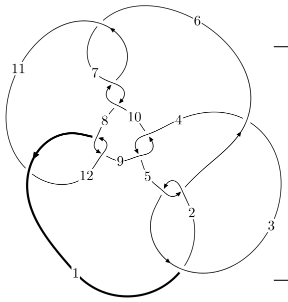
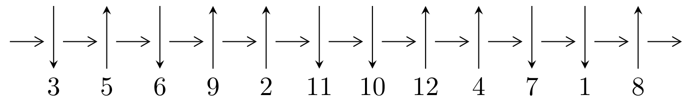
$12a_{0023}$ ($K12a_{0023}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

Ideals for irreducible components[2] of $X_{\mathbf{par}}$

$$\begin{aligned}
I^u_1 = \langle &1.54404\times 10^{97}u^{81} - 3.41633\times 10^{97}u^{80} + \cdots + 2.29518\times 10^{98}b - 3.85065\times 10^{98},\\
&-1.38710\times 10^{99}u^{81} + 4.21392\times 10^{99}u^{80} + \cdots + 3.35096\times 10^{100}a + 5.51614\times 10^{101},\\
&u^{82} - 3u^{81} + \cdots - 360u + 73\rangle\\
I^u_2 = \langle &-u^6 - 2u^4 - u^3 - u^2 + b - u - 1,\ u^{10} + 3u^8 + 2u^7 + 3u^6 + 4u^5 + 3u^4 + 3u^3 + 2u^2 + a + u,\\
&u^{12} + 4u^{10} + 2u^9 + 6u^8 + 6u^7 + 7u^6 + 6u^5 + 7u^4 + 3u^3 + 3u^2 + u + 1\rangle\\
I^u_3 = \langle &u^2a - au + u^2 + b - u,\ 2u^3a - 4u^2a - 5u^3 + 4a^2 + 6au + 6u^2 - 2a - 13u + 15,\ u^4 - u^3 + 3u^2 - 2u + 1\rangle\\
I^u_4 = \langle &89a^4u + 27a^4 - 332a^3u + 255a^3 + 238a^2u - 336a^2 - 693au + 173b + 93a + 205u - 208,\\
&a^5 - 5a^4u - 4a^4 + 13a^3u - 12a^2u - 2a^2 + 18au + 3a - 6u + 5,\ u^2 + 1\rangle\\
I^u_5 = \langle &u^{12} + 4u^{10} + 2u^9 + 6u^8 + 6u^7 + 6u^6 + 6u^5 + 5u^4 + 2u^3 + 2u^2 + b,\\
&u^{12} + 5u^{10} + 2u^9 + 9u^8 + 8u^7 + 10u^6 + 10u^5 + 10u^4 + 6u^3 + 5u^2 + a + 2u + 1,\ u^{18} + 6u^{16} + \cdots + 2u^3 + 1\rangle
\end{aligned}$$

* 5 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 130 representations.

[1] 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`).

[2] All coefficients of polynomials are rational numbers. But the coefficients are sometimes approximated in decimal forms when there is not enough margin.

I. $\boldsymbol{I_1^u = \langle 1.54 \times 10^{97} u^{81} - 3.42 \times 10^{97} u^{80} + \cdots + 2.30 \times 10^{98} b - 3.85 \times 10^{98},\ -1.39 \times 10^{99} u^{81} + 4.21 \times 10^{99} u^{80} + \cdots + 3.35 \times 10^{100} a + 5.52 \times 10^{101},\ u^{82} - 3u^{81} + \cdots - 360u + 73\rangle}$

(i) Arc colorings

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

$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.0413941u^{81} - 0.125753u^{80} + \cdots + 42.8841u - 16.4614 \\ -0.0672732u^{81} + 0.148848u^{80} + \cdots - 8.13184u + 1.67771 \end{pmatrix}$$

