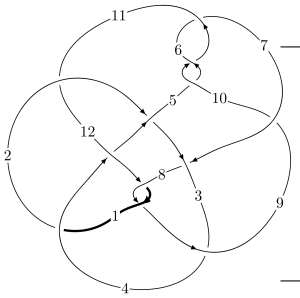
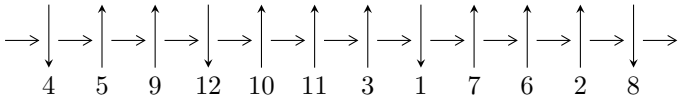
$12a_{0857}$ $(K12a_{0857})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -2.74319 \times 10^{223} u^{147} + 7.21947 \times 10^{223} u^{146} + \cdots + 6.94482 \times 10^{222} b - 1.64886 \times 10^{223},$$
$$- 2.55680 \times 10^{223} u^{147} + 1.17756 \times 10^{224} u^{146} + \cdots + 6.94482 \times 10^{222} a - 4.29985 \times 10^{224},$$
$$u^{148} - 4u^{147} + \cdots + 28u + 1 \rangle$$
$$I_2^u = \langle 6u^{28} + 2u^{27} + \cdots + b - 9,\ 2u^{28} - 4u^{27} + \cdots + a + 1,\ u^{29} - u^{28} + \cdots + 6u + 1 \rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 177 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. $\boldsymbol{I_1^u = \langle -2.74 \times 10^{223} u^{147} + 7.22 \times 10^{223} u^{146} + \cdots + 6.94 \times 10^{222} b - 1.65 \times 10^{223},\ -2.56 \times 10^{223} u^{147} + 1.18 \times 10^{224} u^{146} + \cdots + 6.94 \times 10^{222} a - 4.30 \times 10^{224},\ u^{148} - 4u^{147} + \cdots + 28u + 1 \rangle}$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_6 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 3.68159u^{147} - 16.9559u^{146} + \cdots + 1057.19u + 61.9145 \\ 3.94998u^{147} - 10.3955u^{146} + \cdots + 26.0103u + 2.37422 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^2 + 1 \\ u^4 - 2u^2 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -2.56776u^{147} + 11.4550u^{146} + \cdots - 390.067u - 4.59737 \\ -2.17368u^{147} + 6.02080u^{146} + \cdots + 83.1920u + 4.76360 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.268390u^{147} - 6.56048u^{146} + \cdots + 1031.18u + 59.5402 \\ 3.94998u^{147} - 10.3955u^{146} + \cdots + 26.0103u + 2.37422 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -4.71414u^{147} + 19.5299u^{146} + \cdots - 986.652u - 49.6532 \\ 1.96876u^{147} - 4.77246u^{146} + \cdots - 106.499u - 3.82153 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 3.53479u^{147} - 17.1089u^{146} + \cdots + 1054.78u + 62.0307 \\ 3.40108u^{147} - 8.93411u^{146} + \cdots + 33.4451u + 2.43885 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -7.50495u^{147} + 18.0052u^{146} + \cdots + 157.274u - 8.86158 \\ -0.207768u^{147} + 1.08489u^{146} + \cdots - 48.3846u - 3.44396 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u^5 + 2u^3 - u \\ u^7 - 3u^5 + 2u^3 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 23.0139u^{147} - 56.6855u^{146} + \cdots - 967.950u - 41.0456$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{148} + 14u^{147} + \cdots + 31659u + 1009$
c_2	$u^{148} - 3u^{147} + \cdots - 22u - 1$
c_3	$u^{148} - u^{147} + \cdots - 58242827u + 11140141$
c_4	$u^{148} + 2u^{147} + \cdots - 56u + 1$
c_5, c_6, c_{10}	$u^{148} - 4u^{147} + \cdots + 28u + 1$
c_7	$u^{148} - u^{147} + \cdots + 629u - 841$
c_8, c_{12}	$u^{148} - 2u^{147} + \cdots - 174u + 599$
c_9	$u^{148} + 12u^{147} + \cdots + 6333548u + 186337$
c_{11}	$u^{148} + 15u^{147} + \cdots + 305347u + 14947$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{148} - 34y^{147} + \cdots - 405878435y + 1018081$
c_2	$y^{148} + 7y^{147} + \cdots - 18y + 1$
c_3	$y^{148} + 39y^{147} + \cdots + 6412545735582301y + 124102741499881$
c_4	$y^{148} - 2y^{147} + \cdots - 70y + 1$
c_5, c_6, c_{10}	$y^{148} - 130y^{147} + \cdots - 174y + 1$
