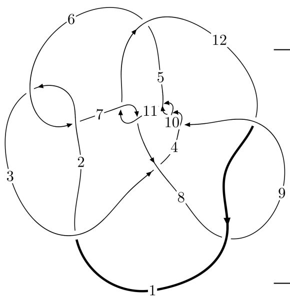
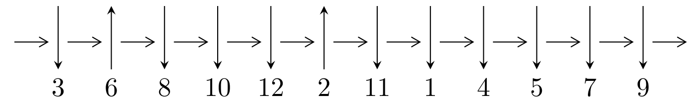
$12a_{0311}$ $(K12a_{0311})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & 4.08905 \times 10^{49} u^{39} - 1.01301 \times 10^{50} u^{38} + \cdots + 2.88391 \times 10^{51} b - 2.25929 \times 10^{51}, \\
& - 4.64639 \times 10^{50} u^{39} + 1.25973 \times 10^{51} u^{38} + \cdots + 2.30713 \times 10^{52} a + 9.26479 \times 10^{51}, \\
& u^{40} - 3u^{39} + \cdots - 192u^2 - 32\rangle \\
I_2^u = \langle & 3u^{30}a - 3u^{30} + \cdots + 5a + 11,\ -112u^{30}a - 102u^{30} + \cdots - 77a - 491,\ u^{31} + u^{30} + \cdots + 2u + 1\rangle \\
I_3^u = \langle & b + 1,\ 8a^2 - 2au + 8a - u + 3,\ u^2 - 2\rangle \\
I_4^u = \langle & b + u,\ 3a - 5u + 1,\ u^2 + 1\rangle
\end{aligned}$$

$$I_1^v = \langle a,\ b - 1,\ 4v^2 + 2v + 1\rangle$$

* 5 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 110 representations.

[1]The image of knot diagram is generated by the software "**Draw programme**" developed by Andrew Bartholomew(`http://www.layer8.co.uk/maths/draw/index.htm#Running-draw`), where we modified some parts for our purpose(`https://github.com/CATsTAILs/LinksPainter`).

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

I. $\boldsymbol{I_1^u = \langle 4.09 \times 10^{49} u^{39} - 1.01 \times 10^{50} u^{38} + \cdots + 2.88 \times 10^{51} b - 2.26 \times 10^{51},\ -4.65 \times 10^{50} u^{39} + 1.26 \times 10^{51} u^{38} + \cdots + 2.31 \times 10^{52} a + 9.26 \times 10^{51},\ u^{40} - 3u^{39} + \cdots - 192u^2 - 32\rangle}$

