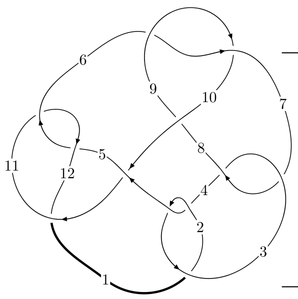
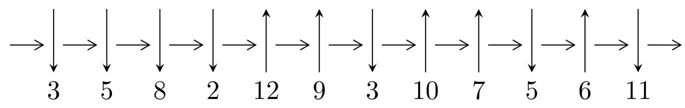
$12n_{0219}$ ($K12n_{0219}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle &-2.93434 \times 10^{85} u^{46} + 3.71779 \times 10^{85} u^{45} + \cdots + 2.55773 \times 10^{87} d - 1.93229 \times 10^{88},\\
&2.15362 \times 10^{85} u^{46} - 4.85011 \times 10^{85} u^{45} + \cdots + 1.02309 \times 10^{88} c + 2.94200 \times 10^{88},\\
&1.12139 \times 10^{85} u^{46} - 1.67513 \times 10^{85} u^{45} + \cdots + 4.44856 \times 10^{87} b + 1.22255 \times 10^{88},\\
&2.90225 \times 10^{85} u^{46} - 4.18154 \times 10^{85} u^{45} + \cdots + 4.44856 \times 10^{87} a + 2.35085 \times 10^{88},\\
&u^{47} - 2u^{46} + \cdots + 1024u - 512\rangle\\
I_2^u = \langle &au + d,\ u^4a + u^3a - 2u^2a - a^2 - au + c + a,\ a^2u - u^2a + b + a,\\
&-u^4a - 2u^3a - u^4 + a^3 + u^2a - u^3 + 3au + 2u^2 + u - 1,\ u^5 + u^4 - 2u^3 - u^2 + u - 1\rangle
\end{aligned}$$

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

* 5 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 67 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`).

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

I. $\boldsymbol{I^u_1 = \langle -2.93\times10^{85}u^{46} + 3.72\times10^{85}u^{45} + \cdots + 2.56\times10^{87}d - 1.93\times10^{88},\ 2.15\times10^{85}u^{46} - 4.85\times10^{85}u^{45} + \cdots + 1.02\times10^{88}c + 2.94\times10^{88},\ 1.12\times10^{85}u^{46} - 1.68\times10^{85}u^{45} + \cdots + 4.45\times10^{87}b + 1.22\times10^{88},\ 2.90\times10^{85}u^{46} - 4.18\times10^{85}u^{45} + \cdots + 4.45\times10^{87}a + 2.35\times10^{88},\ u^{47} - 2u^{46} + \cdots + 1024u - 512\rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix}0\\u\end{pmatrix}$$

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

$$a_5 = \begin{pmatrix}-0.00652403u^{46} + 0.00939975u^{45} + \cdots + 0.175259u - 5.28451\\ -0.00252080u^{46} + 0.00376556u^{45} + \cdots + 1.87177u - 2.74819\end{pmatrix}$$

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

$$a_{10} = \begin{pmatrix}-0.00210501u^{46} + 0.00474064u^{45} + \cdots + 0.461395u - 2.87560\\ 0.0114724u^{46} - 0.0145355u^{45} + \cdots - 4.65650u + 7.55472\end{pmatrix}$$

$$a_{11} = \begin{pmatrix}-0.00461353u^{46} + 0.00835301u^{45} + \cdots + 2.10921u - 5.15564\\ 0.0115443u^{46} - 0.0142337u^{45} + \cdots - 4.45469u + 6.85180\end{pmatrix}$$

$$a_2 = \begin{pmatrix}0.00732363u^{46} - 0.0107206u^{45} + \cdots - 1.65147u + 6.16477\\ 0.00115968u^{46} - 0.00136478u^{45} + \cdots + 1.20500u + 1.13020\end{pmatrix}$$

$$a_1 = \begin{pmatrix}0.00732363u^{46} - 0.0107206u^{45} + \cdots - 1.65147u + 6.16477\\ -0.000799603u^{46} + 0.00132083u^{45} + \cdots + 1.47622u - 0.880259\end{pmatrix}$$

$$a_4 = \begin{pmatrix}-u\\-u^3+u\end{pmatrix}$$

$$a_9 = \begin{pmatrix}-0.0135774u^{46} + 0.0192761u^{45} + \cdots + 5.11789u - 10.4303\\ 0.0114724u^{46} - 0.0145355u^{45} + \cdots - 4.65650u + 7.55472\end{pmatrix}$$

