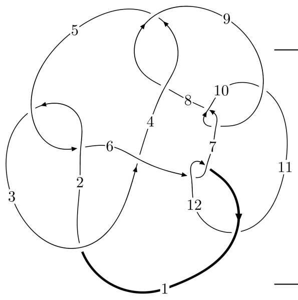
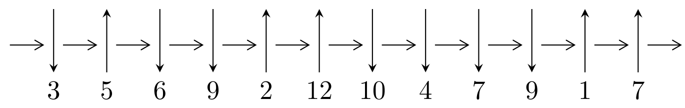
$12n_{0061}$ ($K12n_{0061}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned} I_1^u = \langle & -6.70930 \times 10^{96} u^{46} - 9.84287 \times 10^{96} u^{45} + \cdots + 6.09681 \times 10^{98} d - 6.16018 \times 10^{99}, \\ & -1.03963 \times 10^{97} u^{46} - 1.48428 \times 10^{97} u^{45} + \cdots + 3.04841 \times 10^{98} c - 8.34618 \times 10^{99}, \\ & -3.55708 \times 10^{84} u^{46} - 5.87581 \times 10^{84} u^{45} + \cdots + 4.44856 \times 10^{87} b - 3.91588 \times 10^{87}, \\ & 2.90225 \times 10^{85} u^{46} + 4.18154 \times 10^{85} u^{45} + \cdots + 4.44856 \times 10^{87} a + 2.35085 \times 10^{88}, \\ & u^{47} + 2u^{46} + \cdots + 1024u + 512 \rangle \\ I_2^u = \langle & a^2 u + d - a,\ a^2 u + c,\ a^2 u + b - a,\ -u^4 a + 2u^3 a - u^4 + a^3 + u^2 a + u^3 - 3au + 2u^2 - u - 1, \\ & u^5 - u^4 - 2u^3 + u^2 + u + 1 \rangle \end{aligned}$$

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

* 5 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 67 representations.
* 1 irreducible components of $\dim_{\mathbb{C}} = 1$

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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. $\boldsymbol{I_1^u = \langle -6.71\times 10^{96}u^{46} - 9.84\times 10^{96}u^{45} + \cdots + 6.10\times 10^{98}d - 6.16\times 10^{99},\ -1.04\times 10^{97}u^{46} - 1.48\times 10^{97}u^{45} + \cdots + 3.05\times 10^{98}c - 8.35\times 10^{99},\ -3.56\times 10^{84}u^{46} - 5.88\times 10^{84}u^{45} + \cdots + 4.45\times 10^{87}b - 3.92\times 10^{87},\ 2.90\times 10^{85}u^{46} + 4.18\times 10^{85}u^{45} + \cdots + 4.45\times 10^{87}a + 2.35\times 10^{88},\ u^{47} + 2u^{46} + \cdots + 1024u + 512\rangle}$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -0.00652403u^{46} - 0.00939975u^{45} + \cdots - 0.175259u - 5.28451 \\ 0.000799603u^{46} + 0.00132083u^{45} + \cdots + 1.47622u + 0.880259 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0.00732363u^{46} + 0.0107206u^{45} + \cdots + 1.65147u + 6.16477 \\ 0.000799603u^{46} + 0.00132083u^{45} + \cdots + 1.47622u + 0.880259 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 0.0341039u^{46} + 0.0486904u^{45} + \cdots + 14.6818u + 27.3788 \\ 0.0110046u^{46} + 0.0161443u^{45} + \cdots + 4.15721u + 10.1039 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 0.0252497u^{46} + 0.0366947u^{45} + \cdots + 11.3108u + 20.0129 \\ 0.00558802u^{46} + 0.00914935u^{45} + \cdots + 0.890394u + 6.27203 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -0.0265369u^{46} - 0.0375470u^{45} + \cdots - 11.6287u - 20.8089 \\ -0.00128717u^{46} - 0.000852284u^{45} + \cdots - 0.317834u - 0.796018 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 0.00513208u^{46} + 0.00817440u^{45} + \cdots - 0.763266u + 5.03316 \\ 0.00862965u^{46} + 0.0123123u^{45} + \cdots + 4.96716u + 7.59297 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -0.00521744u^{46} - 0.00448641u^{45} + \cdots - 6.21813u - 1.48986 \\ 0.00291266u^{46} + 0.00502319u^{45} + \cdots + 2.03496u + 3.47740 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0.00732363u^{46} + 0.0107206u^{45} + \cdots + 1.65147u + 6.16477 \\ 0.00275888u^{46} + 0.00400645u^{45} + \cdots + 1.74743u + 2.89071 \end{pmatrix}$$

