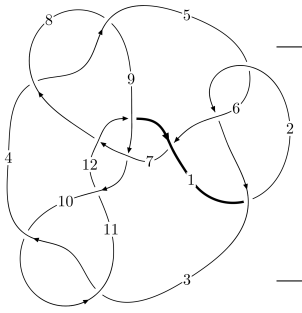
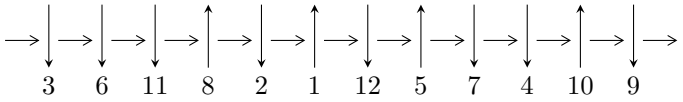
$12a_{0470}$ $(K12a_{0470})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$I_1^u = \langle 4.04726 \times 10^{246} u^{151} - 6.41758 \times 10^{246} u^{150} + \cdots + 5.27327 \times 10^{246} b + 2.97396 \times 10^{246},$
$7.15742 \times 10^{246} u^{151} - 9.25761 \times 10^{246} u^{150} + \cdots + 5.27327 \times 10^{246} a - 1.31606 \times 10^{247},\ u^{152} - 2u^{151} + \cdots +$
$I_2^u = \langle 8u^{28} + 4u^{27} + \cdots + b - 8,\ 5u^{28} + 6u^{27} + \cdots + a - 5,\ u^{29} + u^{28} + \cdots - u - 1 \rangle$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 181 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. $\boldsymbol{I_1^u = \langle 4.05 \times 10^{246} u^{151} - 6.42 \times 10^{246} u^{150} + \cdots + 5.27 \times 10^{246} b + 2.97 \times 10^{246},\ 7.16 \times 10^{246} u^{151} - 9.26 \times 10^{246} u^{150} + \cdots + 5.27 \times 10^{246} a - 1.32 \times 10^{247},\ u^{152} - 2u^{151} + \cdots + u - 1 \rangle}$

