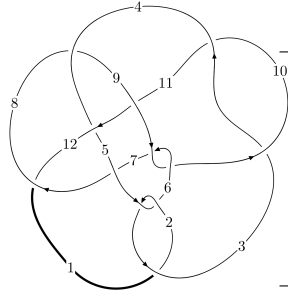
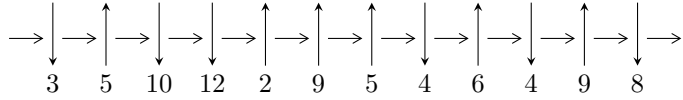


$12n_{0536}$  ( $K12n_{0536}$ )



A knot diagram<sup>1</sup>

**Linearized knot diagram**



**Solving Sequence**

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

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

$$I_1^u = \langle 1.71591 \times 10^{136} u^{61} + 3.72192 \times 10^{136} u^{60} + \dots + 3.75605 \times 10^{136} b - 9.70874 \times 10^{136}, \\ - 7.27064 \times 10^{135} u^{61} - 1.52290 \times 10^{136} u^{60} + \dots + 3.75605 \times 10^{136} a - 1.84906 \times 10^{137}, \\ u^{62} + 3u^{61} + \dots + 6u + 1 \rangle$$

$$I_2^u = \langle 163809549521227u^{21} + 58330736636863u^{20} + \dots + 384149611137554b + 205005886037235, \\ - 51253454018903u^{21} + 148522476867159u^{20} + \dots + 384149611137554a - 60479472657577, \\ u^{22} - 5u^{20} + \dots + 2u + 1 \rangle$$

\* 2 irreducible components of  $\dim_{\mathbb{C}} = 0$ , with total 84 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.

$$\mathbf{I. } I_1^u = \langle 1.72 \times 10^{136} u^{61} + 3.72 \times 10^{136} u^{60} + \dots + 3.76 \times 10^{136} b - 9.71 \times 10^{136}, -7.27 \times 10^{135} u^{61} - 1.52 \times 10^{136} u^{60} + \dots + 3.76 \times 10^{136} a - 1.85 \times 10^{137}, u^{62} + 3u^{61} + \dots + 6u + 1 \rangle$$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_5 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.193572u^{61} + 0.405454u^{60} + \dots + 27.6970u + 4.92287 \\ -0.456839u^{61} - 0.990915u^{60} + \dots + 18.2428u + 2.58483 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.263267u^{61} - 0.585461u^{60} + \dots + 45.9398u + 7.50770 \\ -0.456839u^{61} - 0.990915u^{60} + \dots + 18.2428u + 2.58483 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 1.16917u^{61} + 3.24162u^{60} + \dots + 20.2903u + 1.35776 \\ 1.30286u^{61} + 4.60798u^{60} + \dots + 14.7698u + 0.862367 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 1.18336u^{61} + 3.73183u^{60} + \dots + 26.7343u + 4.71853 \\ -1.32861u^{61} - 4.00841u^{60} + \dots + 16.9317u + 2.60741 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 2.34621u^{61} + 7.59680u^{60} + \dots + 30.9047u + 3.59561 \\ 1.43721u^{61} + 4.71130u^{60} + \dots + 6.07767u - 0.182858 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -0.0591481u^{61} - 0.655677u^{60} + \dots + 9.74878u + 1.14092 \\ -0.0745467u^{61} - 0.710685u^{60} + \dots - 2.22824u - 0.645530 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -0.133695u^{61} - 1.36636u^{60} + \dots + 7.52055u + 0.495394 \\ -0.0745467u^{61} - 0.710685u^{60} + \dots - 2.22824u - 0.645530 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 3.14078u^{61} + 9.08276u^{60} + \dots - 3.04070u + 2.45575 \\ 0.541059u^{61} + 1.40800u^{60} + \dots - 0.406442u + 0.432472 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 1.87526u^{61} + 5.39621u^{60} + \dots - 3.73749u + 2.36287 \\ 0.865858u^{61} + 2.48532u^{60} + \dots + 0.198925u + 0.322445 \end{pmatrix}$$

