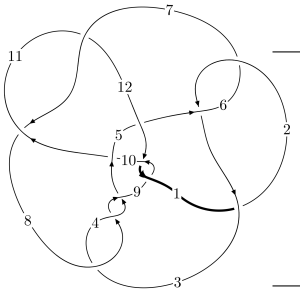
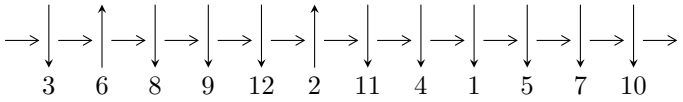
$12a_{0289}$ $(K12a_{0289})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned} I_1^u = \langle & 1.23054 \times 10^{549} u^{129} + 7.13939 \times 10^{549} u^{128} + \cdots + 1.47559 \times 10^{551} b - 4.80171 \times 10^{551}, \\ & - 2.58879 \times 10^{552} u^{129} - 1.24968 \times 10^{553} u^{128} + \cdots + 4.53005 \times 10^{553} a - 4.77775 \times 10^{555}, \\ & u^{130} + 5u^{129} + \cdots + 9370u + 307 \rangle \\ I_2^u = \langle & 9059013u^{33} - 52630678u^{32} + \cdots + 321857b - 3891846, \\ & - 9774026u^{33} + 58589548u^{32} + \cdots + 321857a + 3891173,\ u^{34} - 6u^{33} + \cdots - 6u + 1 \rangle \end{aligned}$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 164 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. $\boldsymbol{I_1^u = \langle 1.23 \times 10^{549} u^{129} + 7.14 \times 10^{549} u^{128} + \cdots + 1.48 \times 10^{551} b - 4.80 \times 10^{551},\ -2.59 \times 10^{552} u^{129} - 1.25 \times 10^{553} u^{128} + \cdots + 4.53 \times 10^{553} a - 4.78 \times 10^{555},\ u^{130} + 5u^{129} + \cdots + 9370u + 307 \rangle}$

(i) Arc colorings

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

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

$$a_5 = \begin{pmatrix} 0.0571471u^{129} + 0.275864u^{128} + \cdots + 2416.99u + 105.468 \\ -0.00833933u^{129} - 0.0483834u^{128} + \cdots + 10.4028u + 3.25410 \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} 0.0424528u^{129} + 0.203895u^{128} + \cdots + 1460.64u + 58.0744 \\ -0.0287762u^{129} - 0.130522u^{128} + \cdots + 107.795u + 4.49195 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 0.0488078u^{129} + 0.227480u^{128} + \cdots + 2427.40u + 108.722 \\ -0.00833933u^{129} - 0.0483834u^{128} + \cdots + 10.4028u + 3.25410 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.0257256u^{129} - 0.125360u^{128} + \cdots - 1959.45u - 75.4831 \\ 0.0164267u^{129} + 0.0571151u^{128} + \cdots - 359.900u - 13.1760 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 0.0340470u^{129} + 0.157222u^{128} + \cdots + 2386.50u + 110.752 \\ 0.0197080u^{129} + 0.138612u^{128} + \cdots + 995.383u + 36.2377 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -0.0342572u^{129} - 0.172968u^{128} + \cdots - 1101.16u - 43.1706 \\ 0.000292252u^{129} - 0.0153436u^{128} + \cdots - 265.849u - 9.05471 \end{pmatrix}$$

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

$$a_6 = \begin{pmatrix} 0.0548184u^{129} + 0.255512u^{128} + \cdots + 2336.78u + 103.311 \\ -0.000327503u^{129} - 0.0231974u^{128} + \cdots + 12.5010u + 3.77093 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.00945379u^{129} - 0.0396822u^{128} + \cdots + 1855.44u + 87.3425 \\ -0.00862843u^{129} - 0.0542862u^{128} + \cdots + 355.882u + 14.9677 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -0.165409u^{129} - 0.885526u^{128} + \cdots - 1219.93u - 34.2034$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{130} + 54u^{129} + \cdots - 5575u + 7921$
c_2, c_6	$u^{130} + 27u^{128} + \cdots - 71u - 89$
c_3, c_4, c_8	$u^{130} - u^{129} + \cdots + 4476u - 653$
c_5	$u^{130} - u^{129} + \cdots - 5193796u - 5692175$
c_7, c_{11}	$u^{130} + 3u^{129} + \cdots - 119574u - 21673$
