$	$-0.50826+11.03970I$	0
$u=-1.49430-0.65030I$ $a=-1.46495+0.47357I$ $b=-1.284620-0.580625I$	$-0.50826-11.03970I$	0
$u=1.02574+1.28472I$ $a=-0.964484+0.463887I$ $b=-1.297650+0.036904I$	$-1.63041+2.72909I$	0
$u=1.02574-1.28472I$ $a=-0.964484-0.463887I$ $b=-1.297650-0.036904I$	$-1.63041-2.72909I$	0
$u=0.203048+0.285531I$ $a=0.545431+0.797365I$ $b=-1.017080+0.766078I$	$3.11818+4.10927I$	$-0.22340+4.80248I$
$u=0.203048-0.285531I$ $a=0.545431-0.797365I$ $b=-1.017080-0.766078I$	$3.11818-4.10927I$	$-0.22340-4.80248I$
$u=-1.50555+0.73851I$ $a=-1.50731-0.37159I$ $b=-1.161000+0.193168I$	$0.20473+6.15765I$	0
$u=-1.50555-0.73851I$ $a=-1.50731+0.37159I$ $b=-1.161000-0.193168I$	$0.20473-6.15765I$	0
$u=1.53503+0.89173I$ $a=1.196270-0.362799I$ $b=1.172060-0.069673I$	$-3.42898+2.30117I$	0
$u=1.53503-0.89173I$ $a=1.196270+0.362799I$ $b=1.172060+0.069673I$	$-3.42898-2.30117I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.69972+0.75102I$ $a=\ \ 1.310350+0.217312I$ $b=\ \ 1.160410-0.245312I$	$-0.24112+4.51482I$	0
$u=-1.69972-0.75102I$ $a=\ \ 1.310350-0.217312I$ $b=\ \ 1.160410+0.245312I$	$-0.24112-4.51482I$	0
$u=\ \ 1.95135+0.38954I$ $a=-1.147300+0.350190I$ $b=-0.926911-0.015610I$	$-0.31440-5.74271I$	0
$u=\ \ 1.95135-0.38954I$ $a=-1.147300-0.350190I$ $b=-0.926911+0.015610I$	$-0.31440+5.74271I$	0
$u=-2.02951+0.22269I$ $a=-1.224180-0.294816I$ $b=-1.048070-0.054620I$	$-0.91409-5.95546I$	0
$u=-2.02951-0.22269I$ $a=-1.224180+0.294816I$ $b=-1.048070+0.054620I$	$-0.91409+5.95546I$	0

III. $\boldsymbol{I_3^u = \langle b+u,\ 188u^{17}-64u^{16}+\cdots+75a-796,\ u^{18}-7u^{16}+\cdots-3u-1\rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix}1\\0\end{pmatrix}$$

$$a_{11} = \begin{pmatrix}0\\u\end{pmatrix}$$

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

$$a_7 = \begin{pmatrix}-2.50667u^{17}+0.853333u^{16}+\cdots+7.41333u+10.6133\\-u\end{pmatrix}$$

$$a_2 = \begin{pmatrix}0.853333u^{17}+0.773333u^{16}+\cdots+3.09333u-1.50667\\-u^2\end{pmatrix}$$

$$a_1 = \begin{pmatrix}0.840000u^{17}+0.480000u^{16}+\cdots-0.0800000u-2.28000\\-0.453333u^{17}+0.0266667u^{16}+\cdots-0.893333u-0.293333\end{pmatrix}$$

$$a_6 = \begin{pmatrix}-3.28000u^{17}+0.840000u^{16}+\cdots+6.36000u+9.76000\\u^3-u\end{pmatrix}$$

$$a_{10} = \begin{pmatrix}u\\u\end{pmatrix}$$

$$a_8 = \begin{pmatrix}-3.28000u^{17}+0.840000u^{16}+\cdots+7.36000u+9.76000\\-0.773333u^{17}-0.0133333u^{16}+\cdots-1.05333u-0.853333\end{pmatrix}$$

$$a_{12} = \begin{pmatrix}3u^{17}-\frac{9}{5}u^{16}+\cdots-\frac{1}{5}u-\frac{34}{5}\\-3.97333u^{17}+2.18667u^{16}+\cdots+6.74667u+3.14667\end{pmatrix}$$

$$a_5 = \begin{pmatrix}3.14667u^{17}-2.57333u^{16}+\cdots-12.2933u-3.29333\\2.76444u^{17}-0.448889u^{16}+\cdots+1.20444u-0.262222\end{pmatrix}$$

