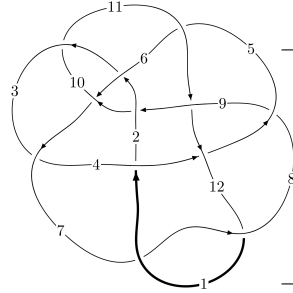
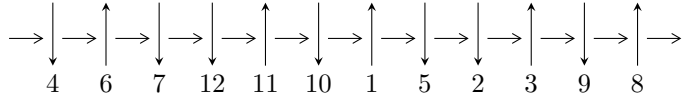


12a<sub>0888</sub> (K12a<sub>0888</sub>)



A knot diagram<sup>1</sup>

**Linearized knot diagram**



**Solving Sequence**

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

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

$$I_1^u = \langle 6.54150 \times 10^{2113} u^{198} + 2.25876 \times 10^{2114} u^{197} + \dots + 8.55458 \times 10^{2111} b - 4.60399 \times 10^{2114}, \\ 6.83826 \times 10^{2112} u^{198} + 2.36400 \times 10^{2113} u^{197} + \dots + 2.94986 \times 10^{2110} a - 4.90075 \times 10^{2113}, \\ u^{199} + 4u^{198} + \dots + 109u - 4 \rangle$$

$$I_2^u = \langle 6.56727 \times 10^{107} u^{47} + 2.94736 \times 10^{108} u^{46} + \dots + 2.61573 \times 10^{107} b + 7.33724 \times 10^{107}, \\ 2.23775 \times 10^{108} u^{47} + 1.01685 \times 10^{109} u^{46} + \dots + 2.61573 \times 10^{107} a + 5.16537 \times 10^{108}, u^{48} + 5u^{47} + \dots + u + \dots \rangle$$

\* 2 irreducible components of  $\dim_{\mathbb{C}} = 0$ , with total 247 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.

$$\mathbf{I. } I_1^u = \langle 6.54 \times 10^{2113} u^{198} + 2.26 \times 10^{2114} u^{197} + \dots + 8.55 \times 10^{2111} b - 4.60 \times 10^{2114}, 6.84 \times 10^{2112} u^{198} + 2.36 \times 10^{2113} u^{197} + \dots + 2.95 \times 10^{2110} a - 4.90 \times 10^{2113}, u^{199} + 4u^{198} + \dots + 109u - 4 \rangle$$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} -231.817u^{198} - 801.394u^{197} + \dots - 47715.6u + 1661.35 \\ -76.4678u^{198} - 264.041u^{197} + \dots - 15878.4u + 538.189 \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} -225.100u^{198} - 778.020u^{197} + \dots - 46484.7u + 1626.65 \\ -74.6359u^{198} - 257.674u^{197} + \dots - 15470.8u + 524.219 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -612.133u^{198} - 2116.82u^{197} + \dots - 126908.u + 4380.38 \\ -85.3048u^{198} - 294.370u^{197} + \dots - 18209.2u + 621.492 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -155.349u^{198} - 537.353u^{197} + \dots - 31837.3u + 1123.16 \\ -76.4678u^{198} - 264.041u^{197} + \dots - 15878.4u + 538.189 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 64.7717u^{198} + 223.713u^{197} + \dots + 13415.8u - 433.398 \\ 4.60523u^{198} + 15.3365u^{197} + \dots + 1372.27u - 56.9440 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -333.963u^{198} - 1151.55u^{197} + \dots - 69826.8u + 2360.83 \\ -86.1451u^{198} - 297.865u^{197} + \dots - 17706.9u + 600.597 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -445.466u^{198} - 1541.56u^{197} + \dots - 91239.5u + 3163.38 \\ -81.3622u^{198} - 280.883u^{197} + \dots - 17457.2u + 595.505 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -84.3533u^{198} - 294.144u^{197} + \dots - 13012.0u + 365.244 \\ -14.2315u^{198} - 48.5800u^{197} + \dots - 3365.36u + 118.263 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 21.3818u^{198} + 77.2319u^{197} + \dots - 506.183u + 131.472 \\ 9.19622u^{198} + 31.2502u^{197} + \dots + 2376.87u - 87.7508 \end{pmatrix}$$

(ii) Obstruction class = -1

(iii) Cusp Shapes =  $396.332u^{198} + 1372.96u^{197} + \dots + 84384.4u - 2895.29$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
$c_1$	$u^{199} + 12u^{198} + \dots - 55449899u + 2028184$
$c_2$	$u^{199} - 2u^{198} + \dots + 47u + 1$
$c_3$	$u^{199} + u^{198} + \dots + 1717896531745u + 8566907748177$
$c_4$	$u^{199} - u^{198} + \dots - 51u + 31$
$c_5$	$u^{199} - 9u^{198} + \dots + 50548405469343u + 2906312135033$
$c_6$	$u^{199} - 4u^{198} + \dots + 109u + 4$
$c_7, c_{12}$	$u^{199} - u^{198} + \dots + 106056u + 2767$
$c_8$	$u^{199} - 2u^{198} + \dots + 45150805u + 2117682$
$c_9$	$u^{199} - u^{198} + \dots - 1706345869u + 1142423049$
$c_{10}$	$u^{199} + 4u^{198} + \dots + 656177u + 80681$
$c_{11}$	$u^{199} + 6u^{198} + \dots - 37u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
$c_1$	$y^{199} - 40y^{198} + \dots + 781027898879017y - 4113530337856$
$c_2$	$y^{199} + 26y^{198} + \dots + 177y - 1$
$c_3$	$y^{199} - 111y^{198} + \dots + 4.99 \times 10^{27}y - 7.34 \times 10^{25}$
$c_4$	$y^{199} - 13y^{198} + \dots - 53013y - 961$
$c_5$	$y^{199} + 65y^{198} + \dots - 5.44 \times 10^{26}y - 8.45 \times 10^{24}$
$c_6$	$y^{199} - 60y^{198} + \dots + 6265y - 16$
$c_7, c_{12}$	$y^{199} + 159y^{198} + \dots + 230721528y - 7656289$
$c_8$	$y^{199} - 58y^{198} + \dots + 4291591582916281y - 4484577053124$
$c_9$	$y^{199} - 31y^{198} + \dots + 8.52 \times 10^{19}y - 1.31 \times 10^{18}$
$c_{10}$	$y^{199} + 62y^{198} + \dots - 432375389059y - 6509423761$
$c_{11}$	$y^{199} + 16y^{198} + \dots - 385y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.323788 + 0.956988I$ $a = 0.667654 - 0.376841I$ $b = -0.177054 + 0.120704I$	$-0.49150 - 2.40703I$	0
$u = 0.323788 - 0.956988I$ $a = 0.667654 + 0.376841I$ $b = -0.177054 - 0.120704I$	$-0.49150 + 2.40703I$	0
$u = -0.785832 + 0.588249I$ $a = 0.07111 + 1.43473I$ $b = 1.01085 + 1.15919I$	$1.18695 + 4.28621I$	0
$u = -0.785832 - 0.588249I$ $a = 0.07111 - 1.43473I$ $b = 1.01085 - 1.15919I$	$1.18695 - 4.28621I$	0
$u = 0.949272 + 0.249807I$ $a = -0.71358 + 1.49382I$ $b = -0.406826 + 0.635104I$	$-2.03727 - 4.52529I$	0
$u = 0.949272 - 0.249807I$ $a = -0.71358 - 1.49382I$ $b = -0.406826 - 0.635104I$	$-2.03727 + 4.52529I$	0
$u = 0.480635 + 0.899006I$ $a = -0.023350 - 0.292064I$ $b = 1.057380 - 0.629958I$	$2.92284 - 3.39243I$	0
$u = 0.480635 - 0.899006I$ $a = -0.023350 + 0.292064I$ $b = 1.057380 + 0.629958I$	$2.92284 + 3.39243I$	0
$u = -0.360311 + 0.911287I$ $a = -0.216921 + 0.045739I$ $b = -0.465046 - 0.870341I$	$-4.03164 - 3.58737I$	0
$u = -0.360311 - 0.911287I$ $a = -0.216921 - 0.045739I$ $b = -0.465046 + 0.870341I$	$-4.03164 + 3.58737I$	0

