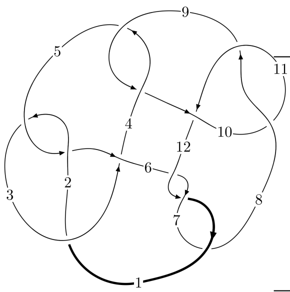
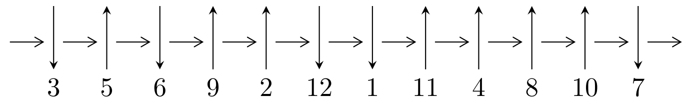
$12a_{0033}$ ($K12a_{0033}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

[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`).

$$
\begin{aligned}
I_1^u = \langle & 4.19179\times10^{162}u^{76} - 8.99312\times10^{162}u^{75} + \cdots + 5.13128\times10^{164}d + 1.74805\times10^{165},\\
& 5.20225\times10^{162}u^{76} - 1.09357\times10^{163}u^{75} + \cdots + 5.13128\times10^{164}c + 2.30253\times10^{165},\\
& 5.03182\times10^{182}u^{76} - 1.22724\times10^{183}u^{75} + \cdots + 1.08760\times10^{185}b + 3.35895\times10^{185},\\
& -3.61857\times10^{182}u^{76} + 6.18392\times10^{182}u^{75} + \cdots + 5.43799\times10^{184}a - 1.83798\times10^{184},\\
& u^{77} - 2u^{76} + \cdots - 2560u^2 - 512\rangle\\
I_2^u = \langle & -43u^3a^2 - 6a^2u^2 - 37u^3a - 62a^2u - 58u^2a + 38u^3 + 36a^2 - 55au + 2u^2 + 71d - 78a - 74u - 12,\\
& -47u^3a^2 + 5a^2u^2 - 52u^3a - 43a^2u - 70u^2a - 8u^3 + 41a^2 - 37au + 22u^2 + 71c - 6a - 104u + 10,\\
& -24u^3a^2 - 5a^2u^2 - 19u^3a - 28a^2u - u^2a + 8u^3 + 30a^2 - 34au - 22u^2 + 71b - 65a - 38u - 10,\\
& -2u^3a^2 - u^3a + a^3 - 2a^2u - 5u^2a - u^3 + 2a^2 - au + u^2 - u,\ u^4 + u^2 - u + 1\rangle\\
I_3^u = \langle & -75u^5a^2 + 125u^5a + \cdots - 31a + 44,\ -55u^5a^2 + 167u^5a + \cdots + 143a - 28,\\
& -58u^5a^2 + 59u^5a + \cdots - 30a + 28,\\
& -2u^5a^2 - 2u^4a^2 + 2u^5a - 4u^3a^2 + u^4a + u^5 - 4a^2u^2 + 3u^3a + a^3 - 4a^2u - 2u^2a - 4a^2 + 2au + 2a,\\
& u^6 + u^5 + 2u^4 + 2u^3 + 2u^2 + 2u + 1\rangle
\end{aligned}
$$

$$
\begin{aligned}
I_1^v &= \langle a,\ d - v + 1,\ c + a,\ b + v - 1,\ v^2 - v + 1\rangle\\
I_2^v &= \langle a,\ d,\ c - v,\ b - v - 1,\ v^2 + v + 1\rangle\\
I_3^v &= \langle a,\ d + 1,\ c + a - 1,\ b - 1,\ v - 1\rangle\\
I_4^v &= \langle a,\ -b^2v - bv + d + 2b - v + 1,\ -b^2av - bav + cb + 2ba - av + a - 1,\\
&\quad v^2c - bav + v^2b - cv - av + v^2 + c + 2a - 2v,\ b^2v^2 + v^2b - 2bv + v^2 - v + 1\rangle
\end{aligned}
$$

* 6 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 112 representations.
* 1 irreducible components of $\dim_{\mathbb{C}} = 1$

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

I.

$$\boldsymbol{I_1^u = \langle 4.19\times10^{162}u^{76}-8.99\times10^{162}u^{75}+\cdots+5.13\times10^{164}d+1.75\times10^{165},\ 5.20\times10^{162}u^{76}-1.09\times10^{163}u^{75}+\cdots+5.13\times10^{164}c+2.30\times10^{165},\ 5.03\times10^{182}u^{76}-1.23\times10^{183}u^{75}+\cdots+1.09\times10^{185}b+3.36\times10^{185},\ -3.62\times10^{182}u^{76}+6.18\times10^{182}u^{75}+\cdots+5.44\times10^{184}a-1.84\times10^{184},\ u^{77}-2u^{76}+\cdots-2560u^2-512\rangle}$$

(i) Arc colorings

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

$$a_9 = \begin{pmatrix}0\\u\end{pmatrix}$$

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

$$a_7 = \begin{pmatrix}0.00665423u^{76}-0.0113717u^{75}+\cdots-8.65830u+0.337989\\-0.00462654u^{76}+0.0112840u^{75}+\cdots+6.23600u-3.08841\end{pmatrix}$$

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

$$a_{12} = \begin{pmatrix}-0.0101383u^{76}+0.0213118u^{75}+\cdots+12.1450u-4.48724\\-0.00816908u^{76}+0.0175261u^{75}+\cdots+11.0464u-3.40665\end{pmatrix}$$

$$a_1 = \begin{pmatrix}-0.0125394u^{76}+0.0245545u^{75}+\cdots+16.0108u-3.02234\\-0.00622485u^{76}+0.0135037u^{75}+\cdots+7.88286u-2.23172\end{pmatrix}$$

$$a_6 = \begin{pmatrix}0.0108390u^{76}-0.0188168u^{75}+\cdots-14.5481u+0.522142\\-0.00170046u^{76}+0.00573767u^{75}+\cdots+1.46268u-2.50020\end{pmatrix}$$

$$a_3 = \begin{pmatrix}-0.00903125u^{76}+0.0210962u^{75}+\cdots+7.69784u-4.39652\\-0.00575546u^{76}+0.0105565u^{75}+\cdots+7.63073u+1.82138\end{pmatrix}$$

$$a_2 = \begin{pmatrix}-0.00761038u^{76}+0.0196600u^{75}+\cdots+4.69111u-7.77114\\-0.00621954u^{76}+0.0118805u^{75}+\cdots+6.90325u+1.10173\end{pmatrix}$$

