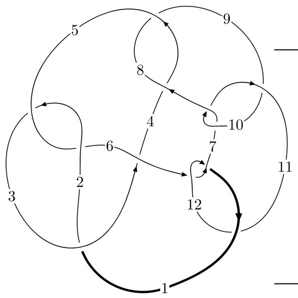
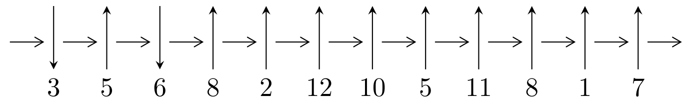
$12n_{0058}$ ($K12n_{0058}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & 6.96435\times10^{33}u^{30} - 1.25405\times10^{34}u^{29} + \cdots + 1.08242\times10^{37}d + 4.63583\times10^{36},\\
& 9.28423\times10^{34}u^{30} + 2.43126\times10^{35}u^{29} + \cdots + 2.16483\times10^{37}c - 1.72516\times10^{37},\\
& 5.70526\times10^{35}u^{30} + 1.13115\times10^{36}u^{29} + \cdots + 1.08242\times10^{37}b + 2.53478\times10^{37},\\
& -4.91990\times10^{35}u^{30} - 1.12026\times10^{36}u^{29} + \cdots + 2.16483\times10^{37}a - 3.93806\times10^{37},\\
& u^{31} + 3u^{30} + \cdots + 64u + 32\rangle\\
I_2^u = \langle & 38636161249u^{22}c - 6684998365u^{22} + \cdots - 212657671098c + 31359529106,\\
& 709294494705u^{22}c - 467986206381u^{22} + \cdots + 1120177291630c + 112735730394,\\
& -215916739835u^{22} + 130467973157u^{21} + \cdots + 5749764833848b - 314250588698,\\
& -153137520489u^{22} + 68036492975u^{21} + \cdots + 1149952967696a - 806106649958,\\
& u^{23} - u^{22} + \cdots + 8u + 4\rangle
\end{aligned}$$

$$\begin{aligned}
I_1^v &= \langle a,\ d,\ c-1,\ b+v,\ v^2-v+1\rangle\\
I_2^v &= \langle a,\ d+1,\ av+c-a+1,\ b+v,\ v^2-v+1\rangle\\
I_3^v &= \langle c,\ d+1,\ b,\ a+1,\ v+1\rangle\\
I_4^v &= \langle c,\ d+1,\ -v^2ba+v^3b-v^2b+av-v^2+c,\ b^2v^2-bv+1\rangle
\end{aligned}$$

* 5 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 82 representations.
* 1 irreducible components of $\dim_{\mathbb{C}} = 1$

[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`).

I. $\boldsymbol{I_1^u = \langle 6.96 \times 10^{33}u^{30} - 1.25 \times 10^{34}u^{29} + \cdots + 1.08 \times 10^{37}d + 4.64 \times 10^{36},\ 9.28 \times 10^{34}u^{30} + 2.43 \times 10^{35}u^{29} + \cdots + 2.16 \times 10^{37}c - 1.73 \times 10^{37},\ 5.71 \times 10^{35}u^{30} + 1.13 \times 10^{36}u^{29} + \cdots + 1.08 \times 10^{37}b + 2.53 \times 10^{37},\ -4.92 \times 10^{35}u^{30} - 1.12 \times 10^{36}u^{29} + \cdots + 2.16 \times 10^{37}a - 3.94 \times 10^{37},\ u^{31} + 3u^{30} + \cdots + 64u + 32\rangle}$

(i) Arc colorings

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

$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 0.0227265u^{30} + 0.0517482u^{29} + \cdots + 2.69661u + 1.81911 \\ -0.0527085u^{30} - 0.104502u^{29} + \cdots - 2.42240u - 2.34178 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} 0.0227265u^{30} + 0.0517482u^{29} + \cdots + 2.69661u + 1.81911 \\ -0.0423983u^{30} - 0.0818074u^{29} + \cdots - 2.09805u - 1.81598 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0.0368633u^{30} + 0.0974729u^{29} + \cdots + 0.270429u + 0.869375 \\ -0.0613442u^{30} - 0.159676u^{29} + \cdots + 0.274410u - 2.98789 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.0244809u^{30} + 0.0622027u^{29} + \cdots - 0.544839u + 2.11852 \\ -0.0715195u^{30} - 0.187609u^{29} + \cdots + 0.338443u - 3.34757 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u \\ u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -0.00428866u^{30} - 0.0112307u^{29} + \cdots - 0.0728208u + 0.796905 \\ -0.000643408u^{30} + 0.00115856u^{29} + \cdots + 0.160798u - 0.428286 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -0.00364526u^{30} - 0.0123893u^{29} + \cdots - 0.233619u + 1.22519 \\ -0.000643408u^{30} + 0.00115856u^{29} + \cdots + 0.160798u - 0.428286 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -0.00116998u^{30} + 0.000296647u^{29} + \cdots + 0.120558u + 0.316290 \\ -0.00311868u^{30} - 0.0115274u^{29} + \cdots - 0.193379u + 0.480614 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 0.0281261u^{30} + 0.0745920u^{29} + \cdots - 0.311221u + 1.89333 \\ -0.0708761u^{30} - 0.188768u^{29} + \cdots + 0.177645u - 2.91928 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 0.0330834u^{30} + 0.0743041u^{29} + \cdots + 9.35750u + 13.8824$

