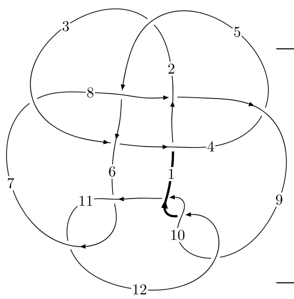
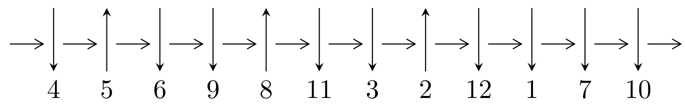
$12a_{0804}$ ($K12a_{0804}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & -7.46655 \times 10^{73} u^{66} + 4.19280 \times 10^{74} u^{65} + \cdots + 5.68441 \times 10^{73} b + 8.22113 \times 10^{74}, \\
& -6.82885 \times 10^{73} u^{66} + 3.74607 \times 10^{74} u^{65} + \cdots + 5.68441 \times 10^{73} a + 4.88086 \times 10^{74}, \\
& u^{67} - 7u^{66} + \cdots + 17u + 16 \rangle \\
I_2^u = \langle & -4.31286 \times 10^{18} a u^{45} + 7.66921 \times 10^{18} u^{45} + \cdots + 2.80217 \times 10^{18} a - 5.40388 \times 10^{18}, \\
& 4276100239374611 u^{45} a + 1318919595635818 u^{45} + \cdots - 2872520987122649 a - 510440857054024, \\
& u^{46} - 5u^{45} + \cdots + u + 1 \rangle \\
I_3^u = \langle & u^{20} - 8u^{19} + \cdots + b - 4u,\ 3u^{20} - 12u^{19} + \cdots + a + 3,\ u^{21} - 4u^{20} + \cdots - u - 1 \rangle \\
I_4^u = \langle & 4a^3 - 7a^2 + b + 6a - 3,\ 4a^4 - 7a^3 + 7a^2 - 4a + 1,\ u + 1 \rangle \\
I_5^u = \langle & a^5 - 5a^4 + 13a^3 - 16a^2 + b + 11a - 4,\ a^6 - 5a^5 + 13a^4 - 16a^3 + 12a^2 - 5a + 1,\ u + 1 \rangle \\
I_6^u = \langle & -au + b - a - 1,\ a^2 + 2au - a - 3u + 6,\ u^2 - u - 1 \rangle
\end{aligned}$$

* 6 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 194 representations.

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[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. $I_1^u = \langle -7.47 \times 10^{73}u^{66} + 4.19 \times 10^{74}u^{65} + \cdots + 5.68 \times 10^{73}b + 8.22 \times 10^{74},\ -6.83 \times 10^{73}u^{66} + 3.75 \times 10^{74}u^{65} + \cdots + 5.68 \times 10^{73}a + 4.88 \times 10^{74},\ u^{67} - 7u^{66} + \cdots + 17u + 16\rangle$

(i) Arc colorings

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

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

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

$$a_{4} = \begin{pmatrix} 1.20133u^{66} - 6.59007u^{65} + \cdots - 8.38458u - 8.58640 \\ 1.31351u^{66} - 7.37596u^{65} + \cdots - 28.0095u - 14.4626 \end{pmatrix}$$

$$a_{2} = \begin{pmatrix} 3.37831u^{66} - 18.7956u^{65} + \cdots - 63.1226u - 34.2832 \\ 1.97158u^{66} - 10.8079u^{65} + \cdots - 34.5481u - 19.6508 \end{pmatrix}$$

$$a_{9} = \begin{pmatrix} u \\ u \end{pmatrix}$$

$$a_{5} = \begin{pmatrix} 1.43693u^{66} - 7.65419u^{65} + \cdots - 6.59990u - 8.59606 \\ 1.54912u^{66} - 8.44009u^{65} + \cdots - 26.2248u - 14.4723 \end{pmatrix}$$

$$a_{3} = \begin{pmatrix} 2.78686u^{66} - 15.6625u^{65} + \cdots - 51.4076u - 30.4248 \\ 1.70541u^{66} - 9.35021u^{65} + \cdots - 30.1704u - 16.9114 \end{pmatrix}$$

$$a_{8} = \begin{pmatrix} -2.88579u^{66} + 16.9817u^{65} + \cdots + 66.6836u + 38.9741 \\ -0.883475u^{66} + 5.46866u^{65} + \cdots + 30.5641u + 14.4408 \end{pmatrix}$$

$$a_{6} = \begin{pmatrix} -1.59108u^{66} + 8.68445u^{65} + \cdots + 35.8380u + 17.6639 \\ -1.23122u^{66} + 6.72157u^{65} + \cdots + 18.6619u + 12.2584 \end{pmatrix}$$