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.725286 + 0.656503I$ $a = -0.44083 - 1.86867I$ $b = 0.863602 - 1.016940I$	$-5.13638 - 5.86234I$	0
$u = 0.725286 - 0.656503I$ $a = -0.44083 + 1.86867I$ $b = 0.863602 + 1.016940I$	$-5.13638 + 5.86234I$	0
$u = 0.962257 + 0.127497I$ $a = 0.404010 + 0.764562I$ $b = 0.94825 + 1.46284I$	$-6.63083 + 1.67851I$	0
$u = 0.962257 - 0.127497I$ $a = 0.404010 - 0.764562I$ $b = 0.94825 - 1.46284I$	$-6.63083 - 1.67851I$	0
$u = 0.654821 + 0.797900I$ $a = 0.213505 - 0.935232I$ $b = 0.715807 - 1.121800I$	$-1.31141 - 2.75691I$	0
$u = 0.654821 - 0.797900I$ $a = 0.213505 + 0.935232I$ $b = 0.715807 + 1.121800I$	$-1.31141 + 2.75691I$	0
$u = -1.042340 + 0.005407I$ $a = 0.189611 - 0.720294I$ $b = 1.27692 - 1.08388I$	$-8.66487 - 8.33594I$	0
$u = -1.042340 - 0.005407I$ $a = 0.189611 + 0.720294I$ $b = 1.27692 + 1.08388I$	$-8.66487 + 8.33594I$	0
$u = 0.426424 + 0.957357I$ $a = -0.147677 + 0.788946I$ $b = -1.034250 + 0.448121I$	$0.84671 + 5.88252I$	0
$u = 0.426424 - 0.957357I$ $a = -0.147677 - 0.788946I$ $b = -1.034250 - 0.448121I$	$0.84671 - 5.88252I$	0

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.096913 + 0.941468I$ $a = -1.96577 - 0.53172I$ $b = 1.000940 - 0.078089I$	$1.05606 - 4.87213I$	0
$u = 0.096913 - 0.941468I$ $a = -1.96577 + 0.53172I$ $b = 1.000940 + 0.078089I$	$1.05606 + 4.87213I$	0
$u = 0.564907 + 0.892151I$ $a = -0.499408 - 0.802657I$ $b = 1.071480 - 0.597387I$	$2.89216 - 4.55755I$	0
$u = 0.564907 - 0.892151I$ $a = -0.499408 + 0.802657I$ $b = 1.071480 + 0.597387I$	$2.89216 + 4.55755I$	0
$u = 0.893944 + 0.279837I$ $a = -0.123758 - 0.647024I$ $b = -0.969406 - 0.998165I$	$-2.27890 - 0.79570I$	0
$u = 0.893944 - 0.279837I$ $a = -0.123758 + 0.647024I$ $b = -0.969406 + 0.998165I$	$-2.27890 + 0.79570I$	0
$u = 0.672584 + 0.828175I$ $a = -0.106988 - 0.910380I$ $b = 1.04196 - 1.23080I$	$-0.36012 - 6.38149I$	0
$u = 0.672584 - 0.828175I$ $a = -0.106988 + 0.910380I$ $b = 1.04196 + 1.23080I$	$-0.36012 + 6.38149I$	0
$u = 0.302464 + 1.060080I$ $a = 1.42525 + 0.65612I$ $b = -0.972513 + 0.316322I$	$0.92092 - 3.48037I$	0
$u = 0.302464 - 1.060080I$ $a = 1.42525 - 0.65612I$ $b = -0.972513 - 0.316322I$	$0.92092 + 3.48037I$	0

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.896824$ $a = 0.409689$ $b = -0.568323$	-1.71335	0
$u = 0.521557 + 0.724607I$ $a = 0.021341 + 1.127670I$ $b = -1.06995 + 1.51914I$	$0.84025 - 7.67933I$	0
$u = 0.521557 - 0.724607I$ $a = 0.021341 - 1.127670I$ $b = -1.06995 - 1.51914I$	$0.84025 + 7.67933I$	0
$u = 0.564778 + 0.959312I$ $a = 0.522560 + 1.046920I$ $b = -0.700517 + 0.475594I$	$0.57466 - 4.52245I$	0
$u = 0.564778 - 0.959312I$ $a = 0.522560 - 1.046920I$ $b = -0.700517 - 0.475594I$	$0.57466 + 4.52245I$	0
$u = 0.873155 + 0.131603I$ $a = 0.157307 + 1.232550I$ $b = -1.00907 + 1.30822I$	$-8.73974 + 2.24560I$	0
$u = 0.873155 - 0.131603I$ $a = 0.157307 - 1.232550I$ $b = -1.00907 - 1.30822I$	$-8.73974 - 2.24560I$	0
$u = 0.742286 + 0.465956I$ $a = 1.266160 - 0.340133I$ $b = -0.015500 + 0.458490I$	$-2.38628 + 0.27161I$	0
$u = 0.742286 - 0.465956I$ $a = 1.266160 + 0.340133I$ $b = -0.015500 - 0.458490I$	$-2.38628 - 0.27161I$	0
$u = -0.531378 + 0.994319I$ $a = 0.062490 - 0.761390I$ $b = -0.902681 - 0.439001I$	$4.79372 - 0.96584I$	0



Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.531378 - 0.994319I$ $a = 0.062490 + 0.761390I$ $b = -0.902681 + 0.439001I$	$4.79372 + 0.96584I$	0
$u = 0.996952 + 0.527145I$ $a = -0.043900 - 0.574589I$ $b = -0.359306 - 0.841527I$	$-1.95993 - 0.90366I$	0
$u = 0.996952 - 0.527145I$ $a = -0.043900 + 0.574589I$ $b = -0.359306 + 0.841527I$	$-1.95993 + 0.90366I$	0
$u = 0.936475 + 0.667721I$ $a = 0.558206 - 1.078580I$ $b = 1.17804 - 0.96787I$	$-1.95927 - 2.42706I$	0
$u = 0.936475 - 0.667721I$ $a = 0.558206 + 1.078580I$ $b = 1.17804 + 0.96787I$	$-1.95927 + 2.42706I$	0
$u = -0.836320 + 0.101458I$ $a = 0.213015 + 0.775985I$ $b = -1.12254 + 1.22527I$	$-4.39442 + 4.72099I$	0
$u = -0.836320 - 0.101458I$ $a = 0.213015 - 0.775985I$ $b = -1.12254 - 1.22527I$	$-4.39442 - 4.72099I$	0
$u = -1.047300 + 0.525620I$ $a = -0.82278 + 1.26278I$ $b = 0.066296 + 0.719138I$	$-5.35189 + 6.00591I$	0
$u = -1.047300 - 0.525620I$ $a = -0.82278 - 1.26278I$ $b = 0.066296 - 0.719138I$	$-5.35189 - 6.00591I$	0
$u = -0.543103 + 0.624813I$ $a = -0.52508 - 1.95543I$ $b = -0.1166340 + 0.0277607I$	$-3.70079 + 7.18957I$	0