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

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{31}+15u^{30}+\cdots+120u-16$
c_2, c_5	$u^{31}+u^{30}+\cdots+8u-4$
c_3	$u^{31}-u^{30}+\cdots+128u-548$
c_4, c_8	$u^{31}-3u^{30}+\cdots+64u-32$
c_6, c_7, c_{10} c_{12}	$u^{31}+5u^{30}+\cdots-3u-1$
c_9, c_{11}	$u^{31}-11u^{30}+\cdots+21u-1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{31} + 3y^{30} + \cdots + 25888y - 256$
c_2, c_5	$y^{31} + 15y^{30} + \cdots + 120y - 16$
c_3	$y^{31} - 9y^{30} + \cdots + 4451896y - 300304$
c_4, c_8	$y^{31} + 15y^{30} + \cdots + 1024y - 1024$
c_6, c_7, c_{10} c_{12}	$y^{31} - 11y^{30} + \cdots + 21y - 1$
c_9, c_{11}	$y^{31} + 29y^{30} + \cdots + 61y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.753219 + 0.379837I$ $a = -0.743282 - 0.874244I$ $b = 0.716703 + 0.640811I$ $c = 0.685053 - 0.287784I$ $d = -0.240774 - 0.521238I$	$-1.42006 + 1.96537I$	$1.93692 - 5.44006I$
$u = 0.753219 - 0.379837I$ $a = -0.743282 + 0.874244I$ $b = 0.716703 - 0.640811I$ $c = 0.685053 + 0.287784I$ $d = -0.240774 + 0.521238I$	$-1.42006 - 1.96537I$	$1.93692 + 5.44006I$
$u = -0.337564 + 1.132290I$ $a = -0.588580 + 0.817543I$ $b = -1.10048 + 1.34389I$ $c = 0.17117 - 1.61585I$ $d = 0.935169 - 0.612003I$	$0.45247 - 2.02679I$	$7.73031 + 3.42583I$
$u = -0.337564 - 1.132290I$ $a = -0.588580 - 0.817543I$ $b = -1.10048 - 1.34389I$ $c = 0.17117 + 1.61585I$ $d = 0.935169 + 0.612003I$	$0.45247 + 2.02679I$	$7.73031 - 3.42583I$
$u = 1.121020 + 0.424146I$ $a = -0.661458 + 0.037458I$ $b = 1.62605 + 0.80238I$ $c = 0.460731 + 0.138106I$ $d = -0.991521 + 0.596969I$	$1.55877 - 4.66712I$	$11.51750 + 4.56967I$
$u = 1.121020 - 0.424146I$ $a = -0.661458 - 0.037458I$ $b = 1.62605 - 0.80238I$ $c = 0.460731 - 0.138106I$ $d = -0.991521 - 0.596969I$	$1.55877 + 4.66712I$	$11.51750 - 4.56967I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.698083 + 0.364692I$ $a = 0.272982 - 1.147330I$ $b = -1.63704 + 2.06806I$ $c = 0.498679 + 0.078631I$ $d = -0.956651 + 0.308522I$	$3.68376 - 3.19069I$	$14.6846 + 5.1485I$
$u = 0.698083 - 0.364692I$ $a = 0.272982 + 1.147330I$ $b = -1.63704 - 2.06806I$ $c = 0.498679 - 0.078631I$ $d = -0.956651 - 0.308522I$	$3.68376 + 3.19069I$	$14.6846 - 5.1485I$
$u = -1.235540 + 0.189024I$ $a = 0.397076 - 0.873318I$ $b = -1.100320 + 0.790305I$ $c = 0.472913 - 0.179552I$ $d = -0.848142 - 0.701686I$	$-2.56816 + 1.34649I$	$5.38369 - 2.07194I$
$u = -1.235540 - 0.189024I$ $a = 0.397076 + 0.873318I$ $b = -1.100320 - 0.790305I$ $c = 0.472913 + 0.179552I$ $d = -0.848142 + 0.701686I$	$-2.56816 - 1.34649I$	$5.38369 + 2.07194I$
$u = 0.464557 + 1.163760I$ $a = -0.762353 + 0.385358I$ $b = 0.17520 + 1.91640I$ $c = -0.05406 + 1.60814I$ $d = 1.020880 + 0.621136I$	$1.15318 + 7.72517I$	$9.61403 - 8.29170I$
$u = 0.464557 - 1.163760I$ $a = -0.762353 - 0.385358I$ $b = 0.17520 - 1.91640I$ $c = -0.05406 - 1.60814I$ $d = 1.020880 - 0.621136I$	$1.15318 - 7.72517I$	$9.61403 + 8.29170I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.253240+0.506936I$ $a=\ \ 0.045977+0.940408I$ $b=-1.72925-0.22350I$ $c=\ \ 0.439439-0.143874I$ $d=-1.055310-0.672917I$	$-1.12377+9.51847I$	$8.01541-7.69926I$