(i) Arc colorings

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

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

$$a_2 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

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

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

$$a_9 = \begin{pmatrix} -1.35730u^{151} + 1.75558u^{150} + \cdots - 5.13107u + 2.49572 \\ -0.767505u^{151} + 1.21700u^{150} + \cdots - 0.938204u - 0.563969 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -1.24710u^{151} + 2.18343u^{150} + \cdots - 5.16086u + 3.31368 \\ -1.61120u^{151} + 2.24775u^{150} + \cdots - 0.307596u - 1.05852 \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} -1.64848u^{151} + 2.79384u^{150} + \cdots - 5.42734u + 2.23244 \\ -1.90549u^{151} + 2.80402u^{150} + \cdots - 0.487392u - 1.28317 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -1.00094u^{151} + 3.31075u^{150} + \cdots - 4.77710u - 2.74348 \\ 0.190513u^{151} - 1.42765u^{150} + \cdots - 2.05798u + 1.60425 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 3.78395u^{151} - 7.66715u^{150} + \cdots + 9.27456u - 1.33763 \\ 0.377582u^{151} - 1.13512u^{150} + \cdots + 5.43079u - 1.54915 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 7.65369u^{151} - 11.9415u^{150} + \cdots - 5.79642u + 3.51479 \\ 0.585467u^{151} - 0.0463453u^{150} + \cdots - 0.251655u + 1.47548 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -0.0982650u^{151} - 5.31022u^{150} + \cdots + 12.0206u - 0.0299219$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{152}+76u^{151}+\cdots+13u+1$
c_2, c_5	$u^{152}+2u^{151}+\cdots-u-1$
c_3, c_{10}	$u^{152}+33u^{150}+\cdots+783u+259$
c_4, c_8	$u^{152}+u^{151}+\cdots+6u+1$
c_6	$u^{152}+6u^{151}+\cdots-3317745u-609725$
c_7	$u^{152}-u^{151}+\cdots+57u-1$
c_9	$u^{152}-20u^{151}+\cdots+21337u-12353$
c_{11}	$u^{152}-66u^{151}+\cdots-1636585u+67081$
c_{12}	$u^{152}-14u^{151}+\cdots-30u+1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{152}+4y^{151}+\cdots-105y+1$
c_2, c_5	$y^{152}-76y^{151}+\cdots-13y+1$
c_3, c_{10}	$y^{152}+66y^{151}+\cdots+1636585y+67081$
c_4, c_8	$y^{152}-99y^{151}+\cdots-18y+1$
c_6	$y^{152}+68y^{151}+\cdots-27842735435875y+371764575625$
c_7	$y^{152}+y^{151}+\cdots-129y+1$
c_9	$y^{152}-40y^{151}+\cdots-15266440451y+152596609$
c_{11}	$y^{152}+54y^{151}+\cdots+6314845277y+4499860561$
c_{12}	$y^{152}-4y^{151}+\cdots+152y+1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.383777 + 0.919433I$ $a = 1.078470 - 0.262629I$ $b = 0.962367 - 0.275916I$	$1.07545 + 4.53235I$	0
$u = 0.383777 - 0.919433I$ $a = 1.078470 + 0.262629I$ $b = 0.962367 + 0.275916I$	$1.07545 - 4.53235I$	0
$u = -0.944741 + 0.285279I$ $a = 1.35833 + 1.30200I$ $b = -0.650112 + 0.955026I$	$-3.08140 + 1.12956I$	0
$u = -0.944741 - 0.285279I$ $a = 1.35833 - 1.30200I$ $b = -0.650112 - 0.955026I$	$-3.08140 - 1.12956I$	0
$u = -0.069371 + 0.971211I$ $a = -0.117881 - 0.389121I$ $b = -0.065256 - 0.129430I$	$-1.18241 - 2.66699I$	0
$u = -0.069371 - 0.971211I$ $a = -0.117881 + 0.389121I$ $b = -0.065256 + 0.129430I$	$-1.18241 + 2.66699I$	0
$u = 0.482267 + 0.836728I$ $a = 1.079100 - 0.220038I$ $b = 1.014560 - 0.374126I$	$1.73768 - 0.27266I$	0
$u = 0.482267 - 0.836728I$ $a = 1.079100 + 0.220038I$ $b = 1.014560 + 0.374126I$	$1.73768 + 0.27266I$	0
$u = -0.931775 + 0.458661I$ $a = -0.517037 + 0.052500I$ $b = -0.963868 - 0.349871I$	$1.67907 + 3.50297I$	0
$u = -0.931775 - 0.458661I$ $a = -0.517037 - 0.052500I$ $b = -0.963868 + 0.349871I$	$1.67907 - 3.50297I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.317637+0.901806I$ $a=-1.042530-0.284626I$ $b=-0.868882-0.244756I$	$0.494522-0.387668I$	0
$u=-0.317637-0.901806I$ $a=-1.042530+0.284626I$ $b=-0.868882+0.244756I$	$0.494522+0.387668I$	0