c_7	$y^{148} + 19y^{147} + \cdots + 90033725y + 707281$
c_8, c_{12}	$y^{148} - 88y^{147} + \cdots - 13930670y + 358801$
c_9	$y^{148} + 42y^{147} + \cdots - 6491280746914y + 34721477569$
c_{11}	$y^{148} + 21y^{147} + \cdots + 9784629847y + 223412809$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.834262+0.559566I$ $a=-0.128303+0.506511I$ $b=-0.586616+0.645748I$	$-2.88757-9.19665I$	0
$u=-0.834262-0.559566I$ $a=-0.128303-0.506511I$ $b=-0.586616-0.645748I$	$-2.88757+9.19665I$	0
$u=-0.882501+0.485594I$ $a=\ \ 0.559978+0.598860I$ $b=\ \ 0.022373+0.954432I$	$-5.23857+1.54918I$	0
$u=-0.882501-0.485594I$ $a=\ \ 0.559978-0.598860I$ $b=\ \ 0.022373-0.954432I$	$-5.23857-1.54918I$	0
$u=-0.383892+0.898713I$ $a=-0.511607-0.101872I$ $b=-0.265657-0.369759I$	$-4.40189+4.11846I$	0
$u=-0.383892-0.898713I$ $a=-0.511607+0.101872I$ $b=-0.265657+0.369759I$	$-4.40189-4.11846I$	0
$u=-0.954716+0.426398I$ $a=-0.328955-0.422546I$ $b=-0.507598-0.928450I$	$-5.61580-0.33311I$	0
$u=-0.954716-0.426398I$ $a=-0.328955+0.422546I$ $b=-0.507598+0.928450I$	$-5.61580+0.33311I$	0
$u=\ \ 0.828082+0.672181I$ $a=\ \ 0.010750-0.276583I$ $b=-0.378265-0.336048I$	$0.75076+2.87734I$	0
$u=\ \ 0.828082-0.672181I$ $a=\ \ 0.010750+0.276583I$ $b=-0.378265+0.336048I$	$0.75076-2.87734I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.970690 + 0.468186I$ $a = -0.687675 + 0.123557I$ $b = -0.877346 + 0.884763I$	$-0.01311 - 4.67709I$	0
$u = 0.970690 - 0.468186I$ $a = -0.687675 - 0.123557I$ $b = -0.877346 - 0.884763I$	$-0.01311 + 4.67709I$	0
$u = -0.975454 + 0.461950I$ $a = -0.919640 - 0.243256I$ $b = -0.96455 - 1.05862I$	$-3.57878 + 10.72080I$	0
$u = -0.975454 - 0.461950I$ $a = -0.919640 + 0.243256I$ $b = -0.96455 + 1.05862I$	$-3.57878 - 10.72080I$	0
$u = 1.096920 + 0.224678I$ $a = 1.077810 - 0.355503I$ $b = 0.487913 - 0.925485I$	$1.338960 + 0.244377I$	0
$u = 1.096920 - 0.224678I$ $a = 1.077810 + 0.355503I$ $b = 0.487913 + 0.925485I$	$1.338960 - 0.244377I$	0
$u = -0.256354 + 0.830185I$ $a = -0.25310 - 1.53553I$ $b = 0.283713 - 1.092650I$	$-7.23092 - 6.20380I$	0
$u = -0.256354 - 0.830185I$ $a = -0.25310 + 1.53553I$ $b = 0.283713 + 1.092650I$	$-7.23092 + 6.20380I$	0
$u = 0.136768 + 0.855356I$ $a = 0.706378 + 0.974069I$ $b = 0.679992 + 0.579479I$	$-2.15264 + 2.82025I$	0
$u = 0.136768 - 0.855356I$ $a = 0.706378 - 0.974069I$ $b = 0.679992 - 0.579479I$	$-2.15264 - 2.82025I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.217599+0.836206I$ $a=-0.58507+2.16088I$ $b=-1.14142+1.16900I$	$-5.9224-15.3515I$	0
$u=-0.217599-0.836206I$ $a=-0.58507-2.16088I$ $b=-1.14142-1.16900I$	$-5.9224+15.3515I$	0
$u=0.220795+0.835141I$ $a=-0.51746-1.84375I$ $b=-1.08269-0.98315I$	$-2.33041+9.31709I$	0
$u=0.220795-0.835141I$ $a=-0.51746+1.84375I$ $b=-1.08269+0.98315I$	$-2.33041-9.31709I$	0
$u=-0.216907+0.813285I$ $a=0.03803+1.71462I$ $b=-0.738737+0.926240I$	$-7.91109-4.12621I$	0
$u=-0.216907-0.813285I$ $a=0.03803-1.71462I$ $b=-0.738737-0.926240I$	$-7.91109+4.12621I$	0
$u=-1.137920+0.250741I$ $a=1.21331+0.81749I$ $b=0.713114+1.184890I$	$0.67957+2.16426I$	0
$u=-1.137920-0.250741I$ $a=1.21331-0.81749I$ $b=0.713114-1.184890I$	$0.67957-2.16426I$	0
$u=0.036176+0.778768I$ $a=0.946637-0.595588I$ $b=-0.038242-0.325947I$	$-5.69981+0.05221I$	0
