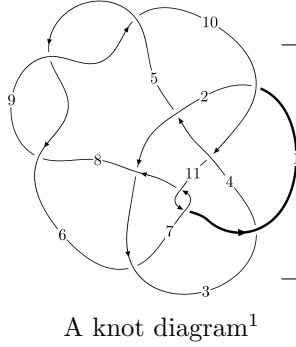
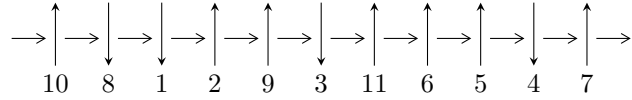


11a<sub>256</sub> (K11a<sub>256</sub>)



**Linearized knot diagram**



**Solving Sequence**

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

**Ideals for irreducible components<sup>2</sup> of  $X_{\text{par}}$**

$$I_1^u = \langle -8.45189 \times 10^{122} u^{81} + 2.24341 \times 10^{123} u^{80} + \dots + 2.70538 \times 10^{122} b + 1.42226 \times 10^{122}, \\ 8.78383 \times 10^{122} u^{81} - 2.33856 \times 10^{123} u^{80} + \dots + 2.70538 \times 10^{122} a + 1.70512 \times 10^{123}, u^{82} - 3u^{81} + \dots - 15u^{80} \rangle$$

$$I_2^u = \langle -u^{14} - 2u^{13} - 10u^{12} - 17u^{11} - 40u^{10} - 55u^9 - 79u^8 - 82u^7 - 76u^6 - 51u^5 - 27u^4 - 4u^3 + 2u^2 + b + 4u, \\ u^{15} + u^{14} + 8u^{13} + 8u^{12} + 24u^{11} + 22u^{10} + 31u^9 + 21u^8 + 11u^7 - 4u^6 - 7u^5 - 11u^4 + 2u^2 + a + 3u + 1, \\ u^{16} + 2u^{15} + \dots - 4u^2 + 1 \rangle$$

\* 2 irreducible components of  $\dim_{\mathbb{C}} = 0$ , with total 98 representations.

<sup>1</sup>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>).

<sup>2</sup>All coefficients of polynomials are rational numbers. But the coefficients are sometimes approximated in decimal forms when there is not enough margin.

$$\mathbf{I. } I_1^u = \langle -8.45 \times 10^{122} u^{81} + 2.24 \times 10^{123} u^{80} + \dots + 2.71 \times 10^{122} b + 1.42 \times 10^{122}, 8.78 \times 10^{122} u^{81} - 2.34 \times 10^{123} u^{80} + \dots + 2.71 \times 10^{122} a + 1.71 \times 10^{123}, u^{82} - 3u^{81} + \dots - 15u + 1 \rangle$$

(i) Arc colorings

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

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

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

$$a_2 = \begin{pmatrix} -3.24680u^{81} + 8.64413u^{80} + \dots + 21.7051u - 6.30272 \\ 3.12411u^{81} - 8.29242u^{80} + \dots + 33.1864u - 0.525715 \end{pmatrix}$$

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

$$a_1 = \begin{pmatrix} -3.22493u^{81} + 8.55324u^{80} + \dots - 4.56661u - 4.12654 \\ 3.14598u^{81} - 8.38332u^{80} + \dots + 6.91462u + 1.65046 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 1.33864u^{81} - 5.77320u^{80} + \dots + 70.5182u - 3.70405 \\ 2.19651u^{81} - 7.34656u^{80} + \dots + 138.368u - 9.13067 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 2.25185u^{81} - 4.76796u^{80} + \dots - 96.2134u + 13.7071 \\ 0.445401u^{81} - 1.81537u^{80} + \dots + 70.4997u - 5.88345 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -3.17256u^{81} + 8.52796u^{80} + \dots + 25.0463u - 6.52919 \\ 2.66750u^{81} - 7.37850u^{80} + \dots + 28.3211u - 0.192700 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0.358941u^{81} - 1.54211u^{80} + \dots + 57.8850u - 6.06076 \\ -0.465964u^{81} + 0.770839u^{80} + \dots + 50.0079u - 3.41294 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0.358941u^{81} - 1.54211u^{80} + \dots + 57.8850u - 6.06076 \\ -0.465964u^{81} + 0.770839u^{80} + \dots + 50.0079u - 3.41294 \end{pmatrix}$$

