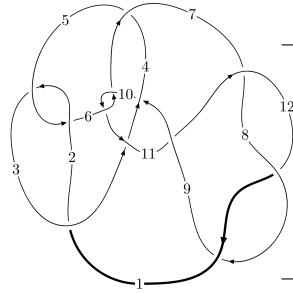
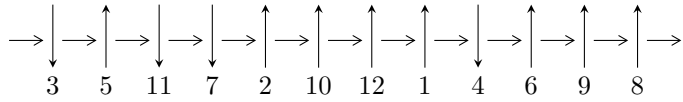


12a<sub>0200</sub> (K12a<sub>0200</sub>)



A knot diagram<sup>1</sup>

**Linearized knot diagram**



**Solving Sequence**

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

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

$$I_1^u = \langle -9.88128 \times 10^{122} u^{110} - 1.62216 \times 10^{123} u^{109} + \dots + 3.02078 \times 10^{122} b - 7.89614 \times 10^{122}, \\ 2.57960 \times 10^{122} u^{110} + 4.87705 \times 10^{121} u^{109} + \dots + 3.02078 \times 10^{122} a + 1.07426 \times 10^{123}, \\ u^{111} + 3u^{110} + \dots + 8u^2 + 1 \rangle$$

$$I_2^u = \langle au + b + a, 5a^2 + 3au - 4a - 3u + 5, u^2 - u - 1 \rangle$$

\* 2 irreducible components of  $\dim_{\mathbb{C}} = 0$ , with total 115 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.

$$\text{I. } I_1^u = \langle -9.88 \times 10^{122} u^{110} - 1.62 \times 10^{123} u^{109} + \dots + 3.02 \times 10^{122} b - 7.90 \times 10^{122}, 2.58 \times 10^{122} u^{110} + 4.88 \times 10^{121} u^{109} + \dots + 3.02 \times 10^{122} a + 1.07 \times 10^{123}, u^{111} + 3u^{110} + \dots + 8u^2 + 1 \rangle$$

(i) Arc colorings

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

$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -0.853953u^{110} - 0.161450u^{109} + \dots + 0.783670u - 3.55623 \\ 3.27110u^{110} + 5.37000u^{109} + \dots - 0.138489u + 2.61394 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -0.971252u^{110} - 2.05773u^{109} + \dots + 0.169491u - 2.13738 \\ 2.96877u^{110} + 5.17690u^{109} + \dots - 1.37894u + 2.55675 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -u \\ u \end{pmatrix}$$

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

$$a_5 = \begin{pmatrix} 0.852901u^{110} + 2.69009u^{109} + \dots - 2.19989u - 2.77029 \\ 0.859350u^{110} + 1.76075u^{109} + \dots + 0.566412u + 1.25696 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -1.70072u^{110} - 2.81982u^{109} + \dots - 2.03552u - 0.407690 \\ 2.53069u^{110} + 3.23016u^{109} + \dots + 0.436662u + 1.31110 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} u^3 - 2u \\ -u^5 + u^3 + u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 0.828171u^{110} + 2.49944u^{109} + \dots - 1.14740u - 2.51520 \\ 0.699867u^{110} + 1.64618u^{109} + \dots + 1.35387u + 1.06035 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.551106u^{110} - 1.46836u^{109} + \dots - 6.95085u - 2.33008 \\ 0.793459u^{110} + 1.82666u^{109} + \dots + 2.35156u + 0.541040 \end{pmatrix}$$