$$a_6 = \begin{pmatrix}0.00753427u^{46} - 0.00851325u^{45} + \cdots - 2.57398u + 4.40744\\ -0.00963927u^{46} + 0.0132539u^{45} + \cdots + 3.03538u - 7.28304\end{pmatrix}$$

$$a_{12} = \begin{pmatrix}-0.00704613u^{46} + 0.0105560u^{45} + \cdots + 5.29963u - 4.88261\\ -0.000358237u^{46} - 0.0000756380u^{45} + \cdots + 1.71290u - 0.326765\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 0.0132573u^{46} - 0.0100723u^{45} + \cdots - 23.2337u - 1.69873$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{47} + 54u^{46} + \cdots + 544u + 256$
c_2, c_4	$u^{47} - 8u^{46} + \cdots + 56u + 16$
c_3, c_7	$u^{47} + 2u^{46} + \cdots + 1024u + 512$
c_5, c_{11}	$u^{47} + 2u^{46} + \cdots + 16u + 4$
c_6, c_9	$u^{47} + 8u^{46} + \cdots + 56u + 16$
c_8	$u^{47} - 14u^{46} + \cdots + 6688u - 256$
c_{10}	$u^{47} - 2u^{46} + \cdots - 21456u + 2592$
c_{12}	$u^{47} + 24u^{46} + \cdots + 216u - 16$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{47} - 114y^{46} + \cdots - 1990144y - 65536$
c_2, c_4	$y^{47} - 54y^{46} + \cdots + 544y - 256$
c_3, c_7	$y^{47} - 30y^{46} + \cdots + 1572864y - 262144$
c_5, c_{11}	$y^{47} + 24y^{46} + \cdots + 216y - 16$
c_6, c_9	$y^{47} - 14y^{46} + \cdots + 6688y - 256$
c_8	$y^{47} + 46y^{46} + \cdots + 11182592y - 65536$
c_{10}	$y^{47} - 24y^{46} + \cdots + 353776896y - 6718464$
c_{12}	$y^{47} + 48y^{45} + \cdots + 67872y - 256$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.168857 + 0.977277I$		
$a = -0.502467 - 0.614921I$		
$b = 1.79611 + 1.03730I$	$-0.50019 + 4.79223I$	$-2.43501 - 7.48976I$
$c = 0.514128 - 0.147532I$		
$d = -0.797065 - 0.515679I$		
$u = 0.168857 - 0.977277I$		
$a = -0.502467 + 0.614921I$		
$b = 1.79611 - 1.03730I$	$-0.50019 - 4.79223I$	$-2.43501 + 7.48976I$
$c = 0.514128 + 0.147532I$		
$d = -0.797065 + 0.515679I$		
$u = -0.758370 + 0.572620I$		
$a = 0.677402 + 0.992682I$		
$b = 0.723028 - 0.014162I$	$-3.62778 - 1.19000I$	$-10.45074 + 1.01195I$
$c = 0.744657 - 0.533323I$		
$d = 0.112391 - 0.635705I$		
$u = -0.758370 - 0.572620I$		
$a = 0.677402 - 0.992682I$		
$b = 0.723028 + 0.014162I$	$-3.62778 + 1.19000I$	$-10.45074 - 1.01195I$
$c = 0.744657 + 0.533323I$		
$d = 0.112391 + 0.635705I$		
$u = -0.798854 + 0.256222I$		
$a = 0.588853 - 0.419968I$		
$b = -0.414268 - 0.500295I$	$1.43042 + 3.68269I$	$-0.57615 - 8.67104I$
$c = 0.87223 + 2.38627I$		
$d = 0.864877 + 0.369674I$		
$u = -0.798854 - 0.256222I$		
$a = 0.588853 + 0.419968I$		
$b = -0.414268 + 0.500295I$	$1.43042 - 3.68269I$	$-0.57615 + 8.67104I$
$c = 0.87223 - 2.38627I$		
$d = 0.864877 - 0.369674I$		