(i) Arc colorings

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

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

$$a_{10} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.0201393u^{39} - 0.0546018u^{38} + \cdots - 3.01826u - 0.401572 \\ -0.0141788u^{39} + 0.0351264u^{38} + \cdots + 1.72761u + 0.783414 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.000995231u^{39} + 0.00708915u^{38} + \cdots + 0.246219u + 1.21626 \\ 0.0112644u^{39} - 0.0355065u^{38} + \cdots - 1.56872u - 0.703111 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 0.00214826u^{39} - 0.00643004u^{38} + \cdots + 1.27576u - 0.435663 \\ -0.00982399u^{39} + 0.0113860u^{38} + \cdots - 0.302904u + 0.425293 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0.00280373u^{39} - 0.0167005u^{38} + \cdots - 1.93511u + 0.195727 \\ -0.00183607u^{39} - 0.0121602u^{38} + \cdots - 0.993431u - 0.862558 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 0.00596044u^{39} - 0.0194753u^{38} + \cdots - 1.29065u + 0.381841 \\ -0.0141788u^{39} + 0.0351264u^{38} + \cdots + 1.72761u + 0.783414 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0.00328746u^{39} + 0.00123723u^{38} + \cdots - 0.904111u + 0.0108409 \\ 0.00995923u^{39} - 0.0198393u^{38} + \cdots - 0.266449u + 0.780010 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.00639471u^{39} - 0.0181709u^{38} + \cdots - 0.259320u + 0.0460362 \\ -0.00105452u^{39} + 0.0113351u^{38} + \cdots + 0.871003u + 0.956721 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 0.102467u^{39} - 0.211834u^{38} + \cdots - 12.5141u + 4.58841$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{40} + 12u^{39} + \cdots - 6305u + 64$
c_2, c_6	$u^{40} - 2u^{39} + \cdots + 57u - 8$
c_3, c_5	$64(64u^{40} - 32u^{39} + \cdots + 40u - 8)$
c_4, c_9, c_{10}	$u^{40} + 3u^{39} + \cdots - 192u^2 - 32$
c_7, c_8, c_{11} c_{12}	$u^{40} - 2u^{39} + \cdots + 19u - 7$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{40} + 20y^{39} + \cdots - 35596225y + 4096$
c_2, c_6	$y^{40} + 12y^{39} + \cdots - 6305y + 64$
c_3, c_5	$4096(4096y^{40} + 3072y^{39} + \cdots - 1312y + 64)$
c_4, c_9, c_{10}	$y^{40} - 35y^{39} + \cdots + 12288y + 1024$
c_7, c_8, c_{11} c_{12}	$y^{40} + 14y^{39} + \cdots + 115y + 49$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.440137 + 0.904158I$ $a = -0.46183 - 1.85321I$ $b = -0.513797 + 1.310640I$	$6.8384 + 13.5929I$	$-4.21050 - 9.23121I$
$u = -0.440137 - 0.904158I$ $a = -0.46183 + 1.85321I$ $b = -0.513797 - 1.310640I$	$6.8384 - 13.5929I$	$-4.21050 + 9.23121I$
$u = 0.429948 + 0.950952I$ $a = -0.40500 + 1.76947I$ $b = -0.420528 - 1.284740I$	$8.33666 - 7.25783I$	$-2.07869 + 5.28616I$
$u = 0.429948 - 0.950952I$ $a = -0.40500 - 1.76947I$ $b = -0.420528 + 1.284740I$	$8.33666 + 7.25783I$	$-2.07869 - 5.28616I$
$u = -0.187511 + 0.912417I$ $a = 0.02873 - 1.86648I$ $b = -0.409629 + 0.962631I$	$-0.05063 + 5.82607I$	$-8.03423 - 8.68283I$
$u = -0.187511 - 0.912417I$ $a = 0.02873 + 1.86648I$ $b = -0.409629 - 0.962631I$	$-0.05063 - 5.82607I$	$-8.03423 + 8.68283I$
$u = -0.808683 + 0.827619I$ $a = -0.582063 - 1.047810I$ $b = 0.378612 + 1.207320I$	$5.82044 - 7.81253I$	$-4.24739 + 6.17178I$
$u = -0.808683 - 0.827619I$ $a = -0.582063 + 1.047810I$ $b = 0.378612 - 1.207320I$	$5.82044 + 7.81253I$	$-4.24739 - 6.17178I$
$u = 1.199590 + 0.427748I$ $a = 0.411698 - 1.287580I$ $b = 0.387145 + 0.855456I$	$-3.26360 - 1.49706I$	$-11.41293 + 5.34755I$
$u = 1.199590 - 0.427748I$ $a = 0.411698 + 1.287580I$ $b = 0.387145 - 0.855456I$	$-3.26360 + 1.49706I$	$-11.41293 - 5.34755I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.907718 + 0.908783I$ $a = -0.490822 + 1.072100I$ $b = 0.255927 - 1.148880I$	$7.10406 + 1.09362I$	$-1.87527 - 4.00746I$