(ii) Obstruction class = -1

(iii) Cusp Shapes =  $1.75758u^{110} + 2.71823u^{109} + \dots + 4.75842u + 0.341861$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
$c_1$	$u^{111} + 49u^{110} + \dots + 3796u - 625$
$c_2, c_5$	$u^{111} + 3u^{110} + \dots + 314u + 25$
$c_3$	$25(25u^{111} - 35u^{110} + \dots + 277470u - 25993)$
$c_4$	$25(25u^{111} + 70u^{110} + \dots - 687u - 509)$
$c_6, c_{10}$	$u^{111} - 3u^{110} + \dots + 2u - 1$
$c_7, c_8, c_{12}$	$u^{111} - 3u^{110} + \dots - 8u^2 - 1$
$c_9$	$u^{111} - u^{110} + \dots - 5600u - 2000$
$c_{11}$	$u^{111} + 9u^{110} + \dots + 89858u + 4589$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
$c_1$	$y^{111} + 29y^{110} + \dots + 12462116y - 390625$
$c_2, c_5$	$y^{111} + 49y^{110} + \dots + 3796y - 625$
$c_3$	$625(625y^{111} - 10275y^{110} + \dots + 4.35687 \times 10^{10}y - 6.75636 \times 10^8)$
$c_4$	$625(625y^{111} - 23850y^{110} + \dots - 6.75091 \times 10^7y - 259081)$
$c_6, c_{10}$	$y^{111} + 61y^{110} + \dots - 16y - 1$
$c_7, c_8, c_{12}$	$y^{111} - 99y^{110} + \dots - 16y - 1$
$c_9$	$y^{111} - 25y^{110} + \dots - 12720000y - 4000000$
$c_{11}$	$y^{111} + 9y^{110} + \dots + 2636458452y - 21058921$

(vi) Complex Volumes and Cusp Shapes

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.848451 + 0.533037I$ $a = -0.292158 + 0.517168I$ $b = 0.443974 - 0.962375I$	$0.42545 + 3.75946I$	0
$u = -0.848451 - 0.533037I$ $a = -0.292158 - 0.517168I$ $b = 0.443974 + 0.962375I$	$0.42545 - 3.75946I$	0
$u = 0.865725 + 0.468426I$ $a = 0.488857 + 0.754210I$ $b = -0.81665 - 1.59668I$	$-3.34824 - 9.97292I$	0
$u = 0.865725 - 0.468426I$ $a = 0.488857 - 0.754210I$ $b = -0.81665 + 1.59668I$	$-3.34824 + 9.97292I$	0
$u = 0.982269 + 0.291203I$ $a = -0.888257 + 0.097247I$ $b = 1.83582 + 0.03095I$	$-1.48534 + 4.18722I$	0
$u = 0.982269 - 0.291203I$ $a = -0.888257 - 0.097247I$ $b = 1.83582 - 0.03095I$	$-1.48534 - 4.18722I$	0
$u = -1.04175$ $a = 0.523490$ $b = -1.28841$	1.68448	0
$u = 1.030970 + 0.293300I$ $a = 0.423550 + 0.949718I$ $b = -1.22150 - 1.85782I$	$-6.34532 - 1.55715I$	0
$u = 1.030970 - 0.293300I$ $a = 0.423550 - 0.949718I$ $b = -1.22150 + 1.85782I$	$-6.34532 + 1.55715I$	0
$u = 0.998551 + 0.450677I$ $a = 0.840429 + 0.185787I$ $b = -1.53447 - 0.47057I$	$-3.85932 + 8.71416I$	0