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I^u_1	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.168857+0.977277I$ $a=-0.502467+0.614921I$ $b=-1.127600+0.633374I$ $c=-0.961290+0.734797I$ $d=-0.756569+0.908522I$	$-0.50019-4.79223I$	$-2.43501+7.48976I$
$u=-0.168857-0.977277I$ $a=-0.502467-0.614921I$ $b=-1.127600-0.633374I$ $c=-0.961290-0.734797I$ $d=-0.756569-0.908522I$	$-0.50019+4.79223I$	$-2.43501-7.48976I$
$u=0.758370+0.572620I$ $a=0.677402-0.992682I$ $b=0.306606+0.328751I$ $c=-0.587766+0.872152I$ $d=-0.654201+0.089268I$	$-3.62778+1.19000I$	$-10.45074-1.01195I$
$u=0.758370-0.572620I$ $a=0.677402+0.992682I$ $b=0.306606-0.328751I$ $c=-0.587766-0.872152I$ $d=-0.654201-0.089268I$	$-3.62778-1.19000I$	$-10.45074+1.01195I$
$u=0.798854+0.256222I$ $a=0.588853+0.419968I$ $b=0.579476-0.018798I$ $c=-0.544662-1.097250I$ $d=-0.20396-1.54472I$	$1.43042-3.68269I$	$-0.57615+8.67104I$
$u=0.798854-0.256222I$ $a=0.588853-0.419968I$ $b=0.579476+0.018798I$ $c=-0.544662+1.097250I$ $d=-0.20396+1.54472I$	$1.43042+3.68269I$	$-0.57615-8.67104I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.287114 + 0.709757I$ $a = 0.383641 + 0.556567I$ $b = 0.733419 + 0.549353I$ $c = 1.205770 + 0.404495I$ $d = 0.597302 + 0.839395I$	$1.71355 + 0.99880I$	$4.04476 - 2.43406I$
$u = 0.287114 - 0.709757I$ $a = 0.383641 - 0.556567I$ $b = 0.733419 - 0.549353I$ $c = 1.205770 - 0.404495I$ $d = 0.597302 - 0.839395I$	$1.71355 - 0.99880I$	$4.04476 + 2.43406I$
$u = -0.723521 + 0.092490I$ $a = -0.704709 + 0.351766I$ $b = -0.480781 - 0.041433I$ $c = -3.56166 + 1.78408I$ $d = -1.048200 + 0.427037I$	$0.84436 + 2.80891I$	$-4.36866 - 6.45196I$
$u = -0.723521 - 0.092490I$ $a = -0.704709 - 0.351766I$ $b = -0.480781 + 0.041433I$ $c = -3.56166 - 1.78408I$ $d = -1.048200 - 0.427037I$	$0.84436 - 2.80891I$	$-4.36866 + 6.45196I$
$u = 0.549584 + 0.433005I$ $a = 0.450542 + 0.396109I$ $b = 0.579765 + 0.179992I$ $c = 2.21899 + 0.55940I$ $d = 0.703512 + 0.579046I$	$2.18982 + 0.74670I$	$2.91211 + 1.96105I$
$u = 0.549584 - 0.433005I$ $a = 0.450542 - 0.396109I$ $b = 0.579765 - 0.179992I$ $c = 2.21899 - 0.55940I$ $d = 0.703512 - 0.579046I$	$2.18982 - 0.74670I$	$2.91211 - 1.96105I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.659997 + 0.157577I$ $a = -0.620233 + 0.304010I$ $b = -0.486762 + 0.009061I$ $c = 0.225348 - 0.901957I$ $d = -0.488745 - 1.323290I$	$1.05099 - 1.22135I$	$-3.11104 - 2.86511I$
$u = -0.659997 - 0.157577I$ $a = -0.620233 - 0.304010I$ $b = -0.486762 - 0.009061I$ $c = 0.225348 + 0.901957I$ $d = -0.488745 + 1.323290I$	$1.05099 + 1.22135I$	$-3.11104 + 2.86511I$
$u = -0.226818 + 1.310000I$ $a = -0.108597 - 1.104710I$ $b = -0.068409 + 0.532975I$ $c = 0.830749 - 0.602517I$ $d = -1.046880 - 0.665279I$	$-4.12204 - 2.83071I$	$-3.10594 + 2.47522I$
$u = -0.226818 - 1.310000I$ $a = -0.108597 + 1.104710I$ $b = -0.068409 - 0.532975I$ $c = 0.830749 + 0.602517I$ $d = -1.046880 + 0.665279I$	$-4.12204 + 2.83071I$	$-3.10594 - 2.47522I$
$u = 0.024914 + 0.666306I$ $a = -0.311476 + 0.943178I$ $b = -0.68322 + 1.48591I$ $c = -0.472994 + 0.671049I$ $d = -0.54160 + 1.46349I$	$-0.68586 + 1.51893I$	$-2.03699 + 0.09471I$
$u = 0.024914 - 0.666306I$ $a = -0.311476 - 0.943178I$ $b = -0.68322 - 1.48591I$ $c = -0.472994 - 0.671049I$ $d = -0.54160 - 1.46349I$	$-0.68586 - 1.51893I$	$-2.03699 - 0.09471I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.275400 + 0.425723I$ $a = 0.527825 + 0.529108I$ $b = 0.767343 - 0.182692I$ $c = -1.00554 - 1.01478I$ $d = -1.17436 - 1.26704I$	$-1.49383 - 5.48046I$	$-1.24533 + 5.03878I$