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.543103 - 0.624813I$ $a = -0.52508 + 1.95543I$ $b = -0.1166340 - 0.0277607I$	$-3.70079 - 7.18957I$	0
$u = -0.705255 + 0.945028I$ $a = -0.039165 - 1.091780I$ $b = -0.97732 - 1.34000I$	$-2.19820 + 13.26320I$	0
$u = -0.705255 - 0.945028I$ $a = -0.039165 + 1.091780I$ $b = -0.97732 + 1.34000I$	$-2.19820 - 13.26320I$	0
$u = -0.295208 + 0.761712I$ $a = -1.93365 + 2.03738I$ $b = 0.745361 + 0.277657I$	$-5.06520 + 11.47870I$	0
$u = -0.295208 - 0.761712I$ $a = -1.93365 - 2.03738I$ $b = 0.745361 - 0.277657I$	$-5.06520 - 11.47870I$	0
$u = -0.804089 + 0.022949I$ $a = 2.02149 - 1.64136I$ $b = 0.138471 - 0.487076I$	$-7.90188 + 3.34180I$	0
$u = -0.804089 - 0.022949I$ $a = 2.02149 + 1.64136I$ $b = 0.138471 + 0.487076I$	$-7.90188 - 3.34180I$	0
$u = 0.732619 + 0.318472I$ $a = 0.168766 + 0.997870I$ $b = 1.38489 + 1.32211I$	$-7.5427 - 12.9521I$	0
$u = 0.732619 - 0.318472I$ $a = 0.168766 - 0.997870I$ $b = 1.38489 - 1.32211I$	$-7.5427 + 12.9521I$	0
$u = -0.430972 + 0.667243I$ $a = -0.133660 + 1.314420I$ $b = 0.997120 + 0.560998I$	$2.10001 + 1.15903I$	0

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.430972 - 0.667243I$ $a = -0.133660 - 1.314420I$ $b = 0.997120 - 0.560998I$	$2.10001 - 1.15903I$	0
$u = -0.739974 + 0.287271I$ $a = -0.619320 + 0.821462I$ $b = -1.36789 + 0.85900I$	$-7.61176 - 1.63049I$	0
$u = -0.739974 - 0.287271I$ $a = -0.619320 - 0.821462I$ $b = -1.36789 - 0.85900I$	$-7.61176 + 1.63049I$	0
$u = 0.773404 + 0.951895I$ $a = 0.047601 + 1.113910I$ $b = -0.486933 + 1.274640I$	$-1.63049 - 3.39349I$	0
$u = 0.773404 - 0.951895I$ $a = 0.047601 - 1.113910I$ $b = -0.486933 - 1.274640I$	$-1.63049 + 3.39349I$	0
$u = 0.767827 + 0.072447I$ $a = -1.34612 + 2.54382I$ $b = -0.057344 + 0.715845I$	$-8.47392 + 2.03447I$	0
$u = 0.767827 - 0.072447I$ $a = -1.34612 - 2.54382I$ $b = -0.057344 - 0.715845I$	$-8.47392 - 2.03447I$	0
$u = 0.188068 + 0.743433I$ $a = 0.88646 + 1.52424I$ $b = -0.1264280 - 0.0496629I$	$1.75098 - 2.18630I$	0
$u = 0.188068 - 0.743433I$ $a = 0.88646 - 1.52424I$ $b = -0.1264280 + 0.0496629I$	$1.75098 + 2.18630I$	0
$u = -0.541870 + 0.540544I$ $a = -0.472306 + 1.135650I$ $b = 1.10817 + 1.07357I$	$0.75904 + 3.74035I$	0

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.541870 - 0.540544I$		
$a = -0.472306 - 1.135650I$	$0.75904 - 3.74035I$	0
$b = 1.10817 - 1.07357I$		
$u = 0.365965 + 1.184860I$		
$a = 0.260225 - 0.322644I$	$-2.11886 - 2.54299I$	0
$b = -0.362133 + 0.463609I$		
$u = 0.365965 - 1.184860I$		
$a = 0.260225 + 0.322644I$	$-2.11886 + 2.54299I$	0
$b = -0.362133 - 0.463609I$		
$u = 0.736545 + 0.028243I$		
$a = -0.24759 - 2.32222I$	$-6.10770 - 5.68822I$	0
$b = 0.598845 - 1.104700I$		
$u = 0.736545 - 0.028243I$		
$a = -0.24759 + 2.32222I$	$-6.10770 + 5.68822I$	0
$b = 0.598845 + 1.104700I$		
$u = -0.589953 + 0.434982I$		
$a = -0.38360 - 2.83389I$	$-7.12718 + 4.38008I$	0
$b = -0.393914 - 0.637502I$		
$u = -0.589953 - 0.434982I$		
$a = -0.38360 + 2.83389I$	$-7.12718 - 4.38008I$	0
$b = -0.393914 + 0.637502I$		
$u = -0.700193 + 0.182108I$		
$a = 0.190511 - 0.899671I$	$-2.21526 + 6.66114I$	0
$b = 1.40072 - 1.48868I$		
$u = -0.700193 - 0.182108I$		
$a = 0.190511 + 0.899671I$	$-2.21526 - 6.66114I$	0
$b = 1.40072 + 1.48868I$		
$u = 0.646010 + 0.325697I$		
$a = 0.13207 - 2.14184I$	$-5.57836 - 6.97331I$	0
$b = -0.06678 - 1.46483I$		

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.646010 - 0.325697I$		
$a = 0.13207 + 2.14184I$	$-5.57836 + 6.97331I$	0
$b = -0.06678 + 1.46483I$		
$u = 0.333997 + 0.629074I$		
$a = 0.650287 - 0.901112I$	$-0.78254 - 2.27569I$	0
$b = 0.345649 - 0.333798I$		
$u = 0.333997 - 0.629074I$		
$a = 0.650287 + 0.901112I$	$-0.78254 + 2.27569I$	0
$b = 0.345649 + 0.333798I$		
$u = 0.703844 + 0.073631I$		
$a = 0.205034 - 0.765896I$	$-3.17000 - 3.06613I$	0
$b = 1.47972 - 1.39097I$		
$u = 0.703844 - 0.073631I$		
$a = 0.205034 + 0.765896I$	$-3.17000 + 3.06613I$	0
$b = 1.47972 + 1.39097I$		
$u = -0.722623 + 1.074710I$		
$a = 0.282178 + 0.460448I$	$-0.15919 + 5.93228I$	0
$b = 1.044830 + 0.618158I$		
$u = -0.722623 - 1.074710I$		
$a = 0.282178 - 0.460448I$	$-0.15919 - 5.93228I$	0
$b = 1.044830 - 0.618158I$		
$u = -1.092520 + 0.701501I$		
$a = -0.055816 - 1.264050I$	$-8.84458 + 5.31755I$	0
$b = -0.801534 - 1.107380I$		
$u = -1.092520 - 0.701501I$		
$a = -0.055816 + 1.264050I$	$-8.84458 - 5.31755I$	0
$b = -0.801534 + 1.107380I$		
$u = 0.829036 + 1.011460I$		
$a = 0.415868 + 0.210937I$	$-5.89659 + 0.25043I$	0
$b = 0.498332 + 1.032160I$		