$$a_9 = \begin{pmatrix}-2.84000u^{17}+1.32000u^{16}+\cdots+1.28000u+8.08000\\0.160000u^{17}-0.480000u^{16}+\cdots+1.08000u+1.28000\end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= \frac{251}{675}u^{17}-\frac{88}{675}u^{16}+\cdots+\frac{11798}{675}u-\frac{13702}{675}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$3(3u^{18} - 19u^{17} + \cdots - 12u + 1)$
c_2, c_{10}	$u^{18} - 7u^{16} + \cdots + 3u - 1$
c_3, c_6	$u^{18} - 7u^{16} + \cdots - 3u - 1$
c_4	$3(3u^{18} + 19u^{17} + \cdots + 12u + 1)$
c_5	$3(3u^{18} + 34u^{17} + \cdots + u - 1)$
c_7	$3(3u^{18} + 8u^{17} + \cdots - u - 1)$
c_8, c_{12}	$u^{18} - u^{17} + \cdots - 4u + 3$
c_9, c_{11}	$u^{18} - u^{17} + \cdots + 5u^2 - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$9(9y^{18} + 53y^{17} + \cdots - 118y + 1)$
c_2, c_3, c_6 c_{10}	$y^{18} - 14y^{17} + \cdots - 13y + 1$
c_5	$9(9y^{18} - 100y^{17} + \cdots - 17y + 1)$
c_7	$9(9y^{18} - 142y^{17} + \cdots + 77y + 1)$
c_8, c_{12}	$y^{18} + 5y^{17} + \cdots - 10y + 9$
c_9, c_{11}	$y^{18} - 9y^{17} + \cdots - 10y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \ 0.728348 + 0.635280I$ $a = -0.458923 + 0.337603I$ $b = -0.728348 - 0.635280I$	$3.10656 - 4.89008I$	$-2.17362 + 6.61154I$
$u = \ 0.728348 - 0.635280I$ $a = -0.458923 - 0.337603I$ $b = -0.728348 + 0.635280I$	$3.10656 + 4.89008I$	$-2.17362 - 6.61154I$
$u = \ 0.391387 + 0.741183I$ $a = -1.378030 + 0.054435I$ $b = -0.391387 - 0.741183I$	$5.27368 - 0.38885I$	$0.08674 + 2.66009I$
$u = \ 0.391387 - 0.741183I$ $a = -1.378030 - 0.054435I$ $b = -0.391387 + 0.741183I$	$5.27368 + 0.38885I$	$0.08674 - 2.66009I$
$u = -0.731290 + 0.259234I$ $a = \ 0.714498 - 0.425143I$ $b = \ 0.731290 - 0.259234I$	$-1.42988 - 0.78385I$	$-8.25164 + 5.40521I$
$u = -0.731290 - 0.259234I$ $a = \ 0.714498 + 0.425143I$ $b = \ 0.731290 + 0.259234I$	$-1.42988 + 0.78385I$	$-8.25164 - 5.40521I$
$u = \ 0.761751$ $a = \ 4.26767$ $b = -0.761751$	1.11001	-4.48450
$u = -0.620488 + 0.372051I$ $a = -1.61392 - 0.54454I$ $b = \ 0.620488 - 0.372051I$	$5.22937 + 9.86143I$	$0.47076 - 8.25956I$
$u = -0.620488 - 0.372051I$ $a = -1.61392 + 0.54454I$ $b = \ 0.620488 + 0.372051I$	$5.22937 - 9.86143I$	$0.47076 + 8.25956I$
$u = -1.219200 + 0.389635I$ $a = \ 1.77496 + 0.18361I$ $b = \ 1.219200 - 0.389635I$	$0.24188 + 3.16622I$	$-1.12756 - 2.19385I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.219200-0.389635I$ $a=\ \ 1.77496-0.18361I$ $b=\ \ 1.219200+0.389635I$	$0.24188-3.16622I$	$-1.12756+2.19385I$
$u=\ \ 1.275660+0.472215I$ $a=-1.30229+0.62626I$ $b=-1.275660-0.472215I$	$-5.56191-7.26369I$	$-7.00294+7.25514I$
$u=\ \ 1.275660-0.472215I$ $a=-1.30229-0.62626I$ $b=-1.275660+0.472215I$	$-5.56191+7.26369I$	$-7.00294-7.25514I$
$u=\ \ 1.40083+0.30786I$ $a=-1.53871-0.02393I$ $b=-1.40083-0.30786I$	$-0.77540+4.13237I$	$-5.30365-2.69060I$
$u=\ \ 1.40083-0.30786I$ $a=-1.53871+0.02393I$ $b=-1.40083+0.30786I$	$-0.77540-4.13237I$	$-5.30365+2.69060I$
$u=-1.38025+0.59051I$ $a=\ \ 1.59019+0.50498I$ $b=\ \ 1.38025-0.59051I$	$-1.18687+10.35570I$	$-5.47784-5.07503I$
$u=-1.38025-0.59051I$ $a=\ \ 1.59019-0.50498I$ $b=\ \ 1.38025+0.59051I$	$-1.18687-10.35570I$	$-5.47784+5.07503I$
$u=-0.451749$ $a=\ \ 3.49012$ $b=\ \ 0.451749$	2.25458	-18.2150