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.287114 + 0.709757I$ $a = 0.383641 - 0.556567I$ $b = -1.121890 + 0.627489I$ $c = 0.513089 + 0.082248I$ $d = -0.900154 + 0.304593I$	$1.71355 - 0.99880I$	$4.04476 + 2.43406I$
$u = -0.287114 - 0.709757I$ $a = 0.383641 + 0.556567I$ $b = -1.121890 - 0.627489I$ $c = 0.513089 - 0.082248I$ $d = -0.900154 - 0.304593I$	$1.71355 + 0.99880I$	$4.04476 - 2.43406I$
$u = 0.723521 + 0.092490I$ $a = -0.704709 - 0.351766I$ $b = 0.164985 - 0.316883I$ $c = 0.454839 - 0.008386I$ $d = -1.197840 - 0.040523I$	$0.84436 - 2.80891I$	$-4.36866 + 6.45196I$
$u = 0.723521 - 0.092490I$ $a = -0.704709 + 0.351766I$ $b = 0.164985 + 0.316883I$ $c = 0.454839 + 0.008386I$ $d = -1.197840 + 0.040523I$	$0.84436 + 2.80891I$	$-4.36866 - 6.45196I$
$u = -0.549584 + 0.433005I$ $a = 0.450542 - 0.396109I$ $b = -0.716682 - 0.079816I$ $c = 0.472953 + 0.041513I$ $d = -1.098210 + 0.184170I$	$2.18982 - 0.74670I$	$2.91211 - 1.96105I$
$u = -0.549584 - 0.433005I$ $a = 0.450542 + 0.396109I$ $b = -0.716682 + 0.079816I$ $c = 0.472953 - 0.041513I$ $d = -1.098210 - 0.184170I$	$2.18982 + 0.74670I$	$2.91211 + 1.96105I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.659997 + 0.157577I$ $a = -0.620233 - 0.304010I$ $b = 0.295226 - 0.244825I$ $c = 2.12917 - 2.54866I$ $d = 0.806949 - 0.231086I$	$1.05099 + 1.22135I$	$-3.11104 + 2.86511I$
$u = 0.659997 - 0.157577I$ $a = -0.620233 + 0.304010I$ $b = 0.295226 + 0.244825I$ $c = 2.12917 + 2.54866I$ $d = 0.806949 + 0.231086I$	$1.05099 - 1.22135I$	$-3.11104 - 2.86511I$
$u = 0.226818 + 1.310000I$ $a = -0.108597 + 1.104710I$ $b = -0.40730 - 1.37054I$ $c = 0.458775 - 0.181209I$ $d = -0.885550 - 0.744761I$	$-4.12204 + 2.83071I$	$-3.10594 - 2.47522I$
$u = 0.226818 - 1.310000I$ $a = -0.108597 - 1.104710I$ $b = -0.40730 + 1.37054I$ $c = 0.458775 + 0.181209I$ $d = -0.885550 + 0.744761I$	$-4.12204 - 2.83071I$	$-3.10594 + 2.47522I$
$u = -0.024914 + 0.666306I$ $a = -0.311476 - 0.943178I$ $b = 0.79000 + 1.91440I$ $c = 0.640075 - 0.081018I$ $d = -0.537681 - 0.194634I$	$-0.68586 - 1.51893I$	$-2.03699 - 0.09471I$
$u = -0.024914 - 0.666306I$ $a = -0.311476 + 0.943178I$ $b = 0.79000 - 1.91440I$ $c = 0.640075 + 0.081018I$ $d = -0.537681 + 0.194634I$	$-0.68586 + 1.51893I$	$-2.03699 + 0.09471I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.275400 + 0.425723I$ $a = 0.527825 - 0.529108I$ $b = -0.57900 - 1.52065I$ $c = -0.01559 + 1.43836I$ $d = 1.007540 + 0.695155I$	$-1.49383 + 5.48046I$	$-1.24533 - 5.03878I$