(ii) Obstruction class = -1

(iii) Cusp Shapes =  $-10.2334u^{61} - 37.5928u^{60} + \dots - 136.983u - 17.5188$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
$c_1$	$u^{62} + 22u^{61} + \dots + 620u + 4$
$c_2, c_5$	$u^{62} + 11u^{60} + \dots - 10u + 2$
$c_3, c_{10}$	$u^{62} + u^{61} + \dots + 170u + 289$
$c_4$	$u^{62} + 3u^{61} + \dots + 6u + 1$
$c_6, c_9$	$u^{62} + 2u^{61} + \dots + 10u + 1$
$c_7$	$u^{62} + 8u^{61} + \dots - 12576553u + 1906367$
$c_8$	$u^{62} + 2u^{61} + \dots - 68u + 26$
$c_{11}$	$u^{62} - u^{61} + \dots - 150u + 67$
$c_{12}$	$u^{62} - u^{61} + \dots - 104469u + 9059$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
$c_1$	$y^{62} + 46y^{61} + \dots - 67792y + 16$
$c_2, c_5$	$y^{62} + 22y^{61} + \dots + 620y + 4$
$c_3, c_{10}$	$y^{62} - y^{61} + \dots + 2388874y + 83521$
$c_4$	$y^{62} - 5y^{61} + \dots + 14y + 1$
$c_6, c_9$	$y^{62} + 12y^{61} + \dots + 52y + 1$
$c_7$	$y^{62} - 84y^{61} + \dots - 322575225344421y + 3634235138689$
$c_8$	$y^{62} + 56y^{61} + \dots - 22200y + 676$
$c_{11}$	$y^{62} - 59y^{61} + \dots + 164028y + 4489$
$c_{12}$	$y^{62} + 67y^{61} + \dots + 488736985y + 82065481$

(vi) Complex Volumes and Cusp Shapes

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.165930 + 0.930592I$ $a = -0.10701 + 2.06026I$ $b = -0.057682 - 0.972148I$	$3.40685 - 2.08743I$	$8.13116 + 4.36654I$
$u = 0.165930 - 0.930592I$ $a = -0.10701 - 2.06026I$ $b = -0.057682 + 0.972148I$	$3.40685 + 2.08743I$	$8.13116 - 4.36654I$
$u = -0.997985 + 0.380629I$ $a = 0.433419 + 1.028500I$ $b = -0.13150 - 1.44905I$	$-1.18532 + 5.73345I$	$0. - 8.28149I$
$u = -0.997985 - 0.380629I$ $a = 0.433419 - 1.028500I$ $b = -0.13150 + 1.44905I$	$-1.18532 - 5.73345I$	$0. + 8.28149I$
$u = -0.002944 + 0.924364I$ $a = 0.211183 - 1.006820I$ $b = -0.16712 + 1.85863I$	$2.71444 + 3.86842I$	$6.79055 - 7.43016I$
$u = -0.002944 - 0.924364I$ $a = 0.211183 + 1.006820I$ $b = -0.16712 - 1.85863I$	$2.71444 - 3.86842I$	$6.79055 + 7.43016I$
$u = -0.812041 + 0.713431I$ $a = -0.915182 - 0.646168I$ $b = -0.609084 + 0.870903I$	$-0.67509 + 1.55554I$	0
$u = -0.812041 - 0.713431I$ $a = -0.915182 + 0.646168I$ $b = -0.609084 - 0.870903I$	$-0.67509 - 1.55554I$	0
$u = -1.063550 + 0.207154I$ $a = -0.420018 + 0.637174I$ $b = 0.467651 + 0.802572I$	$-5.03634 - 0.65577I$	0
$u = -1.063550 - 0.207154I$ $a = -0.420018 - 0.637174I$ $b = 0.467651 - 0.802572I$	$-5.03634 + 0.65577I$	0