(ii) Obstruction class = -1

(iii) Cusp Shapes =  $2.26125u^{81} - 15.9680u^{80} + \dots + 511.715u - 28.2831$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
$c_1$	$u^{82} + 8u^{81} + \dots + 3960u + 472$
$c_2$	$u^{82} - u^{81} + \dots - 4352u + 512$
$c_3$	$u^{82} + 6u^{81} + \dots + 1547u + 543$
$c_4$	$u^{82} + 9u^{80} + \dots + 1938u + 279$
$c_5, c_8, c_9$	$u^{82} + 3u^{81} + \dots + 15u + 1$
$c_6$	$u^{82} + u^{81} + \dots - 14536u + 9797$
$c_7, c_{11}$	$u^{82} + 24u^{80} + \dots - 37u + 43$
$c_{10}$	$u^{82} + 4u^{80} + \dots - 30u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
$c_1$	$y^{82} + 26y^{81} + \dots + 4280224y + 222784$
$c_2$	$y^{82} - 25y^{81} + \dots - 18808832y + 262144$
$c_3$	$y^{82} - 24y^{81} + \dots - 2823265y + 294849$
$c_4$	$y^{82} + 18y^{81} + \dots + 1070856y + 77841$
$c_5, c_8, c_9$	$y^{82} + 87y^{81} + \dots + 17y + 1$
$c_6$	$y^{82} - 35y^{81} + \dots - 3758984936y + 95981209$
$c_7, c_{11}$	$y^{82} + 48y^{81} + \dots + 40857y + 1849$
$c_{10}$	$y^{82} + 8y^{81} + \dots - 26y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.848421 + 0.520032I$ $a = -0.279218 + 0.153559I$ $b = 0.021124 + 0.940599I$	$-5.23833 + 3.58110I$	0
$u = 0.848421 - 0.520032I$ $a = -0.279218 - 0.153559I$ $b = 0.021124 - 0.940599I$	$-5.23833 - 3.58110I$	0
$u = 0.230054 + 0.982996I$ $a = 1.35831 + 0.40646I$ $b = 0.713068 - 0.162440I$	$-1.89873 + 0.22579I$	0
$u = 0.230054 - 0.982996I$ $a = 1.35831 - 0.40646I$ $b = 0.713068 + 0.162440I$	$-1.89873 - 0.22579I$	0
$u = 0.795746 + 0.648558I$ $a = 0.378936 - 0.665797I$ $b = -0.952509 - 0.992848I$	$-3.52948 + 12.80360I$	0
$u = 0.795746 - 0.648558I$ $a = 0.378936 + 0.665797I$ $b = -0.952509 + 0.992848I$	$-3.52948 - 12.80360I$	0
$u = 0.754635 + 0.607172I$ $a = 0.713871 - 0.481869I$ $b = -0.481239 - 0.864034I$	$-5.61608 + 1.76260I$	0
$u = 0.754635 - 0.607172I$ $a = 0.713871 + 0.481869I$ $b = -0.481239 + 0.864034I$	$-5.61608 - 1.76260I$	0
$u = -0.807999 + 0.646747I$ $a = 0.421301 + 0.522180I$ $b = -0.853184 + 0.818654I$	$0.03640 - 6.74939I$	0
$u = -0.807999 - 0.646747I$ $a = 0.421301 - 0.522180I$ $b = -0.853184 - 0.818654I$	$0.03640 + 6.74939I$	0