$u=-1.253240-0.506936I$ $a=\ \ 0.045977-0.940408I$ $b=-1.72925+0.22350I$ $c=\ \ 0.439439+0.143874I$ $d=-1.055310+0.672917I$	$-1.12377-9.51847I$	$8.01541+7.69926I$
$u=\ \ 0.223678+1.371700I$ $a=\ \ 0.023144-0.618799I$ $b=-0.490393-0.901482I$ $c=\ \ 0.413752-0.939419I$ $d=\ \ 0.607334-0.891545I$	$-4.93468-0.57606I$	$5.79676+1.97891I$
$u=\ \ 0.223678-1.371700I$ $a=\ \ 0.023144+0.618799I$ $b=-0.490393+0.901482I$ $c=\ \ 0.413752+0.939419I$ $d=\ \ 0.607334+0.891545I$	$-4.93468+0.57606I$	$5.79676-1.97891I$
$u=-0.591801$ $a=\ \ 0.533366$ $b=-0.736939$ $c=\ \ 0.699591$ $d=-0.429406$	0.834149	11.9720
$u=-0.540907+0.236782I$ $a=-1.50466+1.00061I$ $b=\ \ 3.58655-2.56486I$ $c=\ \ 0.518602-0.047373I$ $d=-0.912302-0.174686I$	$3.12062-1.49349I$	$14.4230+1.8126I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.540907 - 0.236782I$ $a = -1.50466 - 1.00061I$ $b = 3.58655 + 2.56486I$ $c = 0.518602 + 0.047373I$ $d = -0.912302 + 0.174686I$	$3.12062 + 1.49349I$	$14.4230 - 1.8126I$
$u = 0.067118 + 0.557682I$ $a = 1.39023 + 1.20733I$ $b = 0.343697 + 0.692018I$ $c = 1.45537 - 0.23813I$ $d = 0.330807 - 0.109496I$	$0.46111 - 2.29513I$	$1.47827 + 3.85950I$
$u = 0.067118 - 0.557682I$ $a = 1.39023 - 1.20733I$ $b = 0.343697 - 0.692018I$ $c = 1.45537 + 0.23813I$ $d = 0.330807 + 0.109496I$	$0.46111 + 2.29513I$	$1.47827 - 3.85950I$
$u = 0.71578 + 1.28059I$ $a = 0.097632 - 0.639247I$ $b = -1.59966 - 0.59378I$ $c = -0.37486 + 1.39000I$ $d = 1.180860 + 0.670647I$	$-1.16605 + 11.32090I$	$10.43454 - 6.71502I$
$u = 0.71578 - 1.28059I$ $a = 0.097632 + 0.639247I$ $b = -1.59966 + 0.59378I$ $c = -0.37486 - 1.39000I$ $d = 1.180860 - 0.670647I$	$-1.16605 - 11.32090I$	$10.43454 + 6.71502I$
$u = -0.39077 + 1.46203I$ $a = -0.858408 - 0.114457I$ $b = 1.17073 - 1.58917I$ $c = 0.382686 + 0.821951I$ $d = 0.534475 + 0.999877I$	$-8.24554 - 4.31764I$	$2.71892 + 1.88458I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.39077-1.46203I$ $a=-0.858408+0.114457I$ $b=1.17073+1.58917I$ $c=0.382686-0.821951I$ $d=0.534475-0.999877I$	$-8.24554+4.31764I$	$2.71892-1.88458I$
$u=-0.79393+1.30401I$ $a=-0.862730+0.059745I$ $b=1.76369-2.19058I$ $c=-0.444220-1.327190I$ $d=1.226790-0.677567I$	$-3.7041-16.8176I$	$8.02968+10.05725I$
$u=-0.79393-1.30401I$ $a=-0.862730-0.059745I$ $b=1.76369+2.19058I$ $c=-0.444220+1.327190I$ $d=1.226790+0.677567I$	$-3.7041+16.8176I$	$8.02968-10.05725I$
$u=-0.62073+1.40356I$ $a=0.693155-0.448111I$ $b=-0.266136+0.105825I$ $c=-0.237422-1.289560I$ $d=1.138090-0.750034I$	$-6.51517-8.00123I$	$4.81025+4.92455I$
$u=-0.62073-1.40356I$ $a=0.693155+0.448111I$ $b=-0.266136-0.105825I$ $c=-0.237422+1.289560I$ $d=1.138090+0.750034I$	$-6.51517+8.00123I$	$4.81025-4.92455I$
$u=-0.07489+1.53753I$ $a=0.794591-0.282968I$ $b=-0.590866-0.831603I$ $c=0.262372+0.979829I$ $d=0.744999+0.952303I$	$-9.13328+4.81435I$	$2.44035-4.85668I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.07489-1.53753I$		
$a=\ \ 0.794591+0.282968I$		
$b=-0.590866+0.831603I$	$-9.13328-4.81435I$	$2.44035+4.85668I$
$c=\ \ 0.262372-0.979829I$		
$d=\ \ 0.744999-0.952303I$		