$$a_{11} = \begin{pmatrix}-0.00891820u^{76}+0.0191719u^{75}+\cdots+11.1367u-4.56543\\-0.00694897u^{76}+0.0153862u^{75}+\cdots+10.0381u-3.48484\end{pmatrix}$$

$$a_8 = \begin{pmatrix}0.00196923u^{76}-0.00378574u^{75}+\cdots-1.09859u+1.08059\\-0.00694897u^{76}+0.0153862u^{75}+\cdots+10.0381u-3.48484\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 0.0221138u^{76}-0.0478032u^{75}+\cdots-21.6023u-0.388088$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{77} + 36u^{76} + \cdots + 216u - 16$
c_2, c_5	$u^{77} + 2u^{76} + \cdots + 27u^2 - 4$
c_3	$u^{77} - 2u^{76} + \cdots + 351912u - 66564$
c_4, c_9	$u^{77} - 2u^{76} + \cdots - 2560u^2 - 512$
c_6, c_7, c_{12}	$u^{77} - 8u^{76} + \cdots - 72u - 16$
c_8, c_{10}	$u^{77} + 8u^{76} + \cdots - 72u - 16$
c_{11}	$u^{77} - 34u^{76} + \cdots + 1568u - 256$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{77} + 12y^{76} + \cdots + 84256y - 256$
c_2, c_5	$y^{77} + 36y^{76} + \cdots + 216y - 16$
c_3	$y^{77} - 12y^{76} + \cdots + 120020616504y - 4430766096$
c_4, c_9	$y^{77} + 30y^{76} + \cdots - 2621440y - 262144$
c_6, c_7, c_{12}	$y^{77} - 74y^{76} + \cdots + 7712y - 256$
c_8, c_{10}	$y^{77} - 34y^{76} + \cdots + 1568y - 256$
c_{11}	$y^{77} + 26y^{76} + \cdots + 3416576y - 65536$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.508886 + 0.845592I$ $a = 1.118510 + 0.861761I$ $b = 0.504405 - 0.239677I$ $c = -0.82230 - 2.15378I$ $d = -1.077350 - 0.552668I$	$2.40889 + 4.27390I$	$3.74115 - 6.44221I$
$u = 0.508886 - 0.845592I$ $a = 1.118510 - 0.861761I$ $b = 0.504405 + 0.239677I$ $c = -0.82230 + 2.15378I$ $d = -1.077350 + 0.552668I$	$2.40889 - 4.27390I$	$3.74115 + 6.44221I$
$u = -0.848496 + 0.585068I$ $a = -0.008580 + 0.439129I$ $b = 0.103075 - 0.222508I$ $c = 0.749137 - 0.747672I$ $d = 1.049330 + 0.534087I$	$3.78378 + 2.11500I$	$7.65464 - 1.99007I$
$u = -0.848496 - 0.585068I$ $a = -0.008580 - 0.439129I$ $b = 0.103075 + 0.222508I$ $c = 0.749137 + 0.747672I$ $d = 1.049330 - 0.534087I$	$3.78378 - 2.11500I$	$7.65464 + 1.99007I$
$u = -0.990280 + 0.319237I$ $a = -1.79246 + 0.10308I$ $b = -0.675932 - 1.005350I$ $c = -1.016130 + 0.043329I$ $d = -1.111790 - 0.533215I$	$-2.98745 + 0.86657I$	0
$u = -0.990280 - 0.319237I$ $a = -1.79246 - 0.10308I$ $b = -0.675932 + 1.005350I$ $c = -1.016130 - 0.043329I$ $d = -1.111790 + 0.533215I$	$-2.98745 - 0.86657I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.617221 + 0.733532I$ $a = -0.619707 + 0.764557I$ $b = -0.277695 - 0.242708I$ $c = 0.75499 - 1.66880I$ $d = 1.079400 - 0.162408I$	$4.09446 + 0.35704I$	$8.04104 + 0.70386I$
$u = -0.617221 - 0.733532I$ $a = -0.619707 - 0.764557I$ $b = -0.277695 + 0.242708I$ $c = 0.75499 + 1.66880I$ $d = 1.079400 + 0.162408I$	$4.09446 - 0.35704I$	$8.04104 - 0.70386I$
$u = 0.517431 + 0.792256I$ $a = -0.602670 + 0.058164I$ $b = -1.312620 + 0.060155I$ $c = -0.799858 - 0.461927I$ $d = -2.05780 - 0.08517I$	$2.57405 - 0.08416I$	$4.54592 - 2.74373I$
$u = 0.517431 - 0.792256I$ $a = -0.602670 - 0.058164I$ $b = -1.312620 - 0.060155I$ $c = -0.799858 + 0.461927I$ $d = -2.05780 + 0.08517I$	$2.57405 + 0.08416I$	$4.54592 + 2.74373I$
$u = -0.082487 + 0.936352I$ $a = -0.948613 + 0.464331I$ $b = -0.836303 + 0.719975I$ $c = 0.066226 + 0.663106I$ $d = -0.575224 + 0.771574I$	$-1.72016 + 1.41215I$	$-1.65188 - 3.77223I$
$u = -0.082487 - 0.936352I$ $a = -0.948613 - 0.464331I$ $b = -0.836303 - 0.719975I$ $c = 0.066226 - 0.663106I$ $d = -0.575224 - 0.771574I$	$-1.72016 - 1.41215I$	$-1.65188 + 3.77223I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.582500 + 0.889546I$ $a = 0.372525 + 0.042062I$ $b = 0.984114 - 0.079699I$ $c = 0.620752 - 0.807952I$ $d = 1.88365 - 0.53487I$	$3.62010 - 5.07823I$	$6.10660 + 7.37918I$
$u = -0.582500 - 0.889546I$ $a = 0.372525 - 0.042062I$ $b = 0.984114 + 0.079699I$ $c = 0.620752 + 0.807952I$ $d = 1.88365 + 0.53487I$	$3.62010 + 5.07823I$	$6.10660 - 7.37918I$
$u = 0.228301 + 1.040040I$ $a = -0.13810 - 1.60777I$ $b = -1.48108 - 2.66829I$ $c = -0.126234 + 0.944655I$ $d = 0.516753 + 0.893507I$	$-3.92825 - 1.69884I$	$-4.65730 + 2.32962I$
$u = 0.228301 - 1.040040I$ $a = -0.13810 + 1.60777I$ $b = -1.48108 + 2.66829I$ $c = -0.126234 - 0.944655I$ $d = 0.516753 - 0.893507I$	$-3.92825 + 1.69884I$	$-4.65730 - 2.32962I$
$u = 0.782003 + 0.468875I$ $a = -2.36435 - 2.24948I$ $b = -1.06894 + 1.62874I$ $c = -0.310023 - 0.749893I$ $d = -0.722438 + 0.469371I$	$0.65497 - 3.51390I$	$3.54011 + 4.44478I$
$u = 0.782003 - 0.468875I$ $a = -2.36435 + 2.24948I$ $b = -1.06894 - 1.62874I$ $c = -0.310023 + 0.749893I$ $d = -0.722438 - 0.469371I$	$0.65497 + 3.51390I$	$3.54011 - 4.44478I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.374962 + 1.039940I$ $a = 0.00241 - 1.81691I$ $b = 1.04564 - 2.79506I$ $c = -0.054535 + 1.153860I$ $d = -0.648190 + 1.006590I$	$-3.38837 - 3.78470I$	0
