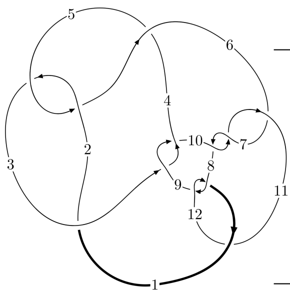
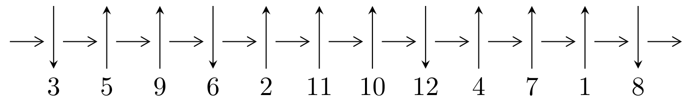
$12a_{0177}$ $(K12a_{0177})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & 7.32498 \times 10^{64} u^{73} + 8.66991 \times 10^{64} u^{72} + \cdots + 6.16277 \times 10^{65} b - 4.73818 \times 10^{66}, \\
& - 1.00235 \times 10^{67} u^{73} - 1.65925 \times 10^{67} u^{72} + \cdots + 2.09534 \times 10^{67} a + 3.92221 \times 10^{68}, \\
& u^{74} + 3u^{73} + \cdots + 241u + 34 \rangle \\
I_2^u = \langle & -u^{12} - 4u^{10} + 2u^9 - 6u^8 + 6u^7 - 6u^6 + 6u^5 - 5u^4 + 2u^3 - 2u^2 + b, \\
& u^{10} + 3u^8 - 2u^7 + 4u^6 - 4u^5 + 5u^4 - 4u^3 + 3u^2 + a - 2u + 1,\ u^{27} + 9u^{25} + \cdots + u - 1 \rangle \\
I_3^u = \langle & u^2 a + u^2 + b + a + 1,\ 2u^3 a + 4u^2 a + 5u^3 + 4a^2 + 6au + 6u^2 + 14a + 13u + 15,\ u^4 + u^3 + 3u^2 + 2u + 1 \rangle \\
I_4^u = \langle & -a^2 - 2au + b + 2a + 2u - 1,\ a^4 + 3a^3 u - 4a^3 - 9a^2 u + 5a^2 + 11au - 2a - 5u + 1,\ u^2 + 1 \rangle
\end{aligned}$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 117 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. $\boldsymbol{I_1^u = \langle 7.32 \times 10^{64} u^{73} + 8.67 \times 10^{64} u^{72} + \cdots + 6.16 \times 10^{65} b - 4.74 \times 10^{66},\ -1.00 \times 10^{67} u^{73} - 1.66 \times 10^{67} u^{72} + \cdots + 2.10 \times 10^{67} a + 3.92 \times 10^{68},\ u^{74} + 3u^{73} + \cdots + 241u + 34\rangle}$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 0.478370u^{73} + 0.791874u^{72} + \cdots - 33.3429u - 18.7187 \\ -0.118859u^{73} - 0.140682u^{72} + \cdots + 21.7836u + 7.68839 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -1.54482u^{73} - 3.80613u^{72} + \cdots - 519.075u - 88.4779 \\ 0.760024u^{73} + 1.86639u^{72} + \cdots + 269.188u + 47.8263 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 0.570211u^{73} + 1.31506u^{72} + \cdots + 144.190u + 26.0532 \\ 0.0702357u^{73} + 0.201359u^{72} + \cdots - 19.1668u - 9.42275 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 0.737803u^{73} + 1.93511u^{72} + \cdots + 256.366u + 47.4633 \\ 0.565372u^{73} + 1.35960u^{72} + \cdots + 138.390u + 21.9622 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -0.784791u^{73} - 1.93974u^{72} + \cdots - 249.887u - 40.6516 \\ 0.760024u^{73} + 1.86639u^{72} + \cdots + 269.188u + 47.8263 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} u^2 + 1 \\ -u^4 - 2u^2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1.26077u^{73} + 3.03039u^{72} + \cdots + 376.302u + 61.5916 \\ -1.04521u^{73} - 2.74727u^{72} + \cdots - 382.989u - 69.8736 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 1.61959u^{73} + 4.23678u^{72} + \cdots + 593.454u + 111.477 \\ 0.435515u^{73} + 0.883326u^{72} + \cdots + 44.5571u + 0.814681 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 0.202194u^{73} + 0.134817u^{72} + \cdots - 112.657u - 17.5239$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{74} + 24u^{73} + \cdots - 225u + 16$
c_2, c_5	$u^{74} + 4u^{73} + \cdots + 35u + 4$
c_3, c_9	$u^{74} - 2u^{73} + \cdots - 2560u + 2048$