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.465488 + 0.779154I$ $a = -0.092600 - 1.357340I$ $b = -0.97065 + 1.22533I$	$-2.61957 + 4.38386I$	$1.07305 - 7.42421I$
$u = -0.465488 - 0.779154I$ $a = -0.092600 + 1.357340I$ $b = -0.97065 - 1.22533I$	$-2.61957 - 4.38386I$	$1.07305 + 7.42421I$
$u = 0.750587 + 0.427782I$ $a = 1.65282 - 0.94218I$ $b = 0.736969 + 0.934309I$	$-0.11147 - 6.99469I$	$-3.20173 + 9.81711I$
$u = 0.750587 - 0.427782I$ $a = 1.65282 + 0.94218I$ $b = 0.736969 - 0.934309I$	$-0.11147 + 6.99469I$	$-3.20173 - 9.81711I$
$u = 1.221520 + 0.120806I$ $a = 0.339911 - 0.433001I$ $b = -0.558973 - 0.091877I$	$-7.45390 - 2.15136I$	0
$u = 1.221520 - 0.120806I$ $a = 0.339911 + 0.433001I$ $b = -0.558973 + 0.091877I$	$-7.45390 + 2.15136I$	0
$u = -0.517704 + 0.562485I$ $a = -0.668372 - 0.070624I$ $b = -0.476542 + 0.257017I$	$-1.05258 + 1.18693I$	$-4.45668 - 4.18814I$
$u = -0.517704 - 0.562485I$ $a = -0.668372 + 0.070624I$ $b = -0.476542 - 0.257017I$	$-1.05258 - 1.18693I$	$-4.45668 + 4.18814I$
$u = 0.523431 + 0.513052I$ $a = -0.535706 + 1.288960I$ $b = 0.266709 - 1.273450I$	$1.82519 - 1.36296I$	$1.54329 + 4.17454I$
$u = 0.523431 - 0.513052I$ $a = -0.535706 - 1.288960I$ $b = 0.266709 + 1.273450I$	$1.82519 + 1.36296I$	$1.54329 - 4.17454I$

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.321102 + 0.647348I$ $a = -0.022673 + 1.348950I$ $b = 0.501475 - 0.865448I$	$1.85599 - 1.13423I$	$-0.309363 - 0.900307I$
$u = 0.321102 - 0.647348I$ $a = -0.022673 - 1.348950I$ $b = 0.501475 + 0.865448I$	$1.85599 + 1.13423I$	$-0.309363 + 0.900307I$
$u = -0.168667 + 0.660664I$ $a = -3.06985 + 0.38017I$ $b = 0.171594 + 0.004198I$	$2.65932 + 6.57779I$	$7.85703 - 7.89113I$
$u = -0.168667 - 0.660664I$ $a = -3.06985 - 0.38017I$ $b = 0.171594 - 0.004198I$	$2.65932 - 6.57779I$	$7.85703 + 7.89113I$
$u = -1.315760 + 0.177104I$ $a = -0.421905 + 0.140944I$ $b = -0.418914 + 0.165670I$	$-2.41902 + 0.19351I$	0
$u = -1.315760 - 0.177104I$ $a = -0.421905 - 0.140944I$ $b = -0.418914 - 0.165670I$	$-2.41902 - 0.19351I$	0
$u = 0.234273 + 0.612614I$ $a = 2.46365 + 1.67487I$ $b = -0.105327 - 0.177690I$	$3.58080 - 1.15954I$	$9.57507 + 5.43915I$
$u = 0.234273 - 0.612614I$ $a = 2.46365 - 1.67487I$ $b = -0.105327 + 0.177690I$	$3.58080 + 1.15954I$	$9.57507 - 5.43915I$
$u = -0.904086 + 1.045360I$ $a = -0.249561 - 0.737893I$ $b = -0.42512 + 1.73156I$	$-0.00214 + 4.68956I$	0
$u = -0.904086 - 1.045360I$ $a = -0.249561 + 0.737893I$ $b = -0.42512 - 1.73156I$	$-0.00214 - 4.68956I$	0

