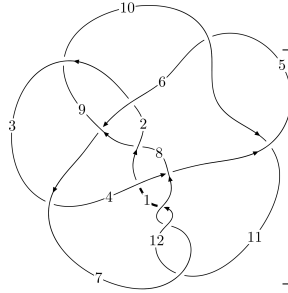
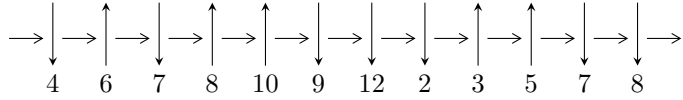


12n<sub>0714</sub> (K12n<sub>0714</sub>)



A knot diagram<sup>1</sup>

**Linearized knot diagram**



**Solving Sequence**

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

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

$$I_1^u = \langle -4.87692 \times 10^{258} u^{86} + 7.24779 \times 10^{258} u^{85} + \dots + 2.73086 \times 10^{260} b + 1.29464 \times 10^{261}, \\ -3.32833 \times 10^{258} u^{86} + 1.03709 \times 10^{259} u^{85} + \dots + 2.73086 \times 10^{260} a + 2.37253 \times 10^{261}, \\ u^{87} - u^{86} + \dots - 144u + 67 \rangle$$

$$I_2^u = \langle -32933031018u^{21} + 1113442853u^{20} + \dots + 9952263913b - 142566726414, \\ -32258549399u^{21} + 13152988225u^{20} + \dots + 9952263913a + 5817215377, \\ u^{22} - 8u^{20} + \dots + 7u + 1 \rangle$$

\* 2 irreducible components of  $\dim_{\mathbb{C}} = 0$ , with total 109 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.

$$\mathbf{I. } I_1^u = \langle -4.88 \times 10^{258} u^{86} + 7.25 \times 10^{258} u^{85} + \dots + 2.73 \times 10^{260} b + 1.29 \times 10^{261}, -3.33 \times 10^{258} u^{86} + 1.04 \times 10^{259} u^{85} + \dots + 2.73 \times 10^{260} a + 2.37 \times 10^{261}, u^{87} - u^{86} + \dots - 144u + 67 \rangle$$

(i) Arc colorings

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

$$a_{12} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_5 = \begin{pmatrix} 0.0121878u^{86} - 0.0379766u^{85} + \dots + 3.72518u - 8.68785 \\ 0.0178585u^{86} - 0.0265403u^{85} + \dots - 4.57034u - 4.74075 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 0.0121878u^{86} - 0.0379766u^{85} + \dots + 3.72518u - 8.68785 \\ -0.0308890u^{86} - 0.0224193u^{85} + \dots - 9.10052u - 3.01290 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.0204608u^{86} - 0.00597308u^{85} + \dots - 3.14988u - 2.22578 \\ 0.0389753u^{86} + 0.00472462u^{85} + \dots + 15.9789u + 3.97260 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.00754574u^{86} + 0.00780789u^{85} + \dots - 1.85076u - 0.0940809 \\ 0.0253749u^{86} + 0.0235466u^{85} + \dots + 15.0954u + 6.13843 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u \\ u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 0.0132086u^{86} - 0.0308291u^{85} + \dots + 2.64852u - 6.84404 \\ -0.0298682u^{86} - 0.0152718u^{85} + \dots - 10.1772u - 1.16910 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.0197591u^{86} + 0.0413246u^{85} + \dots + 7.85051u + 9.58494 \\ 0.0940033u^{86} - 0.0539560u^{85} + \dots + 28.9246u - 17.1001 \end{pmatrix}$$

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

$$a_{10} = \begin{pmatrix} 0.222309u^{86} - 0.106889u^{85} + \dots + 14.9456u - 23.4599 \\ 0.00662288u^{86} + 0.0179377u^{85} + \dots + 12.6317u + 6.50996 \end{pmatrix}$$