IV.

$\boldsymbol{I_4^u = \langle 1.42\times 10^7 u^{17} - 7.27\times 10^6 u^{16} + \cdots + 2.13\times 10^7 b - 4.94\times 10^7,\ 3.46\times 10^7 u^{17} + 1.40\times 10^7 u^{16} + \cdots + 2.13\times 10^7 a + 2.54\times 10^7,\ u^{18} - 8u^{16} + \cdots - u - 1\rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} -1.62451u^{17} - 0.659505u^{16} + \cdots - 10.2030u - 1.19541 \\ -0.669320u^{17} + 0.341618u^{16} + \cdots - 0.874644u + 2.32175 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 3.47945u^{17} + 0.610442u^{16} + \cdots + 13.9590u - 0.732836 \\ -1.03771u^{17} + 0.655256u^{16} + \cdots - 5.58323u + 2.45600 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 1.51328u^{17} + 0.408393u^{16} + \cdots + 4.28593u + 1.11273 \\ -1.34697u^{17} + 0.347103u^{16} + \cdots - 7.75144u + 2.25396 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -2.31940u^{17} + 2.11153u^{16} + \cdots - 12.8858u + 11.0839 \\ 0.297554u^{17} + 0.575634u^{16} + \cdots + 1.86495u + 0.500963 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u \\ u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -1.23022u^{17} - 0.381531u^{16} + \cdots - 8.24665u - 0.194283 \\ -0.275035u^{17} + 0.619592u^{16} + \cdots + 1.08167u + 3.32287 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 0.452704u^{17} + 0.0354049u^{16} + \cdots + 6.46512u + 0.473319 \\ -0.0855289u^{17} - 1.03728u^{16} + \cdots - 1.40122u - 3.55101 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -4.76085u^{17} + 0.392469u^{16} + \cdots - 22.3844u + 6.71242 \\ 1.36783u^{17} + 1.06022u^{16} + \cdots + 11.1635u + 2.16201 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -5.73432u^{17} + 3.28049u^{16} + \cdots - 26.7164u + 16.5093 \\ 2.00084u^{17} + 0.840379u^{16} + \cdots + 9.24226u - 2.13805 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= \frac{90205414}{21285647}u^{17} + \frac{104305397}{21285647}u^{16} + \cdots + \frac{376506031}{21285647}u + \frac{218259211}{21285647}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^9-2u^8+3u^7-7u^6+u^5-10u^4-4u^3-6u^2-4u-1)^2$
c_2, c_{10}	$u^{18}-8u^{16}+\cdots+u-1$
c_3, c_6	$u^{18}-8u^{16}+\cdots-u-1$
c_4	$(u^9+2u^8+3u^7+7u^6+u^5+10u^4-4u^3+6u^2-4u+1)^2$
c_5	$(u^9-2u^8-2u^7+13u^6-18u^5+7u^4+8u^3-6u^2-u+1)^2$
c_7	$(u^9+4u^8+5u^7+3u^6+2u^5+2u^4+u^3+1)^2$
c_8, c_{12}	$u^{18}+3u^{17}+\cdots+u-1$
c_9, c_{11}	$u^{18}+3u^{17}+\cdots+10u-1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$(y^9 + 2y^8 - 17y^7 - 91y^6 - 195y^5 - 220y^4 - 126y^3 - 24y^2 + 4y - 1)^2$
c_2, c_3, c_6 c_{10}	$y^{18} - 16y^{17} + \cdots - 19y + 1$
c_5	$(y^9 - 8y^8 + 20y^7 - 53y^6 + 84y^5 - 173y^4 + 158y^3 - 66y^2 + 13y - 1)^2$
c_7	$(y^9 - 6y^8 + 5y^7 - 3y^6 + 2y^5 - 8y^4 - 5y^3 - 4y^2 - 1)^2$
c_8, c_{12}	$y^{18} + 5y^{17} + \cdots - 29y + 1$
c_9, c_{11}	$y^{18} - 13y^{17} + \cdots - 22y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.05453$ $a=\ \ 1.61973$ $b=-0.529976$	0.416370	13.0170
$u=\ \ 0.619437+0.660413I$ $a=-0.793143+0.656703I$ $b=\ \ 0.374606+0.033571I$	$4.15988-1.15529I$	$8.56223+1.24581I$
$u=\ \ 0.619437-0.660413I$ $a=-0.793143-0.656703I$ $b=\ \ 0.374606-0.033571I$	$4.15988+1.15529I$	$8.56223-1.24581I$
$u=\ \ 1.082530+0.167606I$ $a=\ \ 2.56840+0.03078I$ $b=\ \ 2.12316+0.45346I$	$-0.72688-6.70635I$	$-7.6717+15.3934I$
$u=\ \ 1.082530-0.167606I$ $a=\ \ 2.56840-0.03078I$ $b=\ \ 2.12316-0.45346I$	$-0.72688+6.70635I$	$-7.6717-15.3934I$
$u=-1.178130+0.065422I$ $a=-1.39731-0.34024I$ $b=-1.12254-1.00565I$	$-3.57395+1.78451I$	$-13.26411+1.60529I$
$u=-1.178130-0.065422I$ $a=-1.39731+0.34024I$ $b=-1.12254+1.00565I$	$-3.57395-1.78451I$	$-13.26411-1.60529I$
$u=\ \ 1.046470+0.617812I$ $a=-0.137310+0.033916I$ $b=-0.067200-0.761301I$	$3.22264-4.71392I$	$2.36527+6.84291I$
$u=\ \ 1.046470-0.617812I$ $a=-0.137310-0.033916I$ $b=-0.067200+0.761301I$	$3.22264+4.71392I$	$2.36527-6.84291I$
$u=\ \ 0.067200+0.761301I$ $a=-0.083252+0.208919I$ $b=-1.046470-0.617812I$	$3.22264-4.71392I$	$2.36527+6.84291I$