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.829036 - 1.011460I$		
$a = 0.415868 - 0.210937I$	$-5.89659 - 0.25043I$	0
$b = 0.498332 - 1.032160I$		
$u = -0.633458 + 0.267034I$		
$a = 0.46070 + 1.63703I$	$-0.54362 + 3.54968I$	0
$b = -0.041535 + 1.152310I$		
$u = -0.633458 - 0.267034I$		
$a = 0.46070 - 1.63703I$	$-0.54362 - 3.54968I$	0
$b = -0.041535 - 1.152310I$		
$u = -0.317546 + 0.598247I$		
$a = 0.190964 - 1.105750I$	$-2.20538 - 1.93247I$	0
$b = -0.52822 - 1.74252I$		
$u = -0.317546 - 0.598247I$		
$a = 0.190964 + 1.105750I$	$-2.20538 + 1.93247I$	0
$b = -0.52822 + 1.74252I$		
$u = -1.023070 + 0.838473I$		
$a = 0.253000 - 1.276190I$	$-8.83556 + 5.62215I$	0
$b = -0.883469 - 1.037100I$		
$u = -1.023070 - 0.838473I$		
$a = 0.253000 + 1.276190I$	$-8.83556 - 5.62215I$	0
$b = -0.883469 + 1.037100I$		
$u = 0.560862 + 0.357634I$		
$a = -0.280847 - 1.246230I$	$-7.45812 - 3.89762I$	0
$b = -1.41761 - 1.08113I$		
$u = 0.560862 - 0.357634I$		
$a = -0.280847 + 1.246230I$	$-7.45812 + 3.89762I$	0
$b = -1.41761 + 1.08113I$		
$u = -1.197770 + 0.604792I$		
$a = 0.391251 + 0.723132I$	$0.75793 + 2.05160I$	0
$b = 0.853903 + 0.615187I$		

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.197770 - 0.604792I$		
$a = 0.391251 - 0.723132I$	$0.75793 - 2.05160I$	0
$b = 0.853903 - 0.615187I$		
$u = -0.574343 + 0.229582I$		
$a = -2.32657 + 0.55692I$	$-3.34420 + 5.23806I$	0
$b = 0.542486 + 0.509515I$		
$u = -0.574343 - 0.229582I$		
$a = -2.32657 - 0.55692I$	$-3.34420 - 5.23806I$	0
$b = 0.542486 - 0.509515I$		
$u = 1.375360 + 0.146101I$		
$a = 0.395774 + 0.354106I$	$-2.65060 + 1.09946I$	0
$b = -0.057981 + 0.614935I$		
$u = 1.375360 - 0.146101I$		
$a = 0.395774 - 0.354106I$	$-2.65060 - 1.09946I$	0
$b = -0.057981 - 0.614935I$		
$u = -0.529520 + 0.301878I$		
$a = 0.214856 - 0.714137I$	$-6.63453 + 4.54438I$	0
$b = 1.97190 - 0.67577I$		
$u = -0.529520 - 0.301878I$		
$a = 0.214856 + 0.714137I$	$-6.63453 - 4.54438I$	0
$b = 1.97190 + 0.67577I$		
$u = 0.823843 + 1.125710I$		
$a = -0.639757 - 0.415955I$	$-1.74111 - 3.17086I$	0
$b = 0.123013 - 0.542942I$		
$u = 0.823843 - 1.125710I$		
$a = -0.639757 + 0.415955I$	$-1.74111 + 3.17086I$	0
$b = 0.123013 + 0.542942I$		
$u = -0.586393 + 0.065879I$		
$a = 0.010605 + 1.251070I$	$-4.03698 + 2.14832I$	0
$b = -1.29602 + 1.33972I$		

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.586393 - 0.065879I$		
$a = 0.010605 - 1.251070I$	$-4.03698 - 2.14832I$	0
$b = -1.29602 - 1.33972I$		
$u = 1.13010 + 0.85367I$		
$a = 0.037440 + 1.154100I$	$-1.75180 - 4.93998I$	0
$b = -0.592247 + 0.824467I$		
$u = 1.13010 - 0.85367I$		
$a = 0.037440 - 1.154100I$	$-1.75180 + 4.93998I$	0
$b = -0.592247 - 0.824467I$		
$u = -0.566804 + 0.056222I$		
$a = 0.754777 + 0.077174I$	$-4.43889 - 4.10177I$	0
$b = -1.25330 - 0.67913I$		
$u = -0.566804 - 0.056222I$		
$a = 0.754777 - 0.077174I$	$-4.43889 + 4.10177I$	0
$b = -1.25330 + 0.67913I$		
$u = -0.548026 + 0.001910I$		
$a = -2.32494 + 2.48370I$	$-3.98743 + 2.05565I$	0
$b = 0.044142 + 0.734919I$		
$u = -0.548026 - 0.001910I$		
$a = -2.32494 - 2.48370I$	$-3.98743 - 2.05565I$	0
$b = 0.044142 - 0.734919I$		
$u = 1.06556 + 0.99497I$		
$a = 0.257162 + 0.659827I$	$-1.56739 - 3.79423I$	0
$b = -0.656363 + 0.621881I$		
$u = 1.06556 - 0.99497I$		
$a = 0.257162 - 0.659827I$	$-1.56739 + 3.79423I$	0
$b = -0.656363 - 0.621881I$		
$u = 0.538583 + 0.059880I$		
$a = 4.05215 + 2.88808I$	$-6.82612 - 11.68990I$	0
$b = -0.086024 + 0.541607I$		



Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.538583 - 0.059880I$		
$a = 4.05215 - 2.88808I$	$-6.82612 + 11.68990I$	0
$b = -0.086024 - 0.541607I$		
$u = -1.12983 + 0.92810I$		
$a = 0.198612 - 1.242180I$	$-3.44318 + 5.66140I$	0
$b = -0.605383 - 0.783628I$		
$u = -1.12983 - 0.92810I$		
$a = 0.198612 + 1.242180I$	$-3.44318 - 5.66140I$	0
$b = -0.605383 + 0.783628I$		
$u = 1.26931 + 0.73158I$		
$a = -0.142091 + 1.039720I$	$-8.44189 - 10.86170I$	0
$b = -1.10571 + 1.13602I$		
$u = 1.26931 - 0.73158I$		
$a = -0.142091 - 1.039720I$	$-8.44189 + 10.86170I$	0
$b = -1.10571 - 1.13602I$		
$u = -0.518564 + 0.129065I$		
$a = 0.05461 - 1.59937I$	$-6.76697 + 2.43665I$	0
$b = -1.56190 - 1.07928I$		
$u = -0.518564 - 0.129065I$		
$a = 0.05461 + 1.59937I$	$-6.76697 - 2.43665I$	0
$b = -1.56190 + 1.07928I$		
$u = -1.16012 + 0.91372I$		
$a = -0.055940 - 1.060570I$	$-4.51565 + 10.82510I$	0
$b = -1.03606 - 1.15945I$		
$u = -1.16012 - 0.91372I$		
$a = -0.055940 + 1.060570I$	$-4.51565 - 10.82510I$	0
$b = -1.03606 + 1.15945I$		
$u = 0.500100 + 0.149590I$		
$a = -2.19710 + 2.89769I$	$-7.01049 + 2.31687I$	0
$b = 0.174959 + 0.859949I$		

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.500100 - 0.149590I$ $a = -2.19710 - 2.89769I$ $b = 0.174959 - 0.859949I$	$-7.01049 - 2.31687I$	0
$u = 1.04560 + 1.04993I$ $a = -0.309761 - 0.955612I$ $b = 1.21210 - 1.19231I$	$-5.84212 - 7.46727I$	0
$u = 1.04560 - 1.04993I$ $a = -0.309761 + 0.955612I$ $b = 1.21210 + 1.19231I$	$-5.84212 + 7.46727I$	0
$u = -0.93577 + 1.15597I$ $a = 0.168712 + 0.945813I$ $b = 0.699593 + 0.915387I$	$-1.13442 + 2.29062I$	0
$u = -0.93577 - 1.15597I$ $a = 0.168712 - 0.945813I$ $b = 0.699593 - 0.915387I$	$-1.13442 - 2.29062I$	0
$u = -0.398027 + 0.306358I$ $a = 3.98513 + 0.85317I$ $b = -0.229273 - 0.470217I$	$-0.84326 + 6.93966I$	0
$u = -0.398027 - 0.306358I$ $a = 3.98513 - 0.85317I$ $b = -0.229273 + 0.470217I$	$-0.84326 - 6.93966I$	0
$u = 1.13774 + 0.99949I$ $a = -0.118410 - 0.904582I$ $b = 0.89452 - 1.26055I$	$-4.68296 - 5.92920I$	0
$u = 1.13774 - 0.99949I$ $a = -0.118410 + 0.904582I$ $b = 0.89452 + 1.26055I$	$-4.68296 + 5.92920I$	0
$u = -1.19725 + 0.95611I$ $a = -0.216813 + 0.909013I$ $b = 0.92845 + 1.15620I$	$-9.67267 - 0.23355I$	0