c_6, c_7, c_{10}	$u^{74} + 3u^{73} + \cdots + 241u + 34$
c_8, c_{12}	$u^{74} + 3u^{73} + \cdots + 243u + 34$
c_{11}	$u^{74} - 31u^{73} + \cdots - 29555u + 1156$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{74} + 56y^{73} + \cdots + 227743y + 256$
c_2, c_5	$y^{74} + 24y^{73} + \cdots - 225y + 16$
c_3, c_9	$y^{74} - 40y^{73} + \cdots - 36438016y + 4194304$
c_6, c_7, c_{10}	$y^{74} + 75y^{73} + \cdots + 36099y + 1156$
c_8, c_{12}	$y^{74} + 31y^{73} + \cdots + 29555y + 1156$
c_{11}	$y^{74} + 35y^{73} + \cdots + 11195711y + 1336336$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.944775 + 0.259860I$ $a = 2.05390 - 0.30574I$ $b = -0.743584 + 1.028880I$	$5.92126 - 12.56140I$	0
$u = -0.944775 - 0.259860I$ $a = 2.05390 + 0.30574I$ $b = -0.743584 - 1.028880I$	$5.92126 + 12.56140I$	0
$u = -0.921296 + 0.218016I$ $a = 1.35216 + 1.03131I$ $b = -0.857448 - 0.692852I$	$6.95372 - 6.59603I$	0
$u = -0.921296 - 0.218016I$ $a = 1.35216 - 1.03131I$ $b = -0.857448 + 0.692852I$	$6.95372 + 6.59603I$	0
$u = 0.701992 + 0.812926I$ $a = 0.745443 - 0.467058I$ $b = -0.711125 + 0.915757I$	$2.32200 - 1.76357I$	0
$u = 0.701992 - 0.812926I$ $a = 0.745443 + 0.467058I$ $b = -0.711125 - 0.915757I$	$2.32200 + 1.76357I$	0
$u = 0.633453 + 0.888233I$ $a = 1.49188 - 0.19124I$ $b = -0.734625 - 0.820944I$	$2.61817 + 3.75049I$	0
$u = 0.633453 - 0.888233I$ $a = 1.49188 + 0.19124I$ $b = -0.734625 + 0.820944I$	$2.61817 - 3.75049I$	0
$u = -0.784151 + 0.296355I$ $a = -0.632018 + 0.069860I$ $b = 0.190621 - 1.095890I$	$-0.13573 - 6.54057I$	$4.00000 + 8.07439I$
$u = -0.784151 - 0.296355I$ $a = -0.632018 - 0.069860I$ $b = 0.190621 + 1.095890I$	$-0.13573 + 6.54057I$	$4.00000 - 8.07439I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.672265 + 0.482118I$ $a = 1.222840 + 0.018497I$ $b = -0.042473 - 0.877998I$	$-1.54681 + 2.12225I$	$0. - 3.10049I$
$u = 0.672265 - 0.482118I$ $a = 1.222840 - 0.018497I$ $b = -0.042473 + 0.877998I$	$-1.54681 - 2.12225I$	$0. + 3.10049I$
$u = -0.126360 + 1.199890I$ $a = 1.040200 + 0.208918I$ $b = -0.877658 - 0.958922I$	$6.07360 + 1.90106I$	0
$u = -0.126360 - 1.199890I$ $a = 1.040200 - 0.208918I$ $b = -0.877658 + 0.958922I$	$6.07360 - 1.90106I$	0
$u = 0.114557 + 0.782746I$ $a = 0.659521 + 0.464671I$ $b = 0.177178 + 0.779440I$	$-1.59283 + 1.64325I$	$-3.33878 - 4.86673I$
$u = 0.114557 - 0.782746I$ $a = 0.659521 - 0.464671I$ $b = 0.177178 - 0.779440I$	$-1.59283 - 1.64325I$	$-3.33878 + 4.86673I$
$u = -0.164572 + 1.204940I$ $a = 1.227960 - 0.069637I$ $b = -0.910018 + 0.882320I$	$6.31241 - 4.67571I$	0
$u = -0.164572 - 1.204940I$ $a = 1.227960 + 0.069637I$ $b = -0.910018 - 0.882320I$	$6.31241 + 4.67571I$	0
$u = 0.742648 + 0.206519I$ $a = -2.53072 - 1.14776I$ $b = 0.716663 + 0.940041I$	$2.97428 + 6.29652I$	$7.50844 - 6.68334I$
$u = 0.742648 - 0.206519I$ $a = -2.53072 + 1.14776I$ $b = 0.716663 - 0.940041I$	$2.97428 - 6.29652I$	$7.50844 + 6.68334I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.717121+0.158800I$ $a=-1.225590+0.380080I$ $b=\ \ 0.731356-0.145206I$	$3.98068-3.64075I$	$11.59299+4.80389I$