$u = -0.374962 - 1.039940I$ $a = 0.00241 + 1.81691I$ $b = 1.04564 + 2.79506I$ $c = -0.054535 - 1.153860I$ $d = -0.648190 - 1.006590I$	$-3.38837 + 3.78470I$	0
$u = 0.965284 + 0.548957I$ $a = -0.183189 + 0.297060I$ $b = -0.297598 - 0.221943I$ $c = -0.820096 - 0.337678I$ $d = -1.051710 + 0.877929I$	$1.81197 - 6.85619I$	0
$u = 0.965284 - 0.548957I$ $a = -0.183189 - 0.297060I$ $b = -0.297598 + 0.221943I$ $c = -0.820096 + 0.337678I$ $d = -1.051710 - 0.877929I$	$1.81197 + 6.85619I$	0
$u = 0.288832 + 1.092220I$ $a = 1.30645 + 0.68041I$ $b = 1.045540 + 0.686079I$ $c = -0.140070 + 1.099610I$ $d = 0.513316 + 0.990185I$	$-4.40655 + 2.61636I$	0
$u = 0.288832 - 1.092220I$ $a = 1.30645 - 0.68041I$ $b = 1.045540 - 0.686079I$ $c = -0.140070 - 1.099610I$ $d = 0.513316 - 0.990185I$	$-4.40655 - 2.61636I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.815552 + 0.276755I$ $a = -0.393181 + 0.675339I$ $b = -0.097483 + 0.217571I$ $c = 0.125990 - 0.372709I$ $d = -0.310498 + 0.604570I$	$-0.065597 - 0.205341I$	$1.21551 + 1.86968I$
$u = 0.815552 - 0.276755I$ $a = -0.393181 - 0.675339I$ $b = -0.097483 - 0.217571I$ $c = 0.125990 + 0.372709I$ $d = -0.310498 - 0.604570I$	$-0.065597 + 0.205341I$	$1.21551 - 1.86968I$
$u = -0.008067 + 1.164640I$ $a = 0.831879 + 0.802027I$ $b = 0.838657 + 0.822115I$ $c = -0.537680 + 0.563389I$ $d = 0.297322 + 0.581051I$	$-4.97078 - 4.99360I$	0
$u = -0.008067 - 1.164640I$ $a = 0.831879 - 0.802027I$ $b = 0.838657 - 0.822115I$ $c = -0.537680 - 0.563389I$ $d = 0.297322 - 0.581051I$	$-4.97078 + 4.99360I$	0
$u = 1.177360 + 0.140655I$ $a = 1.271130 - 0.073091I$ $b = 0.52624 - 1.59073I$ $c = 0.914208 - 0.465491I$ $d = 0.97456 - 1.22806I$	$-6.72367 + 2.38646I$	0
$u = 1.177360 - 0.140655I$ $a = 1.271130 + 0.073091I$ $b = 0.52624 + 1.59073I$ $c = 0.914208 + 0.465491I$ $d = 0.97456 + 1.22806I$	$-6.72367 - 2.38646I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.516220+1.088150I$ $a=-0.25335+1.54951I$ $b=-2.64287+2.22003I$ $c=-0.099851-0.875419I$ $d=\ \ 1.071770-0.719904I$	$-2.28765-3.11487I$	0
$u=-0.516220-1.088150I$ $a=-0.25335-1.54951I$ $b=-2.64287-2.22003I$ $c=-0.099851+0.875419I$ $d=\ \ 1.071770+0.719904I$	$-2.28765+3.11487I$	0
$u=\ \ 1.143240+0.423905I$ $a=\ \ 1.84398-0.15315I$ $b=\ \ 1.05407-1.18141I$ $c=\ \ 1.391370-0.013506I$ $d=\ \ 1.59551-0.65628I$	$-5.54743-5.38085I$	0
$u=\ \ 1.143240-0.423905I$ $a=\ \ 1.84398+0.15315I$ $b=\ \ 1.05407+1.18141I$ $c=\ \ 1.391370+0.013506I$ $d=\ \ 1.59551+0.65628I$	$-5.54743+5.38085I$	0
$u=\ \ 1.079500+0.575143I$ $a=-1.83354-0.15848I$ $b=-0.99311+2.16498I$ $c=-1.062600-0.002710I$ $d=-1.21557+1.20650I$	$-1.00971-5.65602I$	0
$u=\ \ 1.079500-0.575143I$ $a=-1.83354+0.15848I$ $b=-0.99311-2.16498I$ $c=-1.062600+0.002710I$ $d=-1.21557-1.20650I$	$-1.00971+5.65602I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.163010 + 0.411297I$ $a = 0.932646 - 0.077718I$ $b = 0.61556 + 2.18561I$ $c = 0.600063 + 0.450923I$ $d = 0.71184 + 1.55150I$	$-5.58247 + 2.79509I$	0
$u = -1.163010 - 0.411297I$ $a = 0.932646 + 0.077718I$ $b = 0.61556 - 2.18561I$ $c = 0.600063 - 0.450923I$ $d = 0.71184 - 1.55150I$	$-5.58247 - 2.79509I$	0
$u = 0.530613 + 1.137340I$ $a = -0.105063 + 0.441883I$ $b = -0.477698 + 0.273175I$ $c = 0.250279 - 0.980703I$ $d = -0.925423 - 0.856938I$	$-2.68982 + 5.10175I$	0
$u = 0.530613 - 1.137340I$ $a = -0.105063 - 0.441883I$ $b = -0.477698 - 0.273175I$ $c = 0.250279 + 0.980703I$ $d = -0.925423 + 0.856938I$	$-2.68982 - 5.10175I$	0
$u = 0.601554 + 1.104580I$ $a = -0.00922 + 1.88522I$ $b = 2.21114 + 2.74600I$ $c = 0.048393 - 1.187080I$ $d = -1.17229 - 1.05265I$	$-1.29562 + 8.75795I$	0
$u = 0.601554 - 1.104580I$ $a = -0.00922 - 1.88522I$ $b = 2.21114 - 2.74600I$ $c = 0.048393 + 1.187080I$ $d = -1.17229 + 1.05265I$	$-1.29562 - 8.75795I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.666542+1.084300I$ $a=-0.037947+0.186829I$ $b=\ 0.412925-0.063735I$ $c=\ 0.116654-1.386120I$ $d=\ 1.37592-1.25181I$	$2.21245-7.79054I$	0
$u=-0.666542-1.084300I$ $a=-0.037947-0.186829I$ $b=\ 0.412925+0.063735I$ $c=\ 0.116654+1.386120I$ $d=\ 1.37592+1.25181I$	$2.21245+7.79054I$	0
$u=-0.620529+0.325559I$ $a=\ 1.77807-5.56934I$ $b=\ 1.16767+1.32481I$ $c=-0.359051-0.919317I$ $d=\ 0.376140+0.228285I$	$-0.115678-1.341920I$	$2.41782+1.83708I$
$u=-0.620529-0.325559I$ $a=\ 1.77807+5.56934I$ $b=\ 1.16767-1.32481I$ $c=-0.359051+0.919317I$ $d=\ 0.376140-0.228285I$	$-0.115678+1.341920I$	$2.41782-1.83708I$
$u=-1.161000+0.625559I$ $a=\ 1.85681+0.28553I$ $b=\ 1.03264+2.35339I$ $c=\ 1.348640+0.218279I$ $d=\ 1.44939+1.44440I$	$-3.39852+10.69180I$	0