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.998551 - 0.450677I$ $a = 0.840429 - 0.185787I$ $b = -1.53447 + 0.47057I$	$-3.85932 - 8.71416I$	0
$u = 0.807023 + 0.379878I$ $a = -0.522999 - 0.820927I$ $b = 0.90293 + 1.46137I$	$-1.05540 - 4.59060I$	0
$u = 0.807023 - 0.379878I$ $a = -0.522999 + 0.820927I$ $b = 0.90293 - 1.46137I$	$-1.05540 + 4.59060I$	0
$u = 0.173431 + 0.853663I$ $a = -1.187460 - 0.697715I$ $b = -0.0829174 + 0.0476338I$	$-6.42513 - 4.06910I$	$-4.22635 + 4.84629I$
$u = 0.173431 - 0.853663I$ $a = -1.187460 + 0.697715I$ $b = -0.0829174 - 0.0476338I$	$-6.42513 + 4.06910I$	$-4.22635 - 4.84629I$
$u = -0.282130 + 0.822678I$ $a = 1.56370 + 0.05524I$ $b = -0.0108961 + 0.0640512I$	$-1.36655 - 8.48240I$	$0. + 8.35925I$
$u = -0.282130 - 0.822678I$ $a = 1.56370 - 0.05524I$ $b = -0.0108961 - 0.0640512I$	$-1.36655 + 8.48240I$	$0. - 8.35925I$
$u = 0.263131 + 0.807594I$ $a = -2.28540 + 0.02260I$ $b = -0.0613055 + 0.0463861I$	$-5.2649 + 14.5040I$	$0. - 9.52744I$
$u = 0.263131 - 0.807594I$ $a = -2.28540 - 0.02260I$ $b = -0.0613055 - 0.0463861I$	$-5.2649 - 14.5040I$	$0. + 9.52744I$
$u = 0.333797 + 0.766731I$ $a = -0.847130 - 0.808429I$ $b = 0.145580 + 0.030472I$	$-6.77766 + 2.81025I$	$-4.73274 - 4.72373I$

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.333797 - 0.766731I$ $a = -0.847130 + 0.808429I$ $b = 0.145580 - 0.030472I$	$-6.77766 - 2.81025I$	$-4.73274 + 4.72373I$
$u = -0.678779 + 0.451474I$ $a = 0.128920 - 0.525934I$ $b = -0.306024 + 0.773797I$	$1.90849 - 0.65389I$	$7.58705 + 0.13678I$
$u = -0.678779 - 0.451474I$ $a = 0.128920 + 0.525934I$ $b = -0.306024 - 0.773797I$	$1.90849 + 0.65389I$	$7.58705 - 0.13678I$
$u = -1.120030 + 0.396848I$ $a = -0.447323 + 0.480647I$ $b = 0.88903 - 1.14435I$	$-1.02530 - 2.41413I$	0
$u = -1.120030 - 0.396848I$ $a = -0.447323 - 0.480647I$ $b = 0.88903 + 1.14435I$	$-1.02530 + 2.41413I$	0
$u = 0.255740 + 0.765219I$ $a = 2.44844 + 0.00182I$ $b = -0.0317545 - 0.0768044I$	$-2.89319 + 8.75711I$	$1.89232 - 6.34972I$
$u = 0.255740 - 0.765219I$ $a = 2.44844 - 0.00182I$ $b = -0.0317545 + 0.0768044I$	$-2.89319 - 8.75711I$	$1.89232 + 6.34972I$
$u = 0.668294 + 0.440594I$ $a = 0.381426 + 0.246199I$ $b = -0.946254 + 0.056017I$	$-5.52371 + 1.47662I$	$-2.33166 - 2.56671I$
$u = 0.668294 - 0.440594I$ $a = 0.381426 - 0.246199I$ $b = -0.946254 - 0.056017I$	$-5.52371 - 1.47662I$	$-2.33166 + 2.56671I$
$u = -0.279123 + 0.745093I$ $a = -1.66286 - 0.04574I$ $b = 0.0789298 - 0.0009419I$	$0.44879 - 3.45366I$	$5.32609 + 3.91559I$