$u=-0.984716+0.353336I$ $a=-0.44854+1.50777I$ $b=-2.22025+0.47865I$	$0.24721-3.77251I$	0
$u=-0.984716-0.353336I$ $a=-0.44854-1.50777I$ $b=-2.22025-0.47865I$	$0.24721+3.77251I$	0
$u=0.674828+0.650638I$ $a=-0.800877-0.378374I$ $b=-0.262229-0.826627I$	$8.14764-3.66069I$	0
$u=0.674828-0.650638I$ $a=-0.800877+0.378374I$ $b=-0.262229+0.826627I$	$8.14764+3.66069I$	0
$u=-0.779228+0.724899I$ $a=-0.668136+0.162670I$ $b=0.1014870-0.0587958I$	$2.90751-0.77875I$	0
$u=-0.779228-0.724899I$ $a=-0.668136-0.162670I$ $b=0.1014870+0.0587958I$	$2.90751+0.77875I$	0
$u=-0.802715+0.700181I$ $a=0.528909-0.214658I$ $b=0.066369-0.571812I$	$2.83078+6.12529I$	0
$u=-0.802715-0.700181I$ $a=0.528909+0.214658I$ $b=0.066369+0.571812I$	$2.83078-6.12529I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.931258$ $a = 0.556220$ $b = 0.725666$	-1.56738	0
$u = -1.005300 + 0.383584I$ $a = -0.971898 + 0.294247I$ $b = -1.30327 - 0.72079I$	$1.73788 + 3.49522I$	0
$u = -1.005300 - 0.383584I$ $a = -0.971898 - 0.294247I$ $b = -1.30327 + 0.72079I$	$1.73788 - 3.49522I$	0
$u = 0.778317 + 0.756459I$ $a = -0.598115 - 0.112367I$ $b = -0.174448 - 0.505818I$	$4.81350 - 11.43230I$	0
$u = 0.778317 - 0.756459I$ $a = -0.598115 + 0.112367I$ $b = -0.174448 + 0.505818I$	$4.81350 + 11.43230I$	0
$u = 0.291795 + 0.863898I$ $a = -1.83268 + 0.83379I$ $b = -1.48448 + 1.13373I$	$1.9610 + 14.4178I$	0
$u = 0.291795 - 0.863898I$ $a = -1.83268 - 0.83379I$ $b = -1.48448 - 1.13373I$	$1.9610 - 14.4178I$	0
$u = -0.775590 + 0.473858I$ $a = 0.847989 - 0.837717I$ $b = 0.90184 + 1.10640I$	$0.61723 + 7.01848I$	0
$u = -0.775590 - 0.473858I$ $a = 0.847989 + 0.837717I$ $b = 0.90184 - 1.10640I$	$0.61723 - 7.01848I$	0
$u = 1.038360 + 0.345757I$ $a = 0.191067 + 0.995519I$ $b = 1.53922 + 0.38333I$	$-1.98195 - 0.69790I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.038360 - 0.345757I$ $a = 0.191067 - 0.995519I$ $b = 1.53922 - 0.38333I$	$-1.98195 + 0.69790I$	0
$u = 0.906062 + 0.615460I$ $a = 0.999545 + 0.441678I$ $b = -0.059051 - 0.308564I$	$7.47803 - 1.24652I$	0
$u = 0.906062 - 0.615460I$ $a = 0.999545 - 0.441678I$ $b = -0.059051 + 0.308564I$	$7.47803 + 1.24652I$	0
$u = -0.965412 + 0.541538I$ $a = -0.001851 - 0.395682I$ $b = -0.544932 - 0.587103I$	$1.74479 + 4.28503I$	0
$u = -0.965412 - 0.541538I$ $a = -0.001851 + 0.395682I$ $b = -0.544932 + 0.587103I$	$1.74479 - 4.28503I$	0
$u = -0.264440 + 0.845180I$ $a = 1.76638 + 0.91924I$ $b = 1.42141 + 1.17453I$	$-0.19681 - 8.54250I$	0
$u = -0.264440 - 0.845180I$ $a = 1.76638 - 0.91924I$ $b = 1.42141 - 1.17453I$	$-0.19681 + 8.54250I$	0
$u = 1.090970 + 0.273767I$ $a = -0.239902 + 1.154550I$ $b = 1.187110 + 0.692719I$	$-2.48172 - 0.27312I$	0
$u = 1.090970 - 0.273767I$ $a = -0.239902 - 1.154550I$ $b = 1.187110 - 0.692719I$	$-2.48172 + 0.27312I$	0
$u = -0.538885 + 0.671846I$ $a = -1.000540 - 0.049819I$ $b = -1.043760 - 0.407156I$	$1.73680 - 2.93232I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.538885-0.671846I$ $a=-1.000540+0.049819I$ $b=-1.043760+0.407156I$	$1.73680+2.93232I$	0
$u=\ \ 0.852933+0.761343I$ $a=\ \ 0.609064+0.330543I$ $b=-0.0280414-0.0735952I$	$4.61641+5.79207I$	0
$u=\ \ 0.852933-0.761343I$ $a=\ \ 0.609064-0.330543I$ $b=-0.0280414+0.0735952I$	$4.61641-5.79207I$	0
$u=\ \ 1.047030+0.467738I$ $a=-0.58666+2.67220I$ $b=\ \ 1.92124+1.21869I$	$0.164504+1.182460I$	0
$u=\ \ 1.047030-0.467738I$ $a=-0.58666-2.67220I$ $b=\ \ 1.92124-1.21869I$	$0.164504-1.182460I$	0
$u=-1.030410+0.508838I$ $a=\ \ 0.17447-1.64458I$ $b=\ \ 1.94710-0.08979I$	$0.29119+7.48074I$	0
$u=-1.030410-0.508838I$ $a=\ \ 0.17447+1.64458I$ $b=\ \ 1.94710+0.08979I$	$0.29119-7.48074I$	0
$u=-0.589867+0.610350I$ $a=-0.700953-0.481848I$ $b=\ \ 0.290361+0.120067I$	$2.84618+0.28798I$	0