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

$$a_5 = \begin{pmatrix} -0.0821417u^{81} + 0.264163u^{80} + \cdots - 69.1648u + 27.9833 \\ 0.128564u^{81} - 0.295774u^{80} + \cdots + 10.3237u - 0.432825 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 0.129775u^{81} - 0.321359u^{80} + \cdots + 96.0521u - 36.0885 \\ -0.134314u^{81} + 0.328329u^{80} + \cdots - 16.2930u + 0.328601 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 0.264088u^{81} - 0.649687u^{80} + \cdots + 112.345u - 36.4171 \\ -0.134314u^{81} + 0.328329u^{80} + \cdots - 16.2930u + 0.328601 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.0708172u^{81} - 0.216816u^{80} + \cdots + 43.2679u - 15.8971 \\ -0.0495787u^{81} + 0.0950525u^{80} + \cdots - 4.54197u + 2.12782 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} u^2 + 1 \\ u^4 + 2u^2 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.0784673u^{81} - 0.196720u^{80} + \cdots + 47.2231u - 14.7403 \\ 0.0892485u^{81} - 0.257911u^{80} + \cdots + 33.5150u - 11.6127 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 0.153951u^{81} - 0.394472u^{80} + \cdots + 69.7949u - 26.5441 \\ -0.00512662u^{81} - 0.00648671u^{80} + \cdots + 9.47710u - 2.79106 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 0.0994831u^{81} - 0.402830u^{80} + \cdots - 10.5235u + 2.17824$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{82} + 40u^{81} + \cdots - 49u + 16$
c_2, c_5	$u^{82} + 4u^{81} + \cdots + 35u + 4$
c_3	$u^{82} - 4u^{81} + \cdots + 198067u + 62564$
c_4, c_9	$u^{82} - 2u^{81} + \cdots - 1536u + 2048$
c_6, c_7, c_{10}	$u^{82} - 3u^{81} + \cdots - 360u + 73$
c_8, c_{12}	$u^{82} - 3u^{81} + \cdots - 494u + 73$
c_{11}	$u^{82} + 33u^{81} + \cdots + 157464u + 5329$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{82} + 8y^{81} + \cdots + 20543y + 256$
c_2, c_5	$y^{82} + 40y^{81} + \cdots - 49y + 16$
c_3	$y^{82} - 24y^{81} + \cdots - 66737549857y + 3914254096$
c_4, c_9	$y^{82} + 40y^{81} + \cdots + 81002496y + 4194304$
c_6, c_7, c_{10}	$y^{82} + 85y^{81} + \cdots - 1704y + 5329$
c_8, c_{12}	$y^{82} + 33y^{81} + \cdots + 157464y + 5329$
c_{11}	$y^{82} + 45y^{81} + \cdots - 920479712y + 28398241$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.931867 + 0.288264I$ $a = 0.74456 + 2.19168I$ $b = -0.578133 + 1.146860I$	$-4.73439 - 13.08270I$	0
$u = 0.931867 - 0.288264I$ $a = 0.74456 - 2.19168I$ $b = -0.578133 - 1.146860I$	$-4.73439 + 13.08270I$	0
$u = -0.716067 + 0.747461I$ $a = -0.032611 + 1.086440I$ $b = -0.496263 + 1.079110I$	$-1.68085 - 2.38669I$	0
$u = -0.716067 - 0.747461I$ $a = -0.032611 - 1.086440I$ $b = -0.496263 - 1.079110I$	$-1.68085 + 2.38669I$	0
$u = 0.881772 + 0.288043I$ $a = -0.567238 + 0.105365I$ $b = -0.812359 - 0.318846I$	$-2.27548 - 7.90430I$	0
$u = 0.881772 - 0.288043I$ $a = -0.567238 - 0.105365I$ $b = -0.812359 + 0.318846I$	$-2.27548 + 7.90430I$	0
$u = -0.552972 + 0.923521I$ $a = 1.04759 - 1.44828I$ $b = -0.404154 - 1.082810I$	$-2.30869 + 4.66431I$	0
$u = -0.552972 - 0.923521I$ $a = 1.04759 + 1.44828I$ $b = -0.404154 + 1.082810I$	$-2.30869 - 4.66431I$	0
$u = 0.865905 + 0.193943I$ $a = -0.21817 - 2.33698I$ $b = -0.225527 - 1.181770I$	$-7.10693 - 4.86870I$	0
$u = 0.865905 - 0.193943I$ $a = -0.21817 + 2.33698I$ $b = -0.225527 + 1.181770I$	$-7.10693 + 4.86870I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.629083 + 0.592688I$ $a = 0.557418 - 0.631931I$ $b = -0.462219 - 0.392158I$	$0.35733 + 1.72933I$	0
$u = -0.629083 - 0.592688I$ $a = 0.557418 + 0.631931I$ $b = -0.462219 + 0.392158I$	$0.35733 - 1.72933I$	0
$u = -0.757316 + 0.260733I$ $a = -0.54770 + 3.02690I$ $b = 0.514202 + 1.095290I$	$-2.21702 + 6.90031I$	$-3.45370 - 7.38488I$
$u = -0.757316 - 0.260733I$ $a = -0.54770 - 3.02690I$ $b = 0.514202 - 1.095290I$	$-2.21702 - 6.90031I$	$-3.45370 + 7.38488I$