(ii) Obstruction class = -1

(iii) Cusp Shapes =  $0.0570476u^{86} + 0.180502u^{85} + \dots + 46.1820u + 3.78747$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
$c_1$	$u^{87} + 3u^{86} + \dots + 3937u + 511$
$c_2$	$u^{87} - 5u^{86} + \dots - 2768u - 437$
$c_3$	$u^{87} - 3u^{86} + \dots - 4842u - 1687$
$c_4$	$u^{87} - u^{86} + \dots + 5250u + 811$
$c_5, c_{10}$	$u^{87} - u^{86} + \dots + 833881u + 81631$
$c_6$	$u^{87} - u^{86} + \dots + 46u - 7$
$c_7, c_{11}, c_{12}$	$u^{87} - u^{86} + \dots - 144u + 67$
$c_8$	$u^{87} - 2u^{86} + \dots - 5106u + 38332$
$c_9$	$u^{87} - 2u^{86} + \dots + 58u + 7$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
$c_1$	$y^{87} + 67y^{86} + \dots - 8202255y - 261121$
$c_2$	$y^{87} + 31y^{86} + \dots - 9342720y - 190969$
$c_3$	$y^{87} - y^{86} + \dots + 410351666y - 2845969$
$c_4$	$y^{87} - 61y^{86} + \dots + 13379732y - 657721$
$c_5, c_{10}$	$y^{87} + 71y^{86} + \dots - 125580302491y - 6663620161$
$c_6$	$y^{87} + 5y^{86} + \dots + 1556y - 49$
$c_7, c_{11}, c_{12}$	$y^{87} - 29y^{86} + \dots + 80634y - 4489$
$c_8$	$y^{87} - 54y^{86} + \dots + 32610801148y - 1469342224$
$c_9$	$y^{87} + 6y^{86} + \dots - 724y - 49$

(vi) Complex Volumes and Cusp Shapes

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.826900 + 0.601872I$ $a = 0.54423 - 1.32762I$ $b = -0.56972 - 1.57384I$	$0.42909 - 5.48515I$	0
$u = 0.826900 - 0.601872I$ $a = 0.54423 + 1.32762I$ $b = -0.56972 + 1.57384I$	$0.42909 + 5.48515I$	0
$u = 0.697175 + 0.780149I$ $a = -0.132182 + 0.977962I$ $b = 0.66470 + 1.50104I$	$0.625492 + 0.055899I$	0
$u = 0.697175 - 0.780149I$ $a = -0.132182 - 0.977962I$ $b = 0.66470 - 1.50104I$	$0.625492 - 0.055899I$	0
$u = -0.463012 + 0.940926I$ $a = 0.10772 + 1.55292I$ $b = -0.372458 + 1.213450I$	$2.67314 + 3.04460I$	0
$u = -0.463012 - 0.940926I$ $a = 0.10772 - 1.55292I$ $b = -0.372458 - 1.213450I$	$2.67314 - 3.04460I$	0
$u = 0.910023 + 0.239643I$ $a = 0.142324 + 0.218288I$ $b = -1.405030 - 0.028502I$	$-4.78233 - 1.85900I$	$-14.9541 + 0.I$
$u = 0.910023 - 0.239643I$ $a = 0.142324 - 0.218288I$ $b = -1.405030 + 0.028502I$	$-4.78233 + 1.85900I$	$-14.9541 + 0.I$
$u = -0.831969 + 0.431052I$ $a = -0.220619 + 0.362466I$ $b = -1.40851 - 0.56135I$	$-4.96402 + 0.26729I$	$-13.27396 + 0.I$
$u = -0.831969 - 0.431052I$ $a = -0.220619 - 0.362466I$ $b = -1.40851 + 0.56135I$	$-4.96402 - 0.26729I$	$-13.27396 + 0.I$

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.920887 + 0.165274I$ $a = 0.32672 - 1.53222I$ $b = 0.142597 - 1.318170I$	$-7.30377 - 5.23114I$	$-9.44716 + 0.I$
$u = -0.920887 - 0.165274I$ $a = 0.32672 + 1.53222I$ $b = 0.142597 + 1.318170I$	$-7.30377 + 5.23114I$	$-9.44716 + 0.I$
$u = -0.562017 + 0.910670I$ $a = -0.503431 - 1.320090I$ $b = 0.09211 - 1.55852I$	$3.88938 - 3.53566I$	0
$u = -0.562017 - 0.910670I$ $a = -0.503431 + 1.320090I$ $b = 0.09211 + 1.55852I$	$3.88938 + 3.53566I$	0
$u = 0.433575 + 0.986609I$ $a = -0.800548 + 1.077630I$ $b = -0.052438 + 1.117500I$	$2.61513 + 1.86499I$	0
$u = 0.433575 - 0.986609I$ $a = -0.800548 - 1.077630I$ $b = -0.052438 - 1.117500I$	$2.61513 - 1.86499I$	0
$u = -0.668811 + 0.854317I$ $a = -0.853243 - 0.834595I$ $b = -0.451199 - 1.287840I$	$-0.85027 - 2.54351I$	0
$u = -0.668811 - 0.854317I$ $a = -0.853243 + 0.834595I$ $b = -0.451199 + 1.287840I$	$-0.85027 + 2.54351I$	0
$u = -0.718679 + 0.564160I$ $a = 0.591608 + 1.158870I$ $b = -1.329980 + 0.300668I$	$-4.48658 + 3.70741I$	$-9.89156 - 7.12776I$
$u = -0.718679 - 0.564160I$ $a = 0.591608 - 1.158870I$ $b = -1.329980 - 0.300668I$	$-4.48658 - 3.70741I$	$-9.89156 + 7.12776I$