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.946706 + 0.464469I$ $a = -0.359761 - 0.292329I$ $b = -0.551014 + 0.678230I$	$-2.89935 - 7.15022I$	0
$u = 0.946706 - 0.464469I$ $a = -0.359761 + 0.292329I$ $b = -0.551014 - 0.678230I$	$-2.89935 + 7.15022I$	0
$u = -0.397863 + 0.833537I$ $a = 1.41819 + 0.02085I$ $b = 0.558559 + 0.571616I$	$-2.38163 + 0.76876I$	0
$u = -0.397863 - 0.833537I$ $a = 1.41819 - 0.02085I$ $b = 0.558559 - 0.571616I$	$-2.38163 - 0.76876I$	0
$u = -1.057730 + 0.537571I$ $a = -0.133063 + 0.144826I$ $b = -0.298352 - 0.505129I$	$0.627372 + 0.834212I$	0
$u = -1.057730 - 0.537571I$ $a = -0.133063 - 0.144826I$ $b = -0.298352 + 0.505129I$	$0.627372 - 0.834212I$	0
$u = -0.258041 + 1.236650I$ $a = 0.647994 + 0.587108I$ $b = -0.727125 + 0.295134I$	$-2.10746 - 3.48943I$	0
$u = -0.258041 - 1.236650I$ $a = 0.647994 - 0.587108I$ $b = -0.727125 - 0.295134I$	$-2.10746 + 3.48943I$	0
$u = -0.520829 + 0.502496I$ $a = 0.008481 - 0.838189I$ $b = 0.897801 - 0.647875I$	$0.82893 - 1.90450I$	$4.86742 + 1.67415I$
$u = -0.520829 - 0.502496I$ $a = 0.008481 + 0.838189I$ $b = 0.897801 + 0.647875I$	$0.82893 + 1.90450I$	$4.86742 - 1.67415I$

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.304388 + 0.650719I$		
$a = 0.344531 + 0.177159I$	$-3.24142 - 2.49646I$	$-3.48952 + 0.93958I$
$b = -1.102020 + 0.249997I$		
$u = 0.304388 - 0.650719I$		
$a = 0.344531 - 0.177159I$	$-3.24142 + 2.49646I$	$-3.48952 - 0.93958I$
$b = -1.102020 - 0.249997I$		
$u = -0.653697 + 0.269632I$		
$a = -0.292759 - 0.182981I$	$-0.62966 - 4.63978I$	$1.72550 + 8.55711I$
$b = 0.844074 - 1.113800I$		
$u = -0.653697 - 0.269632I$		
$a = -0.292759 + 0.182981I$	$-0.62966 + 4.63978I$	$1.72550 - 8.55711I$
$b = 0.844074 + 1.113800I$		
$u = 0.435259 + 0.520271I$		
$a = -0.51925 + 1.44214I$	$0.01973 + 4.53345I$	$1.62927 - 10.52525I$
$b = 0.964368 + 1.021760I$		
$u = 0.435259 - 0.520271I$		
$a = -0.51925 - 1.44214I$	$0.01973 - 4.53345I$	$1.62927 + 10.52525I$
$b = 0.964368 - 1.021760I$		
$u = -0.416371 + 0.520352I$		
$a = 0.571637 - 0.611403I$	$0.79688 - 1.51228I$	$5.59497 + 5.28418I$
$b = 0.797691 - 0.137985I$		
$u = -0.416371 - 0.520352I$		
$a = 0.571637 + 0.611403I$	$0.79688 + 1.51228I$	$5.59497 - 5.28418I$
$b = 0.797691 + 0.137985I$		
$u = -0.650179 + 0.021954I$		
$a = 1.044090 + 0.474203I$	$1.67625 + 0.10307I$	$10.54193 + 3.13566I$
$b = -0.457863 - 0.103655I$		
$u = -0.650179 - 0.021954I$		
$a = 1.044090 - 0.474203I$	$1.67625 - 0.10307I$	$10.54193 - 3.13566I$
$b = -0.457863 + 0.103655I$		