c_9, c_{12}	$u^{130} - 5u^{129} + \cdots - 9370u + 307$
c_{10}	$u^{130} + u^{129} + \cdots - 263540u - 65057$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{130} + 62y^{129} + \cdots - 19593843639y + 62742241$
c_2, c_6	$y^{130} + 54y^{129} + \cdots - 5575y + 7921$
c_3, c_4, c_8	$y^{130} - 123y^{129} + \cdots + 2757736y + 426409$
c_5	$y^{130} + 49y^{129} + \cdots + 915788440159684y + 32400856230625$
c_7, c_{11}	$y^{130} + 83y^{129} + \cdots + 11741041028y + 469718929$
c_9, c_{12}	$y^{130} + 75y^{129} + \cdots - 8845710y + 94249$
c_{10}	$y^{130} + 13y^{129} + \cdots + 211632593170y + 4232413249$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.998922+0.037072I$ $a=-0.251102-0.217828I$ $b=\ \ 0.310908+0.713630I$	$2.66752-8.25962I$	0
$u=-0.998922-0.037072I$ $a=-0.251102+0.217828I$ $b=\ \ 0.310908-0.713630I$	$2.66752+8.25962I$	0
$u=\ \ 0.488004+0.876844I$ $a=\ \ 0.567135-1.192750I$ $b=-0.231263+0.957518I$	$1.80629+0.07312I$	0
$u=\ \ 0.488004-0.876844I$ $a=\ \ 0.567135+1.192750I$ $b=-0.231263-0.957518I$	$1.80629-0.07312I$	0
$u=-0.373524+0.931545I$ $a=-0.28618+1.53825I$ $b=\ \ 1.348360-0.231599I$	$-2.03553+1.90796I$	0
$u=-0.373524-0.931545I$ $a=-0.28618-1.53825I$ $b=\ \ 1.348360+0.231599I$	$-2.03553-1.90796I$	0
$u=\ \ 0.180247+0.989091I$ $a=\ \ 1.31579-1.95264I$ $b=\ \ 1.42664+0.15993I$	$0.14796-7.11169I$	0
$u=\ \ 0.180247-0.989091I$ $a=\ \ 1.31579+1.95264I$ $b=\ \ 1.42664-0.15993I$	$0.14796+7.11169I$	0
$u=-0.420327+0.915445I$ $a=\ \ 0.14191-1.81983I$ $b=-1.49832+0.32981I$	$-5.54583+6.41365I$	0
$u=-0.420327-0.915445I$ $a=\ \ 0.14191+1.81983I$ $b=-1.49832-0.32981I$	$-5.54583-6.41365I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.626447+0.760676I$ $a=\ \ 1.10415+1.42302I$ $b=\ \ 0.965108+0.018640I$	$1.42300+4.98117I$	0
$u=-0.626447-0.760676I$ $a=\ \ 1.10415-1.42302I$ $b=\ \ 0.965108-0.018640I$	$1.42300-4.98117I$	0
$u=\ \ 0.080531+0.979351I$ $a=\ \ 0.12418+2.65907I$ $b=-1.278130-0.144203I$	$3.58342-0.34128I$	0
$u=\ \ 0.080531-0.979351I$ $a=\ \ 0.12418-2.65907I$ $b=-1.278130+0.144203I$	$3.58342+0.34128I$	0
$u=\ \ 0.126615+1.026830I$ $a=-0.091407-1.342550I$ $b=-0.022685+0.760118I$	$2.31765-1.53047I$	0
$u=\ \ 0.126615-1.026830I$ $a=-0.091407+1.342550I$ $b=-0.022685-0.760118I$	$2.31765+1.53047I$	0
$u=\ \ 0.270875+1.001640I$ $a=-1.31017-1.36501I$ $b=\ \ 1.39537+0.33356I$	$-4.33445-2.90226I$	0
$u=\ \ 0.270875-1.001640I$ $a=-1.31017+1.36501I$ $b=\ \ 1.39537-0.33356I$	$-4.33445+2.90226I$	0
$u=\ \ 0.466298+0.929511I$ $a=-0.205508+1.271420I$ $b=-0.211418-0.257274I$	$-1.41170-2.59593I$	0
$u=\ \ 0.466298-0.929511I$ $a=-0.205508-1.271420I$ $b=-0.211418+0.257274I$	$-1.41170+2.59593I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.800134 + 0.522066I$ $a = -0.026229 - 0.197610I$ $b = -0.483920 + 0.094949I$	$-2.63126 - 2.06050I$	0
$u = 0.800134 - 0.522066I$ $a = -0.026229 + 0.197610I$ $b = -0.483920 - 0.094949I$	$-2.63126 + 2.06050I$	0
$u = -0.339304 + 0.884538I$ $a = 0.83930 - 1.61458I$ $b = -1.43241 + 0.06380I$	$-5.64729 - 2.34449I$	0
$u = -0.339304 - 0.884538I$ $a = 0.83930 + 1.61458I$ $b = -1.43241 - 0.06380I$	$-5.64729 + 2.34449I$	0
$u = 0.854041 + 0.406562I$ $a = 0.073292 + 0.125300I$ $b = -1.339470 + 0.246472I$	$-3.53513 - 0.33068I$	0
$u = 0.854041 - 0.406562I$ $a = 0.073292 - 0.125300I$ $b = -1.339470 - 0.246472I$	$-3.53513 + 0.33068I$	0