$u=-0.589867-0.610350I$ $a=-0.700953+0.481848I$ $b=\ \ 0.290361-0.120067I$	$2.84618-0.28798I$	0
$u=-1.068240+0.431591I$ $a=-0.184092-0.729158I$ $b=-0.782026-0.803453I$	$2.17032+1.56453I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.068240-0.431591I$ $a=-0.184092+0.729158I$ $b=-0.782026+0.803453I$	$2.17032-1.56453I$	0
$u=1.029510+0.545055I$ $a=0.268685-0.493310I$ $b=0.778055-0.624997I$	$2.59941-0.54644I$	0
$u=1.029510-0.545055I$ $a=0.268685+0.493310I$ $b=0.778055+0.624997I$	$2.59941+0.54644I$	0
$u=-1.094080+0.400769I$ $a=-1.00807-1.05475I$ $b=2.02800-0.86472I$	$-1.71479-2.37202I$	0
$u=-1.094080-0.400769I$ $a=-1.00807+1.05475I$ $b=2.02800+0.86472I$	$-1.71479+2.37202I$	0
$u=-1.133100+0.281064I$ $a=0.30345-1.45730I$ $b=1.85611+0.47793I$	$1.97754-2.59355I$	0
$u=-1.133100-0.281064I$ $a=0.30345+1.45730I$ $b=1.85611-0.47793I$	$1.97754+2.59355I$	0
$u=0.720540+0.411747I$ $a=-0.767789-0.319195I$ $b=-0.330475+1.225820I$	$-1.26910-2.31076I$	0
$u=0.720540-0.411747I$ $a=-0.767789+0.319195I$ $b=-0.330475-1.225820I$	$-1.26910+2.31076I$	0
$u=-0.814938+0.134931I$ $a=-0.083292-0.966694I$ $b=-0.96051-1.15930I$	$0.36906+4.70085I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.814938-0.134931I$ $a=-0.083292+0.966694I$ $b=-0.96051+1.15930I$	$0.36906-4.70085I$	0
$u=\ 0.289257+0.761883I$ $a=-1.97581+1.16549I$ $b=-1.50924+1.35892I$	$6.30909+5.59657I$	$0.-5.18818I$
$u=\ 0.289257-0.761883I$ $a=-1.97581-1.16549I$ $b=-1.50924-1.35892I$	$6.30909-5.59657I$	$0.+5.18818I$
$u=\ 1.083520+0.481995I$ $a=\ 0.248195-0.676126I$ $b=\ 0.804054-0.749773I$	$2.55663-5.43707I$	0
$u=\ 1.083520-0.481995I$ $a=\ 0.248195+0.676126I$ $b=\ 0.804054+0.749773I$	$2.55663+5.43707I$	0
$u=-0.581841+0.568659I$ $a=\ 0.003892-0.554007I$ $b=\ 0.313242+0.437067I$	$2.72118+0.71702I$	$0.-3.61012I$
$u=-0.581841-0.568659I$ $a=\ 0.003892+0.554007I$ $b=\ 0.313242-0.437067I$	$2.72118-0.71702I$	$0.+3.61012I$
$u=\ 1.079460+0.493063I$ $a=\ 0.99771-1.73678I$ $b=-0.92938-2.12480I$	$2.47693-3.26456I$	0
$u=\ 1.079460-0.493063I$ $a=\ 0.99771+1.73678I$ $b=-0.92938+2.12480I$	$2.47693+3.26456I$	0
$u=\ 1.105180+0.442868I$ $a=\ 0.39641-1.45900I$ $b=-2.25176-0.52753I$	$-4.30081-3.76264I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.105180 - 0.442868I$ $a = 0.39641 + 1.45900I$ $b = -2.25176 + 0.52753I$	$-4.30081 + 3.76264I$	0
$u = -1.103640 + 0.459878I$ $a = -0.20205 + 2.37315I$ $b = -1.77606 + 0.37432I$	$-4.18487 + 3.65759I$	0
$u = -1.103640 - 0.459878I$ $a = -0.20205 - 2.37315I$ $b = -1.77606 - 0.37432I$	$-4.18487 - 3.65759I$	0
$u = 0.490783 + 0.622967I$ $a = 0.671800 - 1.099070I$ $b = -0.356204 + 0.144512I$	$4.17258 - 4.06306I$	$3.00416 + 6.96901I$
$u = 0.490783 - 0.622967I$ $a = 0.671800 + 1.099070I$ $b = -0.356204 - 0.144512I$	$4.17258 + 4.06306I$	$3.00416 - 6.96901I$
$u = -0.217990 + 0.762289I$ $a = -1.72701 + 0.46817I$ $b = -1.32925 - 0.48502I$	$-1.80194 - 7.82902I$	$-4.00000 + 7.12195I$
$u = -0.217990 - 0.762289I$ $a = -1.72701 - 0.46817I$ $b = -1.32925 + 0.48502I$	$-1.80194 + 7.82902I$	$-4.00000 - 7.12195I$
$u = -1.200620 + 0.138247I$ $a = 0.427924 + 0.370421I$ $b = -1.115830 + 0.250729I$	$-4.59892 - 1.62888I$	0
$u = -1.200620 - 0.138247I$ $a = 0.427924 - 0.370421I$ $b = -1.115830 - 0.250729I$	$-4.59892 + 1.62888I$	0
$u = -0.055067 + 0.789218I$ $a = -0.373361 + 0.390003I$ $b = -0.300683 + 0.596293I$	$-1.39195 - 2.77336I$	$-6.16101 + 1.36784I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.055067-0.789218I$ $a=-0.373361-0.390003I$ $b=-0.300683-0.596293I$	$-1.39195+2.77336I$	$-6.16101-1.36784I$
$u=1.082950+0.540225I$ $a=0.30057-2.14940I$ $b=-1.90780-1.79160I$	$1.76357-10.40180I$	0
$u=1.082950-0.540225I$ $a=0.30057+2.14940I$ $b=-1.90780+1.79160I$	$1.76357+10.40180I$	0
$u=-0.337682+0.710933I$ $a=-1.66022-0.03389I$ $b=-1.121330-0.635122I$	$1.67787-2.33035I$	$1.15873+4.49499I$