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.128547 + 1.365150I$ $a = 0.289436 + 1.362680I$ $b = -0.094192 + 0.392027I$	$-2.64053 - 2.49367I$	0
$u = -0.128547 - 1.365150I$ $a = 0.289436 - 1.362680I$ $b = -0.094192 - 0.392027I$	$-2.64053 + 2.49367I$	0
$u = 0.001717 + 1.377580I$ $a = 0.60777 - 1.42357I$ $b = 0.136132 - 0.849643I$	$-4.87547 - 2.11824I$	0
$u = 0.001717 - 1.377580I$ $a = 0.60777 + 1.42357I$ $b = 0.136132 + 0.849643I$	$-4.87547 + 2.11824I$	0
$u = 0.507423 + 0.282090I$ $a = 0.85273 - 2.27652I$ $b = -0.631159 - 0.157718I$	$-1.99505 + 5.47458I$	$4.98884 - 10.22721I$
$u = 0.507423 - 0.282090I$ $a = 0.85273 + 2.27652I$ $b = -0.631159 + 0.157718I$	$-1.99505 - 5.47458I$	$4.98884 + 10.22721I$
$u = -0.18012 + 1.42912I$ $a = 0.24496 - 2.12810I$ $b = 1.00818 - 1.76354I$	$-6.08165 - 7.53590I$	0
$u = -0.18012 - 1.42912I$ $a = 0.24496 + 2.12810I$ $b = 1.00818 + 1.76354I$	$-6.08165 + 7.53590I$	0
$u = 0.02220 + 1.44292I$ $a = 0.196096 + 0.753555I$ $b = 1.37471 + 0.48801I$	$-4.92663 + 2.65020I$	0
$u = 0.02220 - 1.44292I$ $a = 0.196096 - 0.753555I$ $b = 1.37471 - 0.48801I$	$-4.92663 - 2.65020I$	0



Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.10846 + 1.44200I$ $a = 0.43873 + 1.89782I$ $b = 1.25310 + 1.46090I$	$-4.82607 + 4.19978I$	0
$u = 0.10846 - 1.44200I$ $a = 0.43873 - 1.89782I$ $b = 1.25310 - 1.46090I$	$-4.82607 - 4.19978I$	0
$u = 0.13089 + 1.44676I$ $a = -0.30134 - 1.87375I$ $b = -0.195164 - 0.403584I$	$-7.61606 + 7.63883I$	0
$u = 0.13089 - 1.44676I$ $a = -0.30134 + 1.87375I$ $b = -0.195164 + 0.403584I$	$-7.61606 - 7.63883I$	0
$u = 0.05018 + 1.50060I$ $a = -1.04358 + 2.00260I$ $b = -1.47718 + 1.91057I$	$-10.50140 + 6.17930I$	0
$u = 0.05018 - 1.50060I$ $a = -1.04358 - 2.00260I$ $b = -1.47718 - 1.91057I$	$-10.50140 - 6.17930I$	0
$u = -0.02775 + 1.50247I$ $a = -0.48028 - 1.52733I$ $b = -0.99957 - 1.36175I$	$-7.57075 - 1.91522I$	0
$u = -0.02775 - 1.50247I$ $a = -0.48028 + 1.52733I$ $b = -0.99957 + 1.36175I$	$-7.57075 + 1.91522I$	0
$u = -0.059419 + 0.483891I$ $a = 1.085630 - 0.472882I$ $b = -0.266045 - 0.814352I$	$-0.99676 - 1.52566I$	$-2.22095 + 4.83726I$
$u = -0.059419 - 0.483891I$ $a = 1.085630 + 0.472882I$ $b = -0.266045 + 0.814352I$	$-0.99676 + 1.52566I$	$-2.22095 - 4.83726I$