$u=0.036176-0.778768I$ $a=0.946637+0.595588I$ $b=-0.038242+0.325947I$	$-5.69981-0.05221I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.156039 + 0.750413I$ $a = 0.97031 + 2.26841I$ $b = 1.01555 + 1.09135I$	$-1.39682 + 3.46757I$	0
$u = 0.156039 - 0.750413I$ $a = 0.97031 - 2.26841I$ $b = 1.01555 - 1.09135I$	$-1.39682 - 3.46757I$	0
$u = -1.232570 + 0.149590I$ $a = -1.34678 - 1.81963I$ $b = 0.0079557 + 0.0820720I$	$-0.65134 + 4.12392I$	0
$u = -1.232570 - 0.149590I$ $a = -1.34678 + 1.81963I$ $b = 0.0079557 - 0.0820720I$	$-0.65134 - 4.12392I$	0
$u = -0.130626 + 0.744400I$ $a = 0.71695 - 2.90993I$ $b = 0.98660 - 1.31247I$	$-2.29627 - 5.85849I$	0
$u = -0.130626 - 0.744400I$ $a = 0.71695 + 2.90993I$ $b = 0.98660 + 1.31247I$	$-2.29627 + 5.85849I$	0
$u = -0.051336 + 0.751416I$ $a = -1.62420 - 0.69229I$ $b = -1.46175 - 0.46950I$	$-5.98505 + 1.73587I$	0
$u = -0.051336 - 0.751416I$ $a = -1.62420 + 0.69229I$ $b = -1.46175 + 0.46950I$	$-5.98505 - 1.73587I$	0
$u = 1.207640 + 0.318226I$ $a = 0.531479 + 0.572839I$ $b = 0.043236 + 0.652308I$	$-2.10884 + 3.92903I$	0
$u = 1.207640 - 0.318226I$ $a = 0.531479 - 0.572839I$ $b = 0.043236 - 0.652308I$	$-2.10884 - 3.92903I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.216070+0.284676I$ $a=\ \ 0.22126+1.44672I$ $b=-1.57369+0.15677I$	$-2.44194-5.49792I$	0
$u=-1.216070-0.284676I$ $a=\ \ 0.22126-1.44672I$ $b=-1.57369-0.15677I$	$-2.44194+5.49792I$	0
$u=-1.239860+0.173187I$ $a=\ \ 0.773397+0.424869I$ $b=\ \ 0.68782+1.51185I$	$2.37892+0.78548I$	0
$u=-1.239860-0.173187I$ $a=\ \ 0.773397-0.424869I$ $b=\ \ 0.68782-1.51185I$	$2.37892-0.78548I$	0
$u=-1.239060+0.251944I$ $a=\ \ 1.43877+1.68322I$ $b=-1.48406+1.39599I$	$-2.54709+2.50318I$	0
$u=-1.239060-0.251944I$ $a=\ \ 1.43877-1.68322I$ $b=-1.48406-1.39599I$	$-2.54709-2.50318I$	0
$u=\ \ 1.262400+0.107738I$ $a=\ \ 1.082500-0.540636I$ $b=\ \ 0.11874-1.85691I$	$0.27094-4.21563I$	0
$u=\ \ 1.262400-0.107738I$ $a=\ \ 1.082500+0.540636I$ $b=\ \ 0.11874+1.85691I$	$0.27094+4.21563I$	0
$u=\ \ 1.249400+0.260612I$ $a=\ \ 1.06393-1.13172I$ $b=-0.997724-0.835587I$	$0.53631+1.68964I$	0
$u=\ \ 1.249400-0.260612I$ $a=\ \ 1.06393+1.13172I$ $b=-0.997724+0.835587I$	$0.53631-1.68964I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.249760 + 0.271941I$ $a = 0.35669 - 1.37962I$ $b = 0.428838 - 1.124020I$	$-2.77756 - 1.61149I$	0
$u = 1.249760 - 0.271941I$ $a = 0.35669 + 1.37962I$ $b = 0.428838 + 1.124020I$	$-2.77756 + 1.61149I$	0
$u = 0.243349 + 0.675764I$ $a = 0.30508 + 2.50199I$ $b = 0.96287 + 1.40677I$	$-2.06249 + 6.40773I$	$0. - 10.21181I$
$u = 0.243349 - 0.675764I$ $a = 0.30508 - 2.50199I$ $b = 0.96287 - 1.40677I$	$-2.06249 - 6.40773I$	$0. + 10.21181I$
$u = 0.027955 + 0.700281I$ $a = -0.57906 + 2.74231I$ $b = 0.476324 + 0.957322I$	$-6.53858 + 5.12910I$	$-6.02888 - 5.78970I$
$u = 0.027955 - 0.700281I$ $a = -0.57906 - 2.74231I$ $b = 0.476324 - 0.957322I$	$-6.53858 - 5.12910I$	$-6.02888 + 5.78970I$
$u = 0.582340 + 0.379724I$ $a = 1.48013 - 0.01204I$ $b = 0.773397 - 0.967716I$	$-0.74585 - 2.86716I$	$1.86167 + 3.66817I$
$u = 0.582340 - 0.379724I$ $a = 1.48013 + 0.01204I$ $b = 0.773397 + 0.967716I$	$-0.74585 + 2.86716I$	$1.86167 - 3.66817I$
$u = 0.029223 + 0.693114I$ $a = -0.53721 + 2.04383I$ $b = -0.722494 + 1.160630I$	$-3.20932 + 1.76134I$	$-1.48052 - 3.33045I$