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.789666 + 0.455175I$ $a = 0.206483 + 0.013716I$ $b = 1.70611 - 0.43647I$	$-5.91935 - 9.21762I$	$-7.80706 + 9.75144I$
$u = 0.789666 - 0.455175I$ $a = 0.206483 - 0.013716I$ $b = 1.70611 + 0.43647I$	$-5.91935 + 9.21762I$	$-7.80706 - 9.75144I$
$u = -1.13014$ $a = -0.478350$ $b = -0.743354$	$-3.08331$	$0$
$u = -0.779955 + 0.377150I$ $a = -1.61943 - 0.84559I$ $b = 1.042790 - 0.380620I$	$-4.78974 + 2.80082I$	$-12.7389 - 6.7012I$
$u = -0.779955 - 0.377150I$ $a = -1.61943 + 0.84559I$ $b = 1.042790 + 0.380620I$	$-4.78974 - 2.80082I$	$-12.7389 + 6.7012I$
$u = -0.666824 + 0.496437I$ $a = -0.949620 + 0.543858I$ $b = 0.248068 + 0.412413I$	$-1.63086 + 1.85240I$	$0. - 4.46928I$
$u = -0.666824 - 0.496437I$ $a = -0.949620 - 0.543858I$ $b = 0.248068 - 0.412413I$	$-1.63086 - 1.85240I$	$0. + 4.46928I$
$u = 1.171080 + 0.061511I$ $a = -0.322885 - 0.873024I$ $b = -0.573003 + 0.574424I$	$-7.26129 + 1.30453I$	$0$
$u = 1.171080 - 0.061511I$ $a = -0.322885 + 0.873024I$ $b = -0.573003 - 0.574424I$	$-7.26129 - 1.30453I$	$0$
$u = 1.105580 + 0.500970I$ $a = -1.010930 + 0.378023I$ $b = 0.179303 + 1.341920I$	$-0.435109 + 1.276900I$	$0$

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.105580 - 0.500970I$ $a = -1.010930 - 0.378023I$ $b = 0.179303 - 1.341920I$	$-0.435109 - 1.276900I$	0
$u = 0.784472 + 0.035579I$ $a = -0.25017 - 2.35287I$ $b = -0.287280 + 0.096315I$	$-6.69981 + 1.00306I$	$-13.25635 + 3.01209I$
$u = 0.784472 - 0.035579I$ $a = -0.25017 + 2.35287I$ $b = -0.287280 - 0.096315I$	$-6.69981 - 1.00306I$	$-13.25635 - 3.01209I$
$u = 0.660908 + 0.370414I$ $a = -1.65412 + 1.13657I$ $b = 1.115980 - 0.084655I$	$-5.55071 + 5.89913I$	$-8.87687 - 1.92618I$
$u = 0.660908 - 0.370414I$ $a = -1.65412 - 1.13657I$ $b = 1.115980 + 0.084655I$	$-5.55071 - 5.89913I$	$-8.87687 + 1.92618I$
$u = -0.879473 + 0.892598I$ $a = 0.111795 + 1.198310I$ $b = -0.40197 + 1.35768I$	$1.39386 + 4.17528I$	0
$u = -0.879473 - 0.892598I$ $a = 0.111795 - 1.198310I$ $b = -0.40197 - 1.35768I$	$1.39386 - 4.17528I$	0
$u = -0.682765 + 1.069690I$ $a = 0.525669 + 0.650107I$ $b = 0.261339 + 1.297890I$	$-0.98150 - 1.91692I$	0
$u = -0.682765 - 1.069690I$ $a = 0.525669 - 0.650107I$ $b = 0.261339 - 1.297890I$	$-0.98150 + 1.91692I$	0
$u = 0.887280 + 0.919265I$ $a = -0.653503 + 1.063640I$ $b = 0.449194 + 1.328490I$	$5.84192 - 2.12639I$	0



Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.887280 - 0.919265I$ $a = -0.653503 - 1.063640I$ $b = 0.449194 - 1.328490I$	$5.84192 + 2.12639I$	0
$u = 0.510264 + 0.489653I$ $a = 1.017580 + 0.966046I$ $b = -0.094246 - 0.287204I$	$-0.25603 - 4.10697I$	$-3.49910 + 8.93719I$
$u = 0.510264 - 0.489653I$ $a = 1.017580 - 0.966046I$ $b = -0.094246 + 0.287204I$	$-0.25603 + 4.10697I$	$-3.49910 - 8.93719I$
$u = -1.061880 + 0.759062I$ $a = 0.67218 + 1.27261I$ $b = -0.88368 + 1.45387I$	$-2.02209 + 8.59314I$	0
$u = -1.061880 - 0.759062I$ $a = 0.67218 - 1.27261I$ $b = -0.88368 - 1.45387I$	$-2.02209 - 8.59314I$	0
$u = 0.627124 + 0.296393I$ $a = -0.66346 - 2.28848I$ $b = -0.450291 - 0.995511I$	$-5.77440 - 2.55022I$	$-5.68948 + 10.03956I$
$u = 0.627124 - 0.296393I$ $a = -0.66346 + 2.28848I$ $b = -0.450291 + 0.995511I$	$-5.77440 + 2.55022I$	$-5.68948 - 10.03956I$
$u = 0.979254 + 0.889150I$ $a = 0.584027 - 0.906985I$ $b = -0.09677 - 1.45250I$	$5.55872 - 4.53544I$	0
$u = 0.979254 - 0.889150I$ $a = 0.584027 + 0.906985I$ $b = -0.09677 + 1.45250I$	$5.55872 + 4.53544I$	0
$u = -0.948317 + 0.923652I$ $a = -0.279312 - 1.117590I$ $b = 0.69137 - 1.61320I$	$2.59211 + 10.50510I$	0

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.948317 - 0.923652I$ $a = -0.279312 + 1.117590I$ $b = 0.69137 + 1.61320I$	$2.59211 - 10.50510I$	0
$u = -0.952539 + 0.929240I$ $a = -0.918601 - 0.679231I$ $b = 0.160027 - 0.907619I$	$1.16569 + 2.51429I$	0
$u = -0.952539 - 0.929240I$ $a = -0.918601 + 0.679231I$ $b = 0.160027 + 0.907619I$	$1.16569 - 2.51429I$	0
$u = 1.141100 + 0.685664I$ $a = 0.581015 - 0.421440I$ $b = -0.476699 - 1.180220I$	$-0.80622 - 5.62140I$	0
$u = 1.141100 - 0.685664I$ $a = 0.581015 + 0.421440I$ $b = -0.476699 + 1.180220I$	$-0.80622 + 5.62140I$	0
$u = -0.626341 + 0.189979I$ $a = -0.601874 + 0.451367I$ $b = -0.248372 + 0.235217I$	$-1.183180 + 0.695175I$	$-6.70578 - 1.57840I$
$u = -0.626341 - 0.189979I$ $a = -0.601874 - 0.451367I$ $b = -0.248372 - 0.235217I$	$-1.183180 - 0.695175I$	$-6.70578 + 1.57840I$
$u = 0.654724 + 1.181500I$ $a = 0.664538 - 0.850361I$ $b = 0.354261 - 1.323580I$	$-0.68635 + 10.51560I$	0
$u = 0.654724 - 1.181500I$ $a = 0.664538 + 0.850361I$ $b = 0.354261 + 1.323580I$	$-0.68635 - 10.51560I$	0
$u = -0.518604 + 0.387817I$ $a = 3.33694 - 1.80195I$ $b = 0.123907 + 0.119398I$	$-5.62804 + 7.62430I$	$-3.5084 - 15.3680I$