$u=-0.717121-0.158800I$ $a=-1.225590-0.380080I$ $b=\ \ 0.731356+0.145206I$	$3.98068+3.64075I$	$11.59299-4.80389I$
$u=\ \ 0.668164+0.154518I$ $a=-2.39850+1.57549I$ $b=\ \ 0.744333-0.790073I$	$3.43591+0.73188I$	$9.08233-1.08851I$
$u=\ \ 0.668164-0.154518I$ $a=-2.39850-1.57549I$ $b=\ \ 0.744333+0.790073I$	$3.43591-0.73188I$	$9.08233+1.08851I$
$u=-0.129344+1.322690I$ $a=-0.479899-0.769382I$ $b=\ \ 0.779061+0.657588I$	$-3.18435+0.63847I$	0
$u=-0.129344-1.322690I$ $a=-0.479899+0.769382I$ $b=\ \ 0.779061-0.657588I$	$-3.18435-0.63847I$	0
$u=\ \ 0.168573+1.321110I$ $a=-0.405207+0.035030I$ $b=\ \ 0.761529+0.328332I$	$-2.90837+2.42803I$	0
$u=\ \ 0.168573-1.321110I$ $a=-0.405207-0.035030I$ $b=\ \ 0.761529-0.328332I$	$-2.90837-2.42803I$	0
$u=-0.619119+0.176034I$ $a=\ \ 0.73745+1.54337I$ $b=-0.846329-0.820584I$	$9.31962+1.94114I$	$12.61811-2.00223I$
$u=-0.619119-0.176034I$ $a=\ \ 0.73745-1.54337I$ $b=-0.846329+0.820584I$	$9.31962-1.94114I$	$12.61811+2.00223I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.080972 + 1.372850I$ $a = -0.741831 - 0.900405I$ $b = 0.543374 - 1.089860I$	$-5.16943 - 2.42403I$	0
$u = 0.080972 - 1.372850I$ $a = -0.741831 + 0.900405I$ $b = 0.543374 + 1.089860I$	$-5.16943 + 2.42403I$	0
$u = -0.195770 + 1.365850I$ $a = -1.82469 - 0.71360I$ $b = 0.693804 - 1.006320I$	$-4.22851 - 4.92303I$	0
$u = -0.195770 - 1.365850I$ $a = -1.82469 + 0.71360I$ $b = 0.693804 + 1.006320I$	$-4.22851 + 4.92303I$	0
$u = 0.264758 + 1.357650I$ $a = -0.734404 + 0.940199I$ $b = 0.834563 - 0.756749I$	$-1.35573 + 4.11982I$	0
$u = 0.264758 - 1.357650I$ $a = -0.734404 - 0.940199I$ $b = 0.834563 + 0.756749I$	$-1.35573 - 4.11982I$	0
$u = -0.287291 + 1.361710I$ $a = -0.635754 - 0.259327I$ $b = 0.855562 - 0.209147I$	$-0.83655 - 7.27459I$	0
$u = -0.287291 - 1.361710I$ $a = -0.635754 + 0.259327I$ $b = 0.855562 + 0.209147I$	$-0.83655 + 7.27459I$	0
$u = -0.221792 + 1.376420I$ $a = -0.337020 + 0.630518I$ $b = 0.469813 + 1.138480I$	$-3.81286 - 2.52146I$	0
$u = -0.221792 - 1.376420I$ $a = -0.337020 - 0.630518I$ $b = 0.469813 - 1.138480I$	$-3.81286 + 2.52146I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.545845 + 0.228098I$ $a = 2.57811 + 0.51294I$ $b = -0.800509 + 0.954675I$	$8.90634 - 4.18645I$	$12.18887 + 3.45540I$
$u = -0.545845 - 0.228098I$ $a = 2.57811 - 0.51294I$ $b = -0.800509 - 0.954675I$	$8.90634 + 4.18645I$	$12.18887 - 3.45540I$
$u = -0.545719 + 0.215154I$ $a = -1.73543 - 0.37199I$ $b = 0.421570 + 1.033690I$	$1.244170 + 0.336310I$	$9.44086 + 1.14384I$
$u = -0.545719 - 0.215154I$ $a = -1.73543 + 0.37199I$ $b = 0.421570 - 1.033690I$	$1.244170 - 0.336310I$	$9.44086 - 1.14384I$
$u = 0.29962 + 1.38522I$ $a = -1.98098 + 0.41163I$ $b = 0.755945 + 0.990941I$	$-2.08327 + 10.07100I$	0
$u = 0.29962 - 1.38522I$ $a = -1.98098 - 0.41163I$ $b = 0.755945 - 0.990941I$	$-2.08327 - 10.07100I$	0
$u = 0.07395 + 1.42707I$ $a = 0.701838 - 0.037664I$ $b = -0.569204 + 0.123347I$	$-5.46924 + 2.64105I$	0