$u=-0.337682-0.710933I$ $a=-1.66022+0.03389I$ $b=-1.121330+0.635122I$	$1.67787+2.33035I$	$1.15873-4.49499I$
$u=-1.160380+0.354158I$ $a=0.07211+1.58299I$ $b=-1.168230+0.639911I$	$-7.03712+0.88475I$	0
$u=-1.160380-0.354158I$ $a=0.07211-1.58299I$ $b=-1.168230-0.639911I$	$-7.03712-0.88475I$	0
$u=1.108930+0.493416I$ $a=0.87068+2.16235I$ $b=1.56556-0.28063I$	$-1.04151-9.77008I$	0
$u=1.108930-0.493416I$ $a=0.87068-2.16235I$ $b=1.56556+0.28063I$	$-1.04151+9.77008I$	0
$u=1.177530+0.321781I$ $a=-0.05443+1.47304I$ $b=1.117860+0.667814I$	$-5.98061+4.36824I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.177530 - 0.321781I$ $a = -0.05443 - 1.47304I$ $b = 1.117860 - 0.667814I$	$-5.98061 - 4.36824I$	0
$u = 1.205710 + 0.216443I$ $a = -0.330995 + 0.543381I$ $b = 1.169470 + 0.369491I$	$-4.69081 - 2.85034I$	0
$u = 1.205710 - 0.216443I$ $a = -0.330995 - 0.543381I$ $b = 1.169470 - 0.369491I$	$-4.69081 + 2.85034I$	0
$u = -1.112930 + 0.525586I$ $a = -0.36029 - 1.65320I$ $b = 1.36704 - 1.39558I$	$-0.63463 + 6.51514I$	0
$u = -1.112930 - 0.525586I$ $a = -0.36029 + 1.65320I$ $b = 1.36704 + 1.39558I$	$-0.63463 - 6.51514I$	0
$u = 0.389279 + 0.651932I$ $a = 2.47319 - 0.63631I$ $b = 1.01971 - 1.20809I$	$3.78254 + 5.74388I$	$3.75843 - 8.18320I$
$u = 0.389279 - 0.651932I$ $a = 2.47319 + 0.63631I$ $b = 1.01971 + 1.20809I$	$3.78254 - 5.74388I$	$3.75843 + 8.18320I$
$u = -1.112640 + 0.554702I$ $a = 0.10133 - 1.62391I$ $b = 1.88701 - 0.83949I$	$-0.57472 + 7.17851I$	0
$u = -1.112640 - 0.554702I$ $a = 0.10133 + 1.62391I$ $b = 1.88701 + 0.83949I$	$-0.57472 - 7.17851I$	0
$u = -0.088174 + 0.749373I$ $a = 0.91081 + 1.48634I$ $b = 0.73142 + 1.51496I$	$-1.70374 - 3.27624I$	$-8.99219 + 7.85891I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.088174-0.749373I$ $a=\ \ 0.91081-1.48634I$ $b=\ \ 0.73142-1.51496I$	$-1.70374+3.27624I$	$-8.99219-7.85891I$
$u=-0.306550+0.678861I$ $a=-1.72371-0.79331I$ $b=-0.770129-0.856932I$	$1.70576-1.87348I$	$-0.42450+2.49869I$
$u=-0.306550-0.678861I$ $a=-1.72371+0.79331I$ $b=-0.770129+0.856932I$	$1.70576+1.87348I$	$-0.42450-2.49869I$
$u=\ \ 1.187900+0.406665I$ $a=-1.16772-0.86560I$ $b=-1.09338+1.34279I$	$-5.39828-0.73516I$	0
$u=\ \ 1.187900-0.406665I$ $a=-1.16772+0.86560I$ $b=-1.09338-1.34279I$	$-5.39828+0.73516I$	0
$u=\ \ 1.227390+0.266113I$ $a=-0.333602-1.089780I$ $b=-1.55000+0.38750I$	$-4.99353+5.03385I$	0
$u=\ \ 1.227390-0.266113I$ $a=-0.333602+1.089780I$ $b=-1.55000-0.38750I$	$-4.99353-5.03385I$	0
$u=\ \ 1.149540+0.513252I$ $a=-0.163868-1.302950I$ $b=-2.15411-0.49384I$	$-5.93528-7.25693I$	0
$u=\ \ 1.149540-0.513252I$ $a=-0.163868+1.302950I$ $b=-2.15411+0.49384I$	$-5.93528+7.25693I$	0
$u=\ \ 0.185776+0.717411I$ $a=\ \ 1.65846+0.49340I$ $b=\ \ 1.300110-0.457633I$	$-3.17767+2.62041I$	$-6.33336-1.66250I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.185776 - 0.717411I$ $a = 1.65846 - 0.49340I$ $b = 1.300110 + 0.457633I$	$-3.17767 - 2.62041I$	$-6.33336 + 1.66250I$
$u = -1.238700 + 0.235930I$ $a = 0.259320 - 1.049780I$ $b = 1.56835 + 0.30870I$	$-3.07117 - 10.98410I$	0
$u = -1.238700 - 0.235930I$ $a = 0.259320 + 1.049780I$ $b = 1.56835 - 0.30870I$	$-3.07117 + 10.98410I$	0
$u = 1.098530 + 0.619511I$ $a = -0.12705 - 1.41433I$ $b = -1.40890 - 0.43078I$	$-0.15592 - 5.14913I$	0
$u = 1.098530 - 0.619511I$ $a = -0.12705 + 1.41433I$ $b = -1.40890 + 0.43078I$	$-0.15592 + 5.14913I$	0
$u = 1.141500 + 0.551235I$ $a = -0.76008 + 2.15876I$ $b = 1.99570 + 1.66220I$	$3.80506 - 10.53880I$	0
$u = 1.141500 - 0.551235I$ $a = -0.76008 - 2.15876I$ $b = 1.99570 - 1.66220I$	$3.80506 + 10.53880I$	0
$u = 1.187120 + 0.452809I$ $a = -0.357378 + 0.555827I$ $b = 0.899507 + 0.695896I$	$-4.94754 - 1.54657I$	0
$u = 1.187120 - 0.452809I$ $a = -0.357378 - 0.555827I$ $b = 0.899507 - 0.695896I$	$-4.94754 + 1.54657I$	0