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.281954 + 0.542697I$ $a = 0.219911 + 0.087140I$ $b = -2.26522 - 0.10868I$	$2.06711 - 7.02714I$	$7.2802 + 14.8527I$
$u = 0.281954 - 0.542697I$ $a = 0.219911 - 0.087140I$ $b = -2.26522 + 0.10868I$	$2.06711 + 7.02714I$	$7.2802 - 14.8527I$
$u = -0.026975 + 0.606723I$ $a = -0.084880 + 0.310459I$ $b = 1.89438 + 0.04499I$	$3.66976 + 0.24782I$	$12.04590 + 2.79775I$
$u = -0.026975 - 0.606723I$ $a = -0.084880 - 0.310459I$ $b = 1.89438 - 0.04499I$	$3.66976 - 0.24782I$	$12.04590 - 2.79775I$
$u = 0.335377 + 0.481418I$ $a = -0.06783 - 2.73237I$ $b = 0.557255 + 1.037380I$	$-4.01107 - 3.42086I$	$-8.07352 + 4.07528I$
$u = 0.335377 - 0.481418I$ $a = -0.06783 + 2.73237I$ $b = 0.557255 - 1.037380I$	$-4.01107 + 3.42086I$	$-8.07352 - 4.07528I$
$u = 0.92096 + 1.12984I$ $a = -0.401949 + 1.176920I$ $b = -0.52928 - 1.72739I$	$9.40777 - 1.77606I$	0
$u = 0.92096 - 1.12984I$ $a = -0.401949 - 1.176920I$ $b = -0.52928 + 1.72739I$	$9.40777 + 1.77606I$	0
$u = -0.93058 + 1.15260I$ $a = 0.366572 + 1.172380I$ $b = 0.68767 - 1.60197I$	$9.16673 + 8.01243I$	0
$u = -0.93058 - 1.15260I$ $a = 0.366572 - 1.172380I$ $b = 0.68767 + 1.60197I$	$9.16673 - 8.01243I$	0



Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.01454 + 1.08458I$ $a = -0.612869 + 1.143460I$ $b = -0.227460 - 1.383390I$	$4.02353 - 3.94644I$	0
$u = 1.01454 - 1.08458I$ $a = -0.612869 - 1.143460I$ $b = -0.227460 + 1.383390I$	$4.02353 + 3.94644I$	0
$u = 1.45278 + 0.32226I$ $a = 0.186002 + 0.283851I$ $b = 0.180304 - 0.249974I$	$-5.07079 - 5.71196I$	0
$u = 1.45278 - 0.32226I$ $a = 0.186002 - 0.283851I$ $b = 0.180304 + 0.249974I$	$-5.07079 + 5.71196I$	0
$u = -0.172079 + 0.459052I$ $a = -0.346327 + 1.016920I$ $b = 0.095770 + 0.617374I$	$-0.26698 + 2.11215I$	$-2.44927 - 3.44810I$
$u = -0.172079 - 0.459052I$ $a = -0.346327 - 1.016920I$ $b = 0.095770 - 0.617374I$	$-0.26698 - 2.11215I$	$-2.44927 + 3.44810I$
$u = 1.16422 + 0.97896I$ $a = -0.845511 + 0.676945I$ $b = -0.00205 - 1.54662I$	$8.59237 - 5.95049I$	0
$u = 1.16422 - 0.97896I$ $a = -0.845511 - 0.676945I$ $b = -0.00205 + 1.54662I$	$8.59237 + 5.95049I$	0
$u = 1.09741 + 1.08495I$ $a = 0.471415 - 1.019370I$ $b = 0.60017 + 1.72962I$	$9.91197 - 8.88268I$	0
$u = 1.09741 - 1.08495I$ $a = 0.471415 + 1.019370I$ $b = 0.60017 - 1.72962I$	$9.91197 + 8.88268I$	0