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.518604 - 0.387817I$ $a = 3.33694 + 1.80195I$ $b = 0.123907 - 0.119398I$	$-5.62804 - 7.62430I$	$-3.5084 + 15.3680I$
$u = -0.953528 + 0.962716I$ $a = 0.809443 + 0.506327I$ $b = -0.024424 + 1.231810I$	$2.61565 - 3.61386I$	0
$u = -0.953528 - 0.962716I$ $a = 0.809443 - 0.506327I$ $b = -0.024424 - 1.231810I$	$2.61565 + 3.61386I$	0
$u = -1.170390 + 0.725800I$ $a = 0.918705 + 0.823382I$ $b = -0.39022 + 1.53172I$	$1.99944 + 9.66121I$	0
$u = -1.170390 - 0.725800I$ $a = 0.918705 - 0.823382I$ $b = -0.39022 - 1.53172I$	$1.99944 - 9.66121I$	0
$u = 0.091542 + 0.605155I$ $a = -0.643725 + 0.349309I$ $b = 0.316647 + 0.447923I$	$1.12577 + 1.22347I$	$2.24149 - 1.97713I$
$u = 0.091542 - 0.605155I$ $a = -0.643725 - 0.349309I$ $b = 0.316647 - 0.447923I$	$1.12577 - 1.22347I$	$2.24149 + 1.97713I$
$u = 0.922433 + 1.070450I$ $a = 0.427757 - 1.329770I$ $b = -0.578333 - 1.015810I$	$1.28212 - 5.69320I$	0
$u = 0.922433 - 1.070450I$ $a = 0.427757 + 1.329770I$ $b = -0.578333 + 1.015810I$	$1.28212 + 5.69320I$	0
$u = -1.13000 + 0.86180I$ $a = -0.499373 - 0.993413I$ $b = 0.90010 - 1.31563I$	$-2.34996 + 8.89069I$	0

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.13000 - 0.86180I$ $a = -0.499373 + 0.993413I$ $b = 0.90010 + 1.31563I$	$-2.34996 - 8.89069I$	0
$u = 1.18516 + 0.86733I$ $a = -0.515811 + 1.142830I$ $b = 0.82351 + 1.48067I$	$-2.3733 - 17.7998I$	0
$u = 1.18516 - 0.86733I$ $a = -0.515811 - 1.142830I$ $b = 0.82351 - 1.48067I$	$-2.3733 + 17.7998I$	0
$u = -1.24810 + 0.78025I$ $a = -0.723961 - 0.634032I$ $b = 0.138071 - 1.099330I$	$0.29433 + 3.47130I$	0
$u = -1.24810 - 0.78025I$ $a = -0.723961 + 0.634032I$ $b = 0.138071 + 1.099330I$	$0.29433 - 3.47130I$	0
$u = 0.99277 + 1.10862I$ $a = -0.378506 + 0.797429I$ $b = -0.305418 + 0.978314I$	$1.09930 - 2.01981I$	0
$u = 0.99277 - 1.10862I$ $a = -0.378506 - 0.797429I$ $b = -0.305418 - 0.978314I$	$1.09930 + 2.01981I$	0
$u = 1.27655 + 0.81192I$ $a = 0.419881 - 1.024650I$ $b = -0.57213 - 1.44013I$	$0.02085 - 8.57265I$	0
$u = 1.27655 - 0.81192I$ $a = 0.419881 + 1.024650I$ $b = -0.57213 + 1.44013I$	$0.02085 + 8.57265I$	0
$u = 0.458264 + 0.146029I$ $a = 1.69886 + 0.35112I$ $b = -1.196350 + 0.713768I$	$-3.10181 + 0.47570I$	$-5.29751 - 2.60698I$

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.458264 - 0.146029I$		
$a = 1.69886 - 0.35112I$	$-3.10181 - 0.47570I$	$-5.29751 + 2.60698I$
$b = -1.196350 - 0.713768I$		
$u = 1.59928 + 0.17427I$		
$a = 0.252466 + 0.129113I$	$-9.08258 - 1.96810I$	0
$b = -0.178640 - 0.313172I$		
$u = 1.59928 - 0.17427I$		
$a = 0.252466 - 0.129113I$	$-9.08258 + 1.96810I$	0
$b = -0.178640 + 0.313172I$		
$u = -0.145781 + 0.354589I$		
$a = 0.619188 + 0.413783I$	$-3.31878 - 0.04041I$	$-23.4527 - 15.7274I$
$b = 1.75644 + 2.82127I$		
$u = -0.145781 - 0.354589I$		
$a = 0.619188 - 0.413783I$	$-3.31878 + 0.04041I$	$-23.4527 + 15.7274I$
$b = 1.75644 - 2.82127I$		
$u = -1.71018 + 0.04465I$		
$a = 0.188770 + 0.083516I$	$-9.70700 - 5.87952I$	0
$b = 0.052313 + 0.658440I$		
$u = -1.71018 - 0.04465I$		
$a = 0.188770 - 0.083516I$	$-9.70700 + 5.87952I$	0
$b = 0.052313 - 0.658440I$		