$u = 0.708061 + 0.318172I$ $a = 0.036016 - 0.721055I$ $b = 0.702828 - 0.691781I$	$-0.26229 - 5.35525I$	$-1.75979 + 8.80201I$
$u = 0.708061 - 0.318172I$ $a = 0.036016 + 0.721055I$ $b = 0.702828 + 0.691781I$	$-0.26229 + 5.35525I$	$-1.75979 - 8.80201I$
$u = 0.102266 + 1.220550I$ $a = 0.346306 - 1.356210I$ $b = -0.485285 - 1.241660I$	$-4.87377 + 3.17759I$	0
$u = 0.102266 - 1.220550I$ $a = 0.346306 + 1.356210I$ $b = -0.485285 + 1.241660I$	$-4.87377 - 3.17759I$	0
$u = -0.331871 + 0.700232I$ $a = 0.496451 - 0.036342I$ $b = -0.301233 + 0.157524I$	$0.204488 + 1.398330I$	$2.03862 - 5.44556I$
$u = -0.331871 - 0.700232I$ $a = 0.496451 + 0.036342I$ $b = -0.301233 - 0.157524I$	$0.204488 - 1.398330I$	$2.03862 + 5.44556I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.674373 + 0.346981I$ $a = 1.073310 + 0.123315I$ $b = 0.578755 - 0.306719I$	$0.00632 + 2.50124I$	$0.80512 - 3.77203I$
$u = -0.674373 - 0.346981I$ $a = 1.073310 - 0.123315I$ $b = 0.578755 + 0.306719I$	$0.00632 - 2.50124I$	$0.80512 + 3.77203I$
$u = 0.186356 + 1.239000I$ $a = 0.56436 + 1.53697I$ $b = -0.407486 + 1.256420I$	$-5.40817 - 6.29101I$	0
$u = 0.186356 - 1.239000I$ $a = 0.56436 - 1.53697I$ $b = -0.407486 - 1.256420I$	$-5.40817 + 6.29101I$	0
$u = 0.131448 + 1.261180I$ $a = 0.0126024 + 0.1044920I$ $b = -0.894097 + 0.065764I$	$-1.27320 - 1.76086I$	0
$u = 0.131448 - 1.261180I$ $a = 0.0126024 - 0.1044920I$ $b = -0.894097 - 0.065764I$	$-1.27320 + 1.76086I$	0
$u = 0.000944 + 0.700428I$ $a = 0.836733 - 0.250241I$ $b = 0.453431 + 0.652167I$	$0.85090 + 1.37273I$	$5.63231 - 4.46237I$
$u = 0.000944 - 0.700428I$ $a = 0.836733 + 0.250241I$ $b = 0.453431 - 0.652167I$	$0.85090 - 1.37273I$	$5.63231 + 4.46237I$
$u = 0.600384 + 0.298134I$ $a = -0.26365 + 1.53064I$ $b = 0.645915 + 0.903317I$	$-0.883850 - 0.200745I$	$-5.12754 + 3.53229I$
$u = 0.600384 - 0.298134I$ $a = -0.26365 - 1.53064I$ $b = 0.645915 - 0.903317I$	$-0.883850 + 0.200745I$	$-5.12754 - 3.53229I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.044049 + 1.339840I$ $a = 0.38952 + 1.43290I$ $b = 0.201452 + 1.108560I$	$2.76790 + 2.04513I$	0
$u = 0.044049 - 1.339840I$ $a = 0.38952 - 1.43290I$ $b = 0.201452 - 1.108560I$	$2.76790 - 2.04513I$	0
$u = 0.638837 + 0.095613I$ $a = -1.03149 - 2.03244I$ $b = -0.360549 - 1.188300I$	$-8.84527 + 3.38561I$	$-9.80482 - 3.21851I$
$u = 0.638837 - 0.095613I$ $a = -1.03149 + 2.03244I$ $b = -0.360549 + 1.188300I$	$-8.84527 - 3.38561I$	$-9.80482 + 3.21851I$
$u = -0.217222 + 1.359330I$ $a = 0.41987 - 1.65460I$ $b = 0.309949 - 1.160650I$	$1.51647 + 2.63898I$	0
$u = -0.217222 - 1.359330I$ $a = 0.41987 + 1.65460I$ $b = 0.309949 + 1.160650I$	$1.51647 - 2.63898I$	0
$u = -0.580389 + 0.144752I$ $a = -0.08898 - 3.84967I$ $b = 0.368006 - 1.071140I$	$-3.26708 - 0.25890I$	$-6.56949 - 0.34009I$
$u = -0.580389 - 0.144752I$ $a = -0.08898 + 3.84967I$ $b = 0.368006 + 1.071140I$	$-3.26708 + 0.25890I$	$-6.56949 + 0.34009I$
$u = -0.293167 + 1.373670I$ $a = -0.364644 + 0.989732I$ $b = -0.155107 + 1.157470I$	$0.62942 + 3.86909I$	0
$u = -0.293167 - 1.373670I$ $a = -0.364644 - 0.989732I$ $b = -0.155107 - 1.157470I$	$0.62942 - 3.86909I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.10157 + 1.41564I$ $a = -1.007610 - 0.291358I$ $b = 0.672906 - 0.991984I$	$6.01806 - 2.03585I$	0
$u = -0.10157 - 1.41564I$ $a = -1.007610 + 0.291358I$ $b = 0.672906 + 0.991984I$	$6.01806 + 2.03585I$	0
$u = 0.19353 + 1.40902I$ $a = -1.56362 - 1.41156I$ $b = 0.571655 - 1.099770I$	$5.20020 - 5.30195I$	0
$u = 0.19353 - 1.40902I$ $a = -1.56362 + 1.41156I$ $b = 0.571655 + 1.099770I$	$5.20020 + 5.30195I$	0
$u = 0.23431 + 1.41260I$ $a = -0.563863 + 0.112880I$ $b = 0.720598 + 0.946524I$	$4.58279 - 3.27171I$	0
$u = 0.23431 - 1.41260I$ $a = -0.563863 - 0.112880I$ $b = 0.720598 - 0.946524I$	$4.58279 + 3.27171I$	0
$u = 0.141385 + 0.546620I$ $a = -1.17091 - 2.94774I$ $b = 0.537230 - 0.935250I$	$0.01009 - 2.82413I$	$1.52552 - 1.31964I$