$u = 0.907718 - 0.908783I$ $a = -0.490822 - 1.072100I$ $b = 0.255927 + 1.148880I$	$7.10406 - 1.09362I$	$-1.87527 + 4.00746I$
$u = -0.227717 + 1.277080I$ $a = 0.170112 + 1.366760I$ $b = -0.110689 - 0.909064I$	$4.51263 - 0.64388I$	$-12.6147 + 10.6040I$
$u = -0.227717 - 1.277080I$ $a = 0.170112 - 1.366760I$ $b = -0.110689 + 0.909064I$	$4.51263 + 0.64388I$	$-12.6147 - 10.6040I$
$u = -1.337180 + 0.093481I$ $a = -0.568363 - 0.175872I$ $b = -1.40862 - 0.31480I$	$-5.44648 - 0.82010I$	$-6.94084 - 0.88214I$
$u = -1.337180 - 0.093481I$ $a = -0.568363 + 0.175872I$ $b = -1.40862 + 0.31480I$	$-5.44648 + 0.82010I$	$-6.94084 + 0.88214I$
$u = 1.363060 + 0.137405I$ $a = -0.477079 + 0.243693I$ $b = -1.40170 + 0.49884I$	$-6.07938 - 4.11851I$	$-9.52490 + 6.62129I$
$u = 1.363060 - 0.137405I$ $a = -0.477079 - 0.243693I$ $b = -1.40170 - 0.49884I$	$-6.07938 + 4.11851I$	$-9.52490 - 6.62129I$
$u = -0.527569 + 0.240579I$ $a = -0.374770 - 0.519466I$ $b = 0.732459 + 0.494483I$	$-2.68524 - 2.28522I$	$-15.8983 + 1.9193I$
$u = -0.527569 - 0.240579I$ $a = -0.374770 + 0.519466I$ $b = 0.732459 - 0.494483I$	$-2.68524 + 2.28522I$	$-15.8983 - 1.9193I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.43224$ $a = -0.492239$ $b = -0.887681$	-6.54259	-14.4120
$u = 1.47203 + 0.11321I$ $a = -0.308809 + 0.057755I$ $b = -0.961493 + 0.650737I$	$-9.12443 + 0.78989I$	$-16.6960 - 1.5011I$
$u = 1.47203 - 0.11321I$ $a = -0.308809 - 0.057755I$ $b = -0.961493 - 0.650737I$	$-9.12443 - 0.78989I$	$-16.6960 + 1.5011I$
$u = 1.44029 + 0.35968I$ $a = 0.89871 - 1.21509I$ $b = 0.577709 + 1.136010I$	$-5.34996 - 10.39560I$	$-11.35294 + 7.92882I$
$u = 1.44029 - 0.35968I$ $a = 0.89871 + 1.21509I$ $b = 0.577709 - 1.136010I$	$-5.34996 + 10.39560I$	$-11.35294 - 7.92882I$
$u = -1.42057 + 0.48007I$ $a = 0.631676 + 1.097510I$ $b = 0.374302 - 1.088160I$	$0.17053 + 6.80496I$	$-8.00000 - 8.25092I$
$u = -1.42057 - 0.48007I$ $a = 0.631676 - 1.097510I$ $b = 0.374302 + 1.088160I$	$0.17053 - 6.80496I$	$-8.00000 + 8.25092I$
$u = -1.51413 + 0.15368I$ $a = -0.505558 - 0.545335I$ $b = -0.073480 + 0.597284I$	$-4.25095 - 1.64346I$	$-8.00000 + 0.I$
$u = -1.51413 - 0.15368I$ $a = -0.505558 + 0.545335I$ $b = -0.073480 - 0.597284I$	$-4.25095 + 1.64346I$	$-8.00000 + 0.I$
$u = 1.50913 + 0.33966I$ $a = 1.10053 - 1.00347I$ $b = 0.63668 + 1.33597I$	$0.5699 - 18.1001I$	$0. + 9.77509I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.50913 - 0.33966I$ $a = 1.10053 + 1.00347I$ $b = 0.63668 - 1.33597I$	$0.5699 + 18.1001I$	$0. - 9.77509I$
$u = -1.50745 + 0.35840I$ $a = 1.01596 + 0.98674I$ $b = 0.57197 - 1.32042I$	$2.12914 + 11.97580I$	0
$u = -1.50745 - 0.35840I$ $a = 1.01596 - 0.98674I$ $b = 0.57197 + 1.32042I$	$2.12914 - 11.97580I$	0
$u = 0.398385$ $a = 0.194086$ $b = 0.411087$	-0.650198	-15.0380
$u = 0.060206 + 0.390625I$ $a = 1.81385 - 0.89243I$ $b = -0.311880 + 0.206339I$	$-0.52443 - 1.67679I$	$-4.14197 + 2.11677I$
$u = 0.060206 - 0.390625I$ $a = 1.81385 + 0.89243I$ $b = -0.311880 - 0.206339I$	$-0.52443 + 1.67679I$	$-4.14197 - 2.11677I$
$u = -0.085016 + 0.355683I$ $a = -0.687889 - 0.084642I$ $b = 1.230980 + 0.116031I$	$-1.36201 + 2.26426I$	$3.25236 - 9.63689I$
$u = -0.085016 - 0.355683I$ $a = -0.687889 + 0.084642I$ $b = 1.230980 - 0.116031I$	$-1.36201 - 2.26426I$	$3.25236 + 9.63689I$
$u = 1.69092 + 0.00044I$ $a = -0.185011 + 0.410776I$ $b = -0.295674 - 0.847006I$	$-3.61784 - 4.35903I$	0
$u = 1.69092 - 0.00044I$ $a = -0.185011 - 0.410776I$ $b = -0.295674 + 0.847006I$	$-3.61784 + 4.35903I$	0