$u=-1.161000-0.625559I$ $a=\ 1.85681-0.28553I$ $b=\ 1.03264-2.35339I$ $c=\ 1.348640-0.218279I$ $d=\ 1.44939-1.44440I$	$-3.39852-10.69180I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.423653+0.527399I$ $a=-1.74593-0.28445I$ $b=-0.556628+0.090443I$ $c=-0.424220+0.542119I$ $d=-0.623453+0.419471I$	$-1.92120+0.81846I$	$-4.58107+0.87681I$
$u=-0.423653-0.527399I$ $a=-1.74593+0.28445I$ $b=-0.556628-0.090443I$ $c=-0.424220-0.542119I$ $d=-0.623453-0.419471I$	$-1.92120-0.81846I$	$-4.58107-0.87681I$
$u=-0.662834+0.003253I$ $a=\ \ 0.226784+0.451173I$ $b=-0.577746+0.442113I$ $c=-0.680090-0.132286I$ $d=-0.197422+0.184363I$	$-0.58945+2.77011I$	$1.22579-6.61866I$
$u=-0.662834-0.003253I$ $a=\ \ 0.226784-0.451173I$ $b=-0.577746-0.442113I$ $c=-0.680090+0.132286I$ $d=-0.197422-0.184363I$	$-0.58945-2.77011I$	$1.22579+6.61866I$
$u=\ \ 0.703559+1.143570I$ $a=\ \ 0.181516+0.233850I$ $b=-0.233401-0.053613I$ $c=\ \ 0.04116-1.61209I$ $d=-1.22614-1.51356I$	$-0.07596+12.98220I$	0
$u=\ \ 0.703559-1.143570I$ $a=\ \ 0.181516-0.233850I$ $b=-0.233401+0.053613I$ $c=\ \ 0.04116+1.61209I$ $d=-1.22614+1.51356I$	$-0.07596-12.98220I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.624723 + 1.201920I$ $a = -0.19734 - 2.12904I$ $b = 0.63726 - 2.75540I$ $c = -0.33021 + 1.80553I$ $d = -0.96291 + 1.48151I$	$-5.70918 - 6.67323I$	0
$u = -0.624723 - 1.201920I$ $a = -0.19734 + 2.12904I$ $b = 0.63726 + 2.75540I$ $c = -0.33021 - 1.80553I$ $d = -0.96291 - 1.48151I$	$-5.70918 + 6.67323I$	0
$u = 0.127875 + 0.624992I$ $a = 0.97951 + 3.07905I$ $b = 0.341044 + 0.403757I$ $c = 0.03373 - 2.60509I$ $d = -0.194927 - 0.524028I$	$0.93270 - 1.56780I$	$-1.99036 - 0.81001I$
$u = 0.127875 - 0.624992I$ $a = 0.97951 - 3.07905I$ $b = 0.341044 - 0.403757I$ $c = 0.03373 + 2.60509I$ $d = -0.194927 + 0.524028I$	$0.93270 + 1.56780I$	$-1.99036 + 0.81001I$
$u = -0.115044 + 1.357830I$ $a = 0.565753 - 0.402137I$ $b = -1.143390 - 0.603699I$ $c = -1.139500 + 0.344978I$ $d = -0.179723 + 0.294069I$	$-9.14335 - 2.92995I$	0
$u = -0.115044 - 1.357830I$ $a = 0.565753 + 0.402137I$ $b = -1.143390 + 0.603699I$ $c = -1.139500 - 0.344978I$ $d = -0.179723 - 0.294069I$	$-9.14335 + 2.92995I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.518606 + 1.307430I$ $a = 0.40096 - 2.01546I$ $b = -0.57151 - 2.58245I$ $c = -0.09494 + 1.89349I$ $d = 0.61008 + 1.60156I$	$-10.68990 + 3.50430I$	0
$u = 0.518606 - 1.307430I$ $a = 0.40096 + 2.01546I$ $b = -0.57151 + 2.58245I$ $c = -0.09494 - 1.89349I$ $d = 0.61008 - 1.60156I$	$-10.68990 - 3.50430I$	0
$u = 0.758435 + 1.184640I$ $a = -0.64579 + 2.27951I$ $b = 1.18564 + 3.27514I$ $c = 0.10967 - 1.88745I$ $d = -1.17616 - 1.81573I$	$-2.97939 + 12.30500I$	0
$u = 0.758435 - 1.184640I$ $a = -0.64579 - 2.27951I$ $b = 1.18564 - 3.27514I$ $c = 0.10967 + 1.88745I$ $d = -1.17616 + 1.81573I$	$-2.97939 - 12.30500I$	0
$u = 0.69467 + 1.24791I$ $a = 0.21709 - 2.24890I$ $b = -0.58292 - 2.80554I$ $c = 0.45261 + 2.01847I$ $d = 1.09745 + 1.65272I$	$-8.2281 + 11.9338I$	0
$u = 0.69467 - 1.24791I$ $a = 0.21709 + 2.24890I$ $b = -0.58292 + 2.80554I$ $c = 0.45261 - 2.01847I$ $d = 1.09745 - 1.65272I$	$-8.2281 - 11.9338I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.043030 + 0.567805I$ $a = -0.248115 + 0.756603I$ $b = -0.40870 + 1.85697I$ $c = -0.182345 + 1.003610I$ $d = -0.42920 + 2.02878I$	$0.91327 + 2.30980I$	$-2.35018 - 5.72620I$
$u = 0.043030 - 0.567805I$ $a = -0.248115 - 0.756603I$ $b = -0.40870 - 1.85697I$ $c = -0.182345 - 1.003610I$ $d = -0.42920 - 2.02878I$	$0.91327 - 2.30980I$	$-2.35018 + 5.72620I$
$u = -0.68480 + 1.26233I$ $a = 0.77022 + 1.88079I$ $b = -1.05613 + 2.67355I$ $c = -0.52883 - 1.71234I$ $d = 0.71570 - 1.66643I$	$-8.38263 - 9.37788I$	0
$u = -0.68480 - 1.26233I$ $a = 0.77022 - 1.88079I$ $b = -1.05613 - 2.67355I$ $c = -0.52883 + 1.71234I$ $d = 0.71570 + 1.66643I$	$-8.38263 + 9.37788I$	0
$u = -0.80648 + 1.20827I$ $a = 0.81681 + 2.38600I$ $b = -0.91530 + 3.40016I$ $c = -0.12117 - 2.11842I$ $d = 1.18116 - 2.06331I$	$-5.3240 - 17.7550I$	0
$u = -0.80648 - 1.20827I$ $a = 0.81681 - 2.38600I$ $b = -0.91530 - 3.40016I$ $c = -0.12117 + 2.11842I$ $d = 1.18116 + 2.06331I$	$-5.3240 + 17.7550I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.00564 + 1.45291I$ $a = -0.851063 - 0.822170I$ $b = 0.636678 - 1.070480I$ $c = 1.36039 + 0.81823I$ $d = 0.427830 + 0.688849I$	$-13.06970 - 1.34685I$	0
$u = -0.00564 - 1.45291I$ $a = -0.851063 + 0.822170I$ $b = 0.636678 + 1.070480I$ $c = 1.36039 - 0.81823I$ $d = 0.427830 - 0.688849I$	$-13.06970 + 1.34685I$	0
$u = 0.22004 + 1.44810I$ $a = -0.929164 - 0.066704I$ $b = 0.729786 - 0.060469I$ $c = 1.50177 + 0.01187I$ $d = 0.470629 - 0.058111I$	$-12.6554 + 7.5654I$	0
$u = 0.22004 - 1.44810I$ $a = -0.929164 + 0.066704I$ $b = 0.729786 + 0.060469I$ $c = 1.50177 - 0.01187I$ $d = 0.470629 + 0.058111I$	$-12.6554 - 7.5654I$	0
$u = 0.499413$ $a = -1.13138$ $b = 0.269950$ $c = 1.32737$ $d = -0.0790890$	1.20722	9.11790