$u = 0.959676 + 0.497536I$ $a = 0.651009 + 0.038021I$ $b = 1.46933 - 0.03010I$	$-9.03057 - 1.52462I$	0
$u = 0.959676 - 0.497536I$ $a = 0.651009 - 0.038021I$ $b = 1.46933 + 0.03010I$	$-9.03057 + 1.52462I$	0
$u = 0.665755 + 0.625383I$ $a = -0.208885 - 0.017185I$ $b = 1.45889 - 0.31567I$	$-3.84118 + 4.56251I$	0
$u = 0.665755 - 0.625383I$ $a = -0.208885 + 0.017185I$ $b = 1.45889 + 0.31567I$	$-3.84118 - 4.56251I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.373694+1.024360I$ $a=-0.875919-0.950000I$ $b=\ \ 0.556664+0.865976I$	$1.59255+0.75713I$	0
$u=-0.373694-1.024360I$ $a=-0.875919+0.950000I$ $b=\ \ 0.556664-0.865976I$	$1.59255-0.75713I$	0
$u=-0.508519+0.746264I$ $a=\ \ 0.231386-0.933285I$ $b=-1.52146-0.13241I$	$-6.06120-2.63244I$	0
$u=-0.508519-0.746264I$ $a=\ \ 0.231386+0.933285I$ $b=-1.52146+0.13241I$	$-6.06120+2.63244I$	0
$u=\ \ 0.569803+0.943381I$ $a=-0.31490-1.94072I$ $b=\ \ 1.36946+0.47259I$	$-2.90017-9.35280I$	0
$u=\ \ 0.569803-0.943381I$ $a=-0.31490+1.94072I$ $b=\ \ 1.36946-0.47259I$	$-2.90017+9.35280I$	0
$u=-0.888534+0.104450I$ $a=\ \ 0.305653-0.332211I$ $b=-0.301474+0.590297I$	$4.08616+2.89825I$	0
$u=-0.888534-0.104450I$ $a=\ \ 0.305653+0.332211I$ $b=-0.301474-0.590297I$	$4.08616-2.89825I$	0
$u=-0.375206+0.778037I$ $a=\ \ 1.44735+0.67352I$ $b=-0.584094-0.076342I$	$4.20952+1.45294I$	0
$u=-0.375206-0.778037I$ $a=\ \ 1.44735-0.67352I$ $b=-0.584094+0.076342I$	$4.20952-1.45294I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.13859$ $a = -0.382090$ $b = -1.34469$	-5.92828	0
$u = 0.177435 + 0.841260I$ $a = -1.08968 - 3.21917I$ $b = 1.243330 - 0.036580I$	$-0.36112 + 5.47662I$	0
$u = 0.177435 - 0.841260I$ $a = -1.08968 + 3.21917I$ $b = 1.243330 + 0.036580I$	$-0.36112 - 5.47662I$	0
$u = 0.073243 + 1.145020I$ $a = -0.064810 + 1.040970I$ $b = 0.741472 - 0.620426I$	$2.38171 + 1.93938I$	0
$u = 0.073243 - 1.145020I$ $a = -0.064810 - 1.040970I$ $b = 0.741472 + 0.620426I$	$2.38171 - 1.93938I$	0
$u = -0.402200 + 1.075800I$ $a = 0.29477 + 1.72542I$ $b = 0.532236 - 0.605931I$	$1.14366 + 5.69470I$	0
$u = -0.402200 - 1.075800I$ $a = 0.29477 - 1.72542I$ $b = 0.532236 + 0.605931I$	$1.14366 - 5.69470I$	0
$u = -0.175516 + 0.828179I$ $a = 0.107297 - 0.641034I$ $b = -1.67962 + 0.07799I$	$-6.20598 + 4.77746I$	0
$u = -0.175516 - 0.828179I$ $a = 0.107297 + 0.641034I$ $b = -1.67962 - 0.07799I$	$-6.20598 - 4.77746I$	0
$u = -0.649857 + 0.531834I$ $a = 0.037890 + 0.818078I$ $b = 1.45084 - 0.02348I$	$-3.07654 + 2.06245I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.649857-0.531834I$ $a=\ 0.037890-0.818078I$ $b=\ 1.45084+0.02348I$	$-3.07654-2.06245I$	0
$u=\ 0.124876+0.824942I$ $a=-0.272193+0.388150I$ $b=\ 1.65706-0.19738I$	$-5.25781+1.11343I$	0
$u=\ 0.124876-0.824942I$ $a=-0.272193-0.388150I$ $b=\ 1.65706+0.19738I$	$-5.25781-1.11343I$	0
$u=-0.296471+1.137450I$ $a=\ 0.627672+0.998809I$ $b=-0.997811-0.684319I$	$6.29677+2.12622I$	0
$u=-0.296471-1.137450I$ $a=\ 0.627672-0.998809I$ $b=-0.997811+0.684319I$	$6.29677-2.12622I$	0
$u=\ 0.250716+1.152370I$ $a=\ 0.169071-1.047150I$ $b=-0.577900+0.798884I$	$2.48164-2.89167I$	0
$u=\ 0.250716-1.152370I$ $a=\ 0.169071+1.047150I$ $b=-0.577900-0.798884I$	$2.48164+2.89167I$	0
$u=-1.189050+0.092231I$ $a=\ 0.417018-0.276173I$ $b=\ 1.40764+0.23169I$	$-1.35351-5.93265I$	0