$u = -1.275400 - 0.425723I$ $a = 0.527825 + 0.529108I$ $b = -0.57900 + 1.52065I$ $c = -0.01559 - 1.43836I$ $d = 1.007540 - 0.695155I$	$-1.49383 - 5.48046I$	$-1.24533 + 5.03878I$
$u = -1.351470 + 0.126259I$ $a = -1.098230 - 0.058069I$ $b = 0.731592 + 0.348244I$ $c = 0.263301 + 1.208440I$ $d = 0.827868 + 0.790009I$	$-5.10242 - 0.08441I$	$-6.12902 + 0.I$
$u = -1.351470 - 0.126259I$ $a = -1.098230 + 0.058069I$ $b = 0.731592 - 0.348244I$ $c = 0.263301 - 1.208440I$ $d = 0.827868 - 0.790009I$	$-5.10242 + 0.08441I$	$-6.12902 + 0.I$
$u = 0.062543 + 0.611080I$ $a = -0.14897 + 1.86717I$ $b = -0.061997 - 0.416831I$ $c = 0.572392 - 0.040588I$ $d = -0.738313 - 0.123261I$	$-0.53961 + 2.33649I$	$-0.16377 - 3.97632I$
$u = 0.062543 - 0.611080I$ $a = -0.14897 - 1.86717I$ $b = -0.061997 + 0.416831I$ $c = 0.572392 + 0.040588I$ $d = -0.738313 + 0.123261I$	$-0.53961 - 2.33649I$	$-0.16377 + 3.97632I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.354510 + 0.305217I$ $a = 1.072310 - 0.133945I$ $b = -0.714948 + 0.830918I$ $c = 0.098591 - 1.307110I$ $d = 0.942622 - 0.760717I$	$-4.74548 - 5.93381I$	$-5.07129 + 5.57342I$
$u = 1.354510 - 0.305217I$ $a = 1.072310 + 0.133945I$ $b = -0.714948 - 0.830918I$ $c = 0.098591 + 1.307110I$ $d = 0.942622 + 0.760717I$	$-4.74548 + 5.93381I$	$-5.07129 - 5.57342I$
$u = 1.42975 + 0.19774I$ $a = -0.527124 - 0.570614I$ $b = -0.01996 - 1.72223I$ $c = 0.160939 - 1.189000I$ $d = 0.888208 - 0.825909I$	$-5.91128 - 1.72117I$	$-6.79419 + 0.I$
$u = 1.42975 - 0.19774I$ $a = -0.527124 + 0.570614I$ $b = -0.01996 + 1.72223I$ $c = 0.160939 + 1.189000I$ $d = 0.888208 + 0.825909I$	$-5.91128 + 1.72117I$	$-6.79419 + 0.I$
$u = 0.01170 + 1.48787I$ $a = -0.004491 + 1.046020I$ $b = -0.02316 - 1.73362I$ $c = 0.447414 + 0.229022I$ $d = -0.771023 + 0.906547I$	$-8.14593 + 1.35024I$	0
$u = 0.01170 - 1.48787I$ $a = -0.004491 - 1.046020I$ $b = -0.02316 + 1.73362I$ $c = 0.447414 - 0.229022I$ $d = -0.771023 - 0.906547I$	$-8.14593 - 1.35024I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.509235$ $a = -1.62785$ $b = -0.143706$ $c = 1.39211$ $d = 0.281666$	-1.19981	-8.75910
$u = 1.38697 + 0.55724I$ $a = -0.508516 - 0.527555I$ $b = 0.83000 - 1.84270I$ $c = -0.174994 - 1.314570I$ $d = 1.099500 - 0.747460I$	$-4.40802 - 10.56830I$	0