II.
$$\boldsymbol{I_2^u = \langle 3.86\times10^{10}cu^{22} - 6.68\times10^{9}u^{22} + \cdots - 2.13\times10^{11}c + 3.14\times10^{10},\ 7.09\times10^{11}cu^{22} - 4.68\times10^{11}u^{22} + \cdots + 1.12\times10^{12}c + 1.13\times10^{11},\ -2.16\times10^{11}u^{22} + 1.30\times10^{11}u^{21} + \cdots + 5.75\times10^{11}b - 3.14\times10^{11},\ -1.53\times10^{11}u^{22} + 6.80\times10^{10}u^{21} + \cdots + 1.15\times10^{12}a - 8.06\times10^{11},\ u^{23} - u^{22} + \cdots + 8u + 4\rangle}$$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 0.133169u^{22} - 0.0591646u^{21} + \cdots + 1.14807u + 0.700991 \\ 0.375523u^{22} - 0.226910u^{21} + \cdots + 3.58831u + 0.546545 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 0.133169u^{22} - 0.0591646u^{21} + \cdots + 1.14807u + 0.700991 \\ 0.293213u^{22} - 0.236878u^{21} + \cdots + 2.46360u + 0.250529 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0.0322985u^{22} - 0.252479u^{21} + \cdots - 0.902295u + 0.301575 \\ 0.188074u^{22} - 0.335831u^{21} + \cdots + 0.0919786u - 0.580833 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -0.220372u^{22} + 0.588310u^{21} + \cdots + 0.810316u + 0.279258 \\ 0.0232531u^{22} + 0.239196u^{21} + \cdots + 2.15399u + 0.890919 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} c \\ -0.134392cu^{22} + 0.0232531u^{22} + \cdots + 0.739709c - 0.109081 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0.134392cu^{22} - 0.0232531u^{22} + \cdots + 0.260291c + 0.109081 \\ -0.134392cu^{22} + 0.0232531u^{22} + \cdots + 0.739709c - 0.109081 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -0.134392cu^{22} + 0.0232531u^{22} + \cdots + 1.73971c - 0.109081 \\ 0.134392cu^{22} - 0.0232531u^{22} + \cdots - 0.739709c + 0.109081 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 0.0536818cu^{22} - 0.109233u^{22} + \cdots + 1.15888c - 1.35137 \\ -0.0769349cu^{22} - 0.0878859u^{22} + \cdots - 1.04979c + 1.52155 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$$= \frac{173371509589}{143744120962}u^{22} - \frac{241902270957}{143744120962}u^{21} + \cdots - \frac{379864412243}{143744120962}u + \frac{545150434432}{71872060481}$$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^{23}+12u^{22}+\cdots-2u-1)^2$
c_2, c_5	$(u^{23}+2u^{22}+\cdots-2u-1)^2$
c_3	$(u^{23}-2u^{22}+\cdots+18u-9)^2$
c_4, c_8	$(u^{23}+u^{22}+\cdots+8u-4)^2$
c_6, c_7, c_{10} c_{12}	$u^{46}+3u^{45}+\cdots+56u+16$
c_9, c_{11}	$u^{46}-23u^{45}+\cdots-288u+256$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^{23}+24y^{21}+\cdots+10y-1)^2$
c_2, c_5	$(y^{23}+12y^{22}+\cdots-2y-1)^2$
c_3	$(y^{23}-12y^{22}+\cdots-450y-81)^2$
c_4, c_8	$(y^{23}+15y^{22}+\cdots-40y-16)^2$
c_6, c_7, c_{10} c_{12}	$y^{46}-23y^{45}+\cdots-288y+256$