$u = -1.156470 + 0.532261I$ $a = 0.274557 - 1.321940I$ $b = 2.19449 - 0.51983I$	$-4.53293 + 12.66540I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.156470-0.532261I$ $a=\ \ 0.274557+1.321940I$ $b=\ \ 2.19449+0.51983I$	$-4.53293-12.66540I$	0
$u=-1.177490+0.485615I$ $a=\ \ 1.32633+0.93386I$ $b=-0.89475+1.83707I$	$-4.83960+7.81420I$	0
$u=-1.177490-0.485615I$ $a=\ \ 1.32633-0.93386I$ $b=-0.89475-1.83707I$	$-4.83960-7.81420I$	0
$u=-1.202220+0.499350I$ $a=\ \ 0.460879+0.106966I$ $b=-0.283500+0.592956I$	$-4.72308+7.48847I$	0
$u=-1.202220-0.499350I$ $a=\ \ 0.460879-0.106966I$ $b=-0.283500-0.592956I$	$-4.72308-7.48847I$	0
$u=-1.174250+0.568288I$ $a=\ \ 0.49497+1.87336I$ $b=-1.87549+1.43747I$	$-2.91281+13.75270I$	0
$u=-1.174250-0.568288I$ $a=\ \ 0.49497-1.87336I$ $b=-1.87549-1.43747I$	$-2.91281-13.75270I$	0
$u=\ \ 1.173250+0.583567I$ $a=-0.37502+1.92947I$ $b=\ \ 1.94210+1.38100I$	$-0.6843-19.7445I$	0
$u=\ \ 1.173250-0.583567I$ $a=-0.37502-1.92947I$ $b=\ \ 1.94210-1.38100I$	$-0.6843+19.7445I$	0
$u=\ \ 0.677018+0.122920I$ $a=-0.090170+0.431984I$ $b=\ \ 0.773640+0.904200I$	$-1.39396-0.51937I$	$-7.49436+3.54433I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.677018 - 0.122920I$ $a = -0.090170 - 0.431984I$ $b = 0.773640 - 0.904200I$	$-1.39396 + 0.51937I$	$-7.49436 - 3.54433I$
$u = 1.268380 + 0.338936I$ $a = 0.258683 - 0.424308I$ $b = -0.111769 - 0.356158I$	$-5.73048 - 1.79012I$	0
$u = 1.268380 - 0.338936I$ $a = 0.258683 + 0.424308I$ $b = -0.111769 + 0.356158I$	$-5.73048 + 1.79012I$	0
$u = -1.182030 + 0.583698I$ $a = 0.001713 - 1.285930I$ $b = 1.176240 - 0.645768I$	$-2.18165 + 5.82518I$	0
$u = -1.182030 - 0.583698I$ $a = 0.001713 + 1.285930I$ $b = 1.176240 + 0.645768I$	$-2.18165 - 5.82518I$	0
$u = -1.259890 + 0.406415I$ $a = -0.173834 - 0.622203I$ $b = 0.365866 - 0.414471I$	$-5.16392 + 7.51600I$	0
$u = -1.259890 - 0.406415I$ $a = -0.173834 + 0.622203I$ $b = 0.365866 + 0.414471I$	$-5.16392 - 7.51600I$	0
$u = 1.171820 + 0.620671I$ $a = -0.076724 - 1.311900I$ $b = -1.223860 - 0.548169I$	$-1.36507 - 10.18130I$	0
$u = 1.171820 - 0.620671I$ $a = -0.076724 + 1.311900I$ $b = -1.223860 + 0.548169I$	$-1.36507 + 10.18130I$	0
$u = -0.617996 + 0.192261I$ $a = -2.22103 + 0.11935I$ $b = 0.786236 + 0.327337I$	$4.07274 + 1.60672I$	$-3.83245 - 1.97204I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.617996-0.192261I$ $a=-2.22103-0.11935I$ $b=\ \ 0.786236-0.327337I$	$4.07274-1.60672I$	$-3.83245+1.97204I$
$u=\ \ 0.462574+0.416233I$ $a=-2.96641+1.07919I$ $b=-1.48761+0.99410I$	$1.92061-5.04402I$	$1.03354+6.79994I$
$u=\ \ 0.462574-0.416233I$ $a=-2.96641-1.07919I$ $b=-1.48761-0.99410I$	$1.92061+5.04402I$	$1.03354-6.79994I$
$u=\ \ 0.229914+0.551330I$ $a=-2.18549+0.22408I$ $b=-1.49300-0.68166I$	$1.38604+5.52662I$	$-3.41313-7.69772I$
$u=\ \ 0.229914-0.551330I$ $a=-2.18549-0.22408I$ $b=-1.49300+0.68166I$	$1.38604-5.52662I$	$-3.41313+7.69772I$
$u=\ \ 0.314205+0.497227I$ $a=\ \ 2.46177-1.97659I$ $b=\ \ 0.328127-1.321850I$	$4.61091-0.89127I$	$3.81617-0.08868I$
$u=\ \ 0.314205-0.497227I$ $a=\ \ 2.46177+1.97659I$ $b=\ \ 0.328127+1.321850I$	$4.61091+0.89127I$	$3.81617+0.08868I$
$u=\ \ 0.330308+0.437500I$ $a=\ \ 1.56756-1.83086I$ $b=-0.302602+0.275810I$	$4.70777+1.42105I$	$3.12833-3.99747I$
$u=\ \ 0.330308-0.437500I$ $a=\ \ 1.56756+1.83086I$ $b=-0.302602-0.275810I$	$4.70777-1.42105I$	$3.12833+3.99747I$
$u=-0.009918+0.405834I$ $a=\ \ 1.90091+1.21729I$ $b=\ \ 1.38844-0.26997I$	$-1.61251+0.11334I$	$-7.50597+0.03879I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.009918-0.405834I$		
$a=\ \ 1.90091-1.21729I$	$-1.61251-0.11334I$	$-7.50597-0.03879I$
$b=\ \ 1.38844+0.26997I$		
$u=-0.345824$		
$a=\ \ 3.70752$	-1.59359	-5.16680
$b=\ \ 1.16852$		