II. $I_2^u = \langle -43a^2u^3 - 37au^3 + \cdots - 78a - 12,\ -47a^2u^3 - 52au^3 + \cdots - 6a + 10,\ -24a^2u^3 - 19au^3 + \cdots - 65a - 10,\ -2u^3a^2 - u^3a + \cdots + a^3 + 2a^2,\ u^4 + u^2 - u + 1\rangle$

(i) Arc colorings

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

$$a_9 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} a \\ 0.338028a^2u^3 + 0.267606au^3 + \cdots + 0.915493a + 0.140845 \end{pmatrix}$$

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

$$a_{12} = \begin{pmatrix} 0.661972a^2u^3 + 0.732394au^3 + \cdots + 0.0845070a - 0.140845 \\ 0.605634a^2u^3 + 0.521127au^3 + \cdots + 1.09859a + 0.169014 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u \\ u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} u^3 \\ u^3 + u \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} -u^3 + u^2 - u + 1 \\ u^2 - u + 1 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0.338028a^2u^3 + 0.267606au^3 + \cdots - 0.0845070a + 0.140845 \\ 0.281690a^2u^3 + 0.0563380au^3 + \cdots + 0.929577a + 0.450704 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.0563380a^2u^3 - 0.211268au^3 + \cdots + 1.01408a + 0.309859 \\ 0.281690a^2u^3 + 0.0563380au^3 + \cdots + 0.929577a + 0.450704 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^3 - 4u^2 + 2$