**II.**

$$I_2^u = \langle -3.29 \times 10^{10} u^{21} + 1.11 \times 10^9 u^{20} + \dots + 9.95 \times 10^9 b - 1.43 \times 10^{11}, -3.23 \times 10^{10} u^{21} + 1.32 \times 10^{10} u^{20} + \dots + 9.95 \times 10^9 a + 5.82 \times 10^9, u^{22} - 8u^{20} + \dots + 7u + 1 \rangle$$

**(i) Arc colorings**

$$\begin{aligned} a_8 &= \begin{pmatrix} 0 \\ u \end{pmatrix} \\ a_{12} &= \begin{pmatrix} 1 \\ 0 \end{pmatrix} \\ a_1 &= \begin{pmatrix} 1 \\ u^2 \end{pmatrix} \\ a_5 &= \begin{pmatrix} 3.24133u^{21} - 1.32161u^{20} + \dots - 3.62531u - 0.584512 \\ 3.30910u^{21} - 0.111878u^{20} + \dots + 37.7176u + 14.3251 \end{pmatrix} \\ a_4 &= \begin{pmatrix} 3.24133u^{21} - 1.32161u^{20} + \dots - 3.62531u - 0.584512 \\ 5.18964u^{21} - 0.408859u^{20} + \dots + 43.7275u + 15.6467 \end{pmatrix} \\ a_2 &= \begin{pmatrix} 2.94299u^{21} + 0.485488u^{20} + \dots + 31.3762u + 12.8396 \\ 14.8897u^{21} - 2.30887u^{20} + \dots + 165.030u + 65.7091 \end{pmatrix} \\ a_9 &= \begin{pmatrix} 4.23720u^{21} - 0.950521u^{20} + \dots + 27.8535u + 10.5976 \\ 16.9528u^{21} - 2.89931u^{20} + \dots + 187.557u + 69.3435 \end{pmatrix} \\ a_7 &= \begin{pmatrix} u \\ u \end{pmatrix} \\ a_3 &= \begin{pmatrix} 1.76919u^{21} - 0.445000u^{20} + \dots - 11.9629u - 1.49726 \\ 3.71750u^{21} + 0.467748u^{20} + \dots + 35.3900u + 14.7339 \end{pmatrix} \\ a_6 &= \begin{pmatrix} 8.37457u^{21} - 1.23232u^{20} + \dots + 122.450u + 50.2111 \\ 75.6531u^{21} - 18.5917u^{20} + \dots + 890.451u + 325.412 \end{pmatrix} \\ a_{11} &= \begin{pmatrix} -u^2 + 1 \\ -u^2 \end{pmatrix} \\ a_{10} &= \begin{pmatrix} 7.32505u^{21} - 2.30910u^{20} + \dots + 90.2938u + 22.5578 \\ 14.2011u^{21} - 2.31490u^{20} + \dots + 159.942u + 62.8029 \end{pmatrix} \end{aligned}$$

**(ii) Obstruction class = 1**

**(iii) Cusp Shapes**

$$= -\frac{1424127743710}{9952263913}u^{21} + \frac{340116765766}{9952263913}u^{20} + \dots - \frac{16949185078163}{9952263913}u - \frac{6352077428057}{9952263913}$$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
$c_1$	$u^{22} - 10u^{21} + \dots + 4u + 1$
$c_2$	$u^{22} + 8u^{20} + \dots - 11u + 1$
$c_3$	$u^{22} + 6u^{21} + \dots + 65u + 11$
$c_4$	$u^{22} - 2u^{20} + \dots + 5u + 1$
$c_5$	$u^{22} + 6u^{21} + \dots + 16u + 7$
$c_6$	$u^{22} + 4u^{21} + \dots + 3u + 1$
$c_7$	$u^{22} - 8u^{20} + \dots - 7u + 1$
$c_8$	$u^{22} + 3u^{21} + \dots + 18u + 4$
$c_9$	$u^{22} + u^{21} + \dots - 5u + 1$
$c_{10}$	$u^{22} - 6u^{21} + \dots - 16u + 7$
$c_{11}, c_{12}$	$u^{22} - 8u^{20} + \dots + 7u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
$c_1$	$y^{22} - 20y^{21} + \dots - 16y + 1$
$c_2$	$y^{22} + 16y^{21} + \dots - 47y + 1$
$c_3$	$y^{22} + 8y^{21} + \dots - 3125y + 121$
$c_4$	$y^{22} - 4y^{21} + \dots - 47y + 1$
$c_5, c_{10}$	$y^{22} - 4y^{21} + \dots + 444y + 49$
$c_6$	$y^{22} - 26y^{21} + \dots - 19y + 1$
$c_7, c_{11}, c_{12}$	$y^{22} - 16y^{21} + \dots - 33y + 1$
$c_8$	$y^{22} - 21y^{21} + \dots - 156y + 16$
$c_9$	$y^{22} - y^{21} + \dots - 23y + 1$