$u = 0.141385 - 0.546620I$ $a = -1.17091 + 2.94774I$ $b = 0.537230 + 0.935250I$	$0.01009 + 2.82413I$	$1.52552 + 1.31964I$
$u = 0.35574 + 1.39551I$ $a = -0.589303 - 1.191880I$ $b = -0.181803 - 1.231480I$	$-2.06157 - 9.25202I$	0
$u = 0.35574 - 1.39551I$ $a = -0.589303 + 1.191880I$ $b = -0.181803 + 1.231480I$	$-2.06157 + 9.25202I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.15745 + 1.43439I$ $a = -0.807625 - 0.077038I$ $b = 0.768058 + 0.620750I$	$7.11638 + 3.39177I$	0
$u = -0.15745 - 1.43439I$ $a = -0.807625 + 0.077038I$ $b = 0.768058 - 0.620750I$	$7.11638 - 3.39177I$	0
$u = 0.13510 + 1.43944I$ $a = -0.028780 - 0.593948I$ $b = 0.730607 + 0.374401I$	$7.31677 - 0.34373I$	0
$u = 0.13510 - 1.43944I$ $a = -0.028780 + 0.593948I$ $b = 0.730607 - 0.374401I$	$7.31677 + 0.34373I$	0
$u = -0.29944 + 1.41443I$ $a = -1.42686 + 1.79453I$ $b = 0.543220 + 1.143100I$	$3.13401 + 10.72870I$	0
$u = -0.29944 - 1.41443I$ $a = -1.42686 - 1.79453I$ $b = 0.543220 - 1.143100I$	$3.13401 - 10.72870I$	0
$u = -0.25420 + 1.43282I$ $a = 0.217341 + 0.561259I$ $b = 0.743632 - 0.257984I$	$5.70142 + 5.87245I$	0
$u = -0.25420 - 1.43282I$ $a = 0.217341 - 0.561259I$ $b = 0.743632 + 0.257984I$	$5.70142 - 5.87245I$	0
$u = 0.27241 + 1.42956I$ $a = -0.908143 - 0.308634I$ $b = 0.793344 - 0.693334I$	$5.33290 - 8.91870I$	0
$u = 0.27241 - 1.42956I$ $a = -0.908143 + 0.308634I$ $b = 0.793344 + 0.693334I$	$5.33290 + 8.91870I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.475745 + 0.209145I$ $a = 2.03995 + 2.38629I$ $b = -0.499651 + 1.175680I$	$-7.90191 - 5.12885I$	$-9.18084 + 4.19654I$
$u = 0.475745 - 0.209145I$ $a = 2.03995 - 2.38629I$ $b = -0.499651 - 1.175680I$	$-7.90191 + 5.12885I$	$-9.18084 - 4.19654I$
$u = 0.35661 + 1.44636I$ $a = 0.035317 + 0.650934I$ $b = -0.867997 - 0.346788I$	$3.26342 - 12.37470I$	0
$u = 0.35661 - 1.44636I$ $a = 0.035317 - 0.650934I$ $b = -0.867997 + 0.346788I$	$3.26342 + 12.37470I$	0
$u = -0.27471 + 1.46687I$ $a = 0.253358 - 0.576940I$ $b = -0.818333 + 0.377304I$	$5.76778 + 6.48991I$	0
$u = -0.27471 - 1.46687I$ $a = 0.253358 + 0.576940I$ $b = -0.818333 - 0.377304I$	$5.76778 - 6.48991I$	0
$u = 0.493335 + 0.088573I$ $a = -0.704097 + 1.043790I$ $b = -0.778342 - 0.137458I$	$-4.86017 - 0.43404I$	$-6.11324 + 0.16498I$
$u = 0.493335 - 0.088573I$ $a = -0.704097 - 1.043790I$ $b = -0.778342 + 0.137458I$	$-4.86017 + 0.43404I$	$-6.11324 - 0.16498I$
$u = 0.38104 + 1.45468I$ $a = 1.56176 + 1.40425I$ $b = -0.605715 + 1.158280I$	$0.8212 - 17.8110I$	0
$u = 0.38104 - 1.45468I$ $a = 1.56176 - 1.40425I$ $b = -0.605715 - 1.158280I$	$0.8212 + 17.8110I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.31053+1.48595I$ $a=\ \ 1.53155-1.11523I$ $b=-0.598642-1.130360I$	$3.51847+11.77520I$	0
$u=-0.31053-1.48595I$ $a=\ \ 1.53155+1.11523I$ $b=-0.598642+1.130360I$	$3.51847-11.77520I$	0
$u=\ \ 0.03211+1.54530I$ $a=\ \ 0.827192+0.027538I$ $b=-0.614172+0.556963I$	$8.23836+1.61654I$	0
$u=\ \ 0.03211-1.54530I$ $a=\ \ 0.827192-0.027538I$ $b=-0.614172-0.556963I$	$8.23836-1.61654I$	0
$u=-0.18029+1.54523I$ $a=\ \ 0.998658-0.285530I$ $b=-0.517302-0.643049I$	$7.43559+4.67815I$	0
$u=-0.18029-1.54523I$ $a=\ \ 0.998658+0.285530I$ $b=-0.517302+0.643049I$	$7.43559-4.67815I$	0
$u=-0.01098+1.60996I$ $a=\ \ 0.915198-0.352984I$ $b=-0.530424-1.010100I$	$6.89596+6.13785I$	0
$u=-0.01098-1.60996I$ $a=\ \ 0.915198+0.352984I$ $b=-0.530424+1.010100I$	$6.89596-6.13785I$	0
$u=-0.14411+1.60864I$ $a=\ \ 0.643410+0.262050I$ $b=-0.477631+0.979007I$	$6.41976+0.62950I$	0
$u=-0.14411-1.60864I$ $a=\ \ 0.643410-0.262050I$ $b=-0.477631-0.979007I$	$6.41976-0.62950I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.177461 + 0.198624I$ $a = 3.73067 + 4.25469I$ $b = 0.216638 + 0.860749I$	$-1.89160 + 1.79439I$	$-7.98709 - 4.10659I$
$u = -0.177461 - 0.198624I$ $a = 3.73067 - 4.25469I$ $b = 0.216638 - 0.860749I$	$-1.89160 - 1.79439I$	$-7.98709 + 4.10659I$