(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}	$u^{12}-4u^{10}-2u^9+6u^8+6u^7-u^6-6u^5-5u^4+u^3+3u^2+u+1$
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}	$y^{12} - 8y^{11} + \cdots - 31y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.547424 + 0.585652I$ $a = -1.89198 - 0.26082I$ $b = -3.05256 + 0.49971I$ $c = -1.42862 - 0.19451I$ $d = -2.88321 + 0.32177I$	$0.98010 + 1.39709I$	$3.77019 - 3.86736I$
$u = 0.547424 + 0.585652I$ $a = -0.0684280 + 0.0496997I$ $b = 0.375309 + 0.506052I$ $c = 0.571089 + 0.621740I$ $d = 0.814495 + 0.406682I$	$0.98010 + 1.39709I$	$3.77019 - 3.86736I$
$u = 0.547424 + 0.585652I$ $a = 0.25679 + 2.03371I$ $b = 0.973637 + 0.816821I$ $c = -0.23731 - 1.59853I$ $d = -0.729744 - 0.077176I$	$0.98010 + 1.39709I$	$3.77019 - 3.86736I$
$u = 0.547424 - 0.585652I$ $a = -1.89198 + 0.26082I$ $b = -3.05256 - 0.49971I$ $c = -1.42862 + 0.19451I$ $d = -2.88321 - 0.32177I$	$0.98010 - 1.39709I$	$3.77019 + 3.86736I$
$u = 0.547424 - 0.585652I$ $a = -0.0684280 - 0.0496997I$ $b = 0.375309 - 0.506052I$ $c = 0.571089 - 0.621740I$ $d = 0.814495 - 0.406682I$	$0.98010 - 1.39709I$	$3.77019 + 3.86736I$
$u = 0.547424 - 0.585652I$ $a = 0.25679 - 2.03371I$ $b = 0.973637 - 0.816821I$ $c = -0.23731 + 1.59853I$ $d = -0.729744 + 0.077176I$	$0.98010 - 1.39709I$	$3.77019 + 3.86736I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.547424 + 1.120870I$ $a = 0.522652 - 0.149285I$ $b = 0.017395 + 0.374071I$ $c = -0.25807 + 1.52032I$ $d = -0.86105 + 1.25168I$	$-2.62503 - 7.64338I$	$-1.77019 + 6.51087I$
$u = -0.547424 + 1.120870I$ $a = 1.11333 - 1.38898I$ $b = 1.91343 - 0.82551I$ $c = -0.173830 - 1.019770I$ $d = 1.013450 - 0.887820I$	$-2.62503 - 7.64338I$	$-1.77019 + 6.51087I$
$u = -0.547424 + 1.120870I$ $a = -0.93237 + 2.97895I$ $b = -1.22720 + 1.89212I$ $c = 1.52675 - 2.74230I$ $d = 1.64606 - 1.16492I$	$-2.62503 - 7.64338I$	$-1.77019 + 6.51087I$
$u = -0.547424 - 1.120870I$ $a = 0.522652 + 0.149285I$ $b = 0.017395 - 0.374071I$ $c = -0.25807 - 1.52032I$ $d = -0.86105 - 1.25168I$	$-2.62503 + 7.64338I$	$-1.77019 - 6.51087I$
$u = -0.547424 - 1.120870I$ $a = 1.11333 + 1.38898I$ $b = 1.91343 + 0.82551I$ $c = -0.173830 + 1.019770I$ $d = 1.013450 + 0.887820I$	$-2.62503 + 7.64338I$	$-1.77019 - 6.51087I$
$u = -0.547424 - 1.120870I$ $a = -0.93237 - 2.97895I$ $b = -1.22720 - 1.89212I$ $c = 1.52675 + 2.74230I$ $d = 1.64606 + 1.16492I$	$-2.62503 + 7.64338I$	$-1.77019 - 6.51087I$

III. $\boldsymbol{I^u_3 = \langle -75a^2u^5 + 125au^5 + \cdots - 31a + 44,\ -55a^2u^5 + 167au^5 + \cdots + 143a - 28,\ -58a^2u^5 + 59au^5 + \cdots - 30a + 28,\ -2u^5a^2 + 2u^5a + \cdots - 4a^2 + 2a,\ u^6 + u^5 + \cdots + 2u + 1\rangle}$

(i) Arc colorings

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

$$a_9 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} a \\ 0.513274a^2u^5 - 0.522124au^5 + \cdots + 0.265487a - 0.247788 \end{pmatrix}$$

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

$$a_{12} = \begin{pmatrix} 0.486726a^2u^5 - 1.47788au^5 + \cdots - 1.26549a + 0.247788 \\ 0.663717a^2u^5 - 1.10619au^5 + \cdots + 0.274336a - 0.389381 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u \\ u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} u^3 \\ u^3 + u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} u^5 + u^4 + 2u^3 + 2u^2 + 2u + 2 \\ u^5 + 2u^3 + u^2 + 2u + 1 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u^4 + u^2 + u + 1 \\ 2u^5 + u^4 + 3u^3 + 2u^2 + 3u + 2 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0.513274a^2u^5 - 0.522124au^5 + \cdots - 0.734513a - 0.247788 \\ 0.690265a^2u^5 - 0.150442au^5 + \cdots + 0.805310a - 0.884956 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.176991a^2u^5 + 0.371681au^5 + \cdots + 1.53982a - 0.637168 \\ 0.690265a^2u^5 - 0.150442au^5 + \cdots + 0.805310a - 0.884956 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^3 - 4u - 2$