$u = 0.07395 - 1.42707I$ $a = 0.701838 + 0.037664I$ $b = -0.569204 - 0.123347I$	$-5.46924 - 2.64105I$	0
$u = 0.21382 + 1.43929I$ $a = -0.487788 + 1.212470I$ $b = 0.120316 + 1.133060I$	$-7.79078 + 4.88573I$	0
$u = 0.21382 - 1.43929I$ $a = -0.487788 - 1.212470I$ $b = 0.120316 - 1.133060I$	$-7.79078 - 4.88573I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.31083 + 1.42891I$ $a = -0.828824 - 0.998794I$ $b = 0.177740 - 1.175180I$	$-5.64512 - 10.50590I$	0
$u = -0.31083 - 1.42891I$ $a = -0.828824 + 0.998794I$ $b = 0.177740 + 1.175180I$	$-5.64512 + 10.50590I$	0
$u = 0.33404 + 1.42646I$ $a = 0.275691 - 0.575217I$ $b = -0.839583 + 0.641379I$	$-1.11669 + 5.57868I$	0
$u = 0.33404 - 1.42646I$ $a = 0.275691 + 0.575217I$ $b = -0.839583 - 0.641379I$	$-1.11669 - 5.57868I$	0
$u = 0.343987 + 0.408307I$ $a = 1.259340 - 0.200200I$ $b = -0.164430 + 0.105291I$	$0.438180 + 1.277440I$	$4.77216 - 5.31124I$
$u = 0.343987 - 0.408307I$ $a = 1.259340 + 0.200200I$ $b = -0.164430 - 0.105291I$	$0.438180 - 1.277440I$	$4.77216 + 5.31124I$
$u = -0.38671 + 1.41560I$ $a = 0.358467 + 0.797877I$ $b = -0.900022 - 0.655211I$	$1.77264 - 11.28690I$	0
$u = -0.38671 - 1.41560I$ $a = 0.358467 - 0.797877I$ $b = -0.900022 + 0.655211I$	$1.77264 + 11.28690I$	0
$u = -0.39335 + 1.44216I$ $a = 1.78767 + 0.81460I$ $b = -0.744553 + 1.062820I$	$0.5121 - 17.3690I$	0
$u = -0.39335 - 1.44216I$ $a = 1.78767 - 0.81460I$ $b = -0.744553 - 1.062820I$	$0.5121 + 17.3690I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.07337 + 1.49652I$ $a = 0.689010 + 1.074630I$ $b = -0.098684 + 1.018160I$	$-9.15376 + 0.69582I$	0
$u = -0.07337 - 1.49652I$ $a = 0.689010 - 1.074630I$ $b = -0.098684 - 1.018160I$	$-9.15376 - 0.69582I$	0
$u = 0.33300 + 1.47174I$ $a = 1.55926 - 0.90181I$ $b = -0.717365 - 1.043070I$	$-2.33369 + 11.39850I$	0
$u = 0.33300 - 1.47174I$ $a = 1.55926 + 0.90181I$ $b = -0.717365 + 1.043070I$	$-2.33369 - 11.39850I$	0
$u = 0.20232 + 1.50188I$ $a = 1.013920 - 0.861496I$ $b = -0.197794 - 0.951591I$	$-8.06757 + 5.26507I$	0
$u = 0.20232 - 1.50188I$ $a = 1.013920 + 0.861496I$ $b = -0.197794 + 0.951591I$	$-8.06757 - 5.26507I$	0
$u = -0.152162 + 0.459797I$ $a = -3.15294 + 1.05533I$ $b = 0.535113 - 0.935355I$	$0.28773 - 2.82692I$	$5.81058 - 1.66051I$
$u = -0.152162 - 0.459797I$ $a = -3.15294 - 1.05533I$ $b = 0.535113 + 0.935355I$	$0.28773 + 2.82692I$	$5.81058 + 1.66051I$
$u = 0.04801 + 1.62342I$ $a = 0.686356 - 0.660507I$ $b = -0.622151 - 0.909091I$	$-6.42773 + 5.85172I$	0
$u = 0.04801 - 1.62342I$ $a = 0.686356 + 0.660507I$ $b = -0.622151 + 0.909091I$	$-6.42773 - 5.85172I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.11130 + 1.62165I$ $a = 0.478526 + 0.438391I$ $b = -0.614683 + 0.843469I$	$-6.20432 + 1.00932I$	0
$u = 0.11130 - 1.62165I$ $a = 0.478526 - 0.438391I$ $b = -0.614683 - 0.843469I$	$-6.20432 - 1.00932I$	0
$u = 0.012155 + 0.262876I$ $a = -2.05266 - 4.00172I$ $b = 0.483697 + 0.622554I$	$1.18616 + 1.37603I$	$10.47248 - 4.16898I$
$u = 0.012155 - 0.262876I$ $a = -2.05266 + 4.00172I$ $b = 0.483697 - 0.622554I$	$1.18616 - 1.37603I$	$10.47248 + 4.16898I$