II.
$\boldsymbol{I_2^u = \langle -u^6-2u^4-u^3-u^2+b-u-1,\ u^{10}+3u^8+\cdots+a+u,\ u^{12}+4u^{10}+\cdots+u+1\rangle}$

(i) Arc colorings

$$a_6 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_2 = \begin{pmatrix}-u^{10}-3u^8-2u^7-3u^6-4u^5-3u^4-3u^3-2u^2-u\\u^6+2u^4+u^3+u^2+u+1\end{pmatrix}$$
$$a_7 = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_5 = \begin{pmatrix}-u^9-3u^7-u^6-3u^5-2u^4-2u^3-u^2+1\\u^3+u\end{pmatrix}$$
$$a_3 = \begin{pmatrix}-u^{10}-3u^8-u^7-3u^6-2u^5-2u^4-u^3-u^2+u+1\\u^9+3u^7+2u^6+3u^5+4u^4+3u^3+2u^2+2u+1\end{pmatrix}$$
$$a_4 = \begin{pmatrix}-u^{10}-u^9-3u^8-4u^7-5u^6-5u^5-6u^4-4u^3-3u^2-u\\u^9+3u^7+2u^6+3u^5+4u^4+3u^3+2u^2+2u+1\end{pmatrix}$$
$$a_1 = \begin{pmatrix}u\\u^3+u\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}u\\u^3+u\end{pmatrix}$$
$$a_8 = \begin{pmatrix}u^2+1\\u^4+2u^2\end{pmatrix}$$
$$a_9 = \begin{pmatrix}-u^4-u^2-1\\-u^6-2u^4-u^2\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}-u^3\\-u^5-u^3+u\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^9-12u^7-4u^6-12u^5-8u^4-12u^3-4u^2-8u+2$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^4+2u^3+3u^2+u+1)^3$
c_2, c_4, c_5 c_9	$(u^4+u^2-u+1)^3$
c_3	$(u^4-3u^3+4u^2-3u+2)^3$
c_6, c_7, c_8 c_{10}, c_{12}	$u^{12}+4u^{10}+2u^9+6u^8+6u^7+7u^6+6u^5+7u^4+3u^3+3u^2+u+1$
c_{11}	$u^{12}+8u^{11}+\cdots+5u+1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^4 + 2y^3 + 7y^2 + 5y + 1)^3$
c_2, c_4, c_5 c_9	$(y^4 + 2y^3 + 3y^2 + y + 1)^3$
c_3	$(y^4 - y^3 + 2y^2 + 7y + 4)^3$
c_6, c_7, c_8 c_{10}, c_{12}	$y^{12} + 8y^{11} + \cdots + 5y + 1$
c_{11}	$y^{12} - 8y^{11} + \cdots + 9y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.831200 + 0.424235I$ $a = \quad 0.94351 - 1.97518I$ $b = -0.547424 - 1.120870I$	$-2.62503 + 7.64338I$	$-1.77019 - 6.51087I$
$u = -0.831200 - 0.424235I$ $a = \quad 0.94351 + 1.97518I$ $b = -0.547424 + 1.120870I$	$-2.62503 - 7.64338I$	$-1.77019 + 6.51087I$
$u = \quad 0.636602 + 0.984558I$ $a = \quad 0.023505 - 1.114990I$ $b = -0.547424 - 1.120870I$	$-2.62503 + 7.64338I$	$-1.77019 - 6.51087I$
$u = \quad 0.636602 - 0.984558I$ $a = \quad 0.023505 + 1.114990I$ $b = -0.547424 + 1.120870I$	$-2.62503 - 7.64338I$	$-1.77019 + 6.51087I$
$u = \quad 0.012163 + 1.233070I$ $a = -1.07001 + 1.70262I$ $b = \quad 0.547424 - 0.585652I$	$0.98010 - 1.39709I$	$3.77019 + 3.86736I$
$u = \quad 0.012163 - 1.233070I$ $a = -1.07001 - 1.70262I$ $b = \quad 0.547424 + 0.585652I$	$0.98010 + 1.39709I$	$3.77019 - 3.86736I$
$u = \quad 0.369581 + 0.646475I$ $a = \quad 0.947255 - 0.427323I$ $b = \quad 0.547424 + 0.585652I$	$0.98010 + 1.39709I$	$3.77019 - 3.86736I$
$u = \quad 0.369581 - 0.646475I$ $a = \quad 0.947255 + 0.427323I$ $b = \quad 0.547424 - 0.585652I$	$0.98010 - 1.39709I$	$3.77019 + 3.86736I$
$u = -0.381744 + 0.586589I$ $a = \quad 0.252697 + 0.206342I$ $b = \quad 0.547424 + 0.585652I$	$0.98010 + 1.39709I$	$3.77019 - 3.86736I$
$u = -0.381744 - 0.586589I$ $a = \quad 0.252697 - 0.206342I$ $b = \quad 0.547424 - 0.585652I$	$0.98010 - 1.39709I$	$3.77019 + 3.86736I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.19460 + 1.40879I$ $a = 1.90304 + 0.59138I$ $b = -0.547424 + 1.120870I$	$-2.62503 - 7.64338I$	$-1.77019 + 6.51087I$
$u = 0.19460 - 1.40879I$ $a = 1.90304 - 0.59138I$ $b = -0.547424 - 1.120870I$	$-2.62503 + 7.64338I$	$-1.77019 - 6.51087I$

III.

$\boldsymbol{I_3^u = \langle u^2a - au + u^2 + b - u,\ 2u^3a - 5u^3 + \cdots - 2a + 15,\ u^4 - u^3 + 3u^2 - 2u + 1\rangle}$

(i) Arc colorings

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

$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} a \\ -u^2a + au - u^2 + u \end{pmatrix}$$

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

$$a_5 = \begin{pmatrix} u^2a + \frac{1}{2}u^3 - au + a + \frac{1}{2}u - \frac{1}{2} \\ -u^2a + au - u^2 + u - 1 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} \frac{1}{2}u^3 - u^2 + a + \frac{3}{2}u - \frac{3}{2} \\ -u^2a + au - u^2 + u - 1 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} u^2a + \frac{1}{2}u^3 - au + a + \frac{1}{2}u - \frac{1}{2} \\ -u^2a + au - u^2 + u - 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} u^2 + 1 \\ u^3 - u^2 + 2u - 1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= \frac{3}{2}u^3a - 3u^2a + \frac{9}{2}u^3 - \frac{1}{2}au - 5u^2 - \frac{5}{2}a + \frac{21}{2}u - \frac{9}{2}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_3, c_5	$(u^2 - u + 1)^4$
c_2	$(u^2 + u + 1)^4$
c_4, c_9	u^8
c_6, c_7, c_{11}	$(u^4 - u^3 + 3u^2 - 2u + 1)^2$
c_8	$(u^4 - u^3 + u^2 + 1)^2$
c_{10}	$(u^4 + u^3 + 3u^2 + 2u + 1)^2$
c_{12}	$(u^4 + u^3 + u^2 + 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_3 c_5	$(y^2 + y + 1)^4$
c_4, c_9	y^8
c_6, c_7, c_{10} c_{11}	$(y^4 + 5y^3 + 7y^2 + 2y + 1)^2$
c_8, c_{12}	$(y^4 + y^3 + 3y^2 + 2y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.395123 + 0.506844I$ $a = 0.32193 + 1.46300I$ $b = 0.500000 + 0.866025I$	$-0.211005 + 0.614778I$	$0.065036 - 0.652246I$
$u = 0.395123 + 0.506844I$ $a = -0.39397 - 1.87632I$ $b = 0.500000 - 0.866025I$	$-0.21101 - 3.44499I$	$-2.28131 + 9.48913I$
$u = 0.395123 - 0.506844I$ $a = 0.32193 - 1.46300I$ $b = 0.500000 - 0.866025I$	$-0.211005 - 0.614778I$	$0.065036 + 0.652246I$
$u = 0.395123 - 0.506844I$ $a = -0.39397 + 1.87632I$ $b = 0.500000 + 0.866025I$	$-0.21101 + 3.44499I$	$-2.28131 - 9.48913I$
$u = 0.10488 + 1.55249I$ $a = -0.975620 - 0.357786I$ $b = 0.500000 - 0.866025I$	$6.79074 - 5.19385I$	$-0.84181 + 3.92087I$
$u = 0.10488 + 1.55249I$ $a = -0.702338 + 0.200007I$ $b = 0.500000 + 0.866025I$	$6.79074 - 1.13408I$	$4.18309 + 3.88645I$
$u = 0.10488 - 1.55249I$ $a = -0.975620 + 0.357786I$ $b = 0.500000 + 0.866025I$	$6.79074 + 5.19385I$	$-0.84181 - 3.92087I$
$u = 0.10488 - 1.55249I$ $a = -0.702338 - 0.200007I$ $b = 0.500000 - 0.866025I$	$6.79074 + 1.13408I$	$4.18309 - 3.88645I$