$u=-1.189050-0.092231I$ $a=\ 0.417018+0.276173I$ $b=\ 1.40764-0.23169I$	$-1.35351+5.93265I$	0
$u=\ 1.204620+0.097864I$ $a=\ 0.0048488-0.0652224I$ $b=-0.127038+0.418523I$	$-1.42985+2.19312I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.204620 - 0.097864I$ $a = 0.0048488 + 0.0652224I$ $b = -0.127038 - 0.418523I$	$-1.42985 - 2.19312I$	0
$u = -0.838725 + 0.872112I$ $a = -0.939997 - 1.034170I$ $b = -1.237270 - 0.029411I$	$1.94959 + 1.36646I$	0
$u = -0.838725 - 0.872112I$ $a = -0.939997 + 1.034170I$ $b = -1.237270 + 0.029411I$	$1.94959 - 1.36646I$	0
$u = -0.103807 + 1.208050I$ $a = 0.69493 - 1.59950I$ $b = -0.004630 + 0.487245I$	$7.52469 + 1.96519I$	0
$u = -0.103807 - 1.208050I$ $a = 0.69493 + 1.59950I$ $b = -0.004630 - 0.487245I$	$7.52469 - 1.96519I$	0
$u = 0.465870 + 0.632849I$ $a = -0.97228 + 1.43670I$ $b = 0.121008 - 0.908152I$	$1.12369 - 4.14778I$	0
$u = 0.465870 - 0.632849I$ $a = -0.97228 - 1.43670I$ $b = 0.121008 + 0.908152I$	$1.12369 + 4.14778I$	0
$u = -0.377512 + 1.162870I$ $a = -0.635027 - 0.844262I$ $b = 1.000060 + 0.834032I$	$4.76801 + 7.43846I$	0
$u = -0.377512 - 1.162870I$ $a = -0.635027 + 0.844262I$ $b = 1.000060 - 0.834032I$	$4.76801 - 7.43846I$	0
$u = 0.100940 + 1.222380I$ $a = -1.092810 + 0.794031I$ $b = -0.248154 - 0.378291I$	$5.65589 - 5.02669I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.100940 - 1.222380I$ $a = -1.092810 - 0.794031I$ $b = -0.248154 + 0.378291I$	$5.65589 + 5.02669I$	0
$u = -0.093094 + 0.750985I$ $a = 0.53816 + 1.96196I$ $b = 0.120366 - 0.954241I$	$0.08656 + 1.66551I$	0
$u = -0.093094 - 0.750985I$ $a = 0.53816 - 1.96196I$ $b = 0.120366 + 0.954241I$	$0.08656 - 1.66551I$	0
$u = 0.609691 + 1.092430I$ $a = 0.22960 + 1.48894I$ $b = -1.268350 - 0.447561I$	$-1.50629 - 5.04729I$	0
$u = 0.609691 - 1.092430I$ $a = 0.22960 - 1.48894I$ $b = -1.268350 + 0.447561I$	$-1.50629 + 5.04729I$	0
$u = -1.238280 + 0.254731I$ $a = -0.432407 + 0.184066I$ $b = -1.42824 - 0.28270I$	$-2.89370 - 11.89970I$	0
$u = -1.238280 - 0.254731I$ $a = -0.432407 - 0.184066I$ $b = -1.42824 + 0.28270I$	$-2.89370 + 11.89970I$	0
$u = -0.684715 + 0.266128I$ $a = -0.959781 + 0.292036I$ $b = -1.52276 - 0.16188I$	$-8.17847 - 4.45565I$	0
$u = -0.684715 - 0.266128I$ $a = -0.959781 - 0.292036I$ $b = -1.52276 + 0.16188I$	$-8.17847 + 4.45565I$	0
$u = -0.439169 + 1.203530I$ $a = 0.52791 - 1.96700I$ $b = -1.47656 + 0.23123I$	$-5.23032 + 8.79397I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.439169-1.203530I$ $a=\ \ 0.52791+1.96700I$ $b=-1.47656-0.23123I$	$-5.23032-8.79397I$	0
$u=\ \ 0.613331+1.176900I$ $a=-0.21743-1.57938I$ $b=\ \ 1.406670+0.136214I$	$-6.74582-4.23771I$	0
$u=\ \ 0.613331-1.176900I$ $a=-0.21743+1.57938I$ $b=\ \ 1.406670-0.136214I$	$-6.74582+4.23771I$	0
$u=\ \ 0.483483+1.245270I$ $a=\ \ 0.435991+1.151330I$ $b=-1.303720-0.344377I$	$-1.73968-5.59005I$	0
$u=\ \ 0.483483-1.245270I$ $a=\ \ 0.435991-1.151330I$ $b=-1.303720+0.344377I$	$-1.73968+5.59005I$	0
$u=-0.686007+1.160190I$ $a=\ \ 0.522444+1.062630I$ $b=\ \ 1.319060-0.292233I$	$2.73676+0.54826I$	0
$u=-0.686007-1.160190I$ $a=\ \ 0.522444-1.062630I$ $b=\ \ 1.319060+0.292233I$	$2.73676-0.54826I$	0
$u=\ \ 0.371853+1.300940I$ $a=\ \ 0.033576-1.085870I$ $b=\ \ 0.300881+0.771036I$	$3.74987-2.70348I$	0