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.067200 - 0.761301I$ $a = -0.083252 - 0.208919I$ $b = -1.046470 + 0.617812I$	$3.22264 + 4.71392I$	$2.36527 - 6.84291I$
$u = 0.529976$ $a = -3.22290$ $b = 1.05453$	0.416370	13.0170
$u = 1.12254 + 1.00565I$ $a = 0.961556 - 0.585777I$ $b = 1.178130 - 0.065422I$	$-3.57395 + 1.78451I$	$-13.26411 + 1.60529I$
$u = 1.12254 - 1.00565I$ $a = 0.961556 + 0.585777I$ $b = 1.178130 + 0.065422I$	$-3.57395 - 1.78451I$	$-13.26411 - 1.60529I$
$u = -0.374606 + 0.033571I$ $a = 2.47735 - 0.09036I$ $b = -0.619437 + 0.660413I$	$4.15988 + 1.15529I$	$8.56223 - 1.24581I$
$u = -0.374606 - 0.033571I$ $a = 2.47735 + 0.09036I$ $b = -0.619437 - 0.660413I$	$4.15988 - 1.15529I$	$8.56223 + 1.24581I$
$u = -2.12316 + 0.45346I$ $a = -1.294700 - 0.058072I$ $b = -1.082530 + 0.167606I$	$-0.72688 + 6.70635I$	$-7.6717 - 15.3934I$
$u = -2.12316 - 0.45346I$ $a = -1.294700 + 0.058072I$ $b = -1.082530 - 0.167606I$	$-0.72688 - 6.70635I$	$-7.6717 + 15.3934I$