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.19725 - 0.95611I$ $a = -0.216813 - 0.909013I$ $b = 0.92845 - 1.15620I$	$-9.67267 + 0.23355I$	0
$u = -1.39560 + 0.66051I$ $a = 0.185705 + 0.452358I$ $b = -0.202674 + 0.565931I$	$-3.43225 + 1.96005I$	0
$u = -1.39560 - 0.66051I$ $a = 0.185705 - 0.452358I$ $b = -0.202674 - 0.565931I$	$-3.43225 - 1.96005I$	0
$u = -1.13932 + 1.04360I$ $a = -0.083100 + 1.024760I$ $b = 1.07419 + 1.19261I$	$-2.6474 + 15.7939I$	0
$u = -1.13932 - 1.04360I$ $a = -0.083100 - 1.024760I$ $b = 1.07419 - 1.19261I$	$-2.6474 - 15.7939I$	0
$u = -1.53150 + 0.22900I$ $a = -0.562485 + 0.697175I$ $b = -0.292303 + 0.608305I$	$-4.74207 - 6.97341I$	0
$u = -1.53150 - 0.22900I$ $a = -0.562485 - 0.697175I$ $b = -0.292303 - 0.608305I$	$-4.74207 + 6.97341I$	0
$u = 1.14495 + 1.06021I$ $a = 0.164366 + 0.945061I$ $b = -1.03096 + 1.06770I$	$-2.25531 - 8.49508I$	0
$u = 1.14495 - 1.06021I$ $a = 0.164366 - 0.945061I$ $b = -1.03096 - 1.06770I$	$-2.25531 + 8.49508I$	0
$u = 1.18315 + 1.01750I$ $a = -0.032214 + 1.114430I$ $b = -0.98356 + 1.16040I$	$-8.4248 - 12.2045I$	0

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.18315 - 1.01750I$ $a = -0.032214 - 1.114430I$ $b = -0.98356 - 1.16040I$	$-8.4248 + 12.2045I$	0
$u = 1.19909 + 1.05418I$ $a = -0.036895 - 1.059110I$ $b = 1.06485 - 1.17719I$	$-8.0218 - 21.8174I$	0
$u = 1.19909 - 1.05418I$ $a = -0.036895 + 1.059110I$ $b = 1.06485 + 1.17719I$	$-8.0218 + 21.8174I$	0
$u = -1.17961 + 1.08563I$ $a = -0.092356 + 0.981033I$ $b = 0.79967 + 1.19799I$	$-9.3698 + 12.4453I$	0
$u = -1.17961 - 1.08563I$ $a = -0.092356 - 0.981033I$ $b = 0.79967 - 1.19799I$	$-9.3698 - 12.4453I$	0
$u = -0.373570 + 0.064315I$ $a = 1.68104 + 1.74560I$ $b = 0.665488 + 0.375857I$	$1.17548 + 1.25393I$	0
$u = -0.373570 - 0.064315I$ $a = 1.68104 - 1.74560I$ $b = 0.665488 - 0.375857I$	$1.17548 - 1.25393I$	0
$u = -0.73930 + 1.44446I$ $a = -0.339528 + 0.298857I$ $b = -0.351317 + 0.720109I$	$-7.24462 + 1.36294I$	0
$u = -0.73930 - 1.44446I$ $a = -0.339528 - 0.298857I$ $b = -0.351317 - 0.720109I$	$-7.24462 - 1.36294I$	0
$u = 0.188384 + 0.324873I$ $a = -1.04888 + 2.79155I$ $b = 0.618067 - 0.059583I$	$1.43272 - 1.51882I$	$5.54313 + 8.48562I$

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.188384 - 0.324873I$ $a = -1.04888 - 2.79155I$ $b = 0.618067 + 0.059583I$	$1.43272 + 1.51882I$	$5.54313 - 8.48562I$
$u = -0.331610 + 0.157329I$ $a = -2.23641 + 1.93706I$ $b = 0.876545 + 0.512842I$	$0.43039 + 3.01839I$	$0. - 4.68806I$
$u = -0.331610 - 0.157329I$ $a = -2.23641 - 1.93706I$ $b = 0.876545 - 0.512842I$	$0.43039 - 3.01839I$	$0. + 4.68806I$
$u = 1.61554 + 0.27473I$ $a = 0.559733 - 0.380923I$ $b = 0.971206 - 0.299453I$	$-2.96222 + 0.08886I$	$0$
$u = 1.61554 - 0.27473I$ $a = 0.559733 + 0.380923I$ $b = 0.971206 + 0.299453I$	$-2.96222 - 0.08886I$	$0$
$u = -1.27707 + 1.05093I$ $a = 0.007884 - 0.895008I$ $b = -1.03793 - 1.09619I$	$-4.52240 + 12.89090I$	$0$
$u = -1.27707 - 1.05093I$ $a = 0.007884 + 0.895008I$ $b = -1.03793 + 1.09619I$	$-4.52240 - 12.89090I$	$0$
$u = -1.31921 + 1.00977I$ $a = -0.147434 - 0.639660I$ $b = -0.830673 - 0.610795I$	$2.01965 + 8.20954I$	$0$
$u = -1.31921 - 1.00977I$ $a = -0.147434 + 0.639660I$ $b = -0.830673 + 0.610795I$	$2.01965 - 8.20954I$	$0$
$u = 1.20961 + 1.16835I$ $a = 0.274011 + 0.368219I$ $b = -0.169671 + 0.939571I$	$-4.20337 - 2.40352I$	$0$

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.20961 - 1.16835I$		
$a = 0.274011 - 0.368219I$	$-4.20337 + 2.40352I$	0
$b = -0.169671 - 0.939571I$		
$u = 1.41619 + 0.92797I$		
$a = -0.312933 + 0.677154I$	$-2.52443 - 12.71120I$	0
$b = -0.939297 + 0.623570I$		
$u = 1.41619 - 0.92797I$		
$a = -0.312933 - 0.677154I$	$-2.52443 + 12.71120I$	0
$b = -0.939297 - 0.623570I$		
$u = 1.25220 + 1.14355I$		
$a = 0.016359 - 0.835331I$	$-0.51360 - 4.17016I$	0
$b = 0.478208 - 0.824121I$		
$u = 1.25220 - 1.14355I$		
$a = 0.016359 + 0.835331I$	$-0.51360 + 4.17016I$	0
$b = 0.478208 + 0.824121I$		
$u = -1.17873 + 1.29748I$		
$a = 0.214421 - 0.406084I$	$-8.69903 + 8.71433I$	0
$b = -0.056110 - 0.988114I$		
$u = -1.17873 - 1.29748I$		
$a = 0.214421 + 0.406084I$	$-8.69903 - 8.71433I$	0
$b = -0.056110 + 0.988114I$		
$u = -1.40344 + 1.10714I$		
$a = 0.304151 - 0.475792I$	$-9.35234 - 3.49399I$	0
$b = -0.078916 - 0.805177I$		
$u = -1.40344 - 1.10714I$		
$a = 0.304151 + 0.475792I$	$-9.35234 + 3.49399I$	0
$b = -0.078916 + 0.805177I$		
$u = 1.42137 + 1.09005I$		
$a = -0.133436 - 0.323705I$	$-2.17560 - 0.19236I$	0
$b = -0.091125 - 0.804362I$		