II. $I_2^u = \langle 3u^{30}a - 3u^{30} + \cdots + 5a + 11,\ -112u^{30}a - 102u^{30} + \cdots - 77a - 491,\ u^{31} + u^{30} + \cdots + 2u + 1\rangle$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} a \\ -0.187500au^{30} + 0.187500u^{30} + \cdots - 0.312500a - 0.687500 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 0.187500au^{30} + 1.52679u^{30} + \cdots - 0.687500a + 2.11607 \\ 0.187500au^{30} - 0.187500u^{30} + \cdots + 0.312500a + 0.687500 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 0.830357au^{30} - 1.21811u^{30} + \cdots + 2.09821a + 0.554847 \\ -0.625000au^{30} - 0.232143u^{30} + \cdots - 0.375000a - 1.33929 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0.187500au^{30} + 1.52679u^{30} + \cdots - 0.687500a + 1.11607 \\ 1 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -0.187500au^{30} + 0.187500u^{30} + \cdots + 0.687500a - 0.687500 \\ -0.187500au^{30} + 0.187500u^{30} + \cdots - 0.312500a - 0.687500 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0.232143au^{30} - 2.41582u^{30} + \cdots + 1.33929a - 1.13520 \\ -0.312500au^{30} - 0.830357u^{30} + \cdots - 0.187500a - 2.09821 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -0.758929au^{30} - 0.547194u^{30} + \cdots + 1.54464a - 1.87117 \\ -0.562500au^{30} - 0.00892857u^{30} + \cdots - 0.937500a - 1.20536 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 4u^{28} - 52u^{26} + 4u^{25} + 292u^{24} - 48u^{23} - 916u^{22} + 244u^{21} + 1732u^{20} - 672u^{19} - 1988u^{18} + 1056u^{17} + 1360u^{16} - 896u^{15} - 644u^{14} + 332u^{13} + 420u^{12} - 60u^{11} - 288u^{10} + 84u^9 + 88u^8 - 16u^6 - 44u^5 + 4u^2 - 16u - 10$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^{31} + 11u^{30} + \cdots - 4u - 1)^2$
c_2, c_6	$(u^{31} - u^{30} + \cdots + 2u^2 + 1)^2$
c_3, c_5	$49(49u^{62} - 259u^{61} + \cdots - 1.07072 \times 10^7 u + 1308800)$
c_4, c_9, c_{10}	$(u^{31} - u^{30} + \cdots + 2u - 1)^2$
c_7, c_8, c_{11} c_{12}	$u^{62} + 5u^{61} + \cdots + 101u + 10$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^{31} + 19y^{30} + \cdots - 8y - 1)^2$
c_2, c_6	$(y^{31} + 11y^{30} + \cdots - 4y - 1)^2$
c_3, c_5	2401 $\cdot (2401y^{62} + 64827y^{61} + \cdots - 13911596441600y + 1712957440000)$
c_4, c_9, c_{10}	$(y^{31} - 29y^{30} + \cdots - 4y - 1)^2$
c_7, c_8, c_{11} c_{12}	$y^{62} + 39y^{61} + \cdots + 1299y + 100$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.196790 + 0.189244I$ $a = 1.281310 + 0.314655I$ $b = 0.736083 - 1.151530I$	$3.79282 + 0.40298I$	$-4.92930 - 0.52831I$
$u = -1.196790 + 0.189244I$ $a = 0.029998 - 0.447048I$ $b = 0.31189 + 1.51073I$	$3.79282 + 0.40298I$	$-4.92930 - 0.52831I$
$u = -1.196790 - 0.189244I$ $a = 1.281310 - 0.314655I$ $b = 0.736083 + 1.151530I$	$3.79282 - 0.40298I$	$-4.92930 + 0.52831I$
$u = -1.196790 - 0.189244I$ $a = 0.029998 + 0.447048I$ $b = 0.31189 - 1.51073I$	$3.79282 - 0.40298I$	$-4.92930 + 0.52831I$
$u = 0.371332 + 0.681959I$ $a = 0.437240 + 0.099266I$ $b = -1.025610 + 0.013746I$	$2.81425 - 8.17190I$	$-6.44268 + 8.00325I$
$u = 0.371332 + 0.681959I$ $a = 0.40027 - 1.90954I$ $b = 0.52071 + 1.33060I$	$2.81425 - 8.17190I$	$-6.44268 + 8.00325I$
$u = 0.371332 - 0.681959I$ $a = 0.437240 - 0.099266I$ $b = -1.025610 - 0.013746I$	$2.81425 + 8.17190I$	$-6.44268 - 8.00325I$
$u = 0.371332 - 0.681959I$ $a = 0.40027 + 1.90954I$ $b = 0.52071 - 1.33060I$	$2.81425 + 8.17190I$	$-6.44268 - 8.00325I$