(vi) Complex Volumes and Cusp Shapes

Solutions to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.689646 + 0.731117I$ $a = 0.892611 + 0.673718I$ $b = -0.036753 + 1.292750I$	$1.43694 - 2.16906I$	$-2.67250 + 3.66995I$
$u = -0.689646 - 0.731117I$ $a = 0.892611 - 0.673718I$ $b = -0.036753 - 1.292750I$	$1.43694 + 2.16906I$	$-2.67250 - 3.66995I$
$u = 1.089690 + 0.084115I$ $a = 0.411457 + 1.135850I$ $b = 0.794749 - 0.468906I$	$-7.64222 + 1.24596I$	$-23.8515 - 3.0661I$
$u = 1.089690 - 0.084115I$ $a = 0.411457 - 1.135850I$ $b = 0.794749 + 0.468906I$	$-7.64222 - 1.24596I$	$-23.8515 + 3.0661I$
$u = -0.899268$ $a = 0.347566$ $b = 1.27618$	$-3.56961$	$-12.4310$
$u = -0.792158 + 0.366921I$ $a = -0.916716 - 0.499164I$ $b = 1.114910 - 0.251162I$	$-3.56033 + 2.09844I$	$-6.52547 - 4.25542I$
$u = -0.792158 - 0.366921I$ $a = -0.916716 + 0.499164I$ $b = 1.114910 + 0.251162I$	$-3.56033 - 2.09844I$	$-6.52547 + 4.25542I$
$u = 0.719041 + 0.983858I$ $a = -0.166355 + 1.358040I$ $b = 0.272914 + 1.195270I$	$2.68903 - 3.88617I$	$2.04251 + 7.16256I$
$u = 0.719041 - 0.983858I$ $a = -0.166355 - 1.358040I$ $b = 0.272914 - 1.195270I$	$2.68903 + 3.88617I$	$2.04251 - 7.16256I$
$u = 0.707893 + 0.062157I$ $a = -0.41559 + 2.21549I$ $b = 0.691014 + 0.697209I$	$-6.18665 - 1.95182I$	$-13.20160 + 2.52334I$

Solutions to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.707893 - 0.062157I$		
$a = -0.41559 - 2.21549I$	$-6.18665 + 1.95182I$	$-13.20160 - 2.52334I$
$b = 0.691014 - 0.697209I$		
$u = -1.167100 + 0.769333I$		
$a = -0.524110 - 1.013700I$	$-0.27838 + 8.00011I$	$-7.03623 - 4.71619I$
$b = 0.66774 - 1.44550I$		
$u = -1.167100 - 0.769333I$		
$a = -0.524110 + 1.013700I$	$-0.27838 - 8.00011I$	$-7.03623 + 4.71619I$
$b = 0.66774 + 1.44550I$		
$u = -0.456432 + 0.227700I$		
$a = 3.48387 - 1.57572I$	$-5.92592 + 7.21272I$	$-12.48421 - 3.10300I$
$b = -0.736499 - 0.288334I$		
$u = -0.456432 - 0.227700I$		
$a = 3.48387 + 1.57572I$	$-5.92592 - 7.21272I$	$-12.48421 + 3.10300I$
$b = -0.736499 + 0.288334I$		
$u = 1.13411 + 1.02905I$		
$a = 0.657006 - 0.757043I$	$1.52864 - 3.47332I$	$1.80817 + 6.65351I$
$b = -0.097956 - 0.941245I$		
$u = 1.13411 - 1.02905I$		
$a = 0.657006 + 0.757043I$	$1.52864 + 3.47332I$	$1.80817 - 6.65351I$
$b = -0.097956 + 0.941245I$		
$u = -1.53567 + 0.06089I$		
$a = -0.047861 - 0.531327I$	$-10.48400 - 5.80432I$	$-12.69968 + 4.16414I$
$b = -0.356622 - 0.079517I$		
$u = -1.53567 - 0.06089I$		
$a = -0.047861 + 0.531327I$	$-10.48400 + 5.80432I$	$-12.69968 - 4.16414I$
$b = -0.356622 + 0.079517I$		
$u = 1.55684 + 0.15697I$		
$a = 0.129002 + 0.163150I$	$-9.27686 - 2.12244I$	$-21.9473 + 10.7965I$
$b = -0.448678 - 0.325269I$		