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.10944 + 1.08719I$ $a = -0.451584 - 1.116400I$ $b = -0.68155 + 1.68234I$	$8.0311 + 16.0146I$	0
$u = -1.10944 - 1.08719I$ $a = -0.451584 + 1.116400I$ $b = -0.68155 - 1.68234I$	$8.0311 - 16.0146I$	0
$u = 1.04855 + 1.15112I$ $a = 0.698585 - 0.718469I$ $b = 0.06404 + 1.56751I$	$10.11830 + 0.77137I$	0
$u = 1.04855 - 1.15112I$ $a = 0.698585 + 0.718469I$ $b = 0.06404 - 1.56751I$	$10.11830 - 0.77137I$	0
$u = -1.20685 + 0.99490I$ $a = 0.725567 + 0.568353I$ $b = -0.13679 - 1.45257I$	$8.26868 - 0.11939I$	0
$u = -1.20685 - 0.99490I$ $a = 0.725567 - 0.568353I$ $b = -0.13679 + 1.45257I$	$8.26868 + 0.11939I$	0
$u = -1.05420 + 1.18099I$ $a = -0.710445 - 0.706964I$ $b = 0.12015 + 1.50569I$	$8.28897 - 7.80965I$	0
$u = -1.05420 - 1.18099I$ $a = -0.710445 + 0.706964I$ $b = 0.12015 - 1.50569I$	$8.28897 + 7.80965I$	0
$u = -1.08118 + 1.18882I$ $a = 0.421669 + 0.935093I$ $b = 0.258643 - 1.207240I$	$3.27959 + 4.26299I$	0
$u = -1.08118 - 1.18882I$ $a = 0.421669 - 0.935093I$ $b = 0.258643 + 1.207240I$	$3.27959 - 4.26299I$	0

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.203127 + 0.142996I$		
$a = 1.83356 + 2.81105I$	$-0.23208 + 2.09229I$	$-2.77990 - 2.89354I$
$b = 0.160472 + 0.965429I$		
$u = -0.203127 - 0.142996I$		
$a = 1.83356 - 2.81105I$	$-0.23208 - 2.09229I$	$-2.77990 + 2.89354I$
$b = 0.160472 - 0.965429I$		

**II.**

$$I_2^u = \langle 1.64 \times 10^{14} u^{21} + 5.83 \times 10^{13} u^{20} + \dots + 3.84 \times 10^{14} b + 2.05 \times 10^{14}, -5.13 \times 10^{13} u^{21} + 1.49 \times 10^{14} u^{20} + \dots + 3.84 \times 10^{14} a - 6.05 \times 10^{13}, u^{22} - 5u^{20} + \dots + 2u + 1 \rangle$$