(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_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.498832 + 1.001300I$ $a = -1.17148 - 1.07480I$ $b = -1.99587 - 0.45347I$ $c = -0.157661 - 0.713279I$ $d = -1.32986 - 0.49621I$	$-0.26574 + 2.82812I$	$1.50976 - 2.97945I$
$u = 0.498832 + 1.001300I$ $a = -0.358089 - 0.128198I$ $b = 0.131651 + 0.402262I$ $c = 0.299325 + 1.234880I$ $d = 0.840299 + 1.017300I$	$-0.26574 + 2.82812I$	$1.50976 - 2.97945I$
$u = 0.498832 + 1.001300I$ $a = 0.73236 + 2.80324I$ $b = 1.06700 + 1.65145I$ $c = -1.13933 - 2.52421I$ $d = -1.30532 - 0.92346I$	$-0.26574 + 2.82812I$	$1.50976 - 2.97945I$
$u = 0.498832 - 1.001300I$ $a = -1.17148 + 1.07480I$ $b = -1.99587 + 0.45347I$ $c = -0.157661 + 0.713279I$ $d = -1.32986 + 0.49621I$	$-0.26574 - 2.82812I$	$1.50976 + 2.97945I$
$u = 0.498832 - 1.001300I$ $a = -0.358089 + 0.128198I$ $b = 0.131651 - 0.402262I$ $c = 0.299325 - 1.234880I$ $d = 0.840299 - 1.017300I$	$-0.26574 - 2.82812I$	$1.50976 + 2.97945I$
$u = 0.498832 - 1.001300I$ $a = 0.73236 - 2.80324I$ $b = 1.06700 - 1.65145I$ $c = -1.13933 + 2.52421I$ $d = -1.30532 + 0.92346I$	$-0.26574 - 2.82812I$	$1.50976 + 2.97945I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.284920 + 1.115140I$ $a = 0.589677 - 1.038010I$ $b = 1.292560 - 0.412855I$ $c = -0.384455 - 0.173537I$ $d = 0.624963 - 0.038245I$	-4.40332	$-5.01951 + 0.I$
$u = -0.284920 + 1.115140I$ $a = 0.295266 - 0.439795I$ $b = -0.225579 + 0.124250I$ $c = 0.183101 + 1.122730I$ $d = -0.485466 + 1.007580I$	-4.40332	$-5.01951 + 0.I$
$u = -0.284920 + 1.115140I$ $a = -0.45478 + 3.16140I$ $b = -0.63682 + 1.97219I$ $c = 0.77119 - 3.17947I$ $d = 0.86050 - 1.51603I$	-4.40332	$-5.01951 + 0.I$
$u = -0.284920 - 1.115140I$ $a = 0.589677 + 1.038010I$ $b = 1.292560 + 0.412855I$ $c = -0.384455 + 0.173537I$ $d = 0.624963 + 0.038245I$	-4.40332	$-5.01951 + 0.I$
$u = -0.284920 - 1.115140I$ $a = 0.295266 + 0.439795I$ $b = -0.225579 - 0.124250I$ $c = 0.183101 - 1.122730I$ $d = -0.485466 - 1.007580I$	-4.40332	$-5.01951 + 0.I$
$u = -0.284920 - 1.115140I$ $a = -0.45478 - 3.16140I$ $b = -0.63682 - 1.97219I$ $c = 0.77119 + 3.17947I$ $d = 0.86050 + 1.51603I$	-4.40332	$-5.01951 + 0.I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.713912+0.305839I$ $a=-0.161975+1.103030I$ $b=-1.085250+0.272261I$ $c=-0.223253-0.651146I$ $d=\ \ 0.361764+0.394419I$	$-0.26574+2.82812I$	$1.50976-2.97945I$
$u=-0.713912+0.305839I$ $a=-0.0828484+0.0502791I$ $b=-0.632432+0.441144I$ $c=-0.713791+0.255078I$ $d=-0.738624-0.097289I$	$-0.26574+2.82812I$	$1.50976-2.97945I$
$u=-0.713912+0.305839I$ $a=\ \ 2.61188-0.13927I$ $b=\ \ 4.08474+0.30064I$ $c=\ \ 2.36487-0.21561I$ $d=\ \ 4.17174+0.10523I$	$-0.26574+2.82812I$	$1.50976-2.97945I$
$u=-0.713912-0.305839I$ $a=-0.161975-1.103030I$ $b=-1.085250-0.272261I$ $c=-0.223253+0.651146I$ $d=\ \ 0.361764-0.394419I$	$-0.26574-2.82812I$	$1.50976+2.97945I$
$u=-0.713912-0.305839I$ $a=-0.0828484-0.0502791I$ $b=-0.632432-0.441144I$ $c=-0.713791-0.255078I$ $d=-0.738624+0.097289I$	$-0.26574-2.82812I$	$1.50976+2.97945I$
$u=-0.713912-0.305839I$ $a=\ \ 2.61188+0.13927I$ $b=\ \ 4.08474-0.30064I$ $c=\ \ 2.36487+0.21561I$ $d=\ \ 4.17174-0.10523I$	$-0.26574-2.82812I$	$1.50976+2.97945I$

IV. $I_1^v = \langle a,\ d - v + 1,\ c + a,\ b + v - 1,\ v^2 - v + 1\rangle$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} v \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0 \\ -v+1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} v \\ 0 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 0 \\ v-1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 0 \\ v-1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0 \\ -v+1 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1 \\ v \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -v+1 \\ v \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} v \\ v-1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 0 \\ -v+1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4v + 11$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$v = 0.500000 + 0.866025I$		
$a = 0$		
$b = 0.500000 - 0.866025I$	$1.64493 + 2.02988I$	$9.00000 - 3.46410I$
$c = 0$		
$d = -0.500000 + 0.866025I$		
$v = 0.500000 - 0.866025I$		
$a = 0$		
$b = 0.500000 + 0.866025I$	$1.64493 - 2.02988I$	$9.00000 + 3.46410I$
$c = 0$		
$d = -0.500000 - 0.866025I$		

V. $\boldsymbol{I_2^v = \langle a,\ d,\ c - v,\ b - v - 1,\ v^2 + v + 1 \rangle}$

(i) Arc colorings

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

$$a_9 = \begin{pmatrix} v \\ 0 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0 \\ v + 1 \end{pmatrix}$$

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

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

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

$$a_6 = \begin{pmatrix} -v \\ v + 1 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 0 \\ -v \end{pmatrix}$$

$$a_2 = \begin{pmatrix} v \\ -v \end{pmatrix}$$

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

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4v - 1$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^v	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$v = -0.500000 + 0.866025I$ $a = 0$ $b = 0.500000 + 0.866025I$ $c = -0.500000 + 0.866025I$ $d = 0$	$-1.64493 - 2.02988I$	$-3.00000 + 3.46410I$
$v = -0.500000 - 0.866025I$ $a = 0$ $b = 0.500000 - 0.866025I$ $c = -0.500000 - 0.866025I$ $d = 0$	$-1.64493 + 2.02988I$	$-3.00000 - 3.46410I$

VI. $I_3^v = \langle a,\ d+1,\ c+a-1,\ b-1,\ v-1\rangle$

(i) Arc colorings

$$a_4 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_9 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_5 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_7 = \begin{pmatrix}0\\1\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}1\\-1\end{pmatrix}$$
$$a_1 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_6 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_3 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_2 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}2\\-1\end{pmatrix}$$
$$a_8 = \begin{pmatrix}-1\\1\end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 0$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_3 c_4, c_5, c_9	u
c_6, c_7, c_8	$u+1$
c_{10}, c_{11}, c_{12}	$u-1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_3 c_4, c_5, c_9	y
c_6, c_7, c_8 c_{10}, c_{11}, c_{12}	$y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = 1.00000$		
$a = 0$		
$b = 1.00000$	0	0
$c = 1.00000$		
$d = -1.00000$		