$u = 1.38697 - 0.55724I$ $a = -0.508516 + 0.527555I$ $b = 0.83000 + 1.84270I$ $c = -0.174994 + 1.314570I$ $d = 1.099500 + 0.747460I$	$-4.40802 + 10.56830I$	0
$u = -0.40359 + 1.45989I$ $a = 0.149185 + 1.016750I$ $b = 0.78993 - 1.59477I$ $c = 0.426684 + 0.171312I$ $d = -1.018310 + 0.810344I$	$-7.37650 - 7.69255I$	0
$u = -0.40359 - 1.45989I$ $a = 0.149185 - 1.016750I$ $b = 0.78993 + 1.59477I$ $c = 0.426684 - 0.171312I$ $d = -1.018310 - 0.810344I$	$-7.37650 + 7.69255I$	0
$u = 1.43182 + 0.71566I$ $a = 0.954104 - 0.236457I$ $b = -0.54843 + 1.86272I$ $c = -0.319543 - 1.240410I$ $d = 1.194760 - 0.756016I$	$-7.91018 - 10.04820I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.43182 - 0.71566I$ $a = 0.954104 + 0.236457I$ $b = -0.54843 - 1.86272I$ $c = -0.319543 + 1.240410I$ $d = 1.194760 + 0.756016I$	$-7.91018 + 10.04820I$	0
$u = -1.55076 + 0.46120I$ $a = -0.979860 - 0.150029I$ $b = 0.206872 + 1.246280I$ $c = 0.345065 - 0.777884I$ $d = 0.523505 - 1.074170I$	$-10.01530 + 3.44751I$	0
$u = -1.55076 - 0.46120I$ $a = -0.979860 + 0.150029I$ $b = 0.206872 - 1.246280I$ $c = 0.345065 + 0.777884I$ $d = 0.523505 + 1.074170I$	$-10.01530 - 3.44751I$	0
$u = -1.43192 + 0.83141I$ $a = -0.924993 - 0.257013I$ $b = 0.58171 + 2.13451I$ $c = -0.416016 + 1.198340I$ $d = 1.25854 + 0.74473I$	$-10.6565 + 15.7212I$	0
$u = -1.43192 - 0.83141I$ $a = -0.924993 + 0.257013I$ $b = 0.58171 - 2.13451I$ $c = -0.416016 - 1.198340I$ $d = 1.25854 - 0.74473I$	$-10.6565 - 15.7212I$	0
$u = 1.59024 + 0.63743I$ $a = 0.938344 - 0.185530I$ $b = -0.13792 + 1.70847I$ $c = 0.339068 + 0.700979I$ $d = 0.440794 + 1.156090I$	$-13.2358 - 8.9369I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.59024 - 0.63743I$ $a = 0.938344 + 0.185530I$ $b = -0.13792 - 1.70847I$ $c = 0.339068 - 0.700979I$ $d = 0.440794 - 1.156090I$	$-13.2358 + 8.9369I$	0
$u = -1.61640 + 0.61957I$ $a = -0.936055 - 0.176897I$ $b = 0.06628 + 1.66930I$ $c = -0.208465 + 1.110670I$ $d = 1.16324 + 0.86972I$	$-13.4084 + 6.2441I$	0
$u = -1.61640 - 0.61957I$ $a = -0.936055 + 0.176897I$ $b = 0.06628 - 1.66930I$ $c = -0.208465 - 1.110670I$ $d = 1.16324 - 0.86972I$	$-13.4084 - 6.2441I$	0
$u = 1.74703 + 0.30124I$ $a = 0.947443 - 0.082473I$ $b = 0.341668 + 0.840130I$ $c = 0.235184 + 0.814143I$ $d = 0.672509 + 1.133680I$	$-14.9547 + 0.9173I$	0
$u = 1.74703 - 0.30124I$ $a = 0.947443 + 0.082473I$ $b = 0.341668 - 0.840130I$ $c = 0.235184 - 0.814143I$ $d = 0.672509 - 1.133680I$	$-14.9547 - 0.9173I$	0