**(i) Arc colorings**

$$\begin{aligned} a_4 &= \begin{pmatrix} 1 \\ 0 \end{pmatrix} \\ a_{12} &= \begin{pmatrix} 0 \\ u \end{pmatrix} \\ a_5 &= \begin{pmatrix} 1 \\ u^2 \end{pmatrix} \\ a_9 &= \begin{pmatrix} 0.133421u^{21} - 0.386627u^{20} + \dots + 2.14873u + 0.157437 \\ -0.426421u^{21} - 0.151844u^{20} + \dots - 0.826693u - 0.533662 \end{pmatrix} \\ a_8 &= \begin{pmatrix} -0.293001u^{21} - 0.538470u^{20} + \dots + 1.32204u - 0.376224 \\ -0.426421u^{21} - 0.151844u^{20} + \dots - 0.826693u - 0.533662 \end{pmatrix} \\ a_1 &= \begin{pmatrix} -0.647220u^{21} - 0.166162u^{20} + \dots - 12.1300u - 4.73495 \\ -0.353043u^{21} + 0.155220u^{20} + \dots - 3.80337u - 0.927868 \end{pmatrix} \\ a_7 &= \begin{pmatrix} 0.353956u^{21} - 0.383250u^{20} + \dots + 3.51867u + 0.695908 \\ -0.552635u^{21} - 0.137768u^{20} + \dots - 1.78409u - 0.688882 \end{pmatrix} \\ a_6 &= \begin{pmatrix} 0.342136u^{21} + 0.492525u^{20} + \dots + 7.17325u + 3.00994 \\ 0.162285u^{21} - 0.0994937u^{20} + \dots + 2.68471u + 0.397069 \end{pmatrix} \\ a_{11} &= \begin{pmatrix} -0.00909788u^{21} - 0.359656u^{20} + \dots - 3.79539u - 2.89303 \\ -0.285080u^{21} + 0.0382739u^{20} + \dots - 2.53120u - 0.914050 \end{pmatrix} \\ a_{10} &= \begin{pmatrix} -0.294178u^{21} - 0.321382u^{20} + \dots - 6.32659u - 3.80708 \\ -0.285080u^{21} + 0.0382739u^{20} + \dots - 2.53120u - 0.914050 \end{pmatrix} \\ a_3 &= \begin{pmatrix} -1.37389u^{21} + 0.229452u^{20} + \dots - 7.40788u - 0.433030 \\ -0.527423u^{21} + 0.262335u^{20} + \dots - 1.88437u - 0.163479 \end{pmatrix} \\ a_2 &= \begin{pmatrix} -1.07248u^{21} + 0.185019u^{20} + \dots - 4.60852u - 0.499002 \\ -0.522187u^{21} + 0.314870u^{20} + \dots - 2.09691u - 0.119046 \end{pmatrix} \end{aligned}$$

**(ii) Obstruction class = 1**

**(iii) Cusp Shapes**

$$= \frac{44792649864550}{192074805568777} u^{21} + \frac{164302245595680}{192074805568777} u^{20} + \dots + \frac{1491146875316471}{192074805568777} u + \frac{304827721883127}{192074805568777}$$

(iv)  $u$ -Polynomials at the component

Crossings	u-Polynomials at each crossing
$c_1$	$u^{22} - 13u^{21} + \dots - 56u + 4$
$c_2$	$u^{22} + u^{21} + \dots + 2u + 2$
$c_3$	$u^{22} + 2u^{21} + \dots + 8u + 1$
$c_4$	$u^{22} - 5u^{20} + \dots + 2u + 1$
$c_5$	$u^{22} - u^{21} + \dots - 2u + 2$
$c_6$	$u^{22} + 9u^{21} + \dots + 4u + 1$
$c_7$	$u^{22} + u^{21} + \dots + u + 1$
$c_8$	$u^{22} + u^{21} + \dots + 9u^2 + 2$
$c_9$	$u^{22} - 9u^{21} + \dots - 4u + 1$
$c_{10}$	$u^{22} - 2u^{21} + \dots - 8u + 1$
$c_{11}$	$u^{22} - 2u^{21} + \dots - 4u + 1$
$c_{12}$	$u^{22} + 7u^{20} + \dots - 3u + 1$



(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
$c_1$	$y^{22} + y^{21} + \dots - 120y + 16$
$c_2, c_5$	$y^{22} + 13y^{21} + \dots + 56y + 4$
$c_3, c_{10}$	$y^{22} - 18y^{21} + \dots - 22y + 1$
$c_4$	$y^{22} - 10y^{21} + \dots + 10y + 1$
$c_6, c_9$	$y^{22} + 11y^{21} + \dots + 12y + 1$
$c_7$	$y^{22} - 13y^{21} + \dots + 3y + 1$
$c_8$	$y^{22} + 11y^{21} + \dots + 36y + 4$
$c_{11}$	$y^{22} - 12y^{21} + \dots - 8y + 1$
$c_{12}$	$y^{22} + 14y^{21} + \dots + 17y + 1$