$u=\ \ 0.371853-1.300940I$ $a=\ \ 0.033576+1.085870I$ $b=\ \ 0.300881-0.771036I$	$3.74987+2.70348I$	0
$u=-0.449274+1.286290I$ $a=-0.143209-1.370630I$ $b=-0.314364+0.907876I$	$8.26381+7.61943I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.449274-1.286290I$ $a=-0.143209+1.370630I$ $b=-0.314364-0.907876I$	$8.26381-7.61943I$	0
$u=-0.576802+0.229584I$ $a=0.240622-0.047855I$ $b=0.549931+0.558149I$	$-1.30703-1.84964I$	0
$u=-0.576802-0.229584I$ $a=0.240622+0.047855I$ $b=0.549931-0.558149I$	$-1.30703+1.84964I$	0
$u=-0.809204+1.122370I$ $a=-0.637687-0.980685I$ $b=-1.374110+0.185055I$	$2.71446+5.08005I$	0
$u=-0.809204-1.122370I$ $a=-0.637687+0.980685I$ $b=-1.374110-0.185055I$	$2.71446-5.08005I$	0
$u=-0.521501+1.286260I$ $a=0.234119+1.322860I$ $b=0.374641-0.990244I$	$6.5019+13.6173I$	0
$u=-0.521501-1.286260I$ $a=0.234119-1.322860I$ $b=0.374641+0.990244I$	$6.5019-13.6173I$	0
$u=-0.114492+1.388930I$ $a=-1.70720+0.88455I$ $b=1.317400-0.141575I$	$3.36542+4.15824I$	0
$u=-0.114492-1.388930I$ $a=-1.70720-0.88455I$ $b=1.317400+0.141575I$	$3.36542-4.15824I$	0
$u=0.499880+1.316940I$ $a=-0.089651+1.068910I$ $b=-0.453916-0.761218I$	$2.76860-7.90997I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.499880 - 1.316940I$ $a = -0.089651 - 1.068910I$ $b = -0.453916 + 0.761218I$	$2.76860 + 7.90997I$	0
$u = -0.56594 + 1.31649I$ $a = 0.442177 + 0.654444I$ $b = 0.120597 - 0.511623I$	$7.53457 + 2.56804I$	0
$u = -0.56594 - 1.31649I$ $a = 0.442177 - 0.654444I$ $b = 0.120597 + 0.511623I$	$7.53457 - 2.56804I$	0
$u = 0.19688 + 1.42781I$ $a = 1.49564 + 0.47828I$ $b = -1.253650 + 0.046576I$	$2.58804 - 3.76502I$	0
$u = 0.19688 - 1.42781I$ $a = 1.49564 - 0.47828I$ $b = -1.253650 - 0.046576I$	$2.58804 + 3.76502I$	0
$u = -0.41934 + 1.38628I$ $a = -0.373776 - 0.769896I$ $b = -0.112084 + 0.675170I$	$7.23537 - 2.98640I$	0
$u = -0.41934 - 1.38628I$ $a = -0.373776 + 0.769896I$ $b = -0.112084 - 0.675170I$	$7.23537 + 2.98640I$	0
$u = 1.35708 + 0.52770I$ $a = 0.496901 - 0.094223I$ $b = 1.373620 - 0.172233I$	$-6.31168 + 4.42341I$	0
$u = 1.35708 - 0.52770I$ $a = 0.496901 + 0.094223I$ $b = 1.373620 + 0.172233I$	$-6.31168 - 4.42341I$	0
$u = -0.59394 + 1.34963I$ $a = -0.26037 + 1.47710I$ $b = 1.45524 - 0.35568I$	$2.60968 + 12.15470I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.59394-1.34963I$ $a=-0.26037-1.47710I$ $b=\ \ 1.45524+0.35568I$	$2.60968-12.15470I$	0
$u=\ \ 0.64897+1.32693I$ $a=\ \ 0.108148+1.183680I$ $b=-1.40883-0.29861I$	$-1.66880-6.56311I$	0
$u=\ \ 0.64897-1.32693I$ $a=\ \ 0.108148-1.183680I$ $b=-1.40883+0.29861I$	$-1.66880+6.56311I$	0
$u=-0.66521+1.32464I$ $a=\ \ 0.10798-1.48786I$ $b=-1.49557+0.38475I$	$0.5264+18.5537I$	0
$u=-0.66521-1.32464I$ $a=\ \ 0.10798+1.48786I$ $b=-1.49557-0.38475I$	$0.5264-18.5537I$	0
$u=\ \ 1.43853+0.36967I$ $a=-0.440127+0.064598I$ $b=-1.304610+0.111574I$	$-5.19271-0.46382I$	0
$u=\ \ 1.43853-0.36967I$ $a=-0.440127-0.064598I$ $b=-1.304610-0.111574I$	$-5.19271+0.46382I$	0
$u=\ \ 0.73371+1.31741I$ $a=\ \ 0.041791-1.218710I$ $b=\ \ 1.48557+0.29034I$	$-3.45956-11.75770I$	0
$u=\ \ 0.73371-1.31741I$ $a=\ \ 0.041791+1.218710I$ $b=\ \ 1.48557-0.29034I$	$-3.45956+11.75770I$	0
$u=-0.368552+0.170977I$ $a=\ \ 0.06041-2.44101I$ $b=-0.514541+0.493160I$	$3.49008+0.56457I$	$-4.80701-4.25528I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.368552-0.170977I$ $a=\ \ 0.06041+2.44101I$ $b=-0.514541-0.493160I$	$3.49008-0.56457I$	$-4.80701+4.25528I$