VII. $\boldsymbol{I_4^v = \langle a,\ -b^2v - bv + \cdots + 2b + 1,\ -b^2av - bav + \cdots + a - 1,\ v^2c + v^2b + \cdots + c + 2a,\ b^2v^2 + v^2b + \cdots - v + 1\rangle}$

(i) Arc colorings

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

$$a_9 = \begin{pmatrix} v \\ 0 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0 \\ b \end{pmatrix}$$

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

$$a_{12} = \begin{pmatrix} c \\ b^2v + bv - 2b + v - 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} c \\ b^2v + bv - b + v - 1 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} c \\ b^2v + bv - b + v - 1 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -cv - bv + c - v + 2 \\ b^2v + bv - b + v \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -b^2v - cv - 2bv + c + b - 2v + 2 \\ b^2v + bv - b + v \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} c + v \\ b^2v + bv - 2b + v - 1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -c \\ -b^2v - bv + 2b - v + 1 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 2b^3v - b^2v - 3b^2 - bv - v^2 + b - 3v + 4$

(iv) u-Polynomials at the component : It cannot be defined for a positive dimension component.

(v) Riley Polynomials at the component : It cannot be defined for a positive dimension component.

(iv) Complex Volumes and Cusp Shapes

Solution to I_4^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = \cdots$		
$a = \cdots$		
$b = \cdots$	$-\ 2.02988I$	$1.64184 - 3.78338I$
$c = \cdots$		
$d = \cdots$		

VIII. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$u(u^2-u+1)^2(u^4+2u^3+3u^2+u+1)^3(u^6+3u^5+4u^4+2u^3+1)^3$ $\cdot(u^{77}+36u^{76}+\cdots+216u-16)$
c_2	$u(u^2+u+1)^2(u^4+u^2-u+1)^3$ $\cdot((u^6+u^5+2u^4+2u^3+2u^2+2u+1)^3)(u^{77}+2u^{76}+\cdots+27u^2-4)$
c_3	$u(u^2-u+1)^2(u^3+u^2-1)^6(u^4-3u^3+4u^2-3u+2)^3$ $\cdot(u^{77}-2u^{76}+\cdots+351912u-66564)$
c_4, c_9	$u^5(u^4+u^2-u+1)^3(u^6+u^5+2u^4+2u^3+2u^2+2u+1)^3$ $\cdot(u^{77}-2u^{76}+\cdots-2560u^2-512)$
c_5	$u(u^2-u+1)^2(u^4+u^2-u+1)^3$ $\cdot((u^6+u^5+2u^4+2u^3+2u^2+2u+1)^3)(u^{77}+2u^{76}+\cdots+27u^2-4)$
c_6, c_7	$u^2(u-1)^2(u+1)$ $\cdot(u^{12}-4u^{10}-2u^9+6u^8+6u^7-u^6-6u^5-5u^4+u^3+3u^2+u+1)$ $\cdot(u^{18}-6u^{16}+\cdots+2u^3+1)(u^{77}-8u^{76}+\cdots-72u-16)$
c_8	$u^2(u+1)^3$ $\cdot(u^{12}-4u^{10}-2u^9+6u^8+6u^7-u^6-6u^5-5u^4+u^3+3u^2+u+1)$ $\cdot(u^{18}-6u^{16}+\cdots+2u^3+1)(u^{77}+8u^{76}+\cdots-72u-16)$
c_{10}	$u^2(u-1)^3$ $\cdot(u^{12}-4u^{10}-2u^9+6u^8+6u^7-u^6-6u^5-5u^4+u^3+3u^2+u+1)$ $\cdot(u^{18}-6u^{16}+\cdots+2u^3+1)(u^{77}+8u^{76}+\cdots-72u-16)$
c_{11}	$u^2(u-1)^3(u^{12}-8u^{11}+\cdots+5u+1)(u^{18}-12u^{17}+\cdots+8u^2+1)$ $\cdot(u^{77}-34u^{76}+\cdots+1568u-256)$
c_{12}	$u^2(u-1)(u+1)^2$ $\cdot(u^{12}-4u^{10}-2u^9+6u^8+6u^7-u^6-6u^5-5u^4+u^3+3u^2+u+1)$ $\cdot(u^{18}-6u^{16}+\cdots+2u^3+1)(u^{77}-8u^{76}+\cdots-72u-16)$

IX. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$y(y^2+y+1)^2(y^4+2y^3+7y^2+5y+1)^3$ $\cdot((y^6-y^5+4y^4-2y^3+8y^2+1)^3)(y^{77}+12y^{76}+\cdots+84256y-256)$
c_2, c_5	$y(y^2+y+1)^2(y^4+2y^3+3y^2+y+1)^3(y^6+3y^5+4y^4+2y^3+1)^3$ $\cdot(y^{77}+36y^{76}+\cdots+216y-16)$
c_3	$y(y^2+y+1)^2(y^3-y^2+2y-1)^6(y^4-y^3+2y^2+7y+4)^3$ $\cdot(y^{77}-12y^{76}+\cdots+120020616504y-4430766096)$
c_4, c_9	$y^5(y^4+2y^3+3y^2+y+1)^3(y^6+3y^5+4y^4+2y^3+1)^3$ $\cdot(y^{77}+30y^{76}+\cdots-2621440y-262144)$
c_6, c_7, c_{12}	$y^2(y-1)^3(y^{12}-8y^{11}+\cdots+5y+1)(y^{18}-12y^{17}+\cdots+8y^2+1)$ $\cdot(y^{77}-74y^{76}+\cdots+7712y-256)$
c_8, c_{10}	$y^2(y-1)^3(y^{12}-8y^{11}+\cdots+5y+1)(y^{18}-12y^{17}+\cdots+8y^2+1)$ $\cdot(y^{77}-34y^{76}+\cdots+1568y-256)$
c_{11}	$y^2(y-1)^3(y^{12}-8y^{11}+\cdots-31y+1)(y^{18}-12y^{17}+\cdots+16y+1)$ $\cdot(y^{77}+26y^{76}+\cdots+3416576y-65536)$