(vi) Complex Volumes and Cusp Shapes

Solutions to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.730385 + 0.664526I$		
$a = -0.119371 - 1.335790I$	$-4.10993 + 5.20936I$	$-6.16659 - 7.45799I$
$b = -0.70021 + 1.27249I$		
$u = -0.730385 - 0.664526I$		
$a = -0.119371 + 1.335790I$	$-4.10993 - 5.20936I$	$-6.16659 + 7.45799I$
$b = -0.70021 - 1.27249I$		
$u = -0.300453 + 0.938759I$		
$a = 0.045977 + 1.064400I$	$1.93175 + 2.02632I$	$0.71587 - 5.34540I$
$b = -0.219417 - 0.860659I$		
$u = -0.300453 - 0.938759I$		
$a = 0.045977 - 1.064400I$	$1.93175 - 2.02632I$	$0.71587 + 5.34540I$
$b = -0.219417 + 0.860659I$		
$u = -0.996020 + 0.273419I$		
$a = -0.863515 + 0.618721I$	$-5.06317 - 1.44297I$	$-5.03337 + 5.98899I$
$b = 0.400853 + 0.697068I$		
$u = -0.996020 - 0.273419I$		
$a = -0.863515 - 0.618721I$	$-5.06317 + 1.44297I$	$-5.03337 - 5.98899I$
$b = 0.400853 - 0.697068I$		
$u = 0.386934 + 0.803717I$		
$a = 0.08802 - 1.72278I$	$-3.02316 - 3.32393I$	$-0.67724 + 2.00395I$
$b = 0.735248 + 1.035770I$		
$u = 0.386934 - 0.803717I$		
$a = 0.08802 + 1.72278I$	$-3.02316 + 3.32393I$	$-0.67724 - 2.00395I$
$b = 0.735248 - 1.035770I$		
$u = -0.891638 + 0.917052I$		
$a = 0.276614 + 0.800805I$	$0.27203 + 4.50446I$	$7.83463 - 1.95574I$
$b = 0.23326 - 1.72029I$		
$u = -0.891638 - 0.917052I$		
$a = 0.276614 - 0.800805I$	$0.27203 - 4.50446I$	$7.83463 + 1.95574I$
$b = 0.23326 + 1.72029I$		

Solutions to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.340900 + 0.190202I$		
$a = 0.441956 - 0.071410I$	$-2.35927 + 0.54072I$	$-3.88580 - 11.75057I$
$b = 0.533210 - 0.500891I$		
$u = -1.340900 - 0.190202I$		
$a = 0.441956 + 0.071410I$	$-2.35927 - 0.54072I$	$-3.88580 + 11.75057I$
$b = 0.533210 + 0.500891I$		
$u = 1.37204 + 0.36207I$		
$a = 0.479530 - 0.058198I$	$-6.65312 - 1.35752I$	$-1.88118 + 0.54540I$
$b = -0.353709 + 0.696590I$		
$u = 1.37204 - 0.36207I$		
$a = 0.479530 + 0.058198I$	$-6.65312 + 1.35752I$	$-1.88118 - 0.54540I$
$b = -0.353709 - 0.696590I$		
$u = -0.244633 + 0.400597I$		
$a = -1.10874 + 1.94332I$	$3.01849 + 0.66056I$	$0.692989 + 0.616171I$
$b = -0.946752 - 0.384915I$		
$u = -0.244633 - 0.400597I$		
$a = -1.10874 - 1.94332I$	$3.01849 - 0.66056I$	$0.692989 - 0.616171I$
$b = -0.946752 + 0.384915I$		
$u = 1.51864 + 0.20543I$		
$a = -0.157685 + 0.260638I$	$-4.90812 - 6.25806I$	$-2.21179 + 10.98437I$
$b = -0.261556 - 0.551871I$		
$u = 1.51864 - 0.20543I$		
$a = -0.157685 - 0.260638I$	$-4.90812 + 6.25806I$	$-2.21179 - 10.98437I$
$b = -0.261556 + 0.551871I$		
$u = 1.04003 + 1.15736I$		
$a = -0.559668 + 1.100690I$	$4.36949 - 4.17007I$	$10.88438 + 8.79804I$
$b = -0.202417 - 1.320470I$		
$u = 1.04003 - 1.15736I$		
$a = -0.559668 - 1.100690I$	$4.36949 + 4.17007I$	$10.88438 - 8.79804I$
$b = -0.202417 + 1.320470I$		