II.

$\boldsymbol{I_2^u = \langle -u^{12}-4u^{10}+\cdots-2u^2+b,\ u^{10}+3u^8+\cdots+a+1,\ u^{27}+9u^{25}+\cdots+u-1\rangle}$

(i) Arc colorings

$$a_6 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_2 = \begin{pmatrix}-u^{10}-3u^8+2u^7-4u^6+4u^5-5u^4+4u^3-3u^2+2u-1\\u^{12}+4u^{10}-2u^9+6u^8-6u^7+6u^6-6u^5+5u^4-2u^3+2u^2\end{pmatrix}$$
$$a_7 = \begin{pmatrix}1\\-u^2\end{pmatrix}$$
$$a_5 = \begin{pmatrix}-u^{22}-7u^{20}+\cdots-2u^2+1\\u^{24}+8u^{22}+\cdots-8u^5+4u^4\end{pmatrix}$$
$$a_3 = \begin{pmatrix}u^{21}+8u^{19}+\cdots+6u^3-u\\-u^{21}-7u^{19}+\cdots-u^3+u\end{pmatrix}$$
$$a_1 = \begin{pmatrix}-u\\u^3+u\end{pmatrix}$$
$$a_4 = \begin{pmatrix}u^{24}+7u^{22}+\cdots-2u^2+1\\u^{24}+8u^{22}+\cdots-8u^5+4u^4\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}-u\\u^3+u\end{pmatrix}$$
$$a_8 = \begin{pmatrix}u^2+1\\-u^4-2u^2\end{pmatrix}$$
$$a_9 = \begin{pmatrix}-u^4-u^2-1\\u^6+2u^4+u^2\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}u^3\\-u^5-u^3+u\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 4u^{24}+32u^{22}-20u^{21}+112u^{20}-140u^{19}+268u^{18}-420u^{17}+544u^{16}-744u^{15}+884u^{14}-920u^{13}+1000u^{12}-860u^{11}+724u^{10}-556u^9+316u^8-168u^7+60u^6+28u^5-24u^4+24u^3-16u^2+10$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$(u^9 + 3u^8 + 8u^7 + 13u^6 + 17u^5 + 17u^4 + 12u^3 + 6u^2 + u - 1)^3$
c_2, c_5	$(u^9 + u^8 + 2u^7 + u^6 + 3u^5 + u^4 + 2u^3 + u - 1)^3$
c_3, c_9	$(u^9 + u^8 - 2u^7 - 3u^6 + u^5 + 3u^4 + 2u^3 - u - 1)^3$
c_6, c_7, c_8 c_{10}, c_{12}	$u^{27} + 9u^{25} + \cdots + u - 1$
c_{11}	$u^{27} - 18u^{26} + \cdots + 5u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$(y^9 + 7y^8 + 20y^7 + 25y^6 + 5y^5 - 15y^4 + 22y^2 + 13y - 1)^3$
c_2, c_5	$(y^9 + 3y^8 + 8y^7 + 13y^6 + 17y^5 + 17y^4 + 12y^3 + 6y^2 + y - 1)^3$
c_3, c_9	$(y^9 - 5y^8 + 12y^7 - 15y^6 + 9y^5 + y^4 - 4y^3 + 2y^2 + y - 1)^3$
c_6, c_7, c_8 c_{10}, c_{12}	$y^{27} + 18y^{26} + \cdots + 5y - 1$
c_{11}	$y^{27} - 18y^{26} + \cdots + 25y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.269474 + 1.004760I$ $a = -0.82716 + 1.96998I$ $b = 0.628449 - 0.875112I$	$0.61694 - 2.45442I$	$2.32792 + 2.91298I$
$u = 0.269474 - 1.004760I$ $a = -0.82716 - 1.96998I$ $b = 0.628449 + 0.875112I$	$0.61694 + 2.45442I$	$2.32792 - 2.91298I$
$u = 0.861055 + 0.381086I$ $a = 1.96932 + 0.07622I$ $b = -0.728966 - 0.986295I$	$3.59813 + 7.08493I$	$5.57680 - 5.91335I$
$u = 0.861055 - 0.381086I$ $a = 1.96932 - 0.07622I$ $b = -0.728966 + 0.986295I$	$3.59813 - 7.08493I$	$5.57680 + 5.91335I$
$u = -0.457598 + 0.805344I$ $a = 0.921794 + 0.293449I$ $b = 0.140343 + 0.966856I$	$-1.78344 + 2.09337I$	$-0.51499 - 4.16283I$