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.42137 - 1.09005I$ $a = -0.133436 + 0.323705I$ $b = -0.091125 + 0.804362I$	$-2.17560 + 0.19236I$	0
$u = -1.26783 + 1.26617I$ $a = 0.338133 - 0.196943I$ $b = 0.271329 - 0.771699I$	$-2.28874 - 7.28712I$	0
$u = -1.26783 - 1.26617I$ $a = 0.338133 + 0.196943I$ $b = 0.271329 + 0.771699I$	$-2.28874 + 7.28712I$	0
$u = 0.089025 + 0.186720I$ $a = 0.38804 + 8.07352I$ $b = -0.630029 + 0.546201I$	$-2.81537 - 7.38828I$	$-0.49583 + 8.88310I$
$u = 0.089025 - 0.186720I$ $a = 0.38804 - 8.07352I$ $b = -0.630029 - 0.546201I$	$-2.81537 + 7.38828I$	$-0.49583 - 8.88310I$
$u = 0.189077 + 0.004040I$ $a = 5.20169 + 4.95565I$ $b = -0.872048 - 0.186724I$	$0.02024 + 2.52473I$	$1.17278 - 1.87917I$
$u = 0.189077 - 0.004040I$ $a = 5.20169 - 4.95565I$ $b = -0.872048 + 0.186724I$	$0.02024 - 2.52473I$	$1.17278 + 1.87917I$
$u = 0.0828242 + 0.0110934I$ $a = 10.99530 - 3.78336I$ $b = -0.044189 + 1.154030I$	$-4.35510 - 0.00211I$	$-8.47971 - 0.31988I$
$u = 0.0828242 - 0.0110934I$ $a = 10.99530 + 3.78336I$ $b = -0.044189 - 1.154030I$	$-4.35510 + 0.00211I$	$-8.47971 + 0.31988I$
$u = 1.26940 + 1.45138I$ $a = -0.395386 - 0.207203I$ $b = -0.284779 - 0.546310I$	$-7.60576 + 3.48701I$	0

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.26940 - 1.45138I$ $a = -0.395386 + 0.207203I$ $b = -0.284779 + 0.546310I$	$-7.60576 - 3.48701I$	0
$u = 1.31062 + 1.48683I$ $a = 0.335878 + 0.179732I$ $b = 0.325691 + 0.686171I$	$-7.3210 + 12.8460I$	0
$u = 1.31062 - 1.48683I$ $a = 0.335878 - 0.179732I$ $b = 0.325691 - 0.686171I$	$-7.3210 - 12.8460I$	0
$u = -0.94716 + 1.92859I$ $a = -0.200746 + 0.031181I$ $b = -0.197589 + 0.461371I$	$-2.70283 - 2.72163I$	0
$u = -0.94716 - 1.92859I$ $a = -0.200746 - 0.031181I$ $b = -0.197589 - 0.461371I$	$-2.70283 + 2.72163I$	0
$u = -2.97699 + 0.71796I$ $a = 0.110095 + 0.109860I$ $b = 0.364276 + 0.338586I$	$-3.37854 - 2.44402I$	0
$u = -2.97699 - 0.71796I$ $a = 0.110095 - 0.109860I$ $b = 0.364276 - 0.338586I$	$-3.37854 + 2.44402I$	0
$u = -3.08605 + 1.91338I$ $a = 0.0302096 + 0.0602211I$ $b = -0.238205 + 0.059134I$	$-3.50958 + 2.17774I$	0
$u = -3.08605 - 1.91338I$ $a = 0.0302096 - 0.0602211I$ $b = -0.238205 - 0.059134I$	$-3.50958 - 2.17774I$	0



$$\text{II. } I_2^u = \langle 6.57 \times 10^{107} u^{47} + 2.95 \times 10^{108} u^{46} + \dots + 2.62 \times 10^{107} b + 7.34 \times 10^{107}, 2.24 \times 10^{108} u^{47} + 1.02 \times 10^{109} u^{46} + \dots + 2.62 \times 10^{107} a + 5.17 \times 10^{108}, u^{48} + 5u^{47} + \dots + u + 1 \rangle$$

(i) Arc colorings

$$\begin{aligned} a_6 &= \begin{pmatrix} 1 \\ 0 \end{pmatrix} \\ a_{10} &= \begin{pmatrix} 0 \\ u \end{pmatrix} \\ a_3 &= \begin{pmatrix} -8.55496u^{47} - 38.8742u^{46} + \dots + 18.9021u - 19.7473 \\ -2.51068u^{47} - 11.2678u^{46} + \dots - 1.71292u - 2.80504 \end{pmatrix} \\ a_7 &= \begin{pmatrix} 1 \\ u^2 \end{pmatrix} \\ a_4 &= \begin{pmatrix} -8.01225u^{47} - 36.6074u^{46} + \dots + 25.2694u - 20.8429 \\ -2.05965u^{47} - 9.25889u^{46} + \dots - 1.80891u - 2.35832 \end{pmatrix} \\ a_{11} &= \begin{pmatrix} -4.94288u^{47} - 21.8766u^{46} + \dots + 9.37981u - 7.26149 \\ 4.96483u^{47} + 22.7433u^{46} + \dots - 14.7101u + 10.7515 \end{pmatrix} \\ a_2 &= \begin{pmatrix} -6.04428u^{47} - 27.6064u^{46} + \dots + 20.6150u - 16.9423 \\ -2.51068u^{47} - 11.2678u^{46} + \dots - 1.71292u - 2.80504 \end{pmatrix} \\ a_1 &= \begin{pmatrix} 11.3622u^{47} + 51.7182u^{46} + \dots - 26.5973u + 23.3987 \\ -5.66757u^{47} - 25.9601u^{46} + \dots + 13.9293u - 11.6611 \end{pmatrix} \\ a_5 &= \begin{pmatrix} 8.04141u^{47} + 37.0293u^{46} + \dots - 19.3845u + 17.3790 \\ 2.60719u^{47} + 11.5090u^{46} + \dots - 4.18449u + 4.62988 \end{pmatrix} \\ a_9 &= \begin{pmatrix} -13.2513u^{47} - 60.2886u^{46} + \dots + 38.3301u - 26.3350 \\ 3.34357u^{47} + 15.6687u^{46} + \dots - 12.2401u + 8.32195 \end{pmatrix} \\ a_{12} &= \begin{pmatrix} 2.33481u^{47} + 13.3744u^{46} + \dots - 39.2881u + 10.9979 \\ 7.35824u^{47} + 32.4555u^{46} + \dots - 10.3499u + 14.2366 \end{pmatrix} \\ a_8 &= \begin{pmatrix} -19.7887u^{47} - 91.3587u^{46} + \dots + 63.0740u - 44.5314 \\ 3.74782u^{47} + 17.8545u^{46} + \dots - 15.1475u + 9.58291 \end{pmatrix} \end{aligned}$$

(ii) Obstruction class = 1

$$\text{(iii) Cusp Shapes} = 10.0581u^{47} + 46.4043u^{46} + \dots - 19.1110u + 8.00027$$