c_9, c_{11}	$y^{46}-3y^{45}+\cdots-2449920y+65536$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.969482$ $a = 0.635915$ $b = -1.38262$ $c = 0.546696 + 0.177229I$ $d = -0.655217 + 0.536590I$	0.502753	9.67610
$u = -0.969482$ $a = 0.635915$ $b = -1.38262$ $c = 0.546696 - 0.177229I$ $d = -0.655217 - 0.536590I$	0.502753	9.67610
$u = 0.308169 + 0.985429I$ $a = 0.004284 - 0.666189I$ $b = -0.572740 - 0.057611I$ $c = 0.430219 + 0.027076I$ $d = -1.315230 + 0.145711I$	$2.62555 + 2.00215I$	$10.76412 - 3.62705I$
$u = 0.308169 + 0.985429I$ $a = 0.004284 - 0.666189I$ $b = -0.572740 - 0.057611I$ $c = 0.35592 + 1.88659I$ $d = 0.903437 + 0.511840I$	$2.62555 + 2.00215I$	$10.76412 - 3.62705I$
$u = 0.308169 - 0.985429I$ $a = 0.004284 + 0.666189I$ $b = -0.572740 + 0.057611I$ $c = 0.430219 - 0.027076I$ $d = -1.315230 - 0.145711I$	$2.62555 - 2.00215I$	$10.76412 + 3.62705I$
$u = 0.308169 - 0.985429I$ $a = 0.004284 + 0.666189I$ $b = -0.572740 + 0.057611I$ $c = 0.35592 - 1.88659I$ $d = 0.903437 - 0.511840I$	$2.62555 - 2.00215I$	$10.76412 + 3.62705I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.107498+1.054050I$ $a=\ 0.832680+0.608094I$ $b=\ 0.35976+1.52792I$ $c=\ 0.716893+1.112390I$ $d=\ 0.590662+0.635162I$	$-0.12065-2.74438I$	$5.99863+3.42075I$
$u=-0.107498+1.054050I$ $a=\ 0.832680+0.608094I$ $b=\ 0.35976+1.52792I$ $c=\ 0.60269-1.46286I$ $d=\ 0.759232-0.584397I$	$-0.12065-2.74438I$	$5.99863+3.42075I$
$u=-0.107498-1.054050I$ $a=\ 0.832680-0.608094I$ $b=\ 0.35976-1.52792I$ $c=\ 0.716893-1.112390I$ $d=\ 0.590662-0.635162I$	$-0.12065+2.74438I$	$5.99863-3.42075I$
$u=-0.107498-1.054050I$ $a=\ 0.832680-0.608094I$ $b=\ 0.35976-1.52792I$ $c=\ 0.60269+1.46286I$ $d=\ 0.759232+0.584397I$	$-0.12065+2.74438I$	$5.99863-3.42075I$
$u=-0.000983+1.149400I$ $a=\ 0.974897-0.337516I$ $b=-1.35698-0.51540I$ $c=\ 0.547631-1.231120I$ $d=\ 0.698366-0.678096I$	$-0.86138+1.33135I$	$4.84050-0.67575I$
$u=-0.000983+1.149400I$ $a=\ 0.974897-0.337516I$ $b=-1.35698-0.51540I$ $c=\ 0.417486-0.000081I$ $d=-1.395290-0.000467I$	$-0.86138+1.33135I$	$4.84050-0.67575I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.000983 - 1.149400I$ $a = 0.974897 + 0.337516I$ $b = -1.35698 + 0.51540I$ $c = 0.547631 + 1.231120I$ $d = 0.698366 + 0.678096I$	$-0.86138 - 1.33135I$	$4.84050 + 0.67575I$
$u = -0.000983 - 1.149400I$ $a = 0.974897 + 0.337516I$ $b = -1.35698 + 0.51540I$ $c = 0.417486 + 0.000081I$ $d = -1.395290 + 0.000467I$	$-0.86138 - 1.33135I$	$4.84050 + 0.67575I$
$u = 1.222080 + 0.199525I$ $a = -0.209050 + 0.970065I$ $b = 1.41696 - 0.48835I$ $c = 0.508002 - 0.253270I$ $d = -0.576609 - 0.786036I$	$-2.55344 - 3.99588I$	$5.39099 + 3.49800I$