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.279123 - 0.745093I$ $a = -1.66286 + 0.04574I$ $b = 0.0789298 + 0.0009419I$	$0.44879 + 3.45366I$	$5.32609 - 3.91559I$
$u = -0.095794 + 0.780536I$ $a = 1.64142 + 0.32093I$ $b = 0.1096960 - 0.0870152I$	$-4.17950 - 1.81846I$	$-2.32506 + 3.35231I$
$u = -0.095794 - 0.780536I$ $a = 1.64142 - 0.32093I$ $b = 0.1096960 + 0.0870152I$	$-4.17950 + 1.81846I$	$-2.32506 - 3.35231I$
$u = -1.218480 + 0.084617I$ $a = 1.246560 - 0.353208I$ $b = -1.66716 - 0.71596I$	$-0.44945 + 3.45531I$	0
$u = -1.218480 - 0.084617I$ $a = 1.246560 + 0.353208I$ $b = -1.66716 + 0.71596I$	$-0.44945 - 3.45531I$	0
$u = 0.164141 + 0.752127I$ $a = -2.62610 + 0.40767I$ $b = 0.162415 - 0.114911I$	$-8.97208 + 5.45730I$	$-4.50761 - 5.50179I$
$u = 0.164141 - 0.752127I$ $a = -2.62610 - 0.40767I$ $b = 0.162415 + 0.114911I$	$-8.97208 - 5.45730I$	$-4.50761 + 5.50179I$
$u = -1.241840 + 0.229749I$ $a = -1.170840 - 0.281032I$ $b = 2.24935 - 0.85873I$	$0.69363 - 1.61227I$	0
$u = -1.241840 - 0.229749I$ $a = -1.170840 + 0.281032I$ $b = 2.24935 + 0.85873I$	$0.69363 + 1.61227I$	0
$u = 0.171856 + 0.716149I$ $a = 1.23312 + 1.09879I$ $b = 0.074081 + 0.131507I$	$-3.97774 - 0.39890I$	$-0.933790 - 0.131410I$



Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.171856 - 0.716149I$ $a = 1.23312 - 1.09879I$ $b = 0.074081 - 0.131507I$	$-3.97774 + 0.39890I$	$-0.933790 + 0.131410I$
$u = 1.263210 + 0.154487I$ $a = -0.77119 - 1.26137I$ $b = 0.90529 + 1.34726I$	$2.59030 - 0.80985I$	0
$u = 1.263210 - 0.154487I$ $a = -0.77119 + 1.26137I$ $b = 0.90529 - 1.34726I$	$2.59030 + 0.80985I$	0
$u = 1.306580 + 0.239131I$ $a = -2.36258 - 3.57462I$ $b = 1.74438 + 6.98773I$	$1.22033 + 4.76626I$	0
$u = 1.306580 - 0.239131I$ $a = -2.36258 + 3.57462I$ $b = 1.74438 - 6.98773I$	$1.22033 - 4.76626I$	0
$u = 1.332280 + 0.137029I$ $a = -1.26201 - 1.42638I$ $b = 3.20296 + 2.01883I$	$3.35257 - 2.44507I$	0
$u = 1.332280 - 0.137029I$ $a = -1.26201 + 1.42638I$ $b = 3.20296 - 2.01883I$	$3.35257 + 2.44507I$	0
$u = -0.172982 + 0.634595I$ $a = -0.36462 + 2.26997I$ $b = -0.012364 - 0.922385I$	$-3.15676 - 6.04076I$	$-0.86742 + 10.32607I$
$u = -0.172982 - 0.634595I$ $a = -0.36462 - 2.26997I$ $b = -0.012364 + 0.922385I$	$-3.15676 + 6.04076I$	$-0.86742 - 10.32607I$
$u = 1.329140 + 0.212562I$ $a = -0.98741 + 4.66926I$ $b = 4.54408 - 7.18236I$	$1.33372 + 0.95736I$	0

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.329140 - 0.212562I$ $a = -0.98741 - 4.66926I$ $b = 4.54408 + 7.18236I$	$1.33372 - 0.95736I$	0
$u = -0.038787 + 0.648227I$ $a = 2.76975 - 0.72668I$ $b = 0.949523 - 0.658677I$	$-2.97959 - 1.57809I$	$1.46253 + 6.32927I$
$u = -0.038787 - 0.648227I$ $a = 2.76975 + 0.72668I$ $b = 0.949523 + 0.658677I$	$-2.97959 + 1.57809I$	$1.46253 - 6.32927I$
$u = -1.341130 + 0.168721I$ $a = 0.836570 - 0.686707I$ $b = -2.39583 + 1.76770I$	$4.84645 - 0.43250I$	0
$u = -1.341130 - 0.168721I$ $a = 0.836570 + 0.686707I$ $b = -2.39583 - 1.76770I$	$4.84645 + 0.43250I$	0
$u = 1.323060 + 0.311518I$ $a = -1.23701 - 0.76718I$ $b = 2.21363 + 1.52328I$	$0.26439 + 5.73172I$	0
$u = 1.323060 - 0.311518I$ $a = -1.23701 + 0.76718I$ $b = 2.21363 - 1.52328I$	$0.26439 - 5.73172I$	0
$u = -1.349550 + 0.237179I$ $a = -0.353866 + 0.270005I$ $b = 1.45795 - 1.42502I$	$3.91673 - 6.31648I$	0
$u = -1.349550 - 0.237179I$ $a = -0.353866 - 0.270005I$ $b = 1.45795 + 1.42502I$	$3.91673 + 6.31648I$	0
$u = -1.359260 + 0.175859I$ $a = -0.295928 - 0.553147I$ $b = -0.46549 + 2.00688I$	$5.30135 - 0.37795I$	0