$u = -0.457598 - 0.805344I$ $a = 0.921794 - 0.293449I$ $b = 0.140343 - 0.966856I$	$-1.78344 - 2.09337I$	$-0.51499 + 4.16283I$
$u = 0.846765 + 0.300344I$ $a = 1.11197 - 0.96313I$ $b = -0.796005 + 0.733148I$	$4.37135 + 1.33617I$	$7.28409 - 0.70175I$
$u = 0.846765 - 0.300344I$ $a = 1.11197 + 0.96313I$ $b = -0.796005 - 0.733148I$	$4.37135 - 1.33617I$	$7.28409 + 0.70175I$
$u = -0.265891 + 1.100950I$ $a = 0.098685 - 0.826899I$ $b = 0.512358$	1.19845	$8.65235 + 0.I$
$u = -0.265891 - 1.100950I$ $a = 0.098685 + 0.826899I$ $b = 0.512358$	1.19845	$8.65235 + 0.I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.186213 + 1.135090I$ $a = -3.15403 + 1.36709I$ $b = 0.628449 + 0.875112I$	$0.61694 + 2.45442I$	$2.32792 - 2.91298I$
$u = 0.186213 - 1.135090I$ $a = -3.15403 - 1.36709I$ $b = 0.628449 - 0.875112I$	$0.61694 - 2.45442I$	$2.32792 + 2.91298I$
$u = -0.632288 + 1.029230I$ $a = 0.789222 + 0.418020I$ $b = -0.728966 - 0.986295I$	$3.59813 + 7.08493I$	$5.57680 - 5.91335I$
$u = -0.632288 - 1.029230I$ $a = 0.789222 - 0.418020I$ $b = -0.728966 + 0.986295I$	$3.59813 - 7.08493I$	$5.57680 + 5.91335I$
$u = -0.579410 + 1.072300I$ $a = 1.46542 + 0.12702I$ $b = -0.796005 + 0.733148I$	$4.37135 + 1.33617I$	$7.28409 - 0.70175I$
$u = -0.579410 - 1.072300I$ $a = 1.46542 - 0.12702I$ $b = -0.796005 - 0.733148I$	$4.37135 - 1.33617I$	$7.28409 + 0.70175I$
$u = 0.543809 + 0.474736I$ $a = -0.277099 + 0.364720I$ $b = 0.140343 + 0.966856I$	$-1.78344 + 2.09337I$	$-0.51499 - 4.16283I$
$u = 0.543809 - 0.474736I$ $a = -0.277099 - 0.364720I$ $b = 0.140343 - 0.966856I$	$-1.78344 - 2.09337I$	$-0.51499 + 4.16283I$
$u = -0.086211 + 1.280080I$ $a = -0.09642 - 2.48041I$ $b = 0.140343 - 0.966856I$	$-1.78344 - 2.09337I$	$-0.51499 + 4.16283I$
$u = -0.086211 - 1.280080I$ $a = -0.09642 + 2.48041I$ $b = 0.140343 + 0.966856I$	$-1.78344 + 2.09337I$	$-0.51499 - 4.16283I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.267354 + 1.372650I$ $a = -0.193595 + 0.403575I$ $b = -0.796005 - 0.733148I$	$4.37135 - 1.33617I$	$7.28409 + 0.70175I$
$u = -0.267354 - 1.372650I$ $a = -0.193595 - 0.403575I$ $b = -0.796005 + 0.733148I$	$4.37135 + 1.33617I$	$7.28409 - 0.70175I$
$u = -0.22877 + 1.41032I$ $a = 1.32551 + 1.36940I$ $b = -0.728966 + 0.986295I$	$3.59813 - 7.08493I$	$5.57680 + 5.91335I$
$u = -0.22877 - 1.41032I$ $a = 1.32551 - 1.36940I$ $b = -0.728966 - 0.986295I$	$3.59813 + 7.08493I$	$5.57680 - 5.91335I$
$u = 0.531781$ $a = -0.500428$ $b = 0.512358$	1.19845	8.65230
$u = -0.455687 + 0.130328I$ $a = -2.88341 + 1.31485I$ $b = 0.628449 - 0.875112I$	$0.61694 - 2.45442I$	$2.32792 + 2.91298I$
$u = -0.455687 - 0.130328I$ $a = -2.88341 - 1.31485I$ $b = 0.628449 + 0.875112I$	$0.61694 + 2.45442I$	$2.32792 - 2.91298I$