$u = 1.222080 + 0.199525I$ $a = -0.209050 + 0.970065I$ $b = 1.41696 - 0.48835I$ $c = 0.473795 + 0.176635I$ $d = -0.853067 + 0.690841I$	$-2.55344 - 3.99588I$	$5.39099 + 3.49800I$
$u = 1.222080 - 0.199525I$ $a = -0.209050 - 0.970065I$ $b = 1.41696 + 0.48835I$ $c = 0.508002 + 0.253270I$ $d = -0.576609 + 0.786036I$	$-2.55344 + 3.99588I$	$5.39099 - 3.49800I$
$u = 1.222080 - 0.199525I$ $a = -0.209050 - 0.970065I$ $b = 1.41696 + 0.48835I$ $c = 0.473795 - 0.176635I$ $d = -0.853067 - 0.690841I$	$-2.55344 + 3.99588I$	$5.39099 - 3.49800I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.383777 + 1.192290I$ $a = -0.986938 - 0.103224I$ $b = 1.68333 - 1.34680I$ $c = 0.06728 - 1.54278I$ $d = 0.971785 - 0.646950I$	$-0.03073 - 6.47771I$	$7.22220 + 6.52194I$
$u = -0.383777 + 1.192290I$ $a = -0.986938 - 0.103224I$ $b = 1.68333 - 1.34680I$ $c = 0.411691 - 0.031373I$ $d = -1.41498 - 0.18404I$	$-0.03073 - 6.47771I$	$7.22220 + 6.52194I$
$u = -0.383777 - 1.192290I$ $a = -0.986938 + 0.103224I$ $b = 1.68333 + 1.34680I$ $c = 0.06728 + 1.54278I$ $d = 0.971785 + 0.646950I$	$-0.03073 + 6.47771I$	$7.22220 - 6.52194I$
$u = -0.383777 - 1.192290I$ $a = -0.986938 + 0.103224I$ $b = 1.68333 + 1.34680I$ $c = 0.411691 + 0.031373I$ $d = -1.41498 + 0.18404I$	$-0.03073 + 6.47771I$	$7.22220 - 6.52194I$
$u = 0.494865 + 0.507562I$ $a = -1.106230 - 0.139635I$ $b = 0.487880 + 0.827199I$ $c = 0.478200 + 0.048575I$ $d = -1.069820 + 0.210247I$	$4.00909 + 1.37448I$	$14.7018 - 4.3512I$
$u = 0.494865 + 0.507562I$ $a = -1.106230 - 0.139635I$ $b = 0.487880 + 0.827199I$ $c = -1.22900 + 4.29549I$ $d = 1.061570 + 0.215187I$	$4.00909 + 1.37448I$	$14.7018 - 4.3512I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.494865 - 0.507562I$ $a = -1.106230 + 0.139635I$ $b = 0.487880 - 0.827199I$ $c = 0.478200 - 0.048575I$ $d = -1.069820 - 0.210247I$	$4.00909 - 1.37448I$	$14.7018 + 4.3512I$
$u = 0.494865 - 0.507562I$ $a = -1.106230 + 0.139635I$ $b = 0.487880 - 0.827199I$ $c = -1.22900 - 4.29549I$ $d = 1.061570 - 0.215187I$	$4.00909 - 1.37448I$	$14.7018 + 4.3512I$
$u = -0.441227 + 0.551458I$ $a = 0.617455 - 0.819077I$ $b = -0.539142 + 1.070460I$ $c = 0.894756 + 0.404298I$ $d = 0.071873 + 0.419376I$	$1.18777 + 0.88878I$	$5.60709 + 0.92577I$
$u = -0.441227 + 0.551458I$ $a = 0.617455 - 0.819077I$ $b = -0.539142 + 1.070460I$ $c = 0.472778 - 0.042452I$ $d = -1.098240 - 0.188408I$	$1.18777 + 0.88878I$	$5.60709 + 0.92577I$
$u = -0.441227 - 0.551458I$ $a = 0.617455 + 0.819077I$ $b = -0.539142 - 1.070460I$ $c = 0.894756 - 0.404298I$ $d = 0.071873 - 0.419376I$	$1.18777 - 0.88878I$	$5.60709 - 0.92577I$
$u = -0.441227 - 0.551458I$ $a = 0.617455 + 0.819077I$ $b = -0.539142 - 1.070460I$ $c = 0.472778 + 0.042452I$ $d = -1.098240 + 0.188408I$	$1.18777 - 0.88878I$	$5.60709 - 0.92577I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.598699+0.195967I$ $a=\ 0.24768+1.68902I$ $b=-0.806895-0.050101I$ $c=\ 0.530888-0.055930I$ $d=-0.862960-0.196265I$	$3.01275+2.59653I$	$13.46303-3.78636I$