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.359260 - 0.175859I$ $a = -0.295928 + 0.553147I$ $b = -0.46549 - 2.00688I$	$5.30135 + 0.37795I$	0
$u = 1.364380 + 0.192376I$ $a = 1.090040 + 0.421563I$ $b = -1.79311 + 0.21609I$	$5.58685 + 3.51795I$	0
$u = 1.364380 - 0.192376I$ $a = 1.090040 - 0.421563I$ $b = -1.79311 - 0.21609I$	$5.58685 - 3.51795I$	0
$u = 1.363420 + 0.202853I$ $a = 1.25561 + 1.01262I$ $b = -2.57959 - 1.33084I$	$5.45029 + 3.78361I$	0
$u = 1.363420 - 0.202853I$ $a = 1.25561 - 1.01262I$ $b = -2.57959 + 1.33084I$	$5.45029 - 3.78361I$	0
$u = -1.365570 + 0.220575I$ $a = -1.02539 + 1.41423I$ $b = 2.90504 - 2.85866I$	$4.69045 - 6.87284I$	0
$u = -1.365570 - 0.220575I$ $a = -1.02539 - 1.41423I$ $b = 2.90504 + 2.85866I$	$4.69045 + 6.87284I$	0
$u = 1.360430 + 0.255439I$ $a = -1.067560 + 0.487762I$ $b = 1.34716 - 2.01980I$	$1.69884 + 9.29683I$	0
$u = 1.360430 - 0.255439I$ $a = -1.067560 - 0.487762I$ $b = 1.34716 + 2.01980I$	$1.69884 - 9.29683I$	0
$u = -1.367820 + 0.261256I$ $a = -0.296953 + 1.116880I$ $b = 0.34366 - 2.05651I$	$0.88982 - 3.11273I$	0

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.367820 - 0.261256I$ $a = -0.296953 - 1.116880I$ $b = 0.34366 + 2.05651I$	$0.88982 + 3.11273I$	0
$u = -1.358660 + 0.307497I$ $a = 1.47353 - 1.27627I$ $b = -3.02324 + 2.26120I$	$-4.16450 - 9.28584I$	0
$u = -1.358660 - 0.307497I$ $a = 1.47353 + 1.27627I$ $b = -3.02324 - 2.26120I$	$-4.16450 + 9.28584I$	0
$u = 0.131862 + 0.582545I$ $a = 1.70355 + 0.37972I$ $b = -0.055155 - 0.802252I$	$-0.78892 + 3.29378I$	$3.12146 - 3.00778I$
$u = 0.131862 - 0.582545I$ $a = 1.70355 - 0.37972I$ $b = -0.055155 + 0.802252I$	$-0.78892 - 3.29378I$	$3.12146 + 3.00778I$
$u = -1.355040 + 0.381279I$ $a = 0.383877 - 0.711688I$ $b = -0.76178 + 1.57252I$	$-1.62567 - 0.37101I$	0
$u = -1.355040 - 0.381279I$ $a = 0.383877 + 0.711688I$ $b = -0.76178 - 1.57252I$	$-1.62567 + 0.37101I$	0
$u = -1.40693 + 0.17203I$ $a = 0.268174 + 0.963385I$ $b = -0.422266 - 1.260740I$	$0.77219 - 3.38057I$	0
$u = -1.40693 - 0.17203I$ $a = 0.268174 - 0.963385I$ $b = -0.422266 + 1.260740I$	$0.77219 + 3.38057I$	0
$u = 0.199034 + 0.525414I$ $a = 3.35173 + 0.80061I$ $b = -0.535804 - 0.402837I$	$-0.26097 + 4.06974I$	$4.06125 - 10.23179I$