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$9(u^9-2u^8+3u^7-7u^6+u^5-10u^4-4u^3-6u^2-4u-1)^2$ $\cdot(3u^{18}-19u^{17}+\cdots-12u+1)(3u^{33}-68u^{32}+\cdots+6656u-512)$ $\cdot(u^{63}+11u^{62}+\cdots+159u-1)^2$
c_2, c_{10}	$(u^{18}-8u^{16}+\cdots+u-1)(u^{18}-7u^{16}+\cdots+3u-1)$ $\cdot(u^{33}-13u^{31}+\cdots+5u-1)(u^{126}-u^{125}+\cdots+445179u-79381)$
c_3, c_6	$(u^{18}-8u^{16}+\cdots-u-1)(u^{18}-7u^{16}+\cdots-3u-1)$ $\cdot(u^{33}-13u^{31}+\cdots+5u-1)(u^{126}-u^{125}+\cdots+445179u-79381)$
c_4	$9(u^9+2u^8+3u^7+7u^6+u^5+10u^4-4u^3+6u^2-4u+1)^2$ $\cdot(3u^{18}+19u^{17}+\cdots+12u+1)(3u^{33}-68u^{32}+\cdots+6656u-512)$ $\cdot(u^{63}+11u^{62}+\cdots+159u-1)^2$
c_5	$9(u^9-2u^8-2u^7+13u^6-18u^5+7u^4+8u^3-6u^2-u+1)^2$ $\cdot(3u^{18}+34u^{17}+\cdots+u-1)(3u^{33}-83u^{32}+\cdots+416u-64)$ $\cdot(u^{63}+16u^{62}+\cdots+5u+1)^2$
c_7	$9(u^9+4u^8+5u^7+3u^6+2u^5+2u^4+u^3+1)^2$ $\cdot(3u^{18}+8u^{17}+\cdots-u-1)(3u^{33}+83u^{32}+\cdots+19456u+4096)$ $\cdot(u^{63}-14u^{62}+\cdots-694u+39)^2$
c_8, c_{12}	$(u^{18}-u^{17}+\cdots-4u+3)(u^{18}+3u^{17}+\cdots+u-1)$ $\cdot(u^{33}+u^{32}+\cdots+8u+3)(u^{126}+8u^{125}+\cdots-23405u-2473)$
c_9, c_{11}	$(u^{18}-u^{17}+\cdots+5u^2-1)(u^{18}+3u^{17}+\cdots+10u-1)$ $\cdot(u^{33}+u^{32}+\cdots+8u-29)$ $\cdot(u^{126}-2u^{125}+\cdots-81829844u-30650633)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4	81 $\cdot (y^9 + 2y^8 - 17y^7 - 91y^6 - 195y^5 - 220y^4 - 126y^3 - 24y^2 + 4y - 1)^2$ $\cdot (9y^{18} + 53y^{17} + \cdots - 118y + 1)$ $\cdot (9y^{33} + 26y^{32} + \cdots + 12582912y - 262144)$ $\cdot (y^{63} + 35y^{62} + \cdots + 29501y - 1)^2$
c_2, c_3, c_6 c_{10}	$(y^{18} - 16y^{17} + \cdots - 19y + 1)(y^{18} - 14y^{17} + \cdots - 13y + 1)$ $\cdot (y^{33} - 26y^{32} + \cdots + 7y - 1)$ $\cdot (y^{126} - 85y^{125} + \cdots - 14924889155y + 6301343161)$
c_5	81 $\cdot (y^9 - 8y^8 + 20y^7 - 53y^6 + 84y^5 - 173y^4 + 158y^3 - 66y^2 + 13y - 1)^2$ $\cdot (9y^{18} - 100y^{17} + \cdots - 17y + 1)$ $\cdot (9y^{33} - 181y^{32} + \cdots - 89088y - 4096)$ $\cdot (y^{63} - 26y^{62} + \cdots + 47y - 1)^2$
c_7	$81(y^9 - 6y^8 + 5y^7 - 3y^6 + 2y^5 - 8y^4 - 5y^3 - 4y^2 - 1)^2$ $\cdot (9y^{18} - 142y^{17} + \cdots + 77y + 1)$ $\cdot (9y^{33} - 187y^{32} + \cdots + 439353344y - 16777216)$ $\cdot (y^{63} - 104y^{61} + \cdots + 27910y - 1521)^2$
c_8, c_{12}	$(y^{18} + 5y^{17} + \cdots - 10y + 9)(y^{18} + 5y^{17} + \cdots - 29y + 1)$ $\cdot (y^{33} + 5y^{32} + \cdots + 220y - 9)$ $\cdot (y^{126} + 32y^{125} + \cdots - 362675137y + 6115729)$
c_9, c_{11}	$(y^{18} - 13y^{17} + \cdots - 22y + 1)(y^{18} - 9y^{17} + \cdots - 10y + 1)$ $\cdot (y^{33} - 17y^{32} + \cdots + 10620y - 841)$ $\cdot (y^{126} - 58y^{125} + \cdots - 22519621465061486y + 939461303300689)$