$u = 0.434998 + 0.611250I$ $a = 0.553711 - 0.502128I$ $b = -0.543967 + 0.395556I$	$-1.60703 - 1.99617I$	$-11.89924 + 3.62729I$
$u = 0.434998 + 0.611250I$ $a = 0.48079 - 1.60306I$ $b = 0.423951 + 0.864140I$	$-1.60703 - 1.99617I$	$-11.89924 + 3.62729I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.434998 - 0.611250I$ $a = 0.553711 + 0.502128I$ $b = -0.543967 - 0.395556I$	$-1.60703 + 1.99617I$	$-11.89924 - 3.62729I$
$u = 0.434998 - 0.611250I$ $a = 0.48079 + 1.60306I$ $b = 0.423951 - 0.864140I$	$-1.60703 + 1.99617I$	$-11.89924 - 3.62729I$
$u = 1.239060 + 0.217665I$ $a = 1.244900 - 0.296015I$ $b = 0.843023 + 1.049800I$	$3.41810 - 5.89464I$	$-5.94513 + 6.44091I$
$u = 1.239060 + 0.217665I$ $a = -0.213070 + 0.516323I$ $b = 0.20988 - 1.57615I$	$3.41810 - 5.89464I$	$-5.94513 + 6.44091I$
$u = 1.239060 - 0.217665I$ $a = 1.244900 + 0.296015I$ $b = 0.843023 - 1.049800I$	$3.41810 + 5.89464I$	$-5.94513 - 6.44091I$
$u = 1.239060 - 0.217665I$ $a = -0.213070 - 0.516323I$ $b = 0.20988 + 1.57615I$	$3.41810 + 5.89464I$	$-5.94513 - 6.44091I$
$u = 0.529247 + 0.517876I$ $a = 0.053894 - 1.405920I$ $b = 0.588857 - 0.075465I$	$2.14842 + 4.14236I$	$-8.20039 - 2.04013I$
$u = 0.529247 + 0.517876I$ $a = 1.44126 - 0.83676I$ $b = -0.264698 + 1.158750I$	$2.14842 + 4.14236I$	$-8.20039 - 2.04013I$
$u = 0.529247 - 0.517876I$ $a = 0.053894 + 1.405920I$ $b = 0.588857 + 0.075465I$	$2.14842 - 4.14236I$	$-8.20039 + 2.04013I$
$u = 0.529247 - 0.517876I$ $a = 1.44126 + 0.83676I$ $b = -0.264698 - 1.158750I$	$2.14842 - 4.14236I$	$-8.20039 + 2.04013I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.343506+0.654959I$ $a=\ \ 0.213125-0.091385I$ $b=-0.878890+0.145845I$	$4.01963+2.73446I$	$-4.23310-3.38925I$
$u=-0.343506+0.654959I$ $a=\ \ 0.47531+1.96420I$ $b=\ \ 0.362702-1.325630I$	$4.01963+2.73446I$	$-4.23310-3.38925I$
$u=-0.343506-0.654959I$ $a=\ \ 0.213125+0.091385I$ $b=-0.878890-0.145845I$	$4.01963-2.73446I$	$-4.23310+3.38925I$
$u=-0.343506-0.654959I$ $a=\ \ 0.47531-1.96420I$ $b=\ \ 0.362702+1.325630I$	$4.01963-2.73446I$	$-4.23310+3.38925I$
$u=-1.26234$ $a=\ \ 1.24705+1.05057I$ $b=\ \ 0.323876-1.146600I$	0.537061	-5.58210
$u=-1.26234$ $a=\ \ 1.24705-1.05057I$ $b=\ \ 0.323876+1.146600I$	0.537061	-5.58210
$u=-0.028009+0.652167I$ $a=-0.30680-1.72943I$ $b=-0.573998+1.285130I$	$7.28578+2.71284I$	$-0.10058-3.44665I$
$u=-0.028009+0.652167I$ $a=-0.19450+1.96096I$ $b=-0.45397-1.38921I$	$7.28578+2.71284I$	$-0.10058-3.44665I$
$u=-0.028009-0.652167I$ $a=-0.30680+1.72943I$ $b=-0.573998-1.285130I$	$7.28578-2.71284I$	$-0.10058+3.44665I$
$u=-0.028009-0.652167I$ $a=-0.19450-1.96096I$ $b=-0.45397+1.38921I$	$7.28578-2.71284I$	$-0.10058+3.44665I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.358560 + 0.080822I$ $a = -0.49901 + 2.29998I$ $b = 0.076735 - 1.182270I$	$-1.93424 - 2.56488I$	$-13.16453 + 4.43258I$
$u = 1.358560 + 0.080822I$ $a = 2.36676 + 0.38002I$ $b = 0.267326 + 0.813715I$	$-1.93424 - 2.56488I$	$-13.16453 + 4.43258I$
$u = 1.358560 - 0.080822I$ $a = -0.49901 - 2.29998I$ $b = 0.076735 + 1.182270I$	$-1.93424 + 2.56488I$	$-13.16453 - 4.43258I$
$u = 1.358560 - 0.080822I$ $a = 2.36676 - 0.38002I$ $b = 0.267326 - 0.813715I$	$-1.93424 + 2.56488I$	$-13.16453 - 4.43258I$
$u = -0.464772 + 0.428483I$ $a = -0.21337 + 1.49668I$ $b = 0.274726 + 0.400923I$	$3.29780 + 0.92992I$	$-6.40372 - 3.68841I$
$u = -0.464772 + 0.428483I$ $a = 1.87218 + 1.29697I$ $b = -0.052308 - 1.171690I$	$3.29780 + 0.92992I$	$-6.40372 - 3.68841I$