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.199034 - 0.525414I$ $a = 3.35173 - 0.80061I$ $b = -0.535804 + 0.402837I$	$-0.26097 - 4.06974I$	$4.06125 + 10.23179I$
$u = -1.40718 + 0.30970I$ $a = -1.37279 + 1.25640I$ $b = 2.84341 - 2.55407I$	$2.39755 - 12.65390I$	0
$u = -1.40718 - 0.30970I$ $a = -1.37279 - 1.25640I$ $b = 2.84341 + 2.55407I$	$2.39755 + 12.65390I$	0
$u = -0.116165 + 0.546238I$ $a = -1.84090 + 2.69502I$ $b = -0.97453 + 1.07717I$	$-3.19745 + 1.83468I$	$5.65877 - 0.22358I$
$u = -0.116165 - 0.546238I$ $a = -1.84090 - 2.69502I$ $b = -0.97453 - 1.07717I$	$-3.19745 - 1.83468I$	$5.65877 + 0.22358I$
$u = 1.41464 + 0.30140I$ $a = 1.061040 + 0.878788I$ $b = -2.18989 - 1.69422I$	$5.84224 + 7.26151I$	0
$u = 1.41464 - 0.30140I$ $a = 1.061040 - 0.878788I$ $b = -2.18989 + 1.69422I$	$5.84224 - 7.26151I$	0
$u = -1.41616 + 0.32878I$ $a = 1.36309 - 1.23228I$ $b = -2.71714 + 2.56206I$	$0.0783 - 18.6139I$	0
$u = -1.41616 - 0.32878I$ $a = 1.36309 + 1.23228I$ $b = -2.71714 - 2.56206I$	$0.0783 + 18.6139I$	0
$u = 1.42537 + 0.33368I$ $a = -1.021320 - 0.833669I$ $b = 2.11056 + 1.70902I$	$4.06837 + 12.66270I$	0

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.42537 - 0.33368I$ $a = -1.021320 + 0.833669I$ $b = 2.11056 - 1.70902I$	$4.06837 - 12.66270I$	0
$u = -1.46504 + 0.04615I$ $a = -0.339493 + 0.294163I$ $b = -0.118355 + 0.261619I$	$6.11070 + 3.64220I$	0
$u = -1.46504 - 0.04615I$ $a = -0.339493 - 0.294163I$ $b = -0.118355 - 0.261619I$	$6.11070 - 3.64220I$	0
$u = -1.45238 + 0.31120I$ $a = 0.178801 - 0.780640I$ $b = -0.49079 + 1.48727I$	$-1.04831 - 6.74954I$	0
$u = -1.45238 - 0.31120I$ $a = 0.178801 + 0.780640I$ $b = -0.49079 - 1.48727I$	$-1.04831 + 6.74954I$	0
$u = -1.50530 + 0.01500I$ $a = 0.265699 - 0.377681I$ $b = 0.244666 + 0.006083I$	$4.56452 + 9.01884I$	0
$u = -1.50530 - 0.01500I$ $a = 0.265699 + 0.377681I$ $b = 0.244666 - 0.006083I$	$4.56452 - 9.01884I$	0
$u = -0.221727 + 0.438815I$ $a = -2.12355 - 0.19578I$ $b = 0.325288 + 0.377375I$	$0.488487 - 1.269530I$	$6.63867 + 4.16913I$
$u = -0.221727 - 0.438815I$ $a = -2.12355 + 0.19578I$ $b = 0.325288 - 0.377375I$	$0.488487 + 1.269530I$	$6.63867 - 4.16913I$
$u = -0.243843 + 0.413937I$ $a = -1.14024 - 1.03218I$ $b = 0.158306 + 0.677699I$	$0.577620 - 1.139480I$	$7.59571 + 6.13511I$