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.02962 + 1.51246I$ $a = -0.39952 - 1.90255I$ $b = 0.629294 - 1.019480I$	$-10.94790 - 5.28525I$	0
$u = -0.02962 - 1.51246I$ $a = -0.39952 + 1.90255I$ $b = 0.629294 + 1.019480I$	$-10.94790 + 5.28525I$	0
$u = 0.430412 + 0.182241I$ $a = -1.009350 - 0.375067I$ $b = 0.925819 + 0.818610I$	$0.58505 + 2.42533I$	$4.66741 + 0.55099I$
$u = 0.430412 - 0.182241I$ $a = -1.009350 + 0.375067I$ $b = 0.925819 - 0.818610I$	$0.58505 - 2.42533I$	$4.66741 - 0.55099I$
$u = -0.15326 + 1.53297I$ $a = 0.57245 - 1.84376I$ $b = 1.00812 - 1.41371I$	$-5.96597 - 4.32362I$	0
$u = -0.15326 - 1.53297I$ $a = 0.57245 + 1.84376I$ $b = 1.00812 + 1.41371I$	$-5.96597 + 4.32362I$	0
$u = 0.12868 + 1.53593I$ $a = 0.41675 + 2.20491I$ $b = 0.94615 + 1.52086I$	$-6.86700 + 6.57360I$	0
$u = 0.12868 - 1.53593I$ $a = 0.41675 - 2.20491I$ $b = 0.94615 - 1.52086I$	$-6.86700 - 6.57360I$	0
$u = -0.042565 + 0.452034I$ $a = -2.24799 - 3.08194I$ $b = 0.193511 - 0.934402I$	$-4.32269 - 4.92458I$	$-8.27138 + 6.34141I$
$u = -0.042565 - 0.452034I$ $a = -2.24799 + 3.08194I$ $b = 0.193511 + 0.934402I$	$-4.32269 + 4.92458I$	$-8.27138 - 6.34141I$

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.04315 + 1.55403I$ $a = -1.094390 + 0.581684I$ $b = -1.70027 + 0.57610I$	$-10.64210 - 1.47490I$	0
$u = 0.04315 - 1.55403I$ $a = -1.094390 - 0.581684I$ $b = -1.70027 - 0.57610I$	$-10.64210 + 1.47490I$	0
$u = 0.159107 + 0.397170I$ $a = 0.795971 + 1.104450I$ $b = -0.77358 + 1.39138I$	$-4.10333 + 5.41336I$	$-8.23702 - 9.54805I$
$u = 0.159107 - 0.397170I$ $a = 0.795971 - 1.104450I$ $b = -0.77358 - 1.39138I$	$-4.10333 - 5.41336I$	$-8.23702 + 9.54805I$
$u = -0.03478 + 1.57499I$ $a = 0.556673 + 0.515788I$ $b = -0.333490 + 0.387147I$	$-10.49290 - 0.25231I$	0
$u = -0.03478 - 1.57499I$ $a = 0.556673 - 0.515788I$ $b = -0.333490 - 0.387147I$	$-10.49290 + 0.25231I$	0
$u = 0.25279 + 1.55852I$ $a = 0.16688 - 1.45380I$ $b = -0.838801 - 1.072450I$	$-12.71050 + 5.46717I$	0
$u = 0.25279 - 1.55852I$ $a = 0.16688 + 1.45380I$ $b = -0.838801 + 1.072450I$	$-12.71050 - 5.46717I$	0
$u = 0.29458 + 1.55732I$ $a = -0.341317 + 1.352360I$ $b = 0.309405 + 1.319020I$	$-12.0528 + 7.7881I$	0
$u = 0.29458 - 1.55732I$ $a = -0.341317 - 1.352360I$ $b = 0.309405 - 1.319020I$	$-12.0528 - 7.7881I$	0