$u=-0.598699+0.195967I$ $a=\ 0.24768+1.68902I$ $b=-0.806895-0.050101I$ $c=-5.34285-3.08636I$ $d=\ 1.140340-0.081067I$	$3.01275+2.59653I$	$13.46303-3.78636I$
$u=-0.598699-0.195967I$ $a=\ 0.24768-1.68902I$ $b=-0.806895+0.050101I$ $c=\ 0.530888+0.055930I$ $d=-0.862960+0.196265I$	$3.01275-2.59653I$	$13.46303+3.78636I$
$u=-0.598699-0.195967I$ $a=\ 0.24768-1.68902I$ $b=-0.806895+0.050101I$ $c=-5.34285+3.08636I$ $d=\ 1.140340+0.081067I$	$3.01275-2.59653I$	$13.46303+3.78636I$
$u=-0.51611+1.32552I$ $a=-0.061894-0.631449I$ $b=\ 1.142220-0.744188I$ $c=\ 0.461233+0.756174I$ $d=\ 0.412094+0.963850I$	$-3.51902-5.35900I$	$7.50458+3.06793I$
$u=-0.51611+1.32552I$ $a=-0.061894-0.631449I$ $b=\ 1.142220-0.744188I$ $c=-0.132196-1.384640I$ $d=\ 1.068330-0.715684I$	$-3.51902-5.35900I$	$7.50458+3.06793I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.51611-1.32552I$ $a=-0.061894+0.631449I$ $b=1.142220+0.744188I$ $c=0.461233-0.756174I$ $d=0.412094-0.963850I$	$-3.51902+5.35900I$	$7.50458-3.06793I$
$u=-0.51611-1.32552I$ $a=-0.061894+0.631449I$ $b=1.142220+0.744188I$ $c=-0.132196+1.384640I$ $d=1.068330+0.715684I$	$-3.51902+5.35900I$	$7.50458-3.06793I$
$u=0.63403+1.38420I$ $a=0.865718-0.012325I$ $b=-1.50969-1.96886I$ $c=0.425486-0.700704I$ $d=0.366859-1.042680I$	$-6.36348+10.62070I$	$4.97373-6.45650I$
$u=0.63403+1.38420I$ $a=0.865718-0.012325I$ $b=-1.50969-1.96886I$ $c=-0.254465+1.306340I$ $d=1.143660+0.737515I$	$-6.36348+10.62070I$	$4.97373-6.45650I$
$u=0.63403-1.38420I$ $a=0.865718+0.012325I$ $b=-1.50969+1.96886I$ $c=0.425486+0.700704I$ $d=0.366859+1.042680I$	$-6.36348-10.62070I$	$4.97373+6.45650I$
$u=0.63403-1.38420I$ $a=0.865718+0.012325I$ $b=-1.50969+1.96886I$ $c=-0.254465-1.306340I$ $d=1.143660-0.737515I$	$-6.36348-10.62070I$	$4.97373+6.45650I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.37388 + 1.47842I$ $a = -0.746559 - 0.380105I$ $b = 0.386598 - 0.300673I$ $c = 0.371907 - 0.829286I$ $d = 0.549766 - 1.003940I$	$-8.32991 + 1.64388I$	$2.69530 - 0.40272I$
$u = 0.37388 + 1.47842I$ $a = -0.746559 - 0.380105I$ $b = 0.386598 - 0.300673I$ $c = -0.005040 + 1.210940I$ $d = 1.003440 + 0.825793I$	$-8.32991 + 1.64388I$	$2.69530 - 0.40272I$
$u = 0.37388 - 1.47842I$ $a = -0.746559 + 0.380105I$ $b = 0.386598 + 0.300673I$ $c = 0.371907 + 0.829286I$ $d = 0.549766 + 1.003940I$	$-8.32991 - 1.64388I$	$2.69530 + 0.40272I$
$u = 0.37388 - 1.47842I$ $a = -0.746559 + 0.380105I$ $b = 0.386598 + 0.300673I$ $c = -0.005040 - 1.210940I$ $d = 1.003440 - 0.825793I$	$-8.32991 - 1.64388I$	$2.69530 + 0.40272I$