II.

$\boldsymbol{I_2^u = \langle 8u^{28}+4u^{27}+\cdots+b-8,\ 5u^{28}+6u^{27}+\cdots+a-5,\ u^{29}+u^{28}+\cdots-u-1\rangle}$

(i) Arc colorings

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

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

$$a_2 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

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

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

$$a_9 = \begin{pmatrix} -5u^{28}-6u^{27}+\cdots-6u+5 \\ -8u^{28}-4u^{27}+\cdots-4u+8 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -8u^{28}-7u^{27}+\cdots-5u+8 \\ -7u^{28}-4u^{27}+\cdots-5u+7 \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} -4u^{28}-5u^{27}+\cdots-5u+4 \\ -7u^{28}-4u^{27}+\cdots-4u+7 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 6u^{28}+6u^{27}+\cdots+6u-6 \\ 5u^{28}+2u^{27}+\cdots+2u-5 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 3u^{28}-25u^{26}+\cdots-u-6 \\ 7u^{28}-53u^{26}+\cdots-u-12 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -7u^{28}-5u^{27}+\cdots-2u+11 \\ -5u^{28}-2u^{27}+\cdots+u+4 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes

$= 15u^{28}-6u^{27}-122u^{26}+28u^{25}+502u^{24}-47u^{23}-1290u^{22}-66u^{21}+2257u^{20}+497u^{19}-2721u^{18}-1268u^{17}+2194u^{16}+1986u^{15}-962u^{14}-2159u^{13}-163u^{12}+1660u^{11}+800u^{10}-937u^9-994u^8+397u^7+890u^6-159u^5-552u^4+55u^3+228u^2-21u-56$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{29} - 15u^{28} + \cdots + 11u - 1$
c_2	$u^{29} + u^{28} + \cdots - u - 1$
c_3	$u^{29} - u^{28} + \cdots - u + 1$
c_4	$u^{29} - 2u^{28} + \cdots - 2u + 1$
c_5	$u^{29} - u^{28} + \cdots - u + 1$
c_6	$u^{29} - 3u^{28} + \cdots - u + 1$
c_7	$u^{29} - 2u^{28} + \cdots - u - 1$
c_8	$u^{29} + 2u^{28} + \cdots - 2u - 1$
c_9	$u^{29} - u^{28} + \cdots + 13u + 1$
c_{10}	$u^{29} + u^{28} + \cdots - u - 1$
c_{11}	$u^{29} - 15u^{28} + \cdots - 19u + 1$
c_{12}	$u^{29} - u^{28} + \cdots + 2u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{29}+y^{28}+\cdots-5y-1$
c_2, c_5	$y^{29}-15y^{28}+\cdots+11y-1$
c_3, c_{10}	$y^{29}+15y^{28}+\cdots-19y-1$
c_4, c_8	$y^{29}-30y^{28}+\cdots+24y-1$
c_6	$y^{29}+13y^{28}+\cdots+17y-1$
c_7	$y^{29}-2y^{28}+\cdots+3y-1$
c_9	$y^{29}-15y^{28}+\cdots+13y-1$
c_{11}	$y^{29}+11y^{28}+\cdots+5y-1$
c_{12}	$y^{29}-3y^{28}+\cdots+2y-1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.012830 + 0.257666I$ $a = -1.02127 + 1.12267I$ $b = 0.964290 + 1.002990I$	$-3.52317 - 0.78224I$	$-13.57115 - 0.79473I$
$u = 1.012830 - 0.257666I$ $a = -1.02127 - 1.12267I$ $b = 0.964290 - 1.002990I$	$-3.52317 + 0.78224I$	$-13.57115 + 0.79473I$
$u = -0.447640 + 0.820964I$ $a = -1.129020 + 0.024098I$ $b = -0.916140 - 0.220208I$	$1.067470 - 0.913618I$	$-2.47813 + 4.14437I$
$u = -0.447640 - 0.820964I$ $a = -1.129020 - 0.024098I$ $b = -0.916140 + 0.220208I$	$1.067470 + 0.913618I$	$-2.47813 - 4.14437I$
$u = -0.125860 + 0.908684I$ $a = -0.385304 - 0.793638I$ $b = -0.313879 - 0.750734I$	$-0.82578 - 2.86981I$	$3.34364 + 6.99484I$
$u = -0.125860 - 0.908684I$ $a = -0.385304 + 0.793638I$ $b = -0.313879 + 0.750734I$	$-0.82578 + 2.86981I$	$3.34364 - 6.99484I$
$u = -1.035630 + 0.376015I$ $a = 0.55437 + 1.94601I$ $b = -2.40805 + 0.75033I$	$-0.49978 - 2.67316I$	$-5.42153 + 3.02884I$
$u = -1.035630 - 0.376015I$ $a = 0.55437 - 1.94601I$ $b = -2.40805 - 0.75033I$	$-0.49978 + 2.67316I$	$-5.42153 - 3.02884I$
$u = -1.011100 + 0.465853I$ $a = -0.641998 - 0.234013I$ $b = -1.33336 - 1.09971I$	$3.27409 + 4.23230I$	$3.03729 - 4.05269I$
$u = -1.011100 - 0.465853I$ $a = -0.641998 + 0.234013I$ $b = -1.33336 + 1.09971I$	$3.27409 - 4.23230I$	$3.03729 + 4.05269I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.016900 + 0.483979I$ $a = 0.438928 - 1.222220I$ $b = 0.208345 - 1.330300I$	$3.41025 - 1.82150I$	$2.98987 + 2.43916I$