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.26917 + 1.57829I$ $a = -0.16937 + 1.54689I$ $b = -1.12498 + 1.16651I$	$-7.24965 - 10.72690I$	0
$u = -0.26917 - 1.57829I$ $a = -0.16937 - 1.54689I$ $b = -1.12498 - 1.16651I$	$-7.24965 + 10.72690I$	0
$u = 0.26626 + 1.58328I$ $a = -0.21215 - 1.75650I$ $b = -1.15684 - 1.34314I$	$-10.8601 + 16.7429I$	0
$u = 0.26626 - 1.58328I$ $a = -0.21215 + 1.75650I$ $b = -1.15684 + 1.34314I$	$-10.8601 - 16.7429I$	0
$u = 0.183942 + 0.338117I$ $a = 1.65770 + 0.71465I$ $b = 0.829211 - 0.571125I$	$0.45443 - 1.92720I$	$4.74257 + 2.64364I$
$u = 0.183942 - 0.338117I$ $a = 1.65770 - 0.71465I$ $b = 0.829211 + 0.571125I$	$0.45443 + 1.92720I$	$4.74257 - 2.64364I$
$u = -0.23386 + 1.62107I$ $a = 0.137921 - 1.034210I$ $b = 0.599466 - 0.974710I$	$-7.32228 - 3.91026I$	0
$u = -0.23386 - 1.62107I$ $a = 0.137921 + 1.034210I$ $b = 0.599466 + 0.974710I$	$-7.32228 + 3.91026I$	0
$u = 0.35096 + 1.68569I$ $a = -0.212323 + 0.518642I$ $b = 0.204650 + 0.653748I$	$-9.84458 - 1.89156I$	0
$u = 0.35096 - 1.68569I$ $a = -0.212323 - 0.518642I$ $b = 0.204650 - 0.653748I$	$-9.84458 + 1.89156I$	0

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.175841 + 0.112202I$	$0.40683 + 2.17965I$	$5.55317 - 5.50998I$
$a = -3.83138 - 2.52525I$		
$b = 0.800141 + 0.471355I$		
$u = 0.175841 - 0.112202I$	$0.40683 - 2.17965I$	$5.55317 + 5.50998I$
$a = -3.83138 + 2.52525I$		
$b = 0.800141 - 0.471355I$		

**II.**

$$I_2^u = \langle -u^{14} - 2u^{13} + \dots + b + 4u, u^{15} + u^{14} + \dots + a + 1, u^{16} + 2u^{15} + \dots - 4u^2 + 1 \rangle$$

**(i) Arc colorings**

$$\begin{aligned} a_5 &= \begin{pmatrix} 1 \\ 0 \end{pmatrix} \\ a_9 &= \begin{pmatrix} 0 \\ u \end{pmatrix} \\ a_6 &= \begin{pmatrix} 1 \\ -u^2 \end{pmatrix} \\ a_2 &= \begin{pmatrix} -u^{15} - u^{14} + \dots - 3u - 1 \\ u^{14} + 2u^{13} + \dots - 2u^2 - 4u \end{pmatrix} \\ a_{10} &= \begin{pmatrix} u \\ u \end{pmatrix} \\ a_1 &= \begin{pmatrix} -u^5 - u^4 - 3u^3 - 3u^2 - 2u - 1 \\ u^{15} + 2u^{14} + \dots - 3u^2 - 3u \end{pmatrix} \\ a_4 &= \begin{pmatrix} -2u^{15} - 4u^{14} + \dots + 5u + 2 \\ -u^{15} - u^{14} + \dots + 3u^2 - 2u \end{pmatrix} \\ a_{11} &= \begin{pmatrix} -u^{14} - 6u^{12} + \dots - 5u - 4 \\ -u^{15} - 2u^{14} + \dots - u + 1 \end{pmatrix} \\ a_8 &= \begin{pmatrix} -u \\ u^3 + u \end{pmatrix} \\ a_3 &= \begin{pmatrix} -u^{15} - 2u^{14} + \dots - 3u - 1 \\ u^{12} + 2u^{11} + \dots - 4u - 1 \end{pmatrix} \\ a_7 &= \begin{pmatrix} u^{15} + u^{14} + \dots + 7u + 2 \\ -u^{14} - 3u^{13} + \dots + 7u^2 + 4u \end{pmatrix} \\ a_7 &= \begin{pmatrix} u^{15} + u^{14} + \dots + 7u + 2 \\ -u^{14} - 3u^{13} + \dots + 7u^2 + 4u \end{pmatrix} \end{aligned}$$