IV.

$\boldsymbol{I^u_4 = \langle 89a^4u - 332a^3u + \cdots + 93a - 208,\ -5a^4u + 13a^3u + \cdots + 3a + 5,\ u^2 + 1\rangle}$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} a \\ -0.514451a^4u + 1.91908a^3u + \cdots - 0.537572a + 1.20231 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 1 \\ -1 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -0.919075a^4u + 0.653179a^3u + \cdots - 7.58960a + 4.86705 \\ 0.0173410a^4u - 1.50289a^3u + \cdots - 3.55491a + 0.757225 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -0.0115607a^4u - 0.664740a^3u + \cdots + 0.369942a - 0.838150 \\ 0.254335a^4u + 1.62428a^3u + \cdots + 5.86127a - 2.56069 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -0.265896a^4u - 2.28902a^3u + \cdots - 5.49133a + 1.72254 \\ 0.254335a^4u + 1.62428a^3u + \cdots + 5.86127a - 2.56069 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u \\ -0.156069a^4u - 1.47399a^3u + \cdots - 4.00578a - 0.815029 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u \\ 0 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ -0.514451a^4u + 1.91908a^3u + \cdots - 1.53757a + 2.20231 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} u \\ -0.156069a^4u - 1.47399a^3u + \cdots - 4.00578a - 0.815029 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes
$= -\frac{188}{173}a^4u + \frac{184}{173}a^4 - \frac{84}{173}a^3u - \frac{1184}{173}a^3 + \frac{648}{173}a^2u + \frac{1324}{173}a^2 + \frac{352}{173}au - \frac{1596}{173}a + \frac{500}{173}u + \frac{556}{173}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^5 - 3u^4 + 4u^3 - u^2 - u + 1)^2$
c_2	$(u^5 - u^4 + 2u^3 - u^2 + u - 1)^2$
c_3	$(u^5 + u^4 - 2u^3 - u^2 + u - 1)^2$
c_4, c_9	$u^{10} + 5u^8 + 8u^6 + 3u^4 - u^2 + 1$
c_5	$(u^5 + u^4 + 2u^3 + u^2 + u + 1)^2$
c_6, c_7, c_8 c_{10}, c_{12}	$(u^2 + 1)^5$
c_{11}	$(u - 1)^{10}$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^5 - y^4 + 8y^3 - 3y^2 + 3y - 1)^2$
c_2, c_5	$(y^5 + 3y^4 + 4y^3 + y^2 - y - 1)^2$
c_3	$(y^5 - 5y^4 + 8y^3 - 3y^2 - y - 1)^2$
c_4, c_9	$(y^5 + 5y^4 + 8y^3 + 3y^2 - y + 1)^2$
c_6, c_7, c_8 c_{10}, c_{12}	$(y+1)^{10}$
c_{11}	$(y-1)^{10}$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.000000I$ $a = -0.077593 - 1.165070I$ $b = -0.455697 - 1.200150I$	$-5.87256 + 4.40083I$	$-4.74431 - 3.49859I$
$u = 1.000000I$ $a = 0.233174 + 0.517119I$ $b = -0.766826$	-2.40108	$-1.48114 + 0.I$
$u = 1.000000I$ $a = 1.16620 + 1.23524I$ $b = -0.455697 + 1.200150I$	$-5.87256 - 4.40083I$	$-4.74431 + 3.49859I$
$u = 1.000000I$ $a = 1.67996 + 1.38398I$ $b = 0.339110 - 0.822375I$	$-0.32910 - 1.53058I$	$-0.51511 + 4.43065I$
$u = 1.000000I$ $a = 0.99826 + 3.02873I$ $b = 0.339110 + 0.822375I$	$-0.32910 + 1.53058I$	$-0.51511 - 4.43065I$
$u = -1.000000I$ $a = -0.077593 + 1.165070I$ $b = -0.455697 + 1.200150I$	$-5.87256 - 4.40083I$	$-4.74431 + 3.49859I$
$u = -1.000000I$ $a = 0.233174 - 0.517119I$ $b = -0.766826$	-2.40108	$-1.48114 + 0.I$
$u = -1.000000I$ $a = 1.16620 - 1.23524I$ $b = -0.455697 - 1.200150I$	$-5.87256 + 4.40083I$	$-4.74431 - 3.49859I$
$u = -1.000000I$ $a = 1.67996 - 1.38398I$ $b = 0.339110 + 0.822375I$	$-0.32910 + 1.53058I$	$-0.51511 - 4.43065I$
$u = -1.000000I$ $a = 0.99826 - 3.02873I$ $b = 0.339110 - 0.822375I$	$-0.32910 - 1.53058I$	$-0.51511 + 4.43065I$