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.243843 - 0.413937I$ $a = -1.14024 + 1.03218I$ $b = 0.158306 - 0.677699I$	$0.577620 + 1.139480I$	$7.59571 - 6.13511I$
$u = 1.51849 + 0.06536I$ $a = 0.149500 + 0.221635I$ $b = -0.095618 + 0.188264I$	$9.19692 + 2.36753I$	0
$u = 1.51849 - 0.06536I$ $a = 0.149500 - 0.221635I$ $b = -0.095618 - 0.188264I$	$9.19692 - 2.36753I$	0
$u = 0.261953 + 0.330905I$ $a = -1.54230 - 1.70626I$ $b = 0.557405 + 0.825682I$	$0.32554 - 1.70816I$	$6.47908 + 1.51201I$
$u = 0.261953 - 0.330905I$ $a = -1.54230 + 1.70626I$ $b = 0.557405 - 0.825682I$	$0.32554 + 1.70816I$	$6.47908 - 1.51201I$
$u = 1.61557 + 0.02903I$ $a = -0.0648338 - 0.0540396I$ $b = -0.089057 - 0.127793I$	$8.92369 - 2.15451I$	0
$u = 1.61557 - 0.02903I$ $a = -0.0648338 + 0.0540396I$ $b = -0.089057 + 0.127793I$	$8.92369 + 2.15451I$	0
$u = -0.362095 + 0.074063I$ $a = 2.75243 - 1.84793I$ $b = -0.834069 - 0.516392I$	$-1.43243 + 3.58403I$	$4.77704 - 2.61924I$
$u = -0.362095 - 0.074063I$ $a = 2.75243 + 1.84793I$ $b = -0.834069 + 0.516392I$	$-1.43243 - 3.58403I$	$4.77704 + 2.61924I$
$u = 0.166795 + 0.275988I$ $a = -2.86108 - 0.37335I$ $b = 0.432096 + 0.470414I$	$0.19884 - 1.52275I$	$0.827561 + 0.763000I$

	Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u =$	$0.166795 - 0.275988I$		
$a =$	$-2.86108 + 0.37335I$	$0.19884 + 1.52275I$	$0.827561 - 0.763000I$
$b =$	$0.432096 - 0.470414I$		



$$\text{II. } I_2^u = \langle au + b + a, 5a^2 + 3au - 4a - 3u + 5, u^2 - u - 1 \rangle$$

(i) Arc colorings

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

$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} a \\ -au - a \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 1 \\ -u - 1 \end{pmatrix}$$

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

$$a_{12} = \begin{pmatrix} -u \\ u \end{pmatrix}$$

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

$$a_5 = \begin{pmatrix} au + 2a \\ -3au - 2a \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} 1 \\ -2u - 2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} au + 2a \\ -7au - 5a \end{pmatrix}$$

$$a_2 = \begin{pmatrix} au + 2a + u - 1 \\ -7au - 5a - \frac{3}{5}u - \frac{1}{5} \end{pmatrix}$$