$$a_{7} = \begin{pmatrix} 2.65000u^{66} - 15.0717u^{65} + \cdots - 65.4616u - 33.0722 \\ 0.963019u^{66} - 5.68222u^{65} + \cdots - 23.4083u - 13.2523 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -2.97364u^{66} + 17.8037u^{65} + \cdots + 63.3507u + 35.1757$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_3	$u^{67} + 10u^{66} + \cdots + 102u - 1$
c_2	$u^{67} + 37u^{66} + \cdots + 52u + 4$
c_4, c_7	$u^{67} + 5u^{65} + \cdots - 4u + 1$
c_5, c_8	$u^{67} + u^{66} + \cdots + 5u + 1$
c_6, c_{11}	$u^{67} - 5u^{66} + \cdots - 736u + 256$
c_9, c_{10}, c_{12}	$u^{67} - 7u^{66} + \cdots + 17u + 16$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3	$y^{67} - 34y^{66} + \cdots + 7148y - 1$
c_2	$y^{67} - y^{66} + \cdots + 1096y - 16$
c_4, c_7	$y^{67} + 10y^{66} + \cdots + 40y - 1$
c_5, c_8	$y^{67} + 29y^{66} + \cdots - 69y - 1$
c_6, c_{11}	$y^{67} - 27y^{66} + \cdots + 947200y - 65536$
c_9, c_{10}, c_{12}	$y^{67} - 59y^{66} + \cdots - 10527y - 256$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.886040+0.462607I$ $a=\ \ 0.418801-0.553515I$ $b=\ \ 0.941164+0.197930I$	$-3.77727-2.29823I$	0
$u=-0.886040-0.462607I$ $a=\ \ 0.418801+0.553515I$ $b=\ \ 0.941164-0.197930I$	$-3.77727+2.29823I$	0
$u=-0.506108+0.879870I$ $a=\ \ 0.103195+0.584858I$ $b=-0.095104-0.358363I$	$-2.67608-0.95592I$	0
$u=-0.506108-0.879870I$ $a=\ \ 0.103195-0.584858I$ $b=-0.095104+0.358363I$	$-2.67608+0.95592I$	0
$u=-0.278352+0.927953I$ $a=\ \ 0.381479+0.825242I$ $b=-1.177430+0.199299I$	$-0.2794+15.6078I$	$-6.00000-9.90214I$
$u=-0.278352-0.927953I$ $a=\ \ 0.381479-0.825242I$ $b=-1.177430-0.199299I$	$-0.2794-15.6078I$	$-6.00000+9.90214I$
$u=-0.875010+0.359675I$ $a=\ \ 0.086232-0.705853I$ $b=\ \ 0.651120-0.766803I$	$-3.78014+1.26212I$	$-17.5567-2.3807I$
$u=-0.875010-0.359675I$ $a=\ \ 0.086232+0.705853I$ $b=\ \ 0.651120+0.766803I$	$-3.78014-1.26212I$	$-17.5567+2.3807I$
$u=-0.832278+0.744916I$ $a=\ \ 0.307640+0.044559I$ $b=-0.719105-0.118462I$	$-3.66147+6.63575I$	0
$u=-0.832278-0.744916I$ $a=\ \ 0.307640-0.044559I$ $b=-0.719105+0.118462I$	$-3.66147-6.63575I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.146600 + 0.015974I$ $a = 0.236410 - 0.731304I$ $b = -0.179252 + 0.333247I$	$0.57345 + 7.56399I$	0
$u = 1.146600 - 0.015974I$ $a = 0.236410 + 0.731304I$ $b = -0.179252 - 0.333247I$	$0.57345 - 7.56399I$	0
$u = -0.265956 + 0.807155I$ $a = -0.144674 - 1.268960I$ $b = 0.774720 - 0.398888I$	$-1.83450 + 6.83794I$	$-13.0499 - 9.4798I$
$u = -0.265956 - 0.807155I$ $a = -0.144674 + 1.268960I$ $b = 0.774720 + 0.398888I$	$-1.83450 - 6.83794I$	$-13.0499 + 9.4798I$
$u = -0.142952 + 0.833197I$ $a = 0.393388 - 0.285156I$ $b = 0.717234 - 0.035393I$	$-1.24487 + 2.78705I$	$-11.56898 - 3.57731I$
$u = -0.142952 - 0.833197I$ $a = 0.393388 + 0.285156I$ $b = 0.717234 + 0.035393I$	$-1.24487 - 2.78705I$	$-11.56898 + 3.57731I$
$u = -1.151610 + 0.247358I$ $a = 1.093750 + 0.479916I$ $b = 1.326200 - 0.169578I$	$-0.874218 + 1.068790I$	0
$u = -1.151610 - 0.247358I$ $a = 1.093750 - 0.479916I$ $b = 1.326200 + 0.169578I$	$-0.874218 - 1.068790I$	0
$u = -1.003220 + 0.631301I$ $a = 0.066674 + 0.801201I$ $b = -0.139183 - 0.463104I$	$-2.46151 - 10.19180I$	0
$u = -1.003220 - 0.631301I$ $a = 0.066674 - 0.801201I$ $b = -0.139183 + 0.463104I$	$-2.46151 + 10.19180I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.868429 + 0.825439I$ $a = 0.178701 + 0.010283I$ $b = -0.151600 + 0.224746I$	$4.21754 - 3.05286I$	0
$u = 0.868429 - 0.825439I$ $a = 0.178701 - 0.010283I$ $b = -0.151600 - 0.224746I$	$4.21754 + 3.05286I$	0
$u = -1.226260 + 0.017383I$ $a = -2.80177 + 1.01170I$ $b = -3.10614 + 1.95095I$	$-4.09165 + 0.04865I$	0
$u = -1.226260 - 0.017383I$ $a = -2.80177 - 1.01170I$ $b = -3.10614 - 1.95095I$	$-4.09165 - 0.04865I$	0
$u = 0.514220 + 0.564393I$ $a = -0.277985 - 0.852832I$ $b = -0.077903 + 0.542054I$	$1.47490 + 6.03278I$	$-3.03499 - 7.78090I$
$u = 0.514220 - 0.564393I$ $a = -0.277985 + 0.852832I$ $b = -0.077903 - 0.542054I$	$1.47490 - 6.03278I$	$-3.03499 + 7.78090I$
$u = 0.317644 + 0.657692I$ $a = 0.923425 - 0.718468I$ $b = -0.990234 - 0.352466I$	$2.11508 - 9.83520I$	$-3.28213 + 7.19382I$
$u = 0.317644 - 0.657692I$ $a = 0.923425 + 0.718468I$ $b = -0.990234 + 0.352466I$	$2.11508 + 9.83520I$	$-3.28213 - 7.19382I$
$u = -1.267820 + 0.254906I$ $a = -0.98278 - 1.28187I$ $b = -1.23559 - 1.32066I$	$-4.47405 + 1.01497I$	0