Solutions to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.55684 - 0.15697I$		
$a = 0.129002 - 0.163150I$	$-9.27686 + 2.12244I$	$-21.9473 - 10.7965I$
$b = -0.448678 + 0.325269I$		
$u = -0.233875$		
$a = 0.645810$	$-3.27765$	$-239.430$
$b = 4.99418$		

### III. u-Polynomials

Crossings	u-Polynomials at each crossing
$c_1$	$(u^{22} - 10u^{21} + \dots + 4u + 1)(u^{87} + 3u^{86} + \dots + 3937u + 511)$
$c_2$	$(u^{22} + 8u^{20} + \dots - 11u + 1)(u^{87} - 5u^{86} + \dots - 2768u - 437)$
$c_3$	$(u^{22} + 6u^{21} + \dots + 65u + 11)(u^{87} - 3u^{86} + \dots - 4842u - 1687)$
$c_4$	$(u^{22} - 2u^{20} + \dots + 5u + 1)(u^{87} - u^{86} + \dots + 5250u + 811)$
$c_5$	$(u^{22} + 6u^{21} + \dots + 16u + 7)(u^{87} - u^{86} + \dots + 833881u + 81631)$
$c_6$	$(u^{22} + 4u^{21} + \dots + 3u + 1)(u^{87} - u^{86} + \dots + 46u - 7)$
$c_7$	$(u^{22} - 8u^{20} + \dots - 7u + 1)(u^{87} - u^{86} + \dots - 144u + 67)$
$c_8$	$(u^{22} + 3u^{21} + \dots + 18u + 4)(u^{87} - 2u^{86} + \dots - 5106u + 38332)$
$c_9$	$(u^{22} + u^{21} + \dots - 5u + 1)(u^{87} - 2u^{86} + \dots + 58u + 7)$
$c_{10}$	$(u^{22} - 6u^{21} + \dots - 16u + 7)(u^{87} - u^{86} + \dots + 833881u + 81631)$
$c_{11}, c_{12}$	$(u^{22} - 8u^{20} + \dots + 7u + 1)(u^{87} - u^{86} + \dots - 144u + 67)$

#### IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
$c_1$	$(y^{22} - 20y^{21} + \dots - 16y + 1)$ $\cdot (y^{87} + 67y^{86} + \dots - 8202255y - 261121)$
$c_2$	$(y^{22} + 16y^{21} + \dots - 47y + 1)$ $\cdot (y^{87} + 31y^{86} + \dots - 9342720y - 190969)$
$c_3$	$(y^{22} + 8y^{21} + \dots - 3125y + 121)$ $\cdot (y^{87} - y^{86} + \dots + 410351666y - 2845969)$
$c_4$	$(y^{22} - 4y^{21} + \dots - 47y + 1)$ $\cdot (y^{87} - 61y^{86} + \dots + 13379732y - 657721)$
$c_5, c_{10}$	$(y^{22} - 4y^{21} + \dots + 444y + 49)$ $\cdot (y^{87} + 71y^{86} + \dots - 125580302491y - 6663620161)$
$c_6$	$(y^{22} - 26y^{21} + \dots - 19y + 1)(y^{87} + 5y^{86} + \dots + 1556y - 49)$
$c_7, c_{11}, c_{12}$	$(y^{22} - 16y^{21} + \dots - 33y + 1)(y^{87} - 29y^{86} + \dots + 80634y - 4489)$
$c_8$	$(y^{22} - 21y^{21} + \dots - 156y + 16)$ $\cdot (y^{87} - 54y^{86} + \dots + 32610801148y - 1469342224)$
$c_9$	$(y^{22} - y^{21} + \dots - 23y + 1)(y^{87} + 6y^{86} + \dots - 724y - 49)$