$u=\ \ 0.393743$ $a=-0.581967$ $b=\ \ 0.370806$	-0.699244	-14.0430
$u=-0.38556+1.57749I$ $a=-0.431785+0.034034I$ $b=\ \ 1.218090+0.142163I$	$4.21607+0.20557I$	0
$u=-0.38556-1.57749I$ $a=-0.431785-0.034034I$ $b=\ \ 1.218090-0.142163I$	$4.21607-0.20557I$	0
$u=-0.15905+1.66046I$ $a=\ \ 0.420361+0.131503I$ $b=-1.197850-0.189327I$	$4.04950-6.10139I$	0
$u=-0.15905-1.66046I$ $a=\ \ 0.420361-0.131503I$ $b=-1.197850+0.189327I$	$4.04950+6.10139I$	0
$u=-0.250756+0.127060I$ $a=\ \ 1.78838+4.61669I$ $b=\ \ 0.517142-0.577429I$	$1.72264-4.28556I$	$-9.99466+1.07826I$
$u=-0.250756-0.127060I$ $a=\ \ 1.78838-4.61669I$ $b=\ \ 0.517142+0.577429I$	$1.72264+4.28556I$	$-9.99466-1.07826I$
$u=-0.1207490+0.0409065I$ $a=\ \ 1.86529+4.84340I$ $b=\ \ 0.179574+0.443080I$	$-0.53278-1.51708I$	$-4.79422+2.70267I$
$u=-0.1207490-0.0409065I$ $a=\ \ 1.86529-4.84340I$ $b=\ \ 0.179574-0.443080I$	$-0.53278+1.51708I$	$-4.79422-2.70267I$

II.

$\boldsymbol{I_2^u = \langle 9.06\times 10^6 u^{33} - 5.26\times 10^7 u^{32} + \cdots + 3.22\times 10^5 b - 3.89\times 10^6,\ -9.77\times 10^6 u^{33} + 5.86\times 10^7 u^{32} + \cdots + 3.22\times 10^5 a + 3.89\times 10^6,\ u^{34} - 6u^{33} + \cdots - 6u + 1\rangle}$

(i) Arc colorings

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

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

$$a_5 = \begin{pmatrix} 30.3676u^{33} - 182.036u^{32} + \cdots + 125.993u - 12.0898 \\ -28.1461u^{33} + 163.522u^{32} + \cdots - 138.039u + 12.0918 \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} -6.03177u^{33} + 26.8356u^{32} + \cdots + 80.8754u - 20.1016 \\ -3.63424u^{33} + 15.1855u^{32} + \cdots + 75.7771u - 12.7466 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 2.22152u^{33} - 18.5140u^{32} + \cdots - 12.0463u + 0.00209099 \\ -28.1461u^{33} + 163.522u^{32} + \cdots - 138.039u + 12.0918 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 12.0934u^{33} - 60.8529u^{32} + \cdots - 119.983u + 29.7885 \\ 1.02930u^{33} + 3.79785u^{32} + \cdots - 76.4374u + 11.0126 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -10.9493u^{33} + 66.4319u^{32} + \cdots - 111.298u + 15.1043 \\ 25.4830u^{33} - 137.966u^{32} + \cdots + 29.5760u + 13.0636 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 4.46903u^{33} - 25.7688u^{32} + \cdots + 71.9008u - 7.46165 \\ 10.6542u^{33} - 55.9830u^{32} + \cdots - 34.7170u + 8.89648 \end{pmatrix}$$

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

$$a_6 = \begin{pmatrix} 11.5576u^{33} - 74.6522u^{32} + \cdots + 91.2170u - 13.2726 \\ -38.7069u^{33} + 227.188u^{32} + \cdots - 186.862u + 16.3850 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -22.3410u^{33} + 133.212u^{32} + \cdots - 205.379u + 27.9359 \\ 17.1128u^{33} - 86.7603u^{32} + \cdots - 33.5353u + 21.4655 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= \frac{4906050}{321857}u^{33} - \frac{20026912}{321857}u^{32} + \cdots - \frac{104075254}{321857}u + \frac{11861529}{321857}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{34} - 17u^{33} + \cdots - 21u + 1$
c_2	$u^{34} - 3u^{33} + \cdots - 3u + 1$
c_3, c_4	$u^{34} - 18u^{32} + \cdots - 4u + 1$
c_5	$u^{34} + 4u^{32} + \cdots - 2u + 1$
c_6	$u^{34} + 3u^{33} + \cdots + 3u + 1$