$u = -0.464772 - 0.428483I$ $a = -0.21337 - 1.49668I$ $b = 0.274726 - 0.400923I$	$3.29780 - 0.92992I$	$-6.40372 + 3.68841I$
$u = -0.464772 - 0.428483I$ $a = 1.87218 - 1.29697I$ $b = -0.052308 + 1.171690I$	$3.29780 - 0.92992I$	$-6.40372 + 3.68841I$
$u = 1.43568 + 0.18978I$ $a = -0.939070 + 0.829544I$ $b = -0.275288 - 1.076150I$	$-2.60250 - 3.33239I$	$-9.23670 + 3.21859I$
$u = 1.43568 + 0.18978I$ $a = 0.289833 + 0.332892I$ $b = 0.521278 - 0.041093I$	$-2.60250 - 3.33239I$	$-9.23670 + 3.21859I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.43568 - 0.18978I$ $a = -0.939070 - 0.829544I$ $b = -0.275288 + 1.076150I$	$-2.60250 + 3.33239I$	$-9.23670 - 3.21859I$
$u = 1.43568 - 0.18978I$ $a = 0.289833 - 0.332892I$ $b = 0.521278 + 0.041093I$	$-2.60250 + 3.33239I$	$-9.23670 - 3.21859I$
$u = 1.43808 + 0.24908I$ $a = -0.968905 + 0.795580I$ $b = -0.61976 - 1.34317I$	$-1.70250 - 6.04082I$	$-8.35365 + 3.16093I$
$u = 1.43808 + 0.24908I$ $a = 0.393198 - 0.274074I$ $b = 1.120860 - 0.098271I$	$-1.70250 - 6.04082I$	$-8.35365 + 3.16093I$
$u = 1.43808 - 0.24908I$ $a = -0.968905 - 0.795580I$ $b = -0.61976 + 1.34317I$	$-1.70250 + 6.04082I$	$-8.35365 - 3.16093I$
$u = 1.43808 - 0.24908I$ $a = 0.393198 + 0.274074I$ $b = 1.120860 + 0.098271I$	$-1.70250 + 6.04082I$	$-8.35365 - 3.16093I$
$u = -1.45066 + 0.25754I$ $a = -1.008450 - 0.802446I$ $b = -0.73854 + 1.34705I$	$-3.04348 + 11.60290I$	$-10.34947 - 7.70694I$
$u = -1.45066 + 0.25754I$ $a = 0.334822 + 0.373412I$ $b = 1.219230 + 0.204321I$	$-3.04348 + 11.60290I$	$-10.34947 - 7.70694I$
$u = -1.45066 - 0.25754I$ $a = -1.008450 + 0.802446I$ $b = -0.73854 - 1.34705I$	$-3.04348 - 11.60290I$	$-10.34947 + 7.70694I$
$u = -1.45066 - 0.25754I$ $a = 0.334822 - 0.373412I$ $b = 1.219230 - 0.204321I$	$-3.04348 - 11.60290I$	$-10.34947 + 7.70694I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.46473 + 0.17711I$ $a = -0.752786 - 0.694476I$ $b = -0.144612 + 0.731261I$	$-4.22211 - 1.64856I$	$-12.01509 + 2.12263I$
$u = -1.46473 + 0.17711I$ $a = -0.319336 - 0.515774I$ $b = 0.172653 + 0.424747I$	$-4.22211 - 1.64856I$	$-12.01509 + 2.12263I$
$u = -1.46473 - 0.17711I$ $a = -0.752786 + 0.694476I$ $b = -0.144612 - 0.731261I$	$-4.22211 + 1.64856I$	$-12.01509 - 2.12263I$
$u = -1.46473 - 0.17711I$ $a = -0.319336 + 0.515774I$ $b = 0.172653 - 0.424747I$	$-4.22211 + 1.64856I$	$-12.01509 - 2.12263I$
$u = -1.46230 + 0.22292I$ $a = -0.948019 - 0.877022I$ $b = -0.641859 + 1.045060I$	$-7.71400 + 5.04935I$	$-15.1253 - 3.4252I$
$u = -1.46230 + 0.22292I$ $a = 0.090986 + 0.159142I$ $b = 0.881829 + 0.374398I$	$-7.71400 + 5.04935I$	$-15.1253 - 3.4252I$
$u = -1.46230 - 0.22292I$ $a = -0.948019 + 0.877022I$ $b = -0.641859 - 1.045060I$	$-7.71400 - 5.04935I$	$-15.1253 + 3.4252I$
$u = -1.46230 - 0.22292I$ $a = 0.090986 - 0.159142I$ $b = 0.881829 - 0.374398I$	$-7.71400 - 5.04935I$	$-15.1253 + 3.4252I$
$u = -0.265022 + 0.399657I$ $a = -1.88467 + 0.97391I$ $b = -0.124163 + 0.695584I$	$3.18273 + 1.02630I$	$-5.81008 - 6.41690I$
$u = -0.265022 + 0.399657I$ $a = 1.75565 + 3.19567I$ $b = -0.017948 - 1.157170I$	$3.18273 + 1.02630I$	$-5.81008 - 6.41690I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.265022 - 0.399657I$ $a = -1.88467 - 0.97391I$ $b = -0.124163 - 0.695584I$	$3.18273 - 1.02630I$	$-5.81008 + 6.41690I$
$u = -0.265022 - 0.399657I$ $a = 1.75565 - 3.19567I$ $b = -0.017948 + 1.157170I$	$3.18273 - 1.02630I$	$-5.81008 + 6.41690I$