$u = 1.016900 - 0.483979I$ $a = 0.438928 + 1.222220I$ $b = 0.208345 + 1.330300I$	$3.41025 + 1.82150I$	$2.98987 - 2.43916I$
$u = 0.490643 + 0.667636I$ $a = 1.82275 + 0.21847I$ $b = 1.223770 - 0.185664I$	$2.63775 + 4.59064I$	$0.73778 - 4.42435I$
$u = 0.490643 - 0.667636I$ $a = 1.82275 - 0.21847I$ $b = 1.223770 + 0.185664I$	$2.63775 - 4.59064I$	$0.73778 + 4.42435I$
$u = 1.076950 + 0.549716I$ $a = -0.32785 - 2.09071I$ $b = -1.91152 - 0.68915I$	$0.82142 - 9.33880I$	$-2.66312 + 8.92858I$
$u = 1.076950 - 0.549716I$ $a = -0.32785 + 2.09071I$ $b = -1.91152 + 0.68915I$	$0.82142 + 9.33880I$	$-2.66312 - 8.92858I$
$u = 0.787229$ $a = -1.47635$ $b = -1.19340$	-2.37934	-17.8910
$u = 0.617194 + 0.455336I$ $a = 2.10546 - 0.52027I$ $b = -0.156164 - 0.427777I$	$4.73074 - 2.12491I$	$3.90460 + 6.70846I$
$u = 0.617194 - 0.455336I$ $a = 2.10546 + 0.52027I$ $b = -0.156164 + 0.427777I$	$4.73074 + 2.12491I$	$3.90460 - 6.70846I$
$u = -0.644637 + 0.408946I$ $a = -1.38292 - 1.00681I$ $b = 1.008830 - 0.163629I$	$4.53076 - 0.49076I$	$2.29772 - 2.76161I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.644637-0.408946I$ $a=-1.38292+1.00681I$ $b=\ \ 1.008830+0.163629I$	$4.53076+0.49076I$	$2.29772+2.76161I$
$u=-0.718185+0.210952I$ $a=\ \ 1.272540-0.007370I$ $b=\ \ 1.55321+1.24992I$	$0.87385+5.38852I$	$-4.20699-10.26261I$
$u=-0.718185-0.210952I$ $a=\ \ 1.272540+0.007370I$ $b=\ \ 1.55321-1.24992I$	$0.87385-5.38852I$	$-4.20699+10.26261I$
$u=\ \ 1.201740+0.364526I$ $a=\ \ 0.545294+0.710099I$ $b=\ \ 0.916530-0.798971I$	$-5.13331-1.17993I$	$-4.64934+3.15889I$
$u=\ \ 1.201740-0.364526I$ $a=\ \ 0.545294-0.710099I$ $b=\ \ 0.916530+0.798971I$	$-5.13331+1.17993I$	$-4.64934-3.15889I$
$u=-1.113040+0.592971I$ $a=\ \ 0.27814-1.39378I$ $b=\ \ 1.50688-0.49438I$	$-0.99821+6.18935I$	$-5.01467-4.90175I$
$u=-1.113040-0.592971I$ $a=\ \ 0.27814+1.39378I$ $b=\ \ 1.50688+0.49438I$	$-0.99821-6.18935I$	$-5.01467+4.90175I$
$u=-1.213780+0.489666I$ $a=-0.890937-0.393478I$ $b=\ \ 0.253960-1.287140I$	$-4.24162+7.81555I$	$1.63940-9.21259I$
$u=-1.213780-0.489666I$ $a=-0.890937+0.393478I$ $b=\ \ 0.253960+1.287140I$	$-4.24162-7.81555I$	$1.63940+9.21259I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^{29}-15u^{28}+\cdots+11u-1)(u^{152}+76u^{151}+\cdots+13u+1)$
c_2	$(u^{29}+u^{28}+\cdots-u-1)(u^{152}+2u^{151}+\cdots-u-1)$
c_3	$(u^{29}-u^{28}+\cdots-u+1)(u^{152}+33u^{150}+\cdots+783u+259)$
c_4	$(u^{29}-2u^{28}+\cdots-2u+1)(u^{152}+u^{151}+\cdots+6u+1)$
c_5	$(u^{29}-u^{28}+\cdots-u+1)(u^{152}+2u^{151}+\cdots-u-1)$
c_6	$(u^{29}-3u^{28}+\cdots-u+1)(u^{152}+6u^{151}+\cdots-3317745u-609725)$
c_7	$(u^{29}-2u^{28}+\cdots-u-1)(u^{152}-u^{151}+\cdots+57u-1)$
c_8	$(u^{29}+2u^{28}+\cdots-2u-1)(u^{152}+u^{151}+\cdots+6u+1)$
c_9	$(u^{29}-u^{28}+\cdots+13u+1)(u^{152}-20u^{151}+\cdots+21337u-12353)$
c_{10}	$(u^{29}+u^{28}+\cdots-u-1)(u^{152}+33u^{150}+\cdots+783u+259)$
c_{11}	$(u^{29}-15u^{28}+\cdots-19u+1)$ $\cdot(u^{152}-66u^{151}+\cdots-1636585u+67081)$
c_{12}	$(u^{29}-u^{28}+\cdots+2u+1)(u^{152}-14u^{151}+\cdots-30u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y^{29}+y^{28}+\cdots-5y-1)(y^{152}+4y^{151}+\cdots-105y+1)$
c_2, c_5	$(y^{29}-15y^{28}+\cdots+11y-1)(y^{152}-76y^{151}+\cdots-13y+1)$
c_3, c_{10}	$(y^{29}+15y^{28}+\cdots-19y-1)$ $\cdot(y^{152}+66y^{151}+\cdots+1636585y+67081)$
c_4, c_8	$(y^{29}-30y^{28}+\cdots+24y-1)(y^{152}-99y^{151}+\cdots-18y+1)$
c_6	$(y^{29}+13y^{28}+\cdots+17y-1)$ $\cdot(y^{152}+68y^{151}+\cdots-27842735435875y+371764575625)$
c_7	$(y^{29}-2y^{28}+\cdots+3y-1)(y^{152}+y^{151}+\cdots-129y+1)$
c_9	$(y^{29}-15y^{28}+\cdots+13y-1)$ $\cdot(y^{152}-40y^{151}+\cdots-15266440451y+152596609)$
c_{11}	$(y^{29}+11y^{28}+\cdots+5y-1)$ $\cdot(y^{152}+54y^{151}+\cdots+6314845277y+4499860561)$
c_{12}	$(y^{29}-3y^{28}+\cdots+2y-1)(y^{152}-4y^{151}+\cdots+152y+1)$