c_7	$u^{34} + 2u^{33} + \cdots + 10u^2 + 1$
c_8	$u^{34} - 18u^{32} + \cdots + 4u + 1$
c_9	$u^{34} - 6u^{33} + \cdots - 6u + 1$
c_{10}	$u^{34} - 12u^{31} + \cdots - 8u + 1$
c_{11}	$u^{34} - 2u^{33} + \cdots + 10u^2 + 1$
c_{12}	$u^{34} + 6u^{33} + \cdots + 6u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{34} + 17y^{33} + \cdots + 17y + 1$
c_2, c_6	$y^{34} + 17y^{33} + \cdots + 21y + 1$
c_3, c_4, c_8	$y^{34} - 36y^{33} + \cdots - 4y + 1$
c_5	$y^{34} + 8y^{33} + \cdots + 12y + 1$
c_7, c_{11}	$y^{34} + 22y^{33} + \cdots + 20y + 1$
c_9, c_{12}	$y^{34} + 18y^{33} + \cdots + 22y + 1$
c_{10}	$y^{34} - 76y^{31} + \cdots + 46y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.362295 + 0.934341I$ $a = 0.571349 - 1.106030I$ $b = -0.368235 + 0.947898I$	$0.569803 - 0.377414I$	$-12.68162 + 0.92353I$
$u = 0.362295 - 0.934341I$ $a = 0.571349 + 1.106030I$ $b = -0.368235 - 0.947898I$	$0.569803 + 0.377414I$	$-12.68162 - 0.92353I$
$u = 0.964971 + 0.058295I$ $a = -0.255529 - 0.336232I$ $b = -0.132829 - 0.227130I$	$-1.71093 - 1.91753I$	$-12.98292 - 2.82918I$
$u = 0.964971 - 0.058295I$ $a = -0.255529 + 0.336232I$ $b = -0.132829 + 0.227130I$	$-1.71093 + 1.91753I$	$-12.98292 + 2.82918I$
$u = 0.881029 + 0.308206I$ $a = 0.608007 - 0.571275I$ $b = 1.44687 - 0.11986I$	$-7.17236 + 3.25095I$	$-14.4893 - 2.5272I$
$u = 0.881029 - 0.308206I$ $a = 0.608007 + 0.571275I$ $b = 1.44687 + 0.11986I$	$-7.17236 - 3.25095I$	$-14.4893 + 2.5272I$
$u = 0.298489 + 0.838182I$ $a = -0.53459 + 1.80651I$ $b = 0.043826 - 0.891360I$	$0.13345 - 2.50522I$	$-8.58101 + 5.77844I$
$u = 0.298489 - 0.838182I$ $a = -0.53459 - 1.80651I$ $b = 0.043826 + 0.891360I$	$0.13345 + 2.50522I$	$-8.58101 - 5.77844I$
$u = -0.384161 + 0.777176I$ $a = -1.69476 - 0.73523I$ $b = 0.625401 + 0.335047I$	$4.38319 + 0.87335I$	$-3.44558 + 4.49535I$
$u = -0.384161 - 0.777176I$ $a = -1.69476 + 0.73523I$ $b = 0.625401 - 0.335047I$	$4.38319 - 0.87335I$	$-3.44558 - 4.49535I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.412532 + 1.066390I$ $a = -0.43403 - 1.82712I$ $b = 1.47282 + 0.32974I$	$-4.92353 - 7.07733I$	$-8.00000 + 6.50442I$
$u = 0.412532 - 1.066390I$ $a = -0.43403 + 1.82712I$ $b = 1.47282 - 0.32974I$	$-4.92353 + 7.07733I$	$-8.00000 - 6.50442I$
$u = -0.746513 + 0.870185I$ $a = 1.02234 + 1.08350I$ $b = 1.213120 - 0.145368I$	$2.15980 + 2.61121I$	$-8.00000 - 4.50921I$
$u = -0.746513 - 0.870185I$ $a = 1.02234 - 1.08350I$ $b = 1.213120 + 0.145368I$	$2.15980 - 2.61121I$	$-8.00000 + 4.50921I$
$u = -0.326805 + 0.718833I$ $a = -1.85443 - 2.53621I$ $b = -1.348240 + 0.175669I$	$-0.94321 + 6.87314I$	$-10.98607 - 6.55170I$
$u = -0.326805 - 0.718833I$ $a = -1.85443 + 2.53621I$ $b = -1.348240 - 0.175669I$	$-0.94321 - 6.87314I$	$-10.98607 + 6.55170I$
$u = -0.263803 + 1.224040I$ $a = -0.145255 - 0.582755I$ $b = 0.591743 + 0.034239I$	$6.12220 + 2.00811I$	$-3.97976 - 2.59328I$
$u = -0.263803 - 1.224040I$ $a = -0.145255 + 0.582755I$ $b = 0.591743 - 0.034239I$	$6.12220 - 2.00811I$	$-3.97976 + 2.59328I$
$u = -0.132196 + 0.733697I$ $a = 1.73188 + 2.40449I$ $b = -0.440648 - 0.463011I$	$2.55022 + 4.55668I$	$-0.63513 - 3.65256I$
$u = -0.132196 - 0.733697I$ $a = 1.73188 - 2.40449I$ $b = -0.440648 + 0.463011I$	$2.55022 - 4.55668I$	$-0.63513 + 3.65256I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.055311 + 1.305410I$ $a = -0.283044 + 0.144340I$ $b = -0.575313 + 0.196962I$	$5.15846 - 4.12776I$	$-3.79569 + 0.I$