V.

$$\boldsymbol{I^u_5 = \langle u^{12}+4u^{10}+\cdots+2u^2+b,\ u^{12}+5u^{10}+\cdots+a+1,\ u^{18}+6u^{16}+\cdots+2u^3+1\rangle}$$

(i) Arc colorings

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

$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -u^{12} - 5u^{10} + \cdots - 2u - 1 \\ -u^{12} - 4u^{10} - 2u^9 - 6u^8 - 6u^7 - 6u^6 - 6u^5 - 5u^4 - 2u^3 - 2u^2 \end{pmatrix}$$

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

$$a_5 = \begin{pmatrix} u^{16} + 5u^{14} + \cdots - 2u - 1 \\ -u^{15} - 5u^{13} + \cdots - u - 1 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} u^{15} + 6u^{13} + \cdots - 2u - 1 \\ u^{15} + 5u^{13} + \cdots - u^2 - u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} u^{13} + 4u^{11} + 2u^{10} + 7u^9 + 6u^8 + 8u^7 + 7u^6 + 6u^5 + 3u^4 + 2u^3 - u - 1 \\ u^{15} + 5u^{13} + \cdots - u^2 - u \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} u^2 + 1 \\ u^4 + 2u^2 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u^4 - u^2 - 1 \\ -u^6 - 2u^4 - u^2 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -u^3 \\ -u^5 - u^3 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$= -4u^{15} - 20u^{13} - 8u^{12} - 40u^{11} - 32u^{10} - 44u^9 - 48u^8 - 32u^7 - 28u^6 - 16u^5 + 4u^2 + 4u - 2$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^6+3u^5+4u^4+2u^3+1)^3$
c_2, c_4, c_5 c_9	$(u^6+u^5+2u^4+2u^3+2u^2+2u+1)^3$
c_3	$(u^3+u^2-1)^6$
c_6, c_7, c_8 c_{10}, c_{12}	$u^{18}+6u^{16}+\cdots+2u^3+1$
c_{11}	$u^{18}+12u^{17}+\cdots+8u^2+1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^6 - y^5 + 4y^4 - 2y^3 + 8y^2 + 1)^3$
c_2, c_4, c_5 c_9	$(y^6 + 3y^5 + 4y^4 + 2y^3 + 1)^3$
c_3	$(y^3 - y^2 + 2y - 1)^6$
c_6, c_7, c_8 c_{10}, c_{12}	$y^{18} + 12y^{17} + \cdots + 8y^2 + 1$
c_{11}	$y^{18} - 12y^{17} + \cdots + 16y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.313259+0.899357I$ $a=\ \ 0.45015-2.25952I$ $b=\ \ 0.498832-1.001300I$	$-0.26574-2.82812I$	$1.50976+2.97945I$
$u=-0.313259-0.899357I$ $a=\ \ 0.45015+2.25952I$ $b=\ \ 0.498832+1.001300I$	$-0.26574+2.82812I$	$1.50976-2.97945I$
$u=\ \ 0.561896+0.941136I$ $a=\ \ 0.236041+0.494044I$ $b=-0.713912+0.305839I$	$-0.26574+2.82812I$	$1.50976-2.97945I$
$u=\ \ 0.561896-0.941136I$ $a=\ \ 0.236041-0.494044I$ $b=-0.713912-0.305839I$	$-0.26574-2.82812I$	$1.50976+2.97945I$
$u=-0.731365+0.409982I$ $a=-0.296941-0.190639I$ $b=-0.713912+0.305839I$	$-0.26574+2.82812I$	$1.50976-2.97945I$
$u=-0.731365-0.409982I$ $a=-0.296941+0.190639I$ $b=-0.713912-0.305839I$	$-0.26574-2.82812I$	$1.50976+2.97945I$
$u=-0.789849+0.225271I$ $a=-0.23233+1.95687I$ $b=-0.284920+1.115140I$	-4.40332	$-5.01951+0.I$
$u=-0.789849-0.225271I$ $a=-0.23233-1.95687I$ $b=-0.284920-1.115140I$	-4.40332	$-5.01951+0.I$
$u=-0.128706+1.190210I$ $a=-3.31018+1.26239I$ $b=\ \ 0.498832+1.001300I$	$-0.26574+2.82812I$	$1.50976-2.97945I$
$u=-0.128706-1.190210I$ $a=-3.31018-1.26239I$ $b=\ \ 0.498832-1.001300I$	$-0.26574-2.82812I$	$1.50976+2.97945I$

Solutions to I_5^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.506047 + 1.088270I$ $a = 1.08391 + 1.64474I$ $b = -0.284920 + 1.115140I$	-4.40332	$-5.01951 + 0.I$
$u = 0.506047 - 1.088270I$ $a = 1.08391 - 1.64474I$ $b = -0.284920 - 1.115140I$	-4.40332	$-5.01951 + 0.I$
$u = 0.283803 + 1.313550I$ $a = -0.574018 - 0.362840I$ $b = -0.284920 - 1.115140I$	-4.40332	$-5.01951 + 0.I$
$u = 0.283803 - 1.313550I$ $a = -0.574018 + 0.362840I$ $b = -0.284920 + 1.115140I$	-4.40332	$-5.01951 + 0.I$
$u = 0.169470 + 1.351120I$ $a = 0.731066 + 0.861716I$ $b = -0.713912 - 0.305839I$	$-0.26574 - 2.82812I$	$1.50976 + 2.97945I$
$u = 0.169470 - 1.351120I$ $a = 0.731066 - 0.861716I$ $b = -0.713912 + 0.305839I$	$-0.26574 + 2.82812I$	$1.50976 - 2.97945I$
$u = 0.441965 + 0.290850I$ $a = -1.08769 - 3.19240I$ $b = 0.498832 - 1.001300I$	$-0.26574 - 2.82812I$	$1.50976 + 2.97945I$
$u = 0.441965 - 0.290850I$ $a = -1.08769 + 3.19240I$ $b = 0.498832 + 1.001300I$	$-0.26574 + 2.82812I$	$1.50976 - 2.97945I$