$u = -1.267820 - 0.254906I$ $a = -0.98278 + 1.28187I$ $b = -1.23559 + 1.32066I$	$-4.47405 - 1.01497I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.122225 + 0.694677I$ $a = 0.507052 - 0.261280I$ $b = -0.863507 - 0.202693I$	$2.18927 + 2.39577I$	$-0.67460 - 3.37107I$
$u = -0.122225 - 0.694677I$ $a = 0.507052 + 0.261280I$ $b = -0.863507 + 0.202693I$	$2.18927 - 2.39577I$	$-0.67460 + 3.37107I$
$u = 1.308110 + 0.162425I$ $a = 0.626403 + 0.525881I$ $b = 1.097540 - 0.180102I$	$-4.15383 - 0.16010I$	0
$u = 1.308110 - 0.162425I$ $a = 0.626403 - 0.525881I$ $b = 1.097540 + 0.180102I$	$-4.15383 + 0.16010I$	0
$u = -0.650492$ $a = 0.859311$ $b = 0.351682$	-1.00288	-10.0410
$u = -1.334120 + 0.204364I$ $a = -2.54568 - 0.16258I$ $b = -3.25877 + 0.06740I$	$-4.75755 + 4.80110I$	0
$u = -1.334120 - 0.204364I$ $a = -2.54568 + 0.16258I$ $b = -3.25877 - 0.06740I$	$-4.75755 - 4.80110I$	0
$u = -0.297590 + 0.569032I$ $a = -0.388782 + 0.838417I$ $b = 1.67541 + 0.17339I$	$-1.93809 + 1.60095I$	$-10.43691 - 4.02924I$
$u = -0.297590 - 0.569032I$ $a = -0.388782 - 0.838417I$ $b = 1.67541 - 0.17339I$	$-1.93809 - 1.60095I$	$-10.43691 + 4.02924I$
$u = -0.363048 + 0.527813I$ $a = 0.67980 - 1.94335I$ $b = -0.054527 - 0.387963I$	$-2.13919 + 1.55825I$	$-11.25159 - 5.43160I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.363048 - 0.527813I$ $a = 0.67980 + 1.94335I$ $b = -0.054527 + 0.387963I$	$-2.13919 - 1.55825I$	$-11.25159 + 5.43160I$
$u = 1.342900 + 0.275476I$ $a = 0.895399 - 0.647673I$ $b = 1.231760 + 0.093797I$	$-2.43663 - 5.90398I$	0
$u = 1.342900 - 0.275476I$ $a = 0.895399 + 0.647673I$ $b = 1.231760 - 0.093797I$	$-2.43663 + 5.90398I$	0
$u = 1.41253 + 0.22914I$ $a = -1.74771 + 0.52569I$ $b = -2.18934 - 0.54716I$	$-7.40801 - 4.57388I$	0
$u = 1.41253 - 0.22914I$ $a = -1.74771 - 0.52569I$ $b = -2.18934 + 0.54716I$	$-7.40801 + 4.57388I$	0
$u = 1.38655 + 0.37104I$ $a = -1.078820 + 0.668747I$ $b = -1.43331 + 0.46079I$	$-6.09824 - 7.18020I$	0
$u = 1.38655 - 0.37104I$ $a = -1.078820 - 0.668747I$ $b = -1.43331 - 0.46079I$	$-6.09824 + 7.18020I$	0
$u = 1.42617 + 0.19546I$ $a = -0.990215 + 0.549897I$ $b = -1.49974 + 1.39131I$	$-7.87593 - 4.21311I$	0
$u = 1.42617 - 0.19546I$ $a = -0.990215 - 0.549897I$ $b = -1.49974 - 1.39131I$	$-7.87593 + 4.21311I$	0
$u = -1.42366 + 0.26282I$ $a = 2.21278 + 0.02414I$ $b = 3.06613 - 0.66738I$	$-3.44703 + 13.22340I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.42366 - 0.26282I$ $a = 2.21278 - 0.02414I$ $b = 3.06613 + 0.66738I$	$-3.44703 - 13.22340I$	0
$u = 1.41803 + 0.32540I$ $a = -2.05092 + 0.35648I$ $b = -2.83519 + 0.16768I$	$-7.19836 - 10.93070I$	0
$u = 1.41803 - 0.32540I$ $a = -2.05092 - 0.35648I$ $b = -2.83519 - 0.16768I$	$-7.19836 + 10.93070I$	0
$u = 0.077770 + 0.518056I$ $a = -0.54086 + 1.77842I$ $b = 0.801606 + 0.510059I$	$-0.26465 - 2.13116I$	$-8.00844 + 3.42216I$
$u = 0.077770 - 0.518056I$ $a = -0.54086 - 1.77842I$ $b = 0.801606 - 0.510059I$	$-0.26465 + 2.13116I$	$-8.00844 - 3.42216I$
$u = 1.48184 + 0.01796I$ $a = -1.88623 + 0.56334I$ $b = -2.49946 + 0.63940I$	$-11.54390 + 1.53289I$	0
$u = 1.48184 - 0.01796I$ $a = -1.88623 - 0.56334I$ $b = -2.49946 - 0.63940I$	$-11.54390 - 1.53289I$	0
$u = -1.48064 + 0.12268I$ $a = 0.960629 + 0.677197I$ $b = 1.60297 + 1.04822I$	$-5.25353 - 3.65413I$	0
$u = -1.48064 - 0.12268I$ $a = 0.960629 - 0.677197I$ $b = 1.60297 - 1.04822I$	$-5.25353 + 3.65413I$	0
$u = 1.44769 + 0.37948I$ $a = 2.01395 - 0.39710I$ $b = 2.93042 + 0.30305I$	$-5.7776 - 20.3102I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.44769 - 0.37948I$ $a = 2.01395 + 0.39710I$ $b = 2.93042 - 0.30305I$	$-5.7776 + 20.3102I$	0
$u = 1.50160 + 0.27397I$ $a = 0.892084 - 0.367176I$ $b = 1.66203 - 0.53253I$	$-9.25323 - 3.05507I$	0
$u = 1.50160 - 0.27397I$ $a = 0.892084 + 0.367176I$ $b = 1.66203 + 0.53253I$	$-9.25323 + 3.05507I$	0
$u = 1.57951 + 0.06444I$ $a = 1.49720 + 0.37848I$ $b = 2.31797 + 0.90383I$	$-12.2490 - 9.1394I$	0
$u = 1.57951 - 0.06444I$ $a = 1.49720 - 0.37848I$ $b = 2.31797 - 0.90383I$	$-12.2490 + 9.1394I$	0
$u = 0.052527 + 0.206865I$ $a = 2.37554 + 2.38725I$ $b = 0.408286 - 0.391016I$	$-0.97444 + 1.07725I$	$-5.67594 - 4.49690I$
$u = 0.052527 - 0.206865I$ $a = 2.37554 - 2.38725I$ $b = 0.408286 + 0.391016I$	$-0.97444 - 1.07725I$	$-5.67594 + 4.49690I$