(iv)  $u$ -Polynomials at the component

Crossings	u-Polynomials at each crossing
$c_1$	$u^{48} - 9u^{47} + \dots - 148u + 13$
$c_2$	$u^{48} + u^{47} + \dots + 9u + 1$
$c_3$	$u^{48} - 13u^{46} + \dots - 839u + 167$
$c_4$	$u^{48} - 2u^{47} + \dots - 3u + 1$
$c_5$	$u^{48} + 6u^{47} + \dots - 691u + 107$
$c_6$	$u^{48} + 5u^{47} + \dots + u + 1$
$c_7$	$u^{48} + 22u^{46} + \dots - 2u + 1$
$c_8$	$u^{48} - 3u^{47} + \dots - 3u + 1$
$c_9$	$u^{48} + 9u^{46} + \dots + 9u + 19$
$c_{10}$	$u^{48} - u^{47} + \dots - 11u + 1$
$c_{11}$	$u^{48} + 11u^{47} + \dots - 9u + 1$
$c_{12}$	$u^{48} + 22u^{46} + \dots + 2u + 1$



(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
$c_1$	$y^{48} - 7y^{47} + \dots - 1182y + 169$
$c_2$	$y^{48} + 7y^{47} + \dots - 5y + 1$
$c_3$	$y^{48} - 26y^{47} + \dots - 375265y + 27889$
$c_4$	$y^{48} + 66y^{46} + \dots - 11y + 1$
$c_5$	$y^{48} - 14y^{47} + \dots + 63511y + 11449$
$c_6$	$y^{48} - 39y^{47} + \dots - 19y + 1$
$c_7, c_{12}$	$y^{48} + 44y^{47} + \dots + 8y + 1$
$c_8$	$y^{48} - 13y^{47} + \dots + 9y + 1$
$c_9$	$y^{48} + 18y^{47} + \dots + 4137y + 361$
$c_{10}$	$y^{48} + 31y^{47} + \dots + 7y + 1$
$c_{11}$	$y^{48} + 17y^{47} + \dots - 31y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.323313 + 0.989973I$		
$a = 1.52900 + 0.86471I$	$0.65328 - 4.23580I$	$-2.72261 + 6.75924I$
$b = -0.988508 + 0.236721I$		
$u = 0.323313 - 0.989973I$		
$a = 1.52900 - 0.86471I$	$0.65328 + 4.23580I$	$-2.72261 - 6.75924I$
$b = -0.988508 - 0.236721I$		
$u = -0.942244 + 0.027714I$		
$a = -0.41555 + 1.61877I$	$-7.10514 + 5.05893I$	$-13.2952 - 5.2504I$
$b = 0.196945 + 0.984597I$		
$u = -0.942244 - 0.027714I$		
$a = -0.41555 - 1.61877I$	$-7.10514 - 5.05893I$	$-13.2952 + 5.2504I$
$b = 0.196945 - 0.984597I$		
$u = 0.698711 + 0.581088I$		
$a = -0.19127 - 1.42820I$	$0.89104 - 4.37097I$	$-8.0911 + 15.8729I$
$b = 0.95270 - 1.13711I$		
$u = 0.698711 - 0.581088I$		
$a = -0.19127 + 1.42820I$	$0.89104 + 4.37097I$	$-8.0911 - 15.8729I$
$b = 0.95270 + 1.13711I$		
$u = 0.284428 + 0.839495I$		
$a = -1.59869 - 0.85484I$	$1.85426 - 3.44721I$	$6.49243 + 5.23215I$
$b = 0.832646 - 0.392842I$		
$u = 0.284428 - 0.839495I$		
$a = -1.59869 + 0.85484I$	$1.85426 + 3.44721I$	$6.49243 - 5.23215I$
$b = 0.832646 + 0.392842I$		
$u = -0.458317 + 0.743648I$		
$a = -0.227011 + 0.436529I$	$1.73270 + 3.60708I$	$0.56592 - 4.52918I$
$b = 1.219200 + 0.659650I$		
$u = -0.458317 - 0.743648I$		
$a = -0.227011 - 0.436529I$	$1.73270 - 3.60708I$	$0.56592 + 4.52918I$
$b = 1.219200 - 0.659650I$		

Solutions to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.836304 + 0.229387I$ $a = -0.587111 - 0.776985I$ $b = -0.94586 - 1.31735I$	$-6.44600 + 1.35927I$	$-9.28290 + 7.79677I$
$u = 0.836304 - 0.229387I$ $a = -0.587111 + 0.776985I$ $b = -0.94586 + 1.31735I$	$-6.44600 - 1.35927I$	$-9.28290 - 7.79677I$
$u = 0.381585 + 0.750870I$ $a = -1.067870 - 0.404368I$ $b = -0.676066 + 0.093119I$	$-7.07800 + 2.68697I$	$-9.85312 - 2.76114I$
$u = 0.381585 - 0.750870I$ $a = -1.067870 + 0.404368I$ $b = -0.676066 - 0.093119I$	$-7.07800 - 2.68697I$	$-9.85312 + 2.76114I$
$u = 0.371126 + 0.676560I$ $a = -0.907521 - 0.141228I$ $b = -0.090093 - 0.862031I$	$-2.88177 - 2.17171I$	$-7.98882 + 3.07416I$
$u = 0.371126 - 0.676560I$ $a = -0.907521 + 0.141228I$ $b = -0.090093 + 0.862031I$	$-2.88177 + 2.17171I$	$-7.98882 - 3.07416I$
$u = -0.613647 + 0.419320I$ $a = -0.20148 + 2.40562I$ $b = 0.300703 + 1.282690I$	$-5.19004 + 6.90608I$	$1.86956 - 11.58644I$
$u = -0.613647 - 0.419320I$ $a = -0.20148 - 2.40562I$ $b = 0.300703 - 1.282690I$	$-5.19004 - 6.90608I$	$1.86956 + 11.58644I$
$u = 0.675440 + 1.077080I$ $a = -0.179436 - 0.592000I$ $b = 0.725986 - 0.647457I$	$-0.27210 - 4.10719I$	0
$u = 0.675440 - 1.077080I$ $a = -0.179436 + 0.592000I$ $b = 0.725986 + 0.647457I$	$-0.27210 + 4.10719I$	0

Solutions to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.043250 + 0.781150I$		
$a = 0.509607 + 0.927605I$	$-2.05360 + 2.11142I$	0
$b = 1.018740 + 0.860179I$		
$u = -1.043250 - 0.781150I$		
$a = 0.509607 - 0.927605I$	$-2.05360 - 2.11142I$	0
$b = 1.018740 - 0.860179I$		
$u = -1.284530 + 0.239480I$		
$a = -0.399986 - 1.204350I$	$-4.21558 + 6.94790I$	0
$b = -0.435109 - 0.561417I$		
$u = -1.284530 - 0.239480I$		
$a = -0.399986 + 1.204350I$	$-4.21558 - 6.94790I$	0
$b = -0.435109 + 0.561417I$		
$u = -0.669762 + 0.093142I$		
$a = 0.163525 + 0.752714I$	$-4.81680 + 4.38217I$	$-18.6364 - 7.3757I$
$b = -1.48640 + 1.10968I$		
$u = -0.669762 - 0.093142I$		
$a = 0.163525 - 0.752714I$	$-4.81680 - 4.38217I$	$-18.6364 + 7.3757I$
$b = -1.48640 - 1.10968I$		
$u = 1.302450 + 0.398915I$		
$a = 0.087086 - 0.479726I$	$-1.54665 - 1.19900I$	0
$b = -0.278274 - 0.910565I$		
$u = 1.302450 - 0.398915I$		
$a = 0.087086 + 0.479726I$	$-1.54665 + 1.19900I$	0
$b = -0.278274 + 0.910565I$		
$u = 0.921996 + 1.030680I$		
$a = 0.064361 - 0.951015I$	$-0.33650 - 3.55680I$	0
$b = 0.516939 - 0.902340I$		
$u = 0.921996 - 1.030680I$		
$a = 0.064361 + 0.951015I$	$-0.33650 + 3.55680I$	0
$b = 0.516939 + 0.902340I$		