**(ii) Obstruction class = 1**

**(iii) Cusp Shapes** =  $4u^{15} - 5u^{14} + 15u^{13} - 56u^{12} - 48u^{11} - 251u^{10} - 328u^9 - 544u^8 - 576u^7 - 549u^6 - 338u^5 - 185u^4 + 6u^3 + 13u^2 + 21u + 1$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
$c_1$	$u^{16} - u^{15} + \dots - u + 1$
$c_2$	$u^{16} - 3u^{14} + \dots - 3u + 1$
$c_3$	$u^{16} + 9u^{15} + \dots + 8u + 1$
$c_4$	$u^{16} - 7u^{15} + \dots - 5u + 1$
$c_5$	$u^{16} + 2u^{15} + \dots - 4u^2 + 1$
$c_6$	$u^{16} - 2u^{14} + \dots - u + 1$
$c_7$	$u^{16} - u^{15} + \dots + 6u^2 + 1$
$c_8, c_9$	$u^{16} - 2u^{15} + \dots - 4u^2 + 1$
$c_{10}$	$u^{16} - u^{15} + \dots - u + 1$
$c_{11}$	$u^{16} + u^{15} + \dots + 6u^2 + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
$c_1$	$y^{16} + 5y^{15} + \dots + 7y + 1$
$c_2$	$y^{16} - 6y^{15} + \dots + y + 1$
$c_3$	$y^{16} + 3y^{15} + \dots + 14y + 1$
$c_4$	$y^{16} + 5y^{15} + \dots - y + 1$
$c_5, c_8, c_9$	$y^{16} + 18y^{15} + \dots - 8y + 1$
$c_6$	$y^{16} - 4y^{15} + \dots - 13y + 1$
$c_7, c_{11}$	$y^{16} + 7y^{15} + \dots + 12y + 1$
$c_{10}$	$y^{16} + 7y^{15} + \dots + 5y + 1$



(vi) Complex Volumes and Cusp Shapes

Solutions to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.125215 + 1.052150I$ $a = 1.52779 + 0.31343I$ $b = 0.997454 + 0.473846I$	$-1.44116 + 1.20136I$	$3.05969 - 5.58313I$
$u = -0.125215 - 1.052150I$ $a = 1.52779 - 0.31343I$ $b = 0.997454 - 0.473846I$	$-1.44116 - 1.20136I$	$3.05969 + 5.58313I$
$u = -0.794716 + 0.429068I$ $a = -0.020840 - 0.565606I$ $b = 0.269183 + 0.344796I$	$0.845853 + 0.501839I$	$4.49186 + 3.61839I$
$u = -0.794716 - 0.429068I$ $a = -0.020840 + 0.565606I$ $b = 0.269183 - 0.344796I$	$0.845853 - 0.501839I$	$4.49186 - 3.61839I$
$u = -0.192301 + 1.231470I$ $a = -0.777776 - 0.687447I$ $b = 0.784660 - 0.317944I$	$-1.88854 - 3.66694I$	$12.3158 + 12.6160I$
$u = -0.192301 - 1.231470I$ $a = -0.777776 + 0.687447I$ $b = 0.784660 + 0.317944I$	$-1.88854 + 3.66694I$	$12.3158 - 12.6160I$
$u = -0.409152 + 0.389086I$ $a = -0.598837 - 0.699315I$ $b = 0.99426 - 1.00837I$	$0.28915 - 3.18191I$	$1.33628 + 8.27653I$
$u = -0.409152 - 0.389086I$ $a = -0.598837 + 0.699315I$ $b = 0.99426 + 1.00837I$	$0.28915 + 3.18191I$	$1.33628 - 8.27653I$
$u = 0.11544 + 1.46961I$ $a = -0.29937 + 2.22090I$ $b = 0.10144 + 1.44141I$	$-8.75819 + 6.76339I$	$-4.52294 - 6.18611I$
$u = 0.11544 - 1.46961I$ $a = -0.29937 - 2.22090I$ $b = 0.10144 - 1.44141I$	$-8.75819 - 6.76339I$	$-4.52294 + 6.18611I$