II.
$I_2^u = \langle -4.31\times10^{18}au^{45}+7.67\times10^{18}u^{45}+\cdots+2.80\times10^{18}a-5.40\times10^{18},\ 4.28\times10^{15}au^{45}+1.32\times10^{15}u^{45}+\cdots-2.87\times10^{15}a-5.10\times10^{14},\ u^{46}-5u^{45}+\cdots+u+1\rangle$

(i) Arc colorings

$$a_{10} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{1} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_{4} = \begin{pmatrix} a \\ 7.26494au^{45} - 12.9187u^{45} + \cdots - 4.72021a + 9.10275 \end{pmatrix}$$
$$a_{2} = \begin{pmatrix} 10.0594au^{45} + 15.4174u^{45} + \cdots - 8.05021a - 12.4526 \\ 6.68466au^{45} + 7.33727u^{45} + \cdots - 5.87490a - 7.18934 \end{pmatrix}$$
$$a_{9} = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_{5} = \begin{pmatrix} -15.9507au^{45} + 30.4136u^{45} + \cdots + 11.8538a - 20.4155 \\ -8.68580au^{45} + 17.4950u^{45} + \cdots + 6.13364a - 11.3128 \end{pmatrix}$$
$$a_{3} = \begin{pmatrix} -17.5185au^{45} + 44.1901u^{45} + \cdots + 13.3266a - 31.6617 \\ -5.57001au^{45} + 23.9234u^{45} + \cdots + 4.75911a - 17.0092 \end{pmatrix}$$
$$a_{8} = \begin{pmatrix} -8.81370au^{45} - 30.2038u^{45} + \cdots + 5.57064a + 20.7364 \\ -9.90551au^{45} - 24.5364u^{45} + \cdots + 5.91698a + 16.1933 \end{pmatrix}$$
$$a_{6} = \begin{pmatrix} 16.2495u^{45} - 56.2137u^{44} + \cdots - 20.5991u - 11.7119 \\ 11.5267u^{45} - 40.6880u^{44} + \cdots - 11.8242u - 7.98688 \end{pmatrix}$$
$$a_{7} = \begin{pmatrix} -26.2810u^{45} + 96.5901u^{44} + \cdots + 38.3673u + 20.9461 \\ -9.23423u^{45} + 36.1396u^{44} + \cdots + 13.8688u + 8.53396 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= -\frac{3565132764588699}{137866554138758}u^{45} + \frac{12143571441573331}{137866554138758}u^{44} + \cdots + \frac{5241235151619549}{137866554138758}u + \frac{692954415625718}{68933277069379}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_3	$u^{92} - 6u^{91} + \cdots + 21848u - 4007$
c_2	$(u^{46} - 22u^{45} + \cdots + 6u + 4)^2$
c_4, c_7	$u^{92} + 5u^{91} + \cdots + 59081u - 15649$
c_5, c_8	$u^{92} + 9u^{91} + \cdots + 9u + 1$
c_6, c_{11}	$(u^{46} + 2u^{45} + \cdots + 12u - 8)^2$
c_9, c_{10}, c_{12}	$(u^{46} - 5u^{45} + \cdots + u + 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3	$y^{92} + 26y^{91} + \cdots - 169276944y + 16056049$
c_2	$(y^{46} - 6y^{45} + \cdots - 460y + 16)^2$
c_4, c_7	$y^{92} - y^{91} + \cdots + 7756027461y + 244891201$
c_5, c_8	$y^{92} - 25y^{91} + \cdots + 5y + 1$
c_6, c_{11}	$(y^{46} - 24y^{45} + \cdots - 464y + 64)^2$
c_9, c_{10}, c_{12}	$(y^{46} - 43y^{45} + \cdots + y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.301208 + 0.925317I$ $a = 0.539502 + 0.595975I$ $b = -1.070430 - 0.078921I$	$1.27204 + 7.29420I$	$-2.20923 - 9.60817I$
$u = -0.301208 + 0.925317I$ $a = -0.235983 - 0.541720I$ $b = 0.514580 - 0.442022I$	$1.27204 + 7.29420I$	$-2.20923 - 9.60817I$
$u = -0.301208 - 0.925317I$ $a = 0.539502 - 0.595975I$ $b = -1.070430 + 0.078921I$	$1.27204 - 7.29420I$	$-2.20923 + 9.60817I$
$u = -0.301208 - 0.925317I$ $a = -0.235983 + 0.541720I$ $b = 0.514580 + 0.442022I$	$1.27204 - 7.29420I$	$-2.20923 + 9.60817I$
$u = -0.722332 + 0.600949I$ $a = 0.547852 - 0.821980I$ $b = 0.521373 + 0.207530I$	$-3.35914 - 1.96952I$	$-15.8602 + 4.3814I$
$u = -0.722332 + 0.600949I$ $a = 0.628225 - 0.570814I$ $b = -1.159030 - 0.808305I$	$-3.35914 - 1.96952I$	$-15.8602 + 4.3814I$
$u = -0.722332 - 0.600949I$ $a = 0.547852 + 0.821980I$ $b = 0.521373 - 0.207530I$	$-3.35914 + 1.96952I$	$-15.8602 - 4.3814I$
$u = -0.722332 - 0.600949I$ $a = 0.628225 + 0.570814I$ $b = -1.159030 + 0.808305I$	$-3.35914 + 1.96952I$	$-15.8602 - 4.3814I$
$u = -1.069300 + 0.154626I$ $a = -0.028114 + 0.733560I$ $b = 0.58442 + 1.82190I$	$-0.54999 - 3.11732I$	$-1.92655 + 7.58795I$
$u = -1.069300 + 0.154626I$ $a = 4.41452 - 0.50911I$ $b = 4.15151 - 0.93227I$	$-0.54999 - 3.11732I$	$-1.92655 + 7.58795I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.069300 - 0.154626I$ $a = -0.028114 - 0.733560I$ $b = 0.58442 - 1.82190I$	$-0.54999 + 3.11732I$	$-1.92655 - 7.58795I$
$u = -1.069300 - 0.154626I$ $a = 4.41452 + 0.50911I$ $b = 4.15151 + 0.93227I$	$-0.54999 + 3.11732I$	$-1.92655 - 7.58795I$
$u = -0.371010 + 0.778352I$ $a = -0.335013 - 0.893259I$ $b = 0.943969 - 0.589431I$	$-2.25962 + 6.70622I$	$-12.6754 - 9.2419I$
$u = -0.371010 + 0.778352I$ $a = 0.37172 + 1.51058I$ $b = 0.135168 - 0.591500I$	$-2.25962 + 6.70622I$	$-12.6754 - 9.2419I$
$u = -0.371010 - 0.778352I$ $a = -0.335013 + 0.893259I$ $b = 0.943969 + 0.589431I$	$-2.25962 - 6.70622I$	$-12.6754 + 9.2419I$
$u = -0.371010 - 0.778352I$ $a = 0.37172 - 1.51058I$ $b = 0.135168 + 0.591500I$	$-2.25962 - 6.70622I$	$-12.6754 + 9.2419I$
$u = -0.968236 + 0.657208I$ $a = 0.385680 + 0.494198I$ $b = 0.021923 - 0.727960I$	$-0.73382 - 1.83088I$	0
$u = -0.968236 + 0.657208I$ $a = 0.351392 - 0.367182I$ $b = 0.216413 + 0.038938I$	$-0.73382 - 1.83088I$	0
$u = -0.968236 - 0.657208I$ $a = 0.385680 - 0.494198I$ $b = 0.021923 + 0.727960I$	$-0.73382 + 1.83088I$	0
$u = -0.968236 - 0.657208I$ $a = 0.351392 + 0.367182I$ $b = 0.216413 - 0.038938I$	$-0.73382 + 1.83088I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.18912$ $a = 0.381769 + 0.593804I$ $b = 0.205686 - 0.488546I$	2.15622	-11.6170
$u = 1.18912$ $a = 0.381769 - 0.593804I$ $b = 0.205686 + 0.488546I$	2.15622	-11.6170
$u = -1.147130 + 0.330381I$ $a = 0.662485 - 0.140870I$ $b = 0.941847 - 0.872914I$	$-1.02869 + 1.23073I$	0
$u = -1.147130 + 0.330381I$ $a = 1.45074 + 1.11037I$ $b = 1.60150 + 0.22264I$	$-1.02869 + 1.23073I$	0
$u = -1.147130 - 0.330381I$ $a = 0.662485 + 0.140870I$ $b = 0.941847 + 0.872914I$	$-1.02869 - 1.23073I$	0
$u = -1.147130 - 0.330381I$ $a = 1.45074 - 1.11037I$ $b = 1.60150 - 0.22264I$	$-1.02869 - 1.23073I$	0
$u = -1.209740 + 0.143206I$ $a = -0.20791 + 2.25198I$ $b = 0.06312 + 1.64377I$	$-0.98248 + 4.74267I$	0
$u = -1.209740 + 0.143206I$ $a = -3.71784 + 0.24484I$ $b = -4.79294 + 0.94523I$	$-0.98248 + 4.74267I$	0
$u = -1.209740 - 0.143206I$ $a = -0.20791 - 2.25198I$ $b = 0.06312 - 1.64377I$	$-0.98248 - 4.74267I$	0
$u = -1.209740 - 0.143206I$ $a = -3.71784 - 0.24484I$ $b = -4.79294 - 0.94523I$	$-0.98248 - 4.74267I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.227074+0.675918I$ $a=-0.04766-1.46821I$ $b=-1.11495-1.22759I$	$1.69571+6.30129I$	$-2.30828-10.19820I$
$u=-0.227074+0.675918I$ $a=-1.29068-1.06858I$ $b=\ \ 0.860694+0.064321I$	$1.69571+6.30129I$	$-2.30828-10.19820I$
$u=-0.227074-0.675918I$ $a=-0.04766+1.46821I$ $b=-1.11495+1.22759I$	$1.69571-6.30129I$	$-2.30828+10.19820I$