Solutions to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.402196 + 0.391189I$		
$a = 0.53179 + 2.69024I$	$-6.32714 + 11.48380I$	$-3.80151 - 6.75688I$
$b = 0.313342 - 0.390046I$		
$u = 0.402196 - 0.391189I$		
$a = 0.53179 - 2.69024I$	$-6.32714 - 11.48380I$	$-3.80151 + 6.75688I$
$b = 0.313342 + 0.390046I$		
$u = 1.03238 + 1.01701I$		
$a = 0.295513 + 0.998318I$	$-5.76113 - 7.41097I$	0
$b = -1.18186 + 1.17458I$		
$u = 1.03238 - 1.01701I$		
$a = 0.295513 - 0.998318I$	$-5.76113 + 7.41097I$	0
$b = -1.18186 - 1.17458I$		
$u = -0.458599 + 0.197952I$		
$a = -1.72505 - 1.33299I$	$-0.85759 - 6.28048I$	$-3.35947 + 5.36145I$
$b = 0.145824 + 0.735250I$		
$u = -0.458599 - 0.197952I$		
$a = -1.72505 + 1.33299I$	$-0.85759 + 6.28048I$	$-3.35947 - 5.36145I$
$b = 0.145824 - 0.735250I$		
$u = -0.456476 + 0.048563I$		
$a = -0.55231 - 1.94899I$	$-6.60557 - 3.78084I$	$-10.02784 + 2.92978I$
$b = 1.330640 - 0.183402I$		
$u = -0.456476 - 0.048563I$		
$a = -0.55231 + 1.94899I$	$-6.60557 + 3.78084I$	$-10.02784 - 2.92978I$
$b = 1.330640 + 0.183402I$		
$u = 1.22043 + 0.95923I$		
$a = 0.088758 + 1.108040I$	$-1.34081 - 5.21735I$	0
$b = -0.540184 + 0.852891I$		
$u = 1.22043 - 0.95923I$		
$a = 0.088758 - 1.108040I$	$-1.34081 + 5.21735I$	0
$b = -0.540184 - 0.852891I$		

Solutions to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.24489 + 0.96823I$ $a = -0.097442 - 0.925954I$ $b = -0.99555 - 1.13135I$	$-5.80176 + 12.59480I$	0
$u = -1.24489 - 0.96823I$ $a = -0.097442 + 0.925954I$ $b = -0.99555 + 1.13135I$	$-5.80176 - 12.59480I$	0
$u = 0.242257 + 0.240946I$ $a = -1.40833 + 0.25957I$ $b = 0.21891 - 1.54026I$	$-2.72183 - 2.30866I$	$-9.26131 + 2.47203I$
$u = 0.242257 - 0.240946I$ $a = -1.40833 - 0.25957I$ $b = 0.21891 + 1.54026I$	$-2.72183 + 2.30866I$	$-9.26131 - 2.47203I$
$u = 0.33508 + 1.79441I$ $a = -0.278877 + 0.012260I$ $b = 0.070595 - 0.424345I$	$-2.70806 - 2.30035I$	0
$u = 0.33508 - 1.79441I$ $a = -0.278877 - 0.012260I$ $b = 0.070595 + 0.424345I$	$-2.70806 + 2.30035I$	0
$u = -4.35598 + 0.63492I$ $a = 0.0682886 + 0.0116737I$ $b = 0.274736 - 0.068638I$	$-3.44230 + 2.20683I$	0
$u = -4.35598 - 0.63492I$ $a = 0.0682886 - 0.0116737I$ $b = 0.274736 + 0.068638I$	$-3.44230 - 2.20683I$	0

### III. u-Polynomials

Crossings	u-Polynomials at each crossing
$c_1$	$(u^{48} - 9u^{47} + \dots - 148u + 13)$ $\cdot (u^{199} + 12u^{198} + \dots - 55449899u + 2028184)$
$c_2$	$(u^{48} + u^{47} + \dots + 9u + 1)(u^{199} - 2u^{198} + \dots + 47u + 1)$
$c_3$	$(u^{48} - 13u^{46} + \dots - 839u + 167)$ $\cdot (u^{199} + u^{198} + \dots + 1717896531745u + 8566907748177)$
$c_4$	$(u^{48} - 2u^{47} + \dots - 3u + 1)(u^{199} - u^{198} + \dots - 51u + 31)$
$c_5$	$(u^{48} + 6u^{47} + \dots - 691u + 107)$ $\cdot (u^{199} - 9u^{198} + \dots + 50548405469343u + 2906312135033)$
$c_6$	$(u^{48} + 5u^{47} + \dots + u + 1)(u^{199} - 4u^{198} + \dots + 109u + 4)$
$c_7$	$(u^{48} + 22u^{46} + \dots - 2u + 1)(u^{199} - u^{198} + \dots + 106056u + 2767)$
$c_8$	$(u^{48} - 3u^{47} + \dots - 3u + 1)$ $\cdot (u^{199} - 2u^{198} + \dots + 45150805u + 2117682)$
$c_9$	$(u^{48} + 9u^{46} + \dots + 9u + 19)$ $\cdot (u^{199} - u^{198} + \dots - 1706345869u + 1142423049)$
$c_{10}$	$(u^{48} - u^{47} + \dots - 11u + 1)(u^{199} + 4u^{198} + \dots + 656177u + 80681)$
$c_{11}$	$(u^{48} + 11u^{47} + \dots - 9u + 1)(u^{199} + 6u^{198} + \dots - 37u + 1)$
$c_{12}$	$(u^{48} + 22u^{46} + \dots + 2u + 1)(u^{199} - u^{198} + \dots + 106056u + 2767)$

#### IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
$c_1$	$(y^{48} - 7y^{47} + \dots - 1182y + 169)$ $\cdot (y^{199} - 40y^{198} + \dots + 781027898879017y - 4113530337856)$
$c_2$	$(y^{48} + 7y^{47} + \dots - 5y + 1)(y^{199} + 26y^{198} + \dots + 177y - 1)$
$c_3$	$(y^{48} - 26y^{47} + \dots - 375265y + 27889)$ $\cdot (y^{199} - 111y^{198} + \dots + 4.99 \times 10^{27}y - 7.34 \times 10^{25})$
$c_4$	$(y^{48} + 66y^{46} + \dots - 11y + 1)(y^{199} - 13y^{198} + \dots - 53013y - 961)$
$c_5$	$(y^{48} - 14y^{47} + \dots + 63511y + 11449)$ $\cdot (y^{199} + 65y^{198} + \dots - 5.44 \times 10^{26}y - 8.45 \times 10^{24})$
$c_6$	$(y^{48} - 39y^{47} + \dots - 19y + 1)(y^{199} - 60y^{198} + \dots + 6265y - 16)$
$c_7, c_{12}$	$(y^{48} + 44y^{47} + \dots + 8y + 1)$ $\cdot (y^{199} + 159y^{198} + \dots + 230721528y - 7656289)$
$c_8$	$(y^{48} - 13y^{47} + \dots + 9y + 1)$ $\cdot (y^{199} - 58y^{198} + \dots + 4291591582916281y - 4484577053124)$
$c_9$	$(y^{48} + 18y^{47} + \dots + 4137y + 361)$ $\cdot (y^{199} - 31y^{198} + \dots + 8.52 \times 10^{19}y - 1.31 \times 10^{18})$
$c_{10}$	$(y^{48} + 31y^{47} + \dots + 7y + 1)$ $\cdot (y^{199} + 62y^{198} + \dots - 432375389059y - 6509423761)$
$c_{11}$	$(y^{48} + 17y^{47} + \dots - 31y + 1)(y^{199} + 16y^{198} + \dots - 385y - 1)$