VI. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^2-u+1)^4(u^4+2u^3+3u^2+u+1)^3(u^5-3u^4+4u^3-u^2-u+1)^2$ $\cdot((u^6+3u^5+4u^4+2u^3+1)^3)(u^{82}+40u^{81}+\cdots-49u+16)$
c_2	$(u^2+u+1)^4(u^4+u^2-u+1)^3(u^5-u^4+2u^3-u^2+u-1)^2$ $\cdot((u^6+u^5+2u^4+2u^3+2u^2+2u+1)^3)(u^{82}+4u^{81}+\cdots+35u+4)$
c_3	$(u^2-u+1)^4(u^3+u^2-1)^6(u^4-3u^3+4u^2-3u+2)^3$ $\cdot((u^5+u^4-2u^3-u^2+u-1)^2)(u^{82}-4u^{81}+\cdots+198067u+62564)$
c_4, c_9	$u^8(u^4+u^2-u+1)^3(u^6+u^5+2u^4+2u^3+2u^2+2u+1)^3$ $\cdot(u^{10}+5u^8+8u^6+3u^4-u^2+1)(u^{82}-2u^{81}+\cdots-1536u+2048)$
c_5	$(u^2-u+1)^4(u^4+u^2-u+1)^3(u^5+u^4+2u^3+u^2+u+1)^2$ $\cdot((u^6+u^5+2u^4+2u^3+2u^2+2u+1)^3)(u^{82}+4u^{81}+\cdots+35u+4)$
c_6, c_7	$(u^2+1)^5(u^4-u^3+3u^2-2u+1)^2$ $\cdot(u^{12}+4u^{10}+2u^9+6u^8+6u^7+7u^6+6u^5+7u^4+3u^3+3u^2+u+1)$ $\cdot(u^{18}+6u^{16}+\cdots+2u^3+1)(u^{82}-3u^{81}+\cdots-360u+73)$
c_8	$(u^2+1)^5(u^4-u^3+u^2+1)^2$ $\cdot(u^{12}+4u^{10}+2u^9+6u^8+6u^7+7u^6+6u^5+7u^4+3u^3+3u^2+u+1)$ $\cdot(u^{18}+6u^{16}+\cdots+2u^3+1)(u^{82}-3u^{81}+\cdots-494u+73)$
c_{10}	$(u^2+1)^5(u^4+u^3+3u^2+2u+1)^2$ $\cdot(u^{12}+4u^{10}+2u^9+6u^8+6u^7+7u^6+6u^5+7u^4+3u^3+3u^2+u+1)$ $\cdot(u^{18}+6u^{16}+\cdots+2u^3+1)(u^{82}-3u^{81}+\cdots-360u+73)$
c_{11}	$((u-1)^{10})(u^4-u^3+3u^2-2u+1)^2(u^{12}+8u^{11}+\cdots+5u+1)$ $\cdot(u^{18}+12u^{17}+\cdots+8u^2+1)(u^{82}+33u^{81}+\cdots+157464u+5329)$
c_{12}	$(u^2+1)^5(u^4+u^3+u^2+1)^2$ $\cdot(u^{12}+4u^{10}+2u^9+6u^8+6u^7+7u^6+6u^5+7u^4+3u^3+3u^2+u+1)$ $\cdot(u^{18}+6u^{16}+\cdots+2u^3+1)(u^{82}-3u^{81}+\cdots-494u+73)$

VII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y^2+y+1)^4(y^4+2y^3+7y^2+5y+1)^3$ $\cdot(y^5-y^4+8y^3-3y^2+3y-1)^2(y^6-y^5+4y^4-2y^3+8y^2+1)^3$ $\cdot(y^{82}+8y^{81}+\cdots+20543y+256)$
c_2, c_5	$(y^2+y+1)^4(y^4+2y^3+3y^2+y+1)^3(y^5+3y^4+4y^3+y^2-y-1)^2$ $\cdot((y^6+3y^5+4y^4+2y^3+1)^3)(y^{82}+40y^{81}+\cdots-49y+16)$
c_3	$(y^2+y+1)^4(y^3-y^2+2y-1)^6(y^4-y^3+2y^2+7y+4)^3$ $\cdot(y^5-5y^4+8y^3-3y^2-y-1)^2$ $\cdot(y^{82}-24y^{81}+\cdots-66737549857y+3914254096)$
c_4, c_9	$y^8(y^4+2y^3+3y^2+y+1)^3(y^5+5y^4+8y^3+3y^2-y+1)^2$ $\cdot(y^6+3y^5+4y^4+2y^3+1)^3$ $\cdot(y^{82}+40y^{81}+\cdots+81002496y+4194304)$
c_6, c_7, c_{10}	$((y+1)^{10})(y^4+5y^3+\cdots+2y+1)^2(y^{12}+8y^{11}+\cdots+5y+1)$ $\cdot(y^{18}+12y^{17}+\cdots+8y^2+1)(y^{82}+85y^{81}+\cdots-1704y+5329)$
c_8, c_{12}	$((y+1)^{10})(y^4+y^3+3y^2+2y+1)^2(y^{12}+8y^{11}+\cdots+5y+1)$ $\cdot(y^{18}+12y^{17}+\cdots+8y^2+1)(y^{82}+33y^{81}+\cdots+157464y+5329)$
c_{11}	$((y-1)^{10})(y^4+5y^3+\cdots+2y+1)^2(y^{12}-8y^{11}+\cdots+9y+1)$ $\cdot(y^{18}-12y^{17}+\cdots+16y+1)$ $\cdot(y^{82}+45y^{81}+\cdots-920479712y+28398241)$