$u = 0.029223 - 0.693114I$ $a = -0.53721 - 2.04383I$ $b = -0.722494 - 1.160630I$	$-3.20932 - 1.76134I$	$-1.48052 + 3.33045I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.288380+0.220568I$ $a=-0.310760+0.060146I$ $b=\ \ 1.190800+0.741134I$	$2.97962-0.43793I$	0
$u=-1.288380-0.220568I$ $a=-0.310760-0.060146I$ $b=\ \ 1.190800-0.741134I$	$2.97962+0.43793I$	0
$u=-0.055555+0.688167I$ $a=-1.47974-2.87222I$ $b=-1.20801-1.72162I$	$-6.15959-5.89642I$	$-6.69542+6.80189I$
$u=-0.055555-0.688167I$ $a=-1.47974+2.87222I$ $b=-1.20801+1.72162I$	$-6.15959+5.89642I$	$-6.69542-6.80189I$
$u=\ \ 1.302150+0.156856I$ $a=-0.45371+1.69318I$ $b=\ \ 0.510488+0.190093I$	$4.35576+0.14805I$	0
$u=\ \ 1.302150-0.156856I$ $a=-0.45371-1.69318I$ $b=\ \ 0.510488-0.190093I$	$4.35576-0.14805I$	0
$u=-1.273880+0.332660I$ $a=\ \ 0.936615+0.092078I$ $b=-0.1058670+0.0205234I$	$-1.63408-4.06332I$	0
$u=-1.273880-0.332660I$ $a=\ \ 0.936615-0.092078I$ $b=-0.1058670-0.0205234I$	$-1.63408+4.06332I$	0
$u=-1.289870+0.273878I$ $a=-0.767033-0.366375I$ $b=-0.55499-1.49583I$	$0.89907-5.25630I$	0
$u=-1.289870-0.273878I$ $a=-0.767033+0.366375I$ $b=-0.55499+1.49583I$	$0.89907+5.25630I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.389085 + 0.558326I$ $a = 0.618664 - 0.432662I$ $b = -0.570599 - 0.187701I$	$1.00696 + 1.85359I$	$7.26628 + 4.55232I$
$u = 0.389085 - 0.558326I$ $a = 0.618664 + 0.432662I$ $b = -0.570599 + 0.187701I$	$1.00696 - 1.85359I$	$7.26628 - 4.55232I$
$u = -1.302760 + 0.212861I$ $a = -0.29581 - 1.44270I$ $b = 0.555211 - 0.959453I$	$3.01507 - 4.85601I$	0
$u = -1.302760 - 0.212861I$ $a = -0.29581 + 1.44270I$ $b = 0.555211 + 0.959453I$	$3.01507 + 4.85601I$	0
$u = -0.176595 + 0.656507I$ $a = -0.33129 + 2.39777I$ $b = -0.391799 + 0.271433I$	$-3.54982 - 6.83567I$	$2.98828 + 11.18078I$
$u = -0.176595 - 0.656507I$ $a = -0.33129 - 2.39777I$ $b = -0.391799 - 0.271433I$	$-3.54982 + 6.83567I$	$2.98828 - 11.18078I$
$u = -1.290940 + 0.278705I$ $a = -1.95472 - 1.34403I$ $b = 0.565532 - 0.785691I$	$-2.42703 - 8.66471I$	0
$u = -1.290940 - 0.278705I$ $a = -1.95472 + 1.34403I$ $b = 0.565532 + 0.785691I$	$-2.42703 + 8.66471I$	0
$u = 1.290760 + 0.320068I$ $a = -0.428671 - 0.651956I$ $b = -1.37338 + 0.70873I$	$-1.80272 + 2.14012I$	0
$u = 1.290760 - 0.320068I$ $a = -0.428671 + 0.651956I$ $b = -1.37338 - 0.70873I$	$-1.80272 - 2.14012I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.311750 + 0.241225I$ $a = -1.24924 + 0.67822I$ $b = 1.231930 + 0.218310I$	$3.31278 + 5.59201I$	0
$u = 1.311750 - 0.241225I$ $a = -1.24924 - 0.67822I$ $b = 1.231930 - 0.218310I$	$3.31278 - 5.59201I$	0
$u = 1.307720 + 0.278543I$ $a = -1.380210 + 0.080713I$ $b = -1.06974 + 2.04051I$	$-1.88613 + 9.39814I$	0
$u = 1.307720 - 0.278543I$ $a = -1.380210 - 0.080713I$ $b = -1.06974 - 2.04051I$	$-1.88613 - 9.39814I$	0
$u = -0.150051 + 0.630587I$ $a = 0.46734 - 2.41428I$ $b = 1.10321 - 1.17284I$	$-0.81876 - 3.53807I$	$4.00000 + 1.54021I$
$u = -0.150051 - 0.630587I$ $a = 0.46734 + 2.41428I$ $b = 1.10321 + 1.17284I$	$-0.81876 + 3.53807I$	$4.00000 - 1.54021I$
$u = 1.283320 + 0.450508I$ $a = 0.288235 + 0.459970I$ $b = 0.607895 - 0.095074I$	$1.26288 + 1.99839I$	0
$u = 1.283320 - 0.450508I$ $a = 0.288235 - 0.459970I$ $b = 0.607895 + 0.095074I$	$1.26288 - 1.99839I$	0
$u = 1.363690 + 0.013125I$ $a = -0.868984 + 0.413583I$ $b = 1.29272 - 0.70915I$	$6.29495 - 3.07582I$	0