II. $\boldsymbol{I_2^u = \langle au + d,\ u^4a + u^3a + \cdots - a^2 + a,\ a^2u - u^2a + b + a,\ -u^4a - u^4 + \cdots + a^3 - 1,\ u^5 + u^4 - 2u^3 - u^2 + u - 1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^3 + 8u - 6$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{15} + 10u^{14} + \cdots - 5u + 1$
c_2, c_4, c_6 c_9	$u^{15} - 5u^{13} + \cdots + u - 1$
c_3, c_7, c_{10}	$(u^5 - u^4 - 2u^3 + u^2 + u + 1)^3$
c_5, c_{11}	$(u^5 + u^4 + 2u^3 + u^2 + u + 1)^3$
c_8	$u^{15} - 10u^{14} + \cdots - 5u - 1$
c_{12}	$(u^5 + 3u^4 + 4u^3 + u^2 - u - 1)^3$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_8	$y^{15} - 10y^{14} + \cdots - 25y - 1$
c_2, c_4, c_6 c_9	$y^{15} - 10y^{14} + \cdots - 5y - 1$
c_3, c_7, c_{10}	$(y^5 - 5y^4 + 8y^3 - 3y^2 - y - 1)^3$
c_5, c_{11}	$(y^5 + 3y^4 + 4y^3 + y^2 - y - 1)^3$
c_{12}	$(y^5 - y^4 + 8y^3 - 3y^2 + 3y - 1)^3$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.21774$ $a = -0.586248 + 0.597241I$ $b = -0.267245 + 1.141130I$ $c = 0.468414 - 1.190710I$ $d = 0.713895 - 0.727282I$	-2.40108	-3.48110
$u = 1.21774$ $a = -0.586248 - 0.597241I$ $b = -0.267245 - 1.141130I$ $c = 0.468414 + 1.190710I$ $d = 0.713895 + 0.727282I$	-2.40108	-3.48110
$u = 1.21774$ $a = 1.17250$ $b = -1.10790$ $c = 0.411897$ $d = -1.42779$	-2.40108	-3.48110
$u = 0.309916 + 0.549911I$ $a = -0.331889 - 0.475420I$ $b = 0.771871 + 0.426319I$ $c = 0.798410 + 0.227308I$ $d = -0.158581 + 0.329849I$	$-0.32910 - 1.53058I$	$-2.51511 + 4.43065I$
$u = 0.309916 + 0.549911I$ $a = 1.02081 - 1.15644I$ $b = -2.04410 + 2.63713I$ $c = 0.506739 - 0.052679I$ $d = -0.952303 - 0.202954I$	$-0.32910 - 1.53058I$	$-2.51511 + 4.43065I$
$u = 0.309916 + 0.549911I$ $a = -0.68892 + 1.63186I$ $b = -0.283376 - 0.303192I$ $c = -3.90469 - 4.46850I$ $d = 1.110880 - 0.126895I$	$-0.32910 - 1.53058I$	$-2.51511 + 4.43065I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.309916 - 0.549911I$ $a = -0.331889 + 0.475420I$ $b = 0.771871 - 0.426319I$ $c = 0.798410 - 0.227308I$ $d = -0.158581 - 0.329849I$	$-0.32910 + 1.53058I$	$-2.51511 - 4.43065I$
$u = 0.309916 - 0.549911I$ $a = 1.02081 + 1.15644I$ $b = -2.04410 - 2.63713I$ $c = 0.506739 + 0.052679I$ $d = -0.952303 + 0.202954I$	$-0.32910 + 1.53058I$	$-2.51511 - 4.43065I$
$u = 0.309916 - 0.549911I$ $a = -0.68892 - 1.63186I$ $b = -0.283376 + 0.303192I$ $c = -3.90469 + 4.46850I$ $d = 1.110880 + 0.126895I$	$-0.32910 + 1.53058I$	$-2.51511 - 4.43065I$
$u = -1.41878 + 0.21917I$ $a = -1.060130 - 0.090162I$ $b = 0.545899 + 0.598986I$ $c = 0.395542 + 0.016365I$ $d = -1.52386 + 0.10442I$	$-5.87256 + 4.40083I$	$-6.74431 - 3.49859I$
$u = -1.41878 + 0.21917I$ $a = 0.532546 + 0.656825I$ $b = 0.86595 + 1.32754I$ $c = 0.148945 + 1.208370I$ $d = 0.899520 + 0.815176I$	$-5.87256 + 4.40083I$	$-6.74431 - 3.49859I$
$u = -1.41878 + 0.21917I$ $a = 0.527587 - 0.566662I$ $b = -0.03504 - 1.71384I$ $c = 0.380692 - 0.931915I$ $d = 0.624338 - 0.919600I$	$-5.87256 + 4.40083I$	$-6.74431 - 3.49859I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.41878 - 0.21917I$ $a = -1.060130 + 0.090162I$ $b = 0.545899 - 0.598986I$ $c = 0.395542 - 0.016365I$ $d = -1.52386 - 0.10442I$	$-5.87256 - 4.40083I$	$-6.74431 + 3.49859I$
$u = -1.41878 - 0.21917I$ $a = 0.532546 - 0.656825I$ $b = 0.86595 - 1.32754I$ $c = 0.148945 - 1.208370I$ $d = 0.899520 - 0.815176I$	$-5.87256 - 4.40083I$	$-6.74431 + 3.49859I$
$u = -1.41878 - 0.21917I$ $a = 0.527587 + 0.566662I$ $b = -0.03504 + 1.71384I$ $c = 0.380692 + 0.931915I$ $d = 0.624338 + 0.919600I$	$-5.87256 - 4.40083I$	$-6.74431 + 3.49859I$