$u = 0.055311 - 1.305410I$ $a = -0.283044 - 0.144340I$ $b = -0.575313 - 0.196962I$	$5.15846 + 4.12776I$	$-3.79569 + 0.I$
$u = 0.602012 + 1.177220I$ $a = 0.212526 + 1.204120I$ $b = -1.240890 - 0.399799I$	$-2.35125 - 5.23849I$	$-16.8976 + 0.I$
$u = 0.602012 - 1.177220I$ $a = 0.212526 - 1.204120I$ $b = -1.240890 + 0.399799I$	$-2.35125 + 5.23849I$	$-16.8976 + 0.I$
$u = 1.294050 + 0.283314I$ $a = -0.329958 + 0.175257I$ $b = -1.311060 + 0.076528I$	$-5.65111 - 0.82718I$	$-16.3314 + 7.1739I$
$u = 1.294050 - 0.283314I$ $a = -0.329958 - 0.175257I$ $b = -1.311060 - 0.076528I$	$-5.65111 + 0.82718I$	$-16.3314 - 7.1739I$
$u = -0.387999 + 1.296140I$ $a = -0.55950 + 1.44876I$ $b = 1.250220 - 0.025922I$	$3.59809 + 2.25819I$	0
$u = -0.387999 - 1.296140I$ $a = -0.55950 - 1.44876I$ $b = 1.250220 + 0.025922I$	$3.59809 - 2.25819I$	0
$u = 0.243023 + 0.589710I$ $a = -0.536752 - 0.762964I$ $b = 1.61990 - 0.15428I$	$-6.75331 + 3.76104I$	$-12.22184 - 2.29173I$
$u = 0.243023 - 0.589710I$ $a = -0.536752 + 0.762964I$ $b = 1.61990 + 0.15428I$	$-6.75331 - 3.76104I$	$-12.22184 + 2.29173I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.01793 + 1.44056I$ $a = 1.49447 - 0.12610I$ $b = -1.264020 - 0.082568I$	$2.50794 - 5.14683I$	0
$u = 0.01793 - 1.44056I$ $a = 1.49447 + 0.12610I$ $b = -1.264020 + 0.082568I$	$2.50794 + 5.14683I$	0
$u = 0.109835 + 0.509781I$ $a = 1.48728 - 0.81372I$ $b = -1.58268 + 0.19695I$	$-5.90213 + 1.44704I$	$-15.3919 - 2.0599I$
$u = 0.109835 - 0.509781I$ $a = 1.48728 + 0.81372I$ $b = -1.58268 - 0.19695I$	$-5.90213 - 1.44704I$	$-15.3919 + 2.0599I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^{34}-17u^{33}+\cdots-21u+1)(u^{130}+54u^{129}+\cdots-5575u+7921)$
c_2	$(u^{34}-3u^{33}+\cdots-3u+1)(u^{130}+27u^{128}+\cdots-71u-89)$
c_3, c_4	$(u^{34}-18u^{32}+\cdots-4u+1)(u^{130}-u^{129}+\cdots+4476u-653)$
c_5	$(u^{34}+4u^{32}+\cdots-2u+1)(u^{130}-u^{129}+\cdots-5193796u-5692175)$
c_6	$(u^{34}+3u^{33}+\cdots+3u+1)(u^{130}+27u^{128}+\cdots-71u-89)$
c_7	$(u^{34}+2u^{33}+\cdots+10u^2+1)(u^{130}+3u^{129}+\cdots-119574u-21673)$
c_8	$(u^{34}-18u^{32}+\cdots+4u+1)(u^{130}-u^{129}+\cdots+4476u-653)$
c_9	$(u^{34}-6u^{33}+\cdots-6u+1)(u^{130}-5u^{129}+\cdots-9370u+307)$
c_{10}	$(u^{34}-12u^{31}+\cdots-8u+1)(u^{130}+u^{129}+\cdots-263540u-65057)$
c_{11}	$(u^{34}-2u^{33}+\cdots+10u^2+1)(u^{130}+3u^{129}+\cdots-119574u-21673)$
c_{12}	$(u^{34}+6u^{33}+\cdots+6u+1)(u^{130}-5u^{129}+\cdots-9370u+307)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y^{34}+17y^{33}+\cdots+17y+1)$ $\cdot(y^{130}+62y^{129}+\cdots-19593843639y+62742241)$
c_2, c_6	$(y^{34}+17y^{33}+\cdots+21y+1)(y^{130}+54y^{129}+\cdots-5575y+7921)$
c_3, c_4, c_8	$(y^{34}-36y^{33}+\cdots-4y+1)$ $\cdot(y^{130}-123y^{129}+\cdots+2757736y+426409)$
c_5	$(y^{34}+8y^{33}+\cdots+12y+1)$ $\cdot(y^{130}+49y^{129}+\cdots+915788440159684y+32400856230625)$
c_7, c_{11}	$(y^{34}+22y^{33}+\cdots+20y+1)$ $\cdot(y^{130}+83y^{129}+\cdots+11741041028y+469718929)$
c_9, c_{12}	$(y^{34}+18y^{33}+\cdots+22y+1)$ $\cdot(y^{130}+75y^{129}+\cdots-8845710y+94249)$
c_{10}	$(y^{34}-76y^{31}+\cdots+46y+1)$ $\cdot(y^{130}+13y^{129}+\cdots+211632593170y+4232413249)$