$u = 1.363690 - 0.013125I$ $a = -0.868984 - 0.413583I$ $b = 1.29272 + 0.70915I$	$6.29495 + 3.07582I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.36457$ $a = 0.800300$ $b = -0.265614$	2.39925	0
$u = 0.290323 + 0.556988I$ $a = 0.385505 - 1.133770I$ $b = -0.323122 - 0.055224I$	$0.85288 + 1.53171I$	$8.92387 - 4.22600I$
$u = 0.290323 - 0.556988I$ $a = 0.385505 + 1.133770I$ $b = -0.323122 + 0.055224I$	$0.85288 - 1.53171I$	$8.92387 + 4.22600I$
$u = 1.344750 + 0.313792I$ $a = -1.14992 + 1.85647I$ $b = 1.16266 + 1.37871I$	$2.35286 + 9.69335I$	0
$u = 1.344750 - 0.313792I$ $a = -1.14992 - 1.85647I$ $b = 1.16266 - 1.37871I$	$2.35286 - 9.69335I$	0
$u = 1.356540 + 0.264667I$ $a = -1.17529 + 1.30491I$ $b = 1.41228 + 1.12611I$	$3.96376 + 6.83580I$	0
$u = 1.356540 - 0.264667I$ $a = -1.17529 - 1.30491I$ $b = 1.41228 - 1.12611I$	$3.96376 - 6.83580I$	0
$u = 0.616271 + 0.023761I$ $a = 0.710288 + 0.110865I$ $b = 0.698856 + 0.247047I$	$1.342650 + 0.121848I$	$8.91227 + 0.84671I$
$u = 0.616271 - 0.023761I$ $a = 0.710288 - 0.110865I$ $b = 0.698856 - 0.247047I$	$1.342650 - 0.121848I$	$8.91227 - 0.84671I$
$u = 1.363230 + 0.273936I$ $a = 0.52798 - 1.81310I$ $b = -0.437436 - 0.467247I$	$1.32504 + 10.25150I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.363230 - 0.273936I$ $a = 0.52798 + 1.81310I$ $b = -0.437436 + 0.467247I$	$1.32504 - 10.25150I$	0
$u = 1.388500 + 0.091456I$ $a = 1.130930 + 0.524621I$ $b = -0.840469 + 0.361059I$	$3.75546 - 2.79339I$	0
$u = 1.388500 - 0.091456I$ $a = 1.130930 - 0.524621I$ $b = -0.840469 - 0.361059I$	$3.75546 + 2.79339I$	0
$u = -0.035107 + 0.606267I$ $a = 0.184481 - 1.177490I$ $b = 1.147090 - 0.469602I$	$-0.94271 - 2.50791I$	$2.58911 + 4.37316I$
$u = -0.035107 - 0.606267I$ $a = 0.184481 + 1.177490I$ $b = 1.147090 + 0.469602I$	$-0.94271 + 2.50791I$	$2.58911 - 4.37316I$
$u = -1.357790 + 0.316689I$ $a = -0.71987 - 1.64454I$ $b = 1.28709 - 1.16065I$	$3.38172 - 7.33745I$	0
$u = -1.357790 - 0.316689I$ $a = -0.71987 + 1.64454I$ $b = 1.28709 + 1.16065I$	$3.38172 + 7.33745I$	0
$u = -1.404980 + 0.007560I$ $a = -0.537581 - 0.104324I$ $b = 1.378350 + 0.153884I$	$7.52979 + 0.05295I$	0
$u = -1.404980 - 0.007560I$ $a = -0.537581 + 0.104324I$ $b = 1.378350 - 0.153884I$	$7.52979 - 0.05295I$	0
$u = 1.402850 + 0.118826I$ $a = -0.069187 + 0.972484I$ $b = 1.212330 - 0.312016I$	$5.92030 + 0.62489I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.402850 - 0.118826I$ $a = -0.069187 - 0.972484I$ $b = 1.212330 + 0.312016I$	$5.92030 - 0.62489I$	0
$u = -1.366460 + 0.353854I$ $a = -0.362726 - 1.063870I$ $b = 0.933679 - 0.734714I$	$2.61058 - 7.13864I$	0
$u = -1.366460 - 0.353854I$ $a = -0.362726 + 1.063870I$ $b = 0.933679 + 0.734714I$	$2.61058 + 7.13864I$	0
$u = -1.39286 + 0.24973I$ $a = 0.642759 + 1.045830I$ $b = -0.481530 + 0.328023I$	$6.15709 - 4.60004I$	0
$u = -1.39286 - 0.24973I$ $a = 0.642759 - 1.045830I$ $b = -0.481530 - 0.328023I$	$6.15709 + 4.60004I$	0
$u = -1.38851 + 0.28023I$ $a = -1.10646 - 1.27908I$ $b = 1.25713 - 1.46380I$	$3.10758 - 9.91331I$	0
$u = -1.38851 - 0.28023I$ $a = -1.10646 + 1.27908I$ $b = 1.25713 + 1.46380I$	$3.10758 + 9.91331I$	0
$u = 0.046660 + 0.575990I$ $a = 1.39715 + 1.77350I$ $b = 0.420585 + 0.622670I$	$-1.18014 + 2.00255I$	$1.00660 - 4.20684I$