III. $I_3^u = \langle b+1,\ 8a^2 - 2au + 8a - u + 3,\ u^2 - 2\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 8au + 4u - 16$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2	$(u^2 - u + 1)^2$
c_3	$16(16u^4 + 16u^3 - 4u^2 - 4u + 7)$
c_4, c_9, c_{10}	$(u^2 - 2)^2$
c_5	$16(16u^4 - 16u^3 - 4u^2 + 4u + 7)$
c_6	$(u^2 + u + 1)^2$
c_7, c_8	$(u + 1)^4$
c_{11}, c_{12}	$(u - 1)^4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_6	$(y^2+y+1)^2$
c_3, c_5	$256(256y^4-384y^3+368y^2-72y+49)$
c_4, c_9, c_{10}	$(y-2)^4$
c_7, c_8, c_{11} c_{12}	$(y-1)^4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.41421$ $a = -0.323223 + 0.306186I$ $b = -1.00000$	$-6.57974 - 2.02988I$	$-14.0000 + 3.4641I$
$u = 1.41421$ $a = -0.323223 - 0.306186I$ $b = -1.00000$	$-6.57974 + 2.02988I$	$-14.0000 - 3.4641I$
$u = -1.41421$ $a = -0.676777 + 0.306186I$ $b = -1.00000$	$-6.57974 + 2.02988I$	$-14.0000 - 3.4641I$
$u = -1.41421$ $a = -0.676777 - 0.306186I$ $b = -1.00000$	$-6.57974 - 2.02988I$	$-14.0000 + 3.4641I$