(ii) Obstruction class = 1

$$\text{(iii) Cusp Shapes} = \frac{387}{5}au + \frac{259}{5}a + \frac{3}{5}u + 5$$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
$c_1, c_5$	$(u^2 - u + 1)^2$
$c_2$	$(u^2 + u + 1)^2$
$c_3$	$25(25u^4 + 5u^2 + 1)$
$c_4$	$25(25u^4 - 25u^3 + 20u^2 - 5u + 1)$
$c_6, c_7, c_8$	$(u^2 - u - 1)^2$
$c_9$	$u^4$
$c_{10}, c_{12}$	$(u^2 + u - 1)^2$
$c_{11}$	$(u^2 - 3u + 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
$c_1, c_2, c_5$	$(y^2 + y + 1)^2$
$c_3$	$625(25y^2 + 5y + 1)^2$
$c_4$	$625(625y^4 + 375y^3 + 200y^2 + 15y + 1)$
$c_6, c_7, c_8$ $c_{10}, c_{12}$	$(y^2 - 3y + 1)^2$
$c_9$	$y^4$
$c_{11}$	$(y^2 - 7y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.618034$		
$a = 0.585410 + 1.013960I$	$0.98696 - 2.02988I$	$6.94984 + 4.01951I$
$b = -0.223607 - 0.387298I$		
$u = -0.618034$		
$a = 0.585410 - 1.013960I$	$0.98696 + 2.02988I$	$6.94984 - 4.01951I$
$b = -0.223607 + 0.387298I$		
$u = 1.61803$		
$a = -0.085410 + 0.147935I$	$8.88264 + 2.02988I$	$-9.1498 + 26.1898I$
$b = 0.223607 - 0.387298I$		
$u = 1.61803$		
$a = -0.085410 - 0.147935I$	$8.88264 - 2.02988I$	$-9.1498 - 26.1898I$
$b = 0.223607 + 0.387298I$		

### III. u-Polynomials

Crossings	u-Polynomials at each crossing
$c_1$	$((u^2 - u + 1)^2)(u^{111} + 49u^{110} + \dots + 3796u - 625)$
$c_2$	$((u^2 + u + 1)^2)(u^{111} + 3u^{110} + \dots + 314u + 25)$
$c_3$	$625(25u^4 + 5u^2 + 1)(25u^{111} - 35u^{110} + \dots + 277470u - 25993)$
$c_4$	$625(25u^4 - 25u^3 + \dots - 5u + 1)(25u^{111} + 70u^{110} + \dots - 687u - 509)$
$c_5$	$((u^2 - u + 1)^2)(u^{111} + 3u^{110} + \dots + 314u + 25)$
$c_6$	$((u^2 - u - 1)^2)(u^{111} - 3u^{110} + \dots + 2u - 1)$
$c_7, c_8$	$((u^2 - u - 1)^2)(u^{111} - 3u^{110} + \dots - 8u^2 - 1)$
$c_9$	$u^4(u^{111} - u^{110} + \dots - 5600u - 2000)$
$c_{10}$	$((u^2 + u - 1)^2)(u^{111} - 3u^{110} + \dots + 2u - 1)$
$c_{11}$	$((u^2 - 3u + 1)^2)(u^{111} + 9u^{110} + \dots + 89858u + 4589)$
$c_{12}$	$((u^2 + u - 1)^2)(u^{111} - 3u^{110} + \dots - 8u^2 - 1)$

#### IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
$c_1$	$((y^2 + y + 1)^2)(y^{111} + 29y^{110} + \dots + 1.24621 \times 10^7 y - 390625)$
$c_2, c_5$	$((y^2 + y + 1)^2)(y^{111} + 49y^{110} + \dots + 3796y - 625)$
$c_3$	$390625(25y^2 + 5y + 1)^2$ $\cdot (625y^{111} - 10275y^{110} + \dots + 43568737248y - 675636049)$
$c_4$	$390625(625y^4 + 375y^3 + 200y^2 + 15y + 1)$ $\cdot (625y^{111} - 23850y^{110} + \dots - 67509053y - 259081)$
$c_6, c_{10}$	$((y^2 - 3y + 1)^2)(y^{111} + 61y^{110} + \dots - 16y - 1)$
$c_7, c_8, c_{12}$	$((y^2 - 3y + 1)^2)(y^{111} - 99y^{110} + \dots - 16y - 1)$
$c_9$	$y^4(y^{111} - 25y^{110} + \dots - 1.27200 \times 10^7 y - 4000000)$
$c_{11}$	$((y^2 - 7y + 1)^2)(y^{111} + 9y^{110} + \dots + 2.63646 \times 10^9 y - 2.10589 \times 10^7)$