III.

$$I_3^u = \langle u^2a+u^2+b+a+1,\ 2u^3a+5u^3+\cdots+14a+15,\ u^4+u^3+3u^2+2u+1\rangle$$

(i) Arc colorings

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

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

$$a_2 = \begin{pmatrix}a\\-u^2a-u^2-a-1\end{pmatrix}$$

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

$$a_5 = \begin{pmatrix}u^2a+\frac{1}{2}u^3+2u^2+2a+\frac{3}{2}u+\frac{9}{2}\\-u^2a-u^2-a-2\end{pmatrix}$$

$$a_3 = \begin{pmatrix}\frac{1}{2}u^3+u^2+a+\frac{3}{2}u+\frac{5}{2}\\-u^2a-u^2-a-2\end{pmatrix}$$

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

$$a_4 = \begin{pmatrix}\frac{1}{2}u^3+u^2+a+\frac{3}{2}u+\frac{5}{2}\\-u^2a-u^2-a-2\end{pmatrix}$$

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

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

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

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -\frac{7}{2}u^3a+u^2a+\frac{3}{2}u^3-\frac{11}{2}au+7u^2+\frac{7}{2}a+\frac{15}{2}u+\frac{27}{2}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4, c_5	$(u^2 - u + 1)^4$
c_2	$(u^2 + u + 1)^4$
c_3, 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_4 c_5	$(y^2 + y + 1)^4$
c_3, 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	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.395123 + 0.506844I$ $a = -1.10603 - 1.01030I$ $b = \quad 0.500000 + 0.866025I$	$0.211005 + 0.614778I$	$1.372162 + 0.328352I$
$u = -0.395123 + 0.506844I$ $a = -1.82193 + 0.59697I$ $b = \quad 0.500000 - 0.866025I$	$0.21101 - 3.44499I$	$3.71851 + 10.46973I$
$u = -0.395123 - 0.506844I$ $a = -1.10603 + 1.01030I$ $b = \quad 0.500000 - 0.866025I$	$0.211005 - 0.614778I$	$1.372162 - 0.328352I$
$u = -0.395123 - 0.506844I$ $a = -1.82193 - 0.59697I$ $b = \quad 0.500000 + 0.866025I$	$0.21101 + 3.44499I$	$3.71851 - 10.46973I$
$u = -0.10488 + 1.55249I$ $a = -0.797662 - 0.666019I$ $b = \quad 0.500000 - 0.866025I$	$-6.79074 - 5.19385I$	$0.529613 + 1.243149I$
$u = -0.10488 + 1.55249I$ $a = -0.524380 + 0.508239I$ $b = \quad 0.500000 + 0.866025I$	$-6.79074 - 1.13408I$	$-4.49529 + 1.20873I$
$u = -0.10488 - 1.55249I$ $a = -0.797662 + 0.666019I$ $b = \quad 0.500000 + 0.866025I$	$-6.79074 + 5.19385I$	$0.529613 - 1.243149I$
$u = -0.10488 - 1.55249I$ $a = -0.524380 - 0.508239I$ $b = \quad 0.500000 - 0.866025I$	$-6.79074 + 1.13408I$	$-4.49529 - 1.20873I$

IV. $\boldsymbol{I_4^u = \langle -a^2 - 2au + b + 2a + 2u - 1,\ 3a^3u - 9a^2u + \cdots - 2a + 1,\ u^2 + 1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4a^3u + 12a^2u + 8a^2 - 12au - 16a + 4u + 16$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.000000I$ $a = 0.674360 + 0.399232I$ $b = -0.851808 - 0.911292I$	$6.79074 + 3.16396I$	$7.82674 - 2.56480I$
$u = 1.000000I$ $a = 1.325640 + 0.399232I$ $b = -0.851808 + 0.911292I$	$6.79074 - 3.16396I$	$7.82674 + 2.56480I$
$u = 1.000000I$ $a = 0.59947 - 1.89923I$ $b = 0.351808 + 0.720342I$	$-0.21101 + 1.41510I$	$4.17326 - 4.90874I$
$u = 1.000000I$ $a = 1.40053 - 1.89923I$ $b = 0.351808 - 0.720342I$	$-0.21101 - 1.41510I$	$4.17326 + 4.90874I$
$u = -1.000000I$ $a = 0.674360 - 0.399232I$ $b = -0.851808 + 0.911292I$	$6.79074 - 3.16396I$	$7.82674 + 2.56480I$
$u = -1.000000I$ $a = 1.325640 - 0.399232I$ $b = -0.851808 - 0.911292I$	$6.79074 + 3.16396I$	$7.82674 - 2.56480I$
$u = -1.000000I$ $a = 0.59947 + 1.89923I$ $b = 0.351808 - 0.720342I$	$-0.21101 - 1.41510I$	$4.17326 + 4.90874I$
$u = -1.000000I$ $a = 1.40053 + 1.89923I$ $b = 0.351808 + 0.720342I$	$-0.21101 + 1.41510I$	$4.17326 - 4.90874I$