$u=-0.227074-0.675918I$ $a=-1.29068+1.06858I$ $b=\ \ 0.860694-0.064321I$	$1.69571-6.30129I$	$-2.30828+10.19820I$
$u=\ \ 0.344671+0.595078I$ $a=\ \ 1.103900-0.381172I$ $b=-0.664606-0.215065I$	$3.89027-1.72774I$	$3.38137+3.27076I$
$u=\ \ 0.344671+0.595078I$ $a=-0.612797-0.019410I$ $b=\ \ 0.279786+0.632492I$	$3.89027-1.72774I$	$3.38137+3.27076I$
$u=\ \ 0.344671-0.595078I$ $a=\ \ 1.103900+0.381172I$ $b=-0.664606+0.215065I$	$3.89027+1.72774I$	$3.38137-3.27076I$
$u=\ \ 0.344671-0.595078I$ $a=-0.612797+0.019410I$ $b=\ \ 0.279786-0.632492I$	$3.89027+1.72774I$	$3.38137-3.27076I$
$u=-0.085734+0.681652I$ $a=\ \ 0.963556-0.446059I$ $b=-0.619372-0.367941I$	$2.23568+2.45642I$	$-0.01179-3.81685I$
$u=-0.085734+0.681652I$ $a=\ \ 0.126903-0.138439I$ $b=-1.141800+0.059750I$	$2.23568+2.45642I$	$-0.01179-3.81685I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.085734 - 0.681652I$ $a = 0.963556 + 0.446059I$ $b = -0.619372 + 0.367941I$	$2.23568 - 2.45642I$	$-0.01179 + 3.81685I$
$u = -0.085734 - 0.681652I$ $a = 0.126903 + 0.138439I$ $b = -1.141800 - 0.059750I$	$2.23568 - 2.45642I$	$-0.01179 + 3.81685I$
$u = 1.341210 + 0.248066I$ $a = 0.352859 - 0.409330I$ $b = 0.589078 + 0.533839I$	$-2.27518 - 5.75756I$	0
$u = 1.341210 + 0.248066I$ $a = 1.57949 - 0.74710I$ $b = 1.83012 - 0.27573I$	$-2.27518 - 5.75756I$	0
$u = 1.341210 - 0.248066I$ $a = 0.352859 + 0.409330I$ $b = 0.589078 - 0.533839I$	$-2.27518 + 5.75756I$	0
$u = 1.341210 - 0.248066I$ $a = 1.57949 + 0.74710I$ $b = 1.83012 + 0.27573I$	$-2.27518 + 5.75756I$	0
$u = 1.352860 + 0.220635I$ $a = -0.090295 + 0.166667I$ $b = 0.286702 - 1.050280I$	$-2.52895 - 0.78794I$	0
$u = 1.352860 + 0.220635I$ $a = 2.25611 + 0.05895I$ $b = 2.47483 + 0.22157I$	$-2.52895 - 0.78794I$	0
$u = 1.352860 - 0.220635I$ $a = -0.090295 - 0.166667I$ $b = 0.286702 + 1.050280I$	$-2.52895 + 0.78794I$	0
$u = 1.352860 - 0.220635I$ $a = 2.25611 - 0.05895I$ $b = 2.47483 - 0.22157I$	$-2.52895 + 0.78794I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.377160+0.121934I$ $a=1.64144+1.05392I$ $b=2.76256+1.70475I$	$-4.85206+4.48235I$	0
$u=-1.377160+0.121934I$ $a=-2.38363+0.84125I$ $b=-2.92612+1.38254I$	$-4.85206+4.48235I$	0
$u=-1.377160-0.121934I$ $a=1.64144-1.05392I$ $b=2.76256-1.70475I$	$-4.85206-4.48235I$	0
$u=-1.377160-0.121934I$ $a=-2.38363-0.84125I$ $b=-2.92612-1.38254I$	$-4.85206-4.48235I$	0
$u=1.389940+0.148912I$ $a=0.349849+1.319640I$ $b=0.567378+0.478581I$	$-5.20345+1.73809I$	0
$u=1.389940+0.148912I$ $a=-1.29994+1.12545I$ $b=-2.53703+1.65541I$	$-5.20345+1.73809I$	0
$u=1.389940-0.148912I$ $a=0.349849-1.319640I$ $b=0.567378-0.478581I$	$-5.20345-1.73809I$	0
$u=1.389940-0.148912I$ $a=-1.29994-1.12545I$ $b=-2.53703-1.65541I$	$-5.20345-1.73809I$	0
$u=-0.126964+0.583172I$ $a=-0.172976+0.845888I$ $b=-0.830353+1.056760I$	$2.17456-2.13057I$	$0.528217+0.482801I$
$u=-0.126964+0.583172I$ $a=-0.71720+2.33552I$ $b=1.100310+0.405651I$	$2.17456-2.13057I$	$0.528217+0.482801I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.126964 - 0.583172I$ $a = -0.172976 - 0.845888I$ $b = -0.830353 - 1.056760I$	$2.17456 + 2.13057I$	$0.528217 - 0.482801I$
$u = -0.126964 - 0.583172I$ $a = -0.71720 - 2.33552I$ $b = 1.100310 - 0.405651I$	$2.17456 + 2.13057I$	$0.528217 - 0.482801I$
$u = 1.39331 + 0.26832I$ $a = -0.32148 - 1.52891I$ $b = -0.221650 - 0.877142I$	$-3.47417 - 9.74350I$	0
$u = 1.39331 + 0.26832I$ $a = -2.17851 + 0.26231I$ $b = -3.36915 - 0.45804I$	$-3.47417 - 9.74350I$	0
$u = 1.39331 - 0.26832I$ $a = -0.32148 + 1.52891I$ $b = -0.221650 + 0.877142I$	$-3.47417 + 9.74350I$	0
$u = 1.39331 - 0.26832I$ $a = -2.17851 - 0.26231I$ $b = -3.36915 + 0.45804I$	$-3.47417 + 9.74350I$	0
$u = -1.43606 + 0.24418I$ $a = -1.135010 + 0.372690I$ $b = -1.37977 + 0.71731I$	$-1.82755 + 4.86298I$	0
$u = -1.43606 + 0.24418I$ $a = 1.81852 + 0.06882I$ $b = 2.75506 - 0.57441I$	$-1.82755 + 4.86298I$	0
$u = -1.43606 - 0.24418I$ $a = -1.135010 - 0.372690I$ $b = -1.37977 - 0.71731I$	$-1.82755 - 4.86298I$	0
$u = -1.43606 - 0.24418I$ $a = 1.81852 - 0.06882I$ $b = 2.75506 + 0.57441I$	$-1.82755 - 4.86298I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.45662 + 0.29701I$ $a = 0.961195 - 0.905782I$ $b = 2.20336 - 1.56100I$	$-8.11909 - 10.60200I$	0
$u = 1.45662 + 0.29701I$ $a = -2.17260 + 0.01181I$ $b = -2.84085 - 0.49073I$	$-8.11909 - 10.60200I$	0
$u = 1.45662 - 0.29701I$ $a = 0.961195 + 0.905782I$ $b = 2.20336 + 1.56100I$	$-8.11909 + 10.60200I$	0
$u = 1.45662 - 0.29701I$ $a = -2.17260 - 0.01181I$ $b = -2.84085 + 0.49073I$	$-8.11909 + 10.60200I$	0
$u = 1.45643 + 0.37392I$ $a = -1.348470 - 0.086022I$ $b = -1.77780 - 0.47622I$	$-4.33358 - 11.97120I$	0
$u = 1.45643 + 0.37392I$ $a = 1.74861 - 0.40228I$ $b = 2.73577 + 0.36563I$	$-4.33358 - 11.97120I$	0
$u = 1.45643 - 0.37392I$ $a = -1.348470 + 0.086022I$ $b = -1.77780 + 0.47622I$	$-4.33358 + 11.97120I$	0
$u = 1.45643 - 0.37392I$ $a = 1.74861 + 0.40228I$ $b = 2.73577 - 0.36563I$	$-4.33358 + 11.97120I$	0
$u = 1.55105 + 0.09953I$ $a = -1.130330 + 0.686945I$ $b = -1.52179 + 0.99310I$	$-11.04640 - 0.32883I$	0
$u = 1.55105 + 0.09953I$ $a = 1.59938 + 0.11962I$ $b = 2.75969 + 0.96468I$	$-11.04640 - 0.32883I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.55105 - 0.09953I$ $a = -1.130330 - 0.686945I$ $b = -1.52179 - 0.99310I$	$-11.04640 + 0.32883I$	0
$u = 1.55105 - 0.09953I$ $a = 1.59938 - 0.11962I$ $b = 2.75969 - 0.96468I$	$-11.04640 + 0.32883I$	0
$u = -0.327271 + 0.203052I$ $a = -2.17963 - 1.96372I$ $b = -0.373911 + 0.659538I$	$0.12568 - 3.43436I$	$-10.17762 + 5.29029I$
$u = -0.327271 + 0.203052I$ $a = 0.68703 + 4.31707I$ $b = 0.80137 + 1.64583I$	$0.12568 - 3.43436I$	$-10.17762 + 5.29029I$
$u = -0.327271 - 0.203052I$ $a = -2.17963 + 1.96372I$ $b = -0.373911 - 0.659538I$	$0.12568 + 3.43436I$	$-10.17762 - 5.29029I$
$u = -0.327271 - 0.203052I$ $a = 0.68703 - 4.31707I$ $b = 0.80137 - 1.64583I$	$0.12568 + 3.43436I$	$-10.17762 - 5.29029I$
$u = 1.64968$ $a = -0.583630$ $b = -0.721202$	-10.4247	0
$u = 1.64968$ $a = 1.43079$ $b = 2.95527$	-10.4247	0
$u = 0.163730 + 0.182438I$ $a = -3.63921 - 0.10567I$ $b = 0.683249 + 0.865240I$	$0.07877 - 3.07282I$	$-4.99472 + 4.05780I$
$u = 0.163730 + 0.182438I$ $a = 1.39893 - 3.68699I$ $b = -0.366951 + 0.271171I$	$0.07877 - 3.07282I$	$-4.99472 + 4.05780I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.163730 - 0.182438I$ $a = -3.63921 + 0.10567I$ $b = 0.683249 - 0.865240I$	$0.07877 + 3.07282I$	$-4.99472 - 4.05780I$
$u = 0.163730 - 0.182438I$ $a = 1.39893 + 3.68699I$ $b = -0.366951 - 0.271171I$	$0.07877 + 3.07282I$	$-4.99472 - 4.05780I$