Solutions to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.186384 + 0.359934I$	$1.72060 - 6.53470I$	$-2.27189 + 3.95440I$
$a = 2.47689 - 0.01169I$		
$b = 1.281490 + 0.202287I$		
$u = 0.186384 - 0.359934I$	$1.72060 + 6.53470I$	$-2.27189 - 3.95440I$
$a = 2.47689 + 0.01169I$		
$b = 1.281490 - 0.202287I$		

### III. u-Polynomials

Crossings	u-Polynomials at each crossing
$c_1$	$(u^{22} - 13u^{21} + \dots - 56u + 4)(u^{62} + 22u^{61} + \dots + 620u + 4)$
$c_2$	$(u^{22} + u^{21} + \dots + 2u + 2)(u^{62} + 11u^{60} + \dots - 10u + 2)$
$c_3$	$(u^{22} + 2u^{21} + \dots + 8u + 1)(u^{62} + u^{61} + \dots + 170u + 289)$
$c_4$	$(u^{22} - 5u^{20} + \dots + 2u + 1)(u^{62} + 3u^{61} + \dots + 6u + 1)$
$c_5$	$(u^{22} - u^{21} + \dots - 2u + 2)(u^{62} + 11u^{60} + \dots - 10u + 2)$
$c_6$	$(u^{22} + 9u^{21} + \dots + 4u + 1)(u^{62} + 2u^{61} + \dots + 10u + 1)$
$c_7$	$(u^{22} + u^{21} + \dots + u + 1)(u^{62} + 8u^{61} + \dots - 1.25766 \times 10^7 u + 1906367)$
$c_8$	$(u^{22} + u^{21} + \dots + 9u^2 + 2)(u^{62} + 2u^{61} + \dots - 68u + 26)$
$c_9$	$(u^{22} - 9u^{21} + \dots - 4u + 1)(u^{62} + 2u^{61} + \dots + 10u + 1)$
$c_{10}$	$(u^{22} - 2u^{21} + \dots - 8u + 1)(u^{62} + u^{61} + \dots + 170u + 289)$
$c_{11}$	$(u^{22} - 2u^{21} + \dots - 4u + 1)(u^{62} - u^{61} + \dots - 150u + 67)$
$c_{12}$	$(u^{22} + 7u^{20} + \dots - 3u + 1)(u^{62} - u^{61} + \dots - 104469u + 9059)$

#### IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
$c_1$	$(y^{22} + y^{21} + \dots - 120y + 16)(y^{62} + 46y^{61} + \dots - 67792y + 16)$
$c_2, c_5$	$(y^{22} + 13y^{21} + \dots + 56y + 4)(y^{62} + 22y^{61} + \dots + 620y + 4)$
$c_3, c_{10}$	$(y^{22} - 18y^{21} + \dots - 22y + 1)(y^{62} - y^{61} + \dots + 2388874y + 83521)$
$c_4$	$(y^{22} - 10y^{21} + \dots + 10y + 1)(y^{62} - 5y^{61} + \dots + 14y + 1)$
$c_6, c_9$	$(y^{22} + 11y^{21} + \dots + 12y + 1)(y^{62} + 12y^{61} + \dots + 52y + 1)$
$c_7$	$(y^{22} - 13y^{21} + \dots + 3y + 1)$ $\cdot (y^{62} - 84y^{61} + \dots - 322575225344421y + 3634235138689)$
$c_8$	$(y^{22} + 11y^{21} + \dots + 36y + 4)(y^{62} + 56y^{61} + \dots - 22200y + 676)$
$c_{11}$	$(y^{22} - 12y^{21} + \dots - 8y + 1)(y^{62} - 59y^{61} + \dots + 164028y + 4489)$
$c_{12}$	$(y^{22} + 14y^{21} + \dots + 17y + 1)$ $\cdot (y^{62} + 67y^{61} + \dots + 488736985y + 82065481)$