$u = 0.046660 - 0.575990I$ $a = 1.39715 - 1.77350I$ $b = 0.420585 - 0.622670I$	$-1.18014 - 2.00255I$	$1.00660 + 4.20684I$
$u = 1.39416 + 0.33770I$ $a = 1.03319 - 1.11254I$ $b = -0.878878 - 0.875477I$	$-2.80416 + 8.28099I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.39416 - 0.33770I$ $a = 1.03319 + 1.11254I$ $b = -0.878878 + 0.875477I$	$-2.80416 - 8.28099I$	0
$u = 1.39805 + 0.34971I$ $a = 0.95239 - 1.52282I$ $b = -1.27989 - 1.18958I$	$-0.8021 + 19.6275I$	0
$u = 1.39805 - 0.34971I$ $a = 0.95239 + 1.52282I$ $b = -1.27989 + 1.18958I$	$-0.8021 - 19.6275I$	0
$u = -1.39897 + 0.34824I$ $a = 0.86866 + 1.37304I$ $b = -1.23276 + 0.98635I$	$2.80389 - 13.58350I$	0
$u = -1.39897 - 0.34824I$ $a = 0.86866 - 1.37304I$ $b = -1.23276 - 0.98635I$	$2.80389 + 13.58350I$	0
$u = -1.43806 + 0.21229I$ $a = 1.161160 + 0.419970I$ $b = -0.715032 + 0.140045I$	$6.86268 - 4.69797I$	0
$u = -1.43806 - 0.21229I$ $a = 1.161160 - 0.419970I$ $b = -0.715032 - 0.140045I$	$6.86268 + 4.69797I$	0
$u = 1.41553 + 0.34438I$ $a = -0.832851 + 0.755766I$ $b = 0.476708 + 1.126080I$	$-1.92037 + 10.45010I$	0
$u = 1.41553 - 0.34438I$ $a = -0.832851 - 0.755766I$ $b = 0.476708 - 1.126080I$	$-1.92037 - 10.45010I$	0
$u = -1.45751 + 0.09812I$ $a = 0.217631 - 0.561349I$ $b = 1.085990 + 0.646353I$	$5.76160 + 1.26695I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.45751-0.09812I$ $a=\ \ 0.217631+0.561349I$ $b=\ \ 1.085990-0.646353I$	$5.76160-1.26695I$	0
$u=-0.478476+0.243406I$ $a=\ \ 0.716233-1.176960I$ $b=-0.811165-0.122210I$	$-1.98595+3.98277I$	$5.42042-3.64011I$
$u=-0.478476-0.243406I$ $a=\ \ 0.716233+1.176960I$ $b=-0.811165+0.122210I$	$-1.98595-3.98277I$	$5.42042+3.64011I$
$u=\ \ 1.46499+0.13521I$ $a=\ \ 0.446762-0.240495I$ $b=-0.303105-0.313629I$	$2.56788-0.11111I$	0
$u=\ \ 1.46499-0.13521I$ $a=\ \ 0.446762+0.240495I$ $b=-0.303105+0.313629I$	$2.56788+0.11111I$	0
$u=-0.360825+0.371965I$ $a=\ \ 1.62925-0.96032I$ $b=\ \ 0.863807+0.552007I$	$0.290683+1.135740I$	$2.76448+3.83447I$
$u=-0.360825-0.371965I$ $a=\ \ 1.62925+0.96032I$ $b=\ \ 0.863807-0.552007I$	$0.290683-1.135740I$	$2.76448-3.83447I$
$u=-1.48422+0.05865I$ $a=\ \ 0.589184-0.135279I$ $b=-0.983656+0.330263I$	$8.46365-4.65317I$	0
$u=-1.48422-0.05865I$ $a=\ \ 0.589184+0.135279I$ $b=-0.983656-0.330263I$	$8.46365+4.65317I$	0
$u=\ \ 1.48915+0.05284I$ $a=\ \ 0.490479+0.154722I$ $b=-1.091250-0.558767I$	$4.85284+10.67920I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.48915 - 0.05284I$ $a = 0.490479 - 0.154722I$ $b = -1.091250 + 0.558767I$	$4.85284 - 10.67920I$	0
$u = -0.446482 + 0.100884I$ $a = -0.003936 - 0.525214I$ $b = 0.898860 - 0.773223I$	$0.77460 - 3.01645I$	$6.81557 + 9.13013I$
$u = -0.446482 - 0.100884I$ $a = -0.003936 + 0.525214I$ $b = 0.898860 + 0.773223I$	$0.77460 + 3.01645I$	$6.81557 - 9.13013I$
$u = 1.62688$ $a = 0.125898$ $b = 0.0922858$	2.90310	0
$u = -0.123097 + 0.228309I$ $a = 1.96706 - 2.45283I$ $b = 0.333029 + 0.484612I$	$0.14087 + 1.58090I$	$1.55742 - 1.87730I$
$u = -0.123097 - 0.228309I$ $a = 1.96706 + 2.45283I$ $b = 0.333029 - 0.484612I$	$0.14087 - 1.58090I$	$1.55742 + 1.87730I$
$u = -0.0822211 + 0.0320855I$ $a = 4.67861 + 12.51900I$ $b = -0.254461 + 1.080010I$	$-3.58644 + 4.97395I$	$1.74208 - 5.62080I$
$u = -0.0822211 - 0.0320855I$ $a = 4.67861 - 12.51900I$ $b = -0.254461 - 1.080010I$	$-3.58644 - 4.97395I$	$1.74208 + 5.62080I$

II.