III.

$$\boldsymbol{I^u_3 = \langle u^{20}-8u^{19}+\cdots+b-4u,\ 3u^{20}-12u^{19}+\cdots+a+3,\ u^{21}-4u^{20}+\cdots-u-1\rangle}$$

(i) Arc colorings

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

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

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

$$a_4 = \begin{pmatrix} -3u^{20} + 12u^{19} + \cdots - 6u - 3 \\ -u^{20} + 8u^{19} + \cdots + 16u^2 + 4u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 14u^{20} - 50u^{19} + \cdots - 10u - 2 \\ 13u^{20} - 44u^{19} + \cdots + 13u^2 + 9u \end{pmatrix}$$

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

$$a_5 = \begin{pmatrix} -11u^{20} + 35u^{19} + \cdots - 12u - 7 \\ -9u^{20} + 31u^{19} + \cdots - 2u - 4 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -6u^{20} + 20u^{19} + \cdots - 11u - 4 \\ -4u^{20} + 16u^{19} + \cdots - u - 2 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u^{20} + 5u^{19} + \cdots + 15u + 3 \\ 2u^{20} - 10u^{19} + \cdots - u + 2 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -10u^{20} + 29u^{19} + \cdots - 9u - 9 \\ -7u^{20} + 21u^{19} + \cdots - u - 3 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -11u^{20} + 33u^{19} + \cdots - 12u - 12 \\ -3u^{20} + 11u^{19} + \cdots - 11u^2 + u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $=$
$34u^{20}-91u^{19}-145u^{18}+513u^{17}+230u^{16}-1187u^{15}-319u^{14}+1629u^{13}+670u^{12}-1653u^{11}-1075u^{10}+1056u^9+1354u^8-121u^7-1101u^6-340u^5+255u^4+200u^3+96u^2+20u-5$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_3	$u^{21} - 6u^{20} + \cdots + 11u - 1$
c_2	$u^{21} + 15u^{20} + \cdots - 47u - 11$
c_4, c_7	$u^{21} - 3u^{19} + \cdots - 3u - 1$
c_5, c_8	$u^{21} + 3u^{20} + \cdots + 3u^2 - 1$
c_6	$u^{21} - 2u^{20} + \cdots - u + 1$
c_9, c_{10}	$u^{21} + 4u^{20} + \cdots - u + 1$
c_{11}	$u^{21} + 2u^{20} + \cdots - u - 1$
c_{12}	$u^{21} - 4u^{20} + \cdots - u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3	$y^{21} + 14y^{20} + \cdots + 11y - 1$
c_2	$y^{21} + 5y^{20} + \cdots + 3331y - 121$
c_4, c_7	$y^{21} - 6y^{20} + \cdots + 11y - 1$
c_5, c_8	$y^{21} - 11y^{20} + \cdots + 6y - 1$
c_6, c_{11}	$y^{21} - 6y^{20} + \cdots - 7y - 1$
c_9, c_{10}, c_{12}	$y^{21} - 18y^{20} + \cdots - 15y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.786082 + 0.662342I$ $a = -0.039577 - 0.206327I$ $b = 0.377059 + 0.573897I$	$-1.78905 - 1.86556I$	$-10.45393 + 5.20822I$
$u = -0.786082 - 0.662342I$ $a = -0.039577 + 0.206327I$ $b = 0.377059 - 0.573897I$	$-1.78905 + 1.86556I$	$-10.45393 - 5.20822I$
$u = -1.073990 + 0.004776I$ $a = 4.52653 + 2.65432I$ $b = 5.18591 + 1.96100I$	$-0.99148 + 3.67030I$	$9.64428 - 4.49671I$
$u = -1.073990 - 0.004776I$ $a = 4.52653 - 2.65432I$ $b = 5.18591 - 1.96100I$	$-0.99148 - 3.67030I$	$9.64428 + 4.49671I$
$u = -0.337564 + 0.789732I$ $a = -0.574936 - 1.042070I$ $b = 0.448449 - 0.218313I$	$-0.53843 + 6.73076I$	$-6.35237 - 9.05790I$
$u = -0.337564 - 0.789732I$ $a = -0.574936 + 1.042070I$ $b = 0.448449 + 0.218313I$	$-0.53843 - 6.73076I$	$-6.35237 + 9.05790I$
$u = 0.851251 + 0.838826I$ $a = -0.202834 + 0.042291I$ $b = 0.157701 - 0.171924I$	$4.20454 - 3.09844I$	$-32.5936 + 83.7201I$
$u = 0.851251 - 0.838826I$ $a = -0.202834 - 0.042291I$ $b = 0.157701 + 0.171924I$	$4.20454 + 3.09844I$	$-32.5936 - 83.7201I$
$u = 1.311130 + 0.227451I$ $a = 0.691668 - 1.087020I$ $b = 1.184120 - 0.460768I$	$-3.03604 - 6.90956I$	$-11.5554 + 10.0692I$
$u = 1.311130 - 0.227451I$ $a = 0.691668 + 1.087020I$ $b = 1.184120 + 0.460768I$	$-3.03604 + 6.90956I$	$-11.5554 - 10.0692I$