III. $\boldsymbol{I_1^v = \langle a,\ d,\ c-1,\ b+v,\ v^2-v+1\rangle}$

(i) Arc colorings

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

$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -1 \\ -v \end{pmatrix}$$

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

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

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

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

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

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

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4v + 7$

(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_7, c_8 c_9, c_{10}	u^2
c_6, c_{11}	$(u+1)^2$
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_7, c_8 c_9, c_{10}	y^2
c_6, c_{11}, c_{12}	$(y-1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$v = \; 0.500000 + 0.866025I$ $a = \; 0$ $b = -0.500000 - 0.866025I$ $c = \; 1.00000$ $d = \; 0$	$1.64493 - 2.02988I$	$9.00000 + 3.46410I$
$v = \; 0.500000 - 0.866025I$ $a = \; 0$ $b = -0.500000 + 0.866025I$ $c = \; 1.00000$ $d = \; 0$	$1.64493 + 2.02988I$	$9.00000 - 3.46410I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4v + 7$

(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_8 c_{11}, c_{12}	u^2
c_7, c_9	$(u+1)^2$
c_{10}	$(u-1)^2$

(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_8 c_{11}, c_{12}	y^2
c_7, c_9, c_{10}	$(y-1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = 0.500000 + 0.866025I$ $a = 0$ $b = -0.500000 - 0.866025I$ $c = -1.00000$ $d = -1.00000$	$1.64493 - 2.02988I$	$9.00000 + 3.46410I$
$v = 0.500000 - 0.866025I$ $a = 0$ $b = -0.500000 + 0.866025I$ $c = -1.00000$ $d = -1.00000$	$1.64493 + 2.02988I$	$9.00000 - 3.46410I$

V. $\boldsymbol{I_3^v = \langle c,\ d+1,\ b,\ a+1,\ v+1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 12$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_3 c_4, c_5, c_8	u
c_6, c_{10}	$u-1$
c_7, c_9, 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_8	y
c_6, c_7, c_9 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
$v = -1.00000$ $a = -1.00000$ $b = 0$ $c = 0$ $d = -1.00000$	3.28987	12.0000

VI. $I_4^v = \langle c,\ d+1,\ -v^2ba+v^3b-v^2b+av-v^2+c,\ b^2v^2-bv+1\rangle$

(i) Arc colorings

$$a_5 = \begin{pmatrix} v \\ 0 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} a \\ b \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -av+v^2+a-v \\ b \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ -ba-b+a-v+1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -1 \\ ba+b-a+v-1 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} v \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ -1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -1 \\ ba+b-a+v-2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= b^2a+b^2-ba-v^2-b-3a+3v+13$

(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
$v = \cdots$		
$a = \cdots$		
$b = \cdots$	$3.28987 + 2.02988I$	$12.82409 - 3.19607I$
$c = \cdots$		
$d = \cdots$		

VII. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$u(u^2-u+1)^2(u^{23}+12u^{22}+\cdots-2u-1)^2$ $\cdot(u^{31}+15u^{30}+\cdots+120u-16)$
c_2	$u(u^2+u+1)^2(u^{23}+2u^{22}+\cdots-2u-1)^2(u^{31}+u^{30}+\cdots+8u-4)$
c_3	$u(u^2-u+1)^2(u^{23}-2u^{22}+\cdots+18u-9)^2$ $\cdot(u^{31}-u^{30}+\cdots+128u-548)$
c_4, c_8	$u^5(u^{23}+u^{22}+\cdots+8u-4)^2(u^{31}-3u^{30}+\cdots+64u-32)$
c_5	$u(u^2-u+1)^2(u^{23}+2u^{22}+\cdots-2u-1)^2(u^{31}+u^{30}+\cdots+8u-4)$
c_6	$u^2(u-1)(u+1)^2(u^{31}+5u^{30}+\cdots-3u-1)$ $\cdot(u^{46}+3u^{45}+\cdots+56u+16)$
c_7	$u^2(u+1)^3(u^{31}+5u^{30}+\cdots-3u-1)(u^{46}+3u^{45}+\cdots+56u+16)$
c_9, c_{11}	$u^2(u+1)^3(u^{31}-11u^{30}+\cdots+21u-1)$ $\cdot(u^{46}-23u^{45}+\cdots-288u+256)$
c_{10}	$u^2(u-1)^3(u^{31}+5u^{30}+\cdots-3u-1)(u^{46}+3u^{45}+\cdots+56u+16)$
c_{12}	$u^2(u-1)^2(u+1)(u^{31}+5u^{30}+\cdots-3u-1)$ $\cdot(u^{46}+3u^{45}+\cdots+56u+16)$

VIII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$y(y^2+y+1)^2(y^{23}+24y^{21}+\cdots+10y-1)^2$ $\cdot\,(y^{31}+3y^{30}+\cdots+25888y-256)$
c_2, c_5	$y(y^2+y+1)^2(y^{23}+12y^{22}+\cdots-2y-1)^2$ $\cdot\,(y^{31}+15y^{30}+\cdots+120y-16)$
c_3	$y(y^2+y+1)^2(y^{23}-12y^{22}+\cdots-450y-81)^2$ $\cdot\,(y^{31}-9y^{30}+\cdots+4451896y-300304)$
c_4, c_8	$y^5(y^{23}+15y^{22}+\cdots-40y-16)^2$ $\cdot\,(y^{31}+15y^{30}+\cdots+1024y-1024)$
c_6, c_7, c_{10} c_{12}	$y^2(y-1)^3(y^{31}-11y^{30}+\cdots+21y-1)$ $\cdot\,(y^{46}-23y^{45}+\cdots-288y+256)$
c_9, c_{11}	$y^2(y-1)^3(y^{31}+29y^{30}+\cdots+61y-1)$ $\cdot\,(y^{46}-3y^{45}+\cdots-2449920y+65536)$