$\boldsymbol{I_2^u = \langle 6u^{28}+2u^{27}+\cdots+b-9,\ 2u^{28}-4u^{27}+\cdots+a+1,\ u^{29}-u^{28}+\cdots+6u+1\rangle}$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_6 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} u \\ -u^3+u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -2u^{28}+4u^{27}+\cdots-9u-1 \\ -6u^{28}-2u^{27}+\cdots+49u+9 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^2+1 \\ u^4-2u^2 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 12u^{28}+u^{27}+\cdots-46u-7 \\ 5u^{28}+3u^{27}+\cdots-30u-6 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 4u^{28}+6u^{27}+\cdots-58u-10 \\ -6u^{28}-2u^{27}+\cdots+49u+9 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 2u^{28}+2u^{27}+\cdots-24u-2 \\ 6u^{28}-u^{27}+\cdots-13u-1 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u^{28}+4u^{27}+\cdots-21u-3 \\ -4u^{28}-2u^{27}+\cdots+39u+8 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -12u^{28}-u^{27}+\cdots+45u+8 \\ 3u^{28}-2u^{27}+\cdots+9u+3 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u^5+2u^3-u \\ u^7-3u^5+2u^3+u \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes

$= 12u^{28}+u^{27}-177u^{26}-41u^{25}+1135u^{24}+425u^{23}-4100u^{22}-2107u^{21}+8955u^{20}+5855u^{19}-11549u^{18}-9250u^{17}+7327u^{16}+7056u^{15}-241u^{14}+86u^{13}-1061u^{12}-3222u^{11}-1735u^{10}-141u^9+1038u^8+1862u^7+1034u^6-41u^5-301u^4-365u^3-358u^2-160u-20$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{29} - 15u^{28} + \cdots + 15u - 1$
c_2	$u^{29} + 14u^{28} + \cdots + 14u + 1$
c_3	$u^{29} - 2u^{27} + \cdots + 3u + 1$
c_4	$u^{29} - u^{28} + \cdots - 2u - 1$
c_5, c_6	$u^{29} - u^{28} + \cdots + 6u + 1$
c_7	$u^{29} + 6u^{27} + \cdots - 3u + 1$
c_8	$u^{29} + u^{28} + \cdots - 2u + 1$
c_9	$u^{29} - 3u^{28} + \cdots - 10u + 1$
c_{10}	$u^{29} + u^{28} + \cdots + 6u - 1$
c_{11}	$u^{29} + 2u^{28} + \cdots + u - 1$
c_{12}	$u^{29} - u^{28} + \cdots - 2u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{29}+7y^{28}+\cdots-5y-1$
c_2	$y^{29}+8y^{28}+\cdots+6y-1$
c_3	$y^{29}-4y^{28}+\cdots-21y-1$
c_4	$y^{29}-5y^{28}+\cdots+2y-1$
c_5, c_6, c_{10}	$y^{29}-29y^{28}+\cdots+10y-1$
c_7	$y^{29}+12y^{28}+\cdots+7y-1$
c_8, c_{12}	$y^{29}-15y^{28}+\cdots+22y-1$
c_9	$y^{29}-5y^{28}+\cdots+10y-1$
c_{11}	$y^{29}-2y^{28}+\cdots+5y-1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.999979+0.420202I$ $a=-0.0487508+0.1242170I$ $b=\ \ 0.122896-0.425132I$	$0.90884-2.54017I$	$9.49679+4.29966I$
$u=-0.999979-0.420202I$ $a=-0.0487508-0.1242170I$ $b=\ \ 0.122896+0.425132I$	$0.90884+2.54017I$	$9.49679-4.29966I$
$u=-1.172400+0.230229I$ $a=\ \ 1.221070+0.420178I$ $b=\ \ 0.72438+1.39938I$	$1.30589+0.94412I$	$3.28599-1.78629I$
$u=-1.172400-0.230229I$ $a=\ \ 1.221070-0.420178I$ $b=\ \ 0.72438-1.39938I$	$1.30589-0.94412I$	$3.28599+1.78629I$
$u=\ \ 1.203770+0.228092I$ $a=\ \ 0.161500-0.999679I$ $b=-0.650867+0.762859I$	$-1.57852+6.79983I$	$3.32887-7.87594I$
$u=\ \ 1.203770-0.228092I$ $a=\ \ 0.161500+0.999679I$ $b=-0.650867-0.762859I$	$-1.57852-6.79983I$	$3.32887+7.87594I$
$u=\ \ 0.300792+0.701944I$ $a=-0.272613-0.212397I$ $b=-0.239857-0.472850I$	$-4.35092-3.59283I$	$-0.677700-0.091139I$
$u=\ \ 0.300792-0.701944I$ $a=-0.272613+0.212397I$ $b=-0.239857+0.472850I$	$-4.35092+3.59283I$	$-0.677700+0.091139I$
$u=\ \ 1.229560+0.204644I$ $a=\ \ 1.42332-1.72996I$ $b=-0.287250-1.327080I$	$-1.38475-3.11979I$	$2.12057+3.22013I$
$u=\ \ 1.229560-0.204644I$ $a=\ \ 1.42332+1.72996I$ $b=-0.287250+1.327080I$	$-1.38475+3.11979I$	$2.12057-3.22013I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.137523+0.716923I$ $a=\ 0.89763-2.72112I$ $b=\ 1.12906-1.36742I$	$-1.71916-4.40492I$	$-0.59085+7.06882I$