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.342310 + 0.185206I$ $a = 1.052450 + 0.424879I$ $b = 1.60654 - 0.32706I$	$-3.54626 + 0.58020I$	$-8.86695 - 3.99015I$
$u = 1.342310 - 0.185206I$ $a = 1.052450 - 0.424879I$ $b = 1.60654 + 0.32706I$	$-3.54626 - 0.58020I$	$-8.86695 + 3.99015I$
$u = -1.384460 + 0.144996I$ $a = -1.75860 + 0.39956I$ $b = -2.46728 + 0.63972I$	$-3.22992 + 4.52365I$	$-9.21976 - 6.14992I$
$u = -1.384460 - 0.144996I$ $a = -1.75860 - 0.39956I$ $b = -2.46728 - 0.63972I$	$-3.22992 - 4.52365I$	$-9.21976 + 6.14992I$
$u = 1.43929 + 0.31387I$ $a = -1.74095 + 0.11892I$ $b = -2.57103 - 0.08510I$	$-6.19647 - 10.73290I$	$-8.91183 + 8.46185I$
$u = 1.43929 - 0.31387I$ $a = -1.74095 - 0.11892I$ $b = -2.57103 + 0.08510I$	$-6.19647 + 10.73290I$	$-8.91183 - 8.46185I$
$u = -0.113522 + 0.434272I$ $a = -0.63865 + 2.97662I$ $b = 0.518207 + 0.778236I$	$1.08397 - 2.95386I$	$-2.37662 + 3.52429I$
$u = -0.113522 - 0.434272I$ $a = -0.63865 - 2.97662I$ $b = 0.518207 - 0.778236I$	$1.08397 + 2.95386I$	$-2.37662 - 3.52429I$
$u = 1.55482$ $a = -1.32648$ $b = -2.02550$	-10.4277	-15.1730
$u = -0.025771 + 0.425646I$ $a = 1.348130 + 0.324850I$ $b = -0.426919 - 0.922609I$	$1.15871 + 4.26686I$	$-3.22739 - 7.39189I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.025771 - 0.425646I$ $a = \quad 1.348130 - 0.324850I$ $b = -0.426919 + 0.922609I$	$1.15871 - 4.26686I$	$-3.22739 + 7.39189I$

IV. $\boldsymbol{I_4^u = \langle 4a^3 - 7a^2 + b + 6a - 3,\ 4a^4 - 7a^3 + 7a^2 - 4a + 1,\ u + 1\rangle}$

(i) Arc colorings

$$a_{10} = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$

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

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

$$a_4 = \begin{pmatrix} a \\ -4a^3 + 7a^2 - 6a + 3 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -a + 2 \\ -8a^3 + 10a^2 - 8a + 4 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -1 \\ -1 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 4a^3 - 7a^2 + 8a - 3 \\ a \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 4a^2 - 6a + 3 \\ -4a^3 + 7a^2 - 6a + 3 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 12a^3 - 13a^2 + 8a - 3 \\ 8a^3 - 10a^2 + 8a - 3 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 4a^2 - 3a \\ 0 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 4a^2 - 3a \\ 0 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -16a^3 - 7a^2 + 11a - 13$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = \quad 0.309733 + 0.767100I$ $b = -0.237691 - 0.353773I$	$0.98010 - 7.64338I$	$2.12768 + 8.80169I$
$u = -1.00000$ $a = \quad 0.309733 - 0.767100I$ $b = -0.237691 + 0.353773I$	$0.98010 + 7.64338I$	$2.12768 - 8.80169I$
$u = -1.00000$ $a = \quad 0.565267 + 0.213936I$ $b = \quad 1.112690 - 0.371716I$	$-2.62503 + 1.39709I$	$-10.34643 - 2.46427I$
$u = -1.00000$ $a = \quad 0.565267 - 0.213936I$ $b = \quad 1.112690 + 0.371716I$	$-2.62503 - 1.39709I$	$-10.34643 + 2.46427I$

V. $I^u_5 = \langle a^5-5a^4+13a^3-16a^2+b+11a-4,\ a^6-5a^5+13a^4-16a^3+12a^2-5a+1,\ u+1\rangle$

(i) Arc colorings

$$a_{10} = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$

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

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

$$a_4 = \begin{pmatrix} a \\ -a^5+5a^4-13a^3+16a^2-11a+4 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -a+2 \\ -3a^5+14a^4-34a^3+35a^2-21a+6 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -1 \\ -1 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} a^5-5a^4+13a^3-16a^2+13a-4 \\ a \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 4a^5-19a^4+46a^3-47a^2+25a-5 \\ -a^5+5a^4-13a^3+16a^2-11a+4 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 5a^5-23a^4+55a^3-54a^2+29a-6 \\ a^4-4a^3+9a^2-7a+3 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} a^5-6a^4+17a^3-24a^2+16a-4 \\ 0 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} a^5-6a^4+17a^3-24a^2+16a-4 \\ 0 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -13a^5+50a^4-102a^3+53a^2-19a-9$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.00000$ $a=\ \ 0.407481+0.635452I$ $b=\ \ 0.122561-0.479689I$	2.75839	$2.60886+0.I$
$u=-1.00000$ $a=\ \ 0.407481-0.635452I$ $b=\ \ 0.122561+0.479689I$	2.75839	$2.60886+0.I$
$u=-1.00000$ $a=\ \ 0.461306+0.308178I$ $b=\ \ 0.960138-0.693124I$	$-1.37919+2.82812I$	$-10.80443-4.65175I$
$u=-1.00000$ $a=\ \ 0.461306-0.308178I$ $b=\ \ 0.960138+0.693124I$	$-1.37919-2.82812I$	$-10.80443+4.65175I$
$u=-1.00000$ $a=\ \ 1.63121+1.74382I$ $b=\ \ 0.91730+1.43799I$	$-1.37919+2.82812I$	$-10.80443-4.65175I$
$u=-1.00000$ $a=\ \ 1.63121-1.74382I$ $b=\ \ 0.91730-1.43799I$	$-1.37919-2.82812I$	$-10.80443+4.65175I$