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

(i) Arc colorings

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

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

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

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

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

$$a_{11} = \begin{pmatrix} v-1 \\ -1 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} v \\ 0 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} v \\ 0 \end{pmatrix}$$

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

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

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

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

(ii) Obstruction class $= 1$

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

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = 0.500000 + 0.866025I$ $a = 0.500000 + 0.866025I$ $b = 0$ $c = 0$ $d = -1.00000$	$1.64493 - 2.02988I$	$3.00000 + 3.46410I$
$v = 0.500000 - 0.866025I$ $a = 0.500000 - 0.866025I$ $b = 0$ $c = 0$ $d = -1.00000$	$1.64493 + 2.02988I$	$3.00000 - 3.46410I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

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

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

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

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 0$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

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

VI. $I_4^v = \langle c,\ d+1,\ a^2v^2+2cav+v^2a+c^2+cv+v^2,\ bv-1\rangle$

(i) Arc colorings

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

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

$$a_5 = \begin{pmatrix} a \\ b \end{pmatrix}$$

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

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

$$a_{11} = \begin{pmatrix} -a-1 \\ ba-1 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -a+v \\ -b \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -a \\ -b \end{pmatrix}$$

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

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

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

$$a_{12} = \begin{pmatrix} -a-1 \\ ba+a \end{pmatrix}$$

(ii) Obstruction class $= -1$

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

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

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

(iv) Complex Volumes and Cusp Shapes

Solution to I_4^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = \cdots$		
$a = \cdots$		
$b = \cdots$	$-\ 2.02988I$	$-2.23950 - 4.57670I$
$c = \cdots$		
$d = \cdots$		

VII. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$u^2(u-1)^3(u^{15}+10u^{14}+\cdots-5u+1)$ $\cdot\,(u^{47}+54u^{46}+\cdots+544u+256)$
c_2	$u^2(u-1)^3(u^{15}-5u^{13}+\cdots+u-1)(u^{47}-8u^{46}+\cdots+56u+16)$
c_3, c_7	$u^5(u^5-u^4+\cdots+u+1)^3(u^{47}+2u^{46}+\cdots+1024u+512)$
c_4	$u^2(u+1)^3(u^{15}-5u^{13}+\cdots+u-1)(u^{47}-8u^{46}+\cdots+56u+16)$
c_5, c_{11}	$u(u^2-u+1)(u^2+u+1)(u^5+u^4+2u^3+u^2+u+1)^3$ $\cdot\,(u^{47}+2u^{46}+\cdots+16u+4)$
c_6	$u^2(u+1)^3(u^{15}-5u^{13}+\cdots+u-1)(u^{47}+8u^{46}+\cdots+56u+16)$
c_8	$u^2(u+1)^3(u^{15}-10u^{14}+\cdots-5u-1)$ $\cdot\,(u^{47}-14u^{46}+\cdots+6688u-256)$
c_9	$u^2(u-1)^3(u^{15}-5u^{13}+\cdots+u-1)(u^{47}+8u^{46}+\cdots+56u+16)$
c_{10}	$u(u^2-u+1)(u^2+u+1)(u^5-u^4-2u^3+u^2+u+1)^3$ $\cdot\,(u^{47}-2u^{46}+\cdots-21456u+2592)$
c_{12}	$u(u^2+u+1)^2(u^5+3u^4+4u^3+u^2-u-1)^3$ $\cdot\,(u^{47}+24u^{46}+\cdots+216u-16)$

VIII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$y^2(y-1)^3(y^{15}-10y^{14}+\cdots-25y-1)$ $\cdot(y^{47}-114y^{46}+\cdots-1990144y-65536)$
c_2, c_4	$y^2(y-1)^3(y^{15}-10y^{14}+\cdots-5y-1)$ $\cdot(y^{47}-54y^{46}+\cdots+544y-256)$
c_3, c_7	$y^5(y^5-5y^4+8y^3-3y^2-y-1)^3$ $\cdot(y^{47}-30y^{46}+\cdots+1572864y-262144)$
c_5, c_{11}	$y(y^2+y+1)^2(y^5+3y^4+4y^3+y^2-y-1)^3$ $\cdot(y^{47}+24y^{46}+\cdots+216y-16)$
c_6, c_9	$y^2(y-1)^3(y^{15}-10y^{14}+\cdots-5y-1)$ $\cdot(y^{47}-14y^{46}+\cdots+6688y-256)$
c_8	$y^2(y-1)^3(y^{15}-10y^{14}+\cdots-25y-1)$ $\cdot(y^{47}+46y^{46}+\cdots+11182592y-65536)$
c_{10}	$y(y^2+y+1)^2(y^5-5y^4+8y^3-3y^2-y-1)^3$ $\cdot(y^{47}-24y^{46}+\cdots+353776896y-6718464)$
c_{12}	$y(y^2+y+1)^2(y^5-y^4+8y^3-3y^2+3y-1)^3$ $\cdot(y^{47}+48y^{45}+\cdots+67872y-256)$