IV. $I_4^u = \langle b+u,\ 3a-5u+1,\ u^2+1\rangle$

(i) Arc colorings

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

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

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

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

$$a_1 = \begin{pmatrix} \frac{5}{3}u - \frac{1}{3} \\ -u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 2 \\ -3 \end{pmatrix}$$

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

$$a_3 = \begin{pmatrix} \frac{1}{3}u - \frac{4}{9} \\ \frac{1}{3}u + \frac{1}{3} \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -\frac{7}{3}u - \frac{2}{3} \\ 3u + 1 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} \frac{2}{3}u - \frac{1}{3} \\ -u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -u - \frac{5}{9} \\ \frac{5}{3}u + \frac{2}{3} \end{pmatrix}$$

$$a_2 = \begin{pmatrix} \frac{4}{3}u + \frac{1}{9} \\ -\frac{4}{3}u - \frac{1}{3} \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 0$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_6	$(y-1)^2$
c_3, c_5	$81(81y^2+54y+25)$
c_4, c_7, c_8 c_9, c_{10}, c_{11} c_{12}	$(y+1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.000000I$ $a = -0.33333 + 1.66667I$ $b = -1.000000I$	4.93480	0
$u = -1.000000I$ $a = -0.33333 - 1.66667I$ $b = 1.000000I$	4.93480	0

V. $I_1^v = \langle a,\ b-1,\ 4v^2+2v+1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 7v - \frac{25}{2}$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_6	$y^2 + y + 1$
c_3, c_5	$16(16y^2 + 4y + 1)$
c_4, c_9, c_{10}	y^2
c_7, c_8, 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
$v = -0.250000 + 0.433013I$ $a = 0$ $b = 1.00000$	$-1.64493 + 2.02988I$	$-14.2500 + 3.0311I$
$v = -0.250000 - 0.433013I$ $a = 0$ $b = 1.00000$	$-1.64493 - 2.02988I$	$-14.2500 - 3.0311I$

VI. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u+1)^2)(u^2-u+1)^3(u^{31}+11u^{30}+\cdots-4u-1)^2$ $\cdot(u^{40}+12u^{39}+\cdots-6305u+64)$
c_2	$((u+1)^2)(u^2-u+1)^2(u^2+u+1)(u^{31}-u^{30}+\cdots+2u^2+1)^2$ $\cdot(u^{40}-2u^{39}+\cdots+57u-8)$
c_3	$1806336(4u^2-2u+1)(9u^2+6u+5)(16u^4+16u^3+\cdots-4u+7)$ $\cdot(64u^{40}-32u^{39}+\cdots+40u-8)$ $\cdot(49u^{62}-259u^{61}+\cdots-10707200u+1308800)$
c_4, c_9, c_{10}	$u^2(u^2-2)^2(u^2+1)(u^{31}-u^{30}+\cdots+2u-1)^2$ $\cdot(u^{40}+3u^{39}+\cdots-192u^2-32)$
c_5	$1806336(4u^2+2u+1)(9u^2-6u+5)(16u^4-16u^3+\cdots+4u+7)$ $\cdot(64u^{40}-32u^{39}+\cdots+40u-8)$ $\cdot(49u^{62}-259u^{61}+\cdots-10707200u+1308800)$
c_6	$((u-1)^2)(u^2-u+1)(u^2+u+1)^2(u^{31}-u^{30}+\cdots+2u^2+1)^2$ $\cdot(u^{40}-2u^{39}+\cdots+57u-8)$
c_7, c_8	$((u-1)^2)(u+1)^4(u^2+1)(u^{40}-2u^{39}+\cdots+19u-7)$ $\cdot(u^{62}+5u^{61}+\cdots+101u+10)$
c_{11}, c_{12}	$((u-1)^4)(u+1)^2(u^2+1)(u^{40}-2u^{39}+\cdots+19u-7)$ $\cdot(u^{62}+5u^{61}+\cdots+101u+10)$

VII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^2)(y^2+y+1)^3(y^{31}+19y^{30}+\cdots-8y-1)^2$ $\cdot(y^{40}+20y^{39}+\cdots-35596225y+4096)$
c_2, c_6	$((y-1)^2)(y^2+y+1)^3(y^{31}+11y^{30}+\cdots-4y-1)^2$ $\cdot(y^{40}+12y^{39}+\cdots-6305y+64)$
c_3, c_5	$3262849744896(16y^2+4y+1)(81y^2+54y+25)$ $\cdot(256y^4-384y^3+368y^2-72y+49)$ $\cdot(4096y^{40}+3072y^{39}+\cdots-1312y+64)$ $\cdot(2401y^{62}+64827y^{61}+\cdots-13911596441600y+1712957440000)$
c_4, c_9, c_{10}	$y^2(y-2)^4(y+1)^2(y^{31}-29y^{30}+\cdots-4y-1)^2$ $\cdot(y^{40}-35y^{39}+\cdots+12288y+1024)$
c_7, c_8, c_{11} c_{12}	$((y-1)^6)(y+1)^2(y^{40}+14y^{39}+\cdots+115y+49)$ $\cdot(y^{62}+39y^{61}+\cdots+1299y+100)$