VI. $\boldsymbol{I_6^u = \langle -au + b - a - 1,\ a^2 + 2au - a - 3u + 6,\ u^2 - u - 1 \rangle}$

(i) Arc colorings

$$a_{10} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{1} = \begin{pmatrix} 1 \\ u+1 \end{pmatrix}$$
$$a_{4} = \begin{pmatrix} a \\ au+a+1 \end{pmatrix}$$
$$a_{2} = \begin{pmatrix} a+1 \\ au+a+u+2 \end{pmatrix}$$
$$a_{9} = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_{5} = \begin{pmatrix} -2au-u-1 \\ -au-u \end{pmatrix}$$
$$a_{3} = \begin{pmatrix} a+1 \\ au+a+u+2 \end{pmatrix}$$
$$a_{8} = \begin{pmatrix} a+3u-2 \\ 2au+2a+5u+1 \end{pmatrix}$$
$$a_{6} = \begin{pmatrix} -1 \\ -u-1 \end{pmatrix}$$
$$a_{7} = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u \\ -u-1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -9u - 21$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_6^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.618034$ $a = 1.11803 + 2.56984I$ $b = 1.42705 + 0.98159I$	-2.63189	-15.4380
$u = -0.618034$ $a = 1.11803 - 2.56984I$ $b = 1.42705 - 0.98159I$	-2.63189	-15.4380
$u = 1.61803$ $a = -0.795386$ $b = -1.08235$	-10.5276	-35.5620
$u = 1.61803$ $a = -1.44068$ $b = -2.77176$	-10.5276	-35.5620

VII. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_3	$(u-1)^4(u^4+u^2-u+1)(u^6+u^5+2u^4+2u^3+2u^2+2u+1)$ $\cdot(u^{21}-6u^{20}+\cdots+11u-1)(u^{67}+10u^{66}+\cdots+102u-1)$ $\cdot(u^{92}-6u^{91}+\cdots+21848u-4007)$
c_2	$u^4(u^3+u^2-1)^2(u^4-3u^3+\cdots-3u+2)(u^{21}+15u^{20}+\cdots-47u-11)$ $\cdot((u^{46}-22u^{45}+\cdots+6u+4)^2)(u^{67}+37u^{66}+\cdots+52u+4)$
c_4	$(u^4+u^2-u+1)(u^4-3u^3+3u^2-3u+1)$ $\cdot(u^6+u^5+2u^4+2u^3+2u^2+2u+1)(u^{21}-3u^{19}+\cdots-3u-1)$ $\cdot(u^{67}+5u^{65}+\cdots-4u+1)(u^{92}+5u^{91}+\cdots+59081u-15649)$
c_5	$(u^4-3u^3+3u^2-3u+1)(u^4+2u^3+3u^2+u+1)$ $\cdot(u^6+3u^5+4u^4+2u^3+1)(u^{21}+3u^{20}+\cdots+3u^2-1)$ $\cdot(u^{67}+u^{66}+\cdots+5u+1)(u^{92}+9u^{91}+\cdots+9u+1)$
c_6	$u^{10}(u^2+u-1)^2(u^{21}-2u^{20}+\cdots-u+1)$ $\cdot((u^{46}+2u^{45}+\cdots+12u-8)^2)(u^{67}-5u^{66}+\cdots-736u+256)$
c_7	$(u^4+u^2+u+1)(u^4-3u^3+3u^2-3u+1)$ $\cdot(u^6-u^5+2u^4-2u^3+2u^2-2u+1)(u^{21}-3u^{19}+\cdots-3u-1)$ $\cdot(u^{67}+5u^{65}+\cdots-4u+1)(u^{92}+5u^{91}+\cdots+59081u-15649)$
c_8	$(u^4-3u^3+3u^2-3u+1)(u^4-2u^3+3u^2-u+1)$ $\cdot(u^6-3u^5+4u^4-2u^3+1)(u^{21}+3u^{20}+\cdots+3u^2-1)$ $\cdot(u^{67}+u^{66}+\cdots+5u+1)(u^{92}+9u^{91}+\cdots+9u+1)$
c_9, c_{10}	$((u-1)^{10})(u^2+u-1)^2(u^{21}+4u^{20}+\cdots-u+1)$ $\cdot((u^{46}-5u^{45}+\cdots+u+1)^2)(u^{67}-7u^{66}+\cdots+17u+16)$
c_{11}	$u^{10}(u^2-u-1)^2(u^{21}+2u^{20}+\cdots-u-1)$ $\cdot((u^{46}+2u^{45}+\cdots+12u-8)^2)(u^{67}-5u^{66}+\cdots-736u+256)$
c_{12}	$((u+1)^{10})(u^2-u-1)^2(u^{21}-4u^{20}+\cdots-u-1)$ $\cdot((u^{46}-5u^{45}+\cdots+u+1)^2)(u^{67}-7u^{66}+\cdots+17u+16)$

VIII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_3	$(y-1)^4(y^4+2y^3+3y^2+y+1)(y^6+3y^5+4y^4+2y^3+1)$ $\cdot(y^{21}+14y^{20}+\cdots+11y-1)(y^{67}-34y^{66}+\cdots+7148y-1)$ $\cdot(y^{92}+26y^{91}+\cdots-169276944y+16056049)$
c_2	$y^4(y^3-y^2+2y-1)^2(y^4-y^3+2y^2+7y+4)$ $\cdot(y^{21}+5y^{20}+\cdots+3331y-121)(y^{46}-6y^{45}+\cdots-460y+16)^2$ $\cdot(y^{67}-y^{66}+\cdots+1096y-16)$
c_4, c_7	$(y^4-3y^3-7y^2-3y+1)(y^4+2y^3+3y^2+y+1)$ $\cdot(y^6+3y^5+4y^4+2y^3+1)(y^{21}-6y^{20}+\cdots+11y-1)$ $\cdot(y^{67}+10y^{66}+\cdots+40y-1)$ $\cdot(y^{92}-y^{91}+\cdots+7756027461y+244891201)$
c_5, c_8	$(y^4-3y^3-7y^2-3y+1)(y^4+2y^3+7y^2+5y+1)$ $\cdot(y^6-y^5+4y^4-2y^3+8y^2+1)(y^{21}-11y^{20}+\cdots+6y-1)$ $\cdot(y^{67}+29y^{66}+\cdots-69y-1)(y^{92}-25y^{91}+\cdots+5y+1)$
c_6, c_{11}	$y^{10}(y^2-3y+1)^2(y^{21}-6y^{20}+\cdots-7y-1)$ $\cdot(y^{46}-24y^{45}+\cdots-464y+64)^2$ $\cdot(y^{67}-27y^{66}+\cdots+947200y-65536)$
c_9, c_{10}, c_{12}	$((y-1)^{10})(y^2-3y+1)^2(y^{21}-18y^{20}+\cdots-15y-1)$ $\cdot((y^{46}-43y^{45}+\cdots+y+1)^2)(y^{67}-59y^{66}+\cdots-10527y-256)$