Solutions to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.12811 + 1.51638I$		
$a = 0.58938 - 2.08769I$	$-6.15992 - 5.12499I$	$-2.54608 + 6.52368I$
$b = 1.16770 - 1.64492I$		
$u = -0.12811 - 1.51638I$		
$a = 0.58938 + 2.08769I$	$-6.15992 + 5.12499I$	$-2.54608 - 6.52368I$
$b = 1.16770 + 1.64492I$		
$u = 0.403245 + 0.047429I$		
$a = -2.21447 - 0.06862I$	$-3.33071 + 5.01746I$	$1.44271 - 5.49455I$
$b = -0.151854 + 0.863960I$		
$u = 0.403245 - 0.047429I$		
$a = -2.21447 + 0.06862I$	$-3.33071 - 5.01746I$	$1.44271 + 5.49455I$
$b = -0.151854 - 0.863960I$		
$u = 0.13081 + 1.62501I$		
$a = -0.205878 + 0.077876I$	$-9.16530 - 2.37958I$	$-1.57735 + 5.43766I$
$b = -0.662841 - 0.129176I$		
$u = 0.13081 - 1.62501I$		
$a = -0.205878 - 0.077876I$	$-9.16530 + 2.37958I$	$-1.57735 - 5.43766I$
$b = -0.662841 + 0.129176I$		

### III. u-Polynomials

Crossings	u-Polynomials at each crossing
$c_1$	$(u^{16} - u^{15} + \dots - u + 1)(u^{82} + 8u^{81} + \dots + 3960u + 472)$
$c_2$	$(u^{16} - 3u^{14} + \dots - 3u + 1)(u^{82} - u^{81} + \dots - 4352u + 512)$
$c_3$	$(u^{16} + 9u^{15} + \dots + 8u + 1)(u^{82} + 6u^{81} + \dots + 1547u + 543)$
$c_4$	$(u^{16} - 7u^{15} + \dots - 5u + 1)(u^{82} + 9u^{80} + \dots + 1938u + 279)$
$c_5$	$(u^{16} + 2u^{15} + \dots - 4u^2 + 1)(u^{82} + 3u^{81} + \dots + 15u + 1)$
$c_6$	$(u^{16} - 2u^{14} + \dots - u + 1)(u^{82} + u^{81} + \dots - 14536u + 9797)$
$c_7$	$(u^{16} - u^{15} + \dots + 6u^2 + 1)(u^{82} + 24u^{80} + \dots - 37u + 43)$
$c_8, c_9$	$(u^{16} - 2u^{15} + \dots - 4u^2 + 1)(u^{82} + 3u^{81} + \dots + 15u + 1)$
$c_{10}$	$(u^{16} - u^{15} + \dots - u + 1)(u^{82} + 4u^{80} + \dots - 30u + 1)$
$c_{11}$	$(u^{16} + u^{15} + \dots + 6u^2 + 1)(u^{82} + 24u^{80} + \dots - 37u + 43)$

#### IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
$c_1$	$(y^{16} + 5y^{15} + \dots + 7y + 1)(y^{82} + 26y^{81} + \dots + 4280224y + 222784)$
$c_2$	$(y^{16} - 6y^{15} + \dots + y + 1)(y^{82} - 25y^{81} + \dots - 1.88088 \times 10^7 y + 262144)$
$c_3$	$(y^{16} + 3y^{15} + \dots + 14y + 1)(y^{82} - 24y^{81} + \dots - 2823265y + 294849)$
$c_4$	$(y^{16} + 5y^{15} + \dots - y + 1)(y^{82} + 18y^{81} + \dots + 1070856y + 77841)$
$c_5, c_8, c_9$	$(y^{16} + 18y^{15} + \dots - 8y + 1)(y^{82} + 87y^{81} + \dots + 17y + 1)$
$c_6$	$(y^{16} - 4y^{15} + \dots - 13y + 1)$ $\cdot (y^{82} - 35y^{81} + \dots - 3758984936y + 95981209)$
$c_7, c_{11}$	$(y^{16} + 7y^{15} + \dots + 12y + 1)(y^{82} + 48y^{81} + \dots + 40857y + 1849)$
$c_{10}$	$(y^{16} + 7y^{15} + \dots + 5y + 1)(y^{82} + 8y^{81} + \dots - 26y + 1)$