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_4	$(u^2-u+1)^4(u^4-u^3+3u^2-2u+1)^2$ $\cdot(u^9+3u^8+8u^7+13u^6+17u^5+17u^4+12u^3+6u^2+u-1)^3$ $\cdot(u^{74}+24u^{73}+\cdots-225u+16)$
c_2	$(u^2+u+1)^4(u^4-u^3+u^2+1)^2$ $\cdot(u^9+u^8+2u^7+u^6+3u^5+u^4+2u^3+u-1)^3$ $\cdot(u^{74}+4u^{73}+\cdots+35u+4)$
c_3, c_9	$u^8(u^8-5u^6+7u^4-2u^2+1)$ $\cdot(u^9+u^8-2u^7-3u^6+u^5+3u^4+2u^3-u-1)^3$ $\cdot(u^{74}-2u^{73}+\cdots-2560u+2048)$
c_5	$(u^2-u+1)^4(u^4+u^3+u^2+1)^2$ $\cdot(u^9+u^8+2u^7+u^6+3u^5+u^4+2u^3+u-1)^3$ $\cdot(u^{74}+4u^{73}+\cdots+35u+4)$
c_6, c_7	$((u^2+1)^4)(u^4+u^3+3u^2+2u+1)^2(u^{27}+9u^{25}+\cdots+u-1)$ $\cdot(u^{74}+3u^{73}+\cdots+241u+34)$
c_8	$((u^2+1)^4)(u^4+u^3+u^2+1)^2(u^{27}+9u^{25}+\cdots+u-1)$ $\cdot(u^{74}+3u^{73}+\cdots+243u+34)$
c_{10}	$((u^2+1)^4)(u^4-u^3+3u^2-2u+1)^2(u^{27}+9u^{25}+\cdots+u-1)$ $\cdot(u^{74}+3u^{73}+\cdots+241u+34)$
c_{11}	$((u+1)^8)(u^4+u^3+3u^2+2u+1)^2(u^{27}-18u^{26}+\cdots+5u+1)$ $\cdot(u^{74}-31u^{73}+\cdots-29555u+1156)$
c_{12}	$((u^2+1)^4)(u^4-u^3+u^2+1)^2(u^{27}+9u^{25}+\cdots+u-1)$ $\cdot(u^{74}+3u^{73}+\cdots+243u+34)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4	$(y^2+y+1)^4(y^4+5y^3+7y^2+2y+1)^2$ $\cdot(y^9+7y^8+20y^7+25y^6+5y^5-15y^4+22y^2+13y-1)^3$ $\cdot(y^{74}+56y^{73}+\cdots+227743y+256)$
c_2, c_5	$(y^2+y+1)^4(y^4+y^3+3y^2+2y+1)^2$ $\cdot(y^9+3y^8+8y^7+13y^6+17y^5+17y^4+12y^3+6y^2+y-1)^3$ $\cdot(y^{74}+24y^{73}+\cdots-225y+16)$
c_3, c_9	$y^8(y^4-5y^3+7y^2-2y+1)^2$ $\cdot(y^9-5y^8+12y^7-15y^6+9y^5+y^4-4y^3+2y^2+y-1)^3$ $\cdot(y^{74}-40y^{73}+\cdots-36438016y+4194304)$
c_6, c_7, c_{10}	$((y+1)^8)(y^4+5y^3+\cdots+2y+1)^2(y^{27}+18y^{26}+\cdots+5y-1)$ $\cdot(y^{74}+75y^{73}+\cdots+36099y+1156)$
c_8, c_{12}	$((y+1)^8)(y^4+y^3+3y^2+2y+1)^2(y^{27}+18y^{26}+\cdots+5y-1)$ $\cdot(y^{74}+31y^{73}+\cdots+29555y+1156)$
c_{11}	$((y-1)^8)(y^4+5y^3+\cdots+2y+1)^2(y^{27}-18y^{26}+\cdots+25y-1)$ $\cdot(y^{74}+35y^{73}+\cdots+11195711y+1336336)$