$u=-0.137523-0.716923I$ $a=\ 0.89763+2.72112I$ $b=\ 1.12906+1.36742I$	$-1.71916+4.40492I$	$-0.59085-7.06882I$
$u=-1.315220+0.042141I$ $a=-0.686067+0.858758I$ $b=\ 0.876355+0.470562I$	$4.00864+1.86297I$	$9.44509-1.83583I$
$u=-1.315220-0.042141I$ $a=-0.686067-0.858758I$ $b=\ 0.876355-0.470562I$	$4.00864-1.86297I$	$9.44509+1.83583I$
$u=\ 0.149040+0.644191I$ $a=-0.89789+2.87024I$ $b=\ 0.033509+1.176040I$	$-4.63114+6.08208I$	$-2.19730-7.44698I$
$u=\ 0.149040-0.644191I$ $a=-0.89789-2.87024I$ $b=\ 0.033509-1.176040I$	$-4.63114-6.08208I$	$-2.19730+7.44698I$
$u=\ 1.351680+0.301762I$ $a=-1.03814+1.67297I$ $b=\ 1.38886+1.38779I$	$2.98847+8.11025I$	$4.16972-8.54040I$
$u=\ 1.351680-0.301762I$ $a=-1.03814-1.67297I$ $b=\ 1.38886-1.38779I$	$2.98847-8.11025I$	$4.16972+8.54040I$
$u=-1.362600+0.278570I$ $a=-1.23622-1.13259I$ $b=\ 0.319166-1.192320I$	$0.18783-9.48898I$	$3.31208+8.12840I$
$u=-1.362600-0.278570I$ $a=-1.23622+1.13259I$ $b=\ 0.319166+1.192320I$	$0.18783+9.48898I$	$3.31208-8.12840I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.477355+0.364026I$ $a=-0.813650+0.175375I$ $b=\ \ 0.532989-0.404192I$	$0.81757-2.34791I$	$4.57851+8.02025I$
$u=-0.477355-0.364026I$ $a=-0.813650-0.175375I$ $b=\ \ 0.532989+0.404192I$	$0.81757+2.34791I$	$4.57851-8.02025I$
$u=\ \ 1.410240+0.086564I$ $a=\ \ 0.013047+0.669318I$ $b=\ \ 1.283430-0.564993I$	$6.08966-0.80590I$	$11.35130-0.76639I$
$u=\ \ 1.410240-0.086564I$ $a=\ \ 0.013047-0.669318I$ $b=\ \ 1.283430+0.564993I$	$6.08966+0.80590I$	$11.35130+0.76639I$
$u=\ \ 1.44030+0.20052I$ $a=-1.208130+0.321784I$ $b=\ \ 0.708795+0.177396I$	$6.83348+4.83072I$	$0.8987-31.8055I$
$u=\ \ 1.44030-0.20052I$ $a=-1.208130-0.321784I$ $b=\ \ 0.708795-0.177396I$	$6.83348-4.83072I$	$0.8987+31.8055I$
$u=-1.65449$ $a=-0.0205555$ $b=\ \ 0.245784$	2.97055	74.7410
$u=-0.293059+0.174102I$ $a=\ \ 1.99518-1.27971I$ $b=\ \ 0.935656+0.689805I$	$0.55338+1.99406I$	$7.60801-2.72974I$
$u=-0.293059-0.174102I$ $a=\ \ 1.99518+1.27971I$ $b=\ \ 0.935656-0.689805I$	$0.55338-1.99406I$	$7.60801+2.72974I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^{29}-15u^{28}+\cdots+15u-1)(u^{148}+14u^{147}+\cdots+31659u+1009)$
c_2	$(u^{29}+14u^{28}+\cdots+14u+1)(u^{148}-3u^{147}+\cdots-22u-1)$
c_3	$(u^{29}-2u^{27}+\cdots+3u+1)$ $\cdot(u^{148}-u^{147}+\cdots-58242827u+11140141)$
c_4	$(u^{29}-u^{28}+\cdots-2u-1)(u^{148}+2u^{147}+\cdots-56u+1)$
c_5, c_6	$(u^{29}-u^{28}+\cdots+6u+1)(u^{148}-4u^{147}+\cdots+28u+1)$
c_7	$(u^{29}+6u^{27}+\cdots-3u+1)(u^{148}-u^{147}+\cdots+629u-841)$
c_8	$(u^{29}+u^{28}+\cdots-2u+1)(u^{148}-2u^{147}+\cdots-174u+599)$
c_9	$(u^{29}-3u^{28}+\cdots-10u+1)$ $\cdot(u^{148}+12u^{147}+\cdots+6333548u+186337)$
c_{10}	$(u^{29}+u^{28}+\cdots+6u-1)(u^{148}-4u^{147}+\cdots+28u+1)$
c_{11}	$(u^{29}+2u^{28}+\cdots+u-1)(u^{148}+15u^{147}+\cdots+305347u+14947)$
c_{12}	$(u^{29}-u^{28}+\cdots-2u-1)(u^{148}-2u^{147}+\cdots-174u+599)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y^{29}+7y^{28}+\cdots-5y-1)$ $\cdot(y^{148}-34y^{147}+\cdots-405878435y+1018081)$
c_2	$(y^{29}+8y^{28}+\cdots+6y-1)(y^{148}+7y^{147}+\cdots-18y+1)$
c_3	$(y^{29}-4y^{28}+\cdots-21y-1)$ $\cdot(y^{148}+39y^{147}+\cdots+6412545735582301y+124102741499881)$
c_4	$(y^{29}-5y^{28}+\cdots+2y-1)(y^{148}-2y^{147}+\cdots-70y+1)$
c_5, c_6, c_{10}	$(y^{29}-29y^{28}+\cdots+10y-1)(y^{148}-130y^{147}+\cdots-174y+1)$
c_7	$(y^{29}+12y^{28}+\cdots+7y-1)$ $\cdot(y^{148}+19y^{147}+\cdots+90033725y+707281)$
c_8, c_{12}	$(y^{29}-15y^{28}+\cdots+22y-1)$ $\cdot(y^{148}-88y^{147}+\cdots-13930670y+358801)$
c_9	$(y^{29}-5y^{28}+\cdots+10y-1)$ $\cdot(y^{148}+42y^{147}+\cdots-6491280746914y+34721477569)$
c_{11}	$(y^{29}-2y^{28}+\cdots+5y-1)$ $\cdot(y^{148}+21y^{147}+\cdots+9784629847y+223412809)$