$u = 1.275400 - 0.425723I$ $a = 0.527825 - 0.529108I$ $b = 0.767343 + 0.182692I$ $c = -1.00554 + 1.01478I$ $d = -1.17436 + 1.26704I$	$-1.49383 + 5.48046I$	$-1.24533 - 5.03878I$
$u = 1.351470 + 0.126259I$ $a = -1.098230 + 0.058069I$ $b = -2.73978 + 0.07859I$ $c = 0.428611 + 0.687312I$ $d = 0.23689 + 2.41586I$	$-5.10242 + 0.08441I$	$-6.12902 + 0.I$
$u = 1.351470 - 0.126259I$ $a = -1.098230 - 0.058069I$ $b = -2.73978 - 0.07859I$ $c = 0.428611 - 0.687312I$ $d = 0.23689 - 2.41586I$	$-5.10242 - 0.08441I$	$-6.12902 + 0.I$
$u = -0.062543 + 0.611080I$ $a = -0.14897 - 1.86717I$ $b = -0.025679 + 0.284490I$ $c = 3.03261 + 4.80458I$ $d = -0.366383 - 1.198400I$	$-0.53961 - 2.33649I$	$-0.16377 + 3.97632I$
$u = -0.062543 - 0.611080I$ $a = -0.14897 + 1.86717I$ $b = -0.025679 - 0.284490I$ $c = 3.03261 - 4.80458I$ $d = -0.366383 + 1.198400I$	$-0.53961 + 2.33649I$	$-0.16377 - 3.97632I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.354510 + 0.305217I$ $a = 1.072310 + 0.133945I$ $b = 2.69315 + 0.17757I$ $c = -0.777654 + 0.758804I$ $d = -0.87546 + 2.59578I$	$-4.74548 + 5.93381I$	$-5.07129 - 5.57342I$
$u = -1.354510 - 0.305217I$ $a = 1.072310 - 0.133945I$ $b = 2.69315 - 0.17757I$ $c = -0.777654 - 0.758804I$ $d = -0.87546 - 2.59578I$	$-4.74548 - 5.93381I$	$-5.07129 + 5.57342I$
$u = -1.42975 + 0.19774I$ $a = -0.527124 + 0.570614I$ $b = -0.714333 - 0.280041I$ $c = 0.985847 - 0.867635I$ $d = 1.15748 - 0.96588I$	$-5.91128 + 1.72117I$	$-6.79419 + 0.I$
$u = -1.42975 - 0.19774I$ $a = -0.527124 - 0.570614I$ $b = -0.714333 + 0.280041I$ $c = 0.985847 + 0.867635I$ $d = 1.15748 + 0.96588I$	$-5.91128 - 1.72117I$	$-6.79419 + 0.I$
$u = -0.01170 + 1.48787I$ $a = -0.004491 - 1.046020I$ $b = -0.003311 + 0.582025I$ $c = -0.374959 - 0.326873I$ $d = 1.076620 - 0.549413I$	$-8.14593 - 1.35024I$	0
$u = -0.01170 - 1.48787I$ $a = -0.004491 + 1.046020I$ $b = -0.003311 - 0.582025I$ $c = -0.374959 + 0.326873I$ $d = 1.076620 + 0.549413I$	$-8.14593 + 1.35024I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.509235$ $a = -1.62785$ $b = -0.278429$ $c = \ \ 1.42620$ $d = \ \ 0.0709079$	-1.19981	-8.75910
$u = -1.38697 + 0.55724I$ $a = -0.508516 + 0.527555I$ $b = -0.834857 - 0.205621I$ $c = \ \ 1.10528 - 1.01088I$ $d = \ \ 1.36984 - 1.26145I$	$-4.40802 + 10.56830I$	0
$u = -1.38697 - 0.55724I$ $a = -0.508516 - 0.527555I$ $b = -0.834857 + 0.205621I$ $c = \ \ 1.10528 + 1.01088I$ $d = \ \ 1.36984 + 1.26145I$	$-4.40802 - 10.56830I$	0
$u = \ \ 0.40359 + 1.45989I$ $a = \ \ 0.149185 - 1.016750I$ $b = \ \ 0.114536 + 0.582400I$ $c = -0.560529 - 0.949843I$ $d = \ \ 1.124480 - 0.685590I$	$-7.37650 + 7.69255I$	0
$u = \ \ 0.40359 - 1.45989I$ $a = \ \ 0.149185 + 1.016750I$ $b = \ \ 0.114536 - 0.582400I$ $c = -0.560529 + 0.949843I$ $d = \ \ 1.124480 + 0.685590I$	$-7.37650 - 7.69255I$	0
$u = -1.43182 + 0.71566I$ $a = \ \ 0.954104 + 0.236457I$ $b = \ \ 2.50037 + 0.27104I$ $c = -1.42231 + 0.42095I$ $d = -2.09633 + 2.01103I$	$-7.91018 + 10.04820I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.43182 - 0.71566I$ $a = 0.954104 - 0.236457I$ $b = 2.50037 - 0.27104I$ $c = -1.42231 - 0.42095I$ $d = -2.09633 - 2.01103I$	$-7.91018 - 10.04820I$	0
$u = 1.55076 + 0.46120I$ $a = -0.979860 + 0.150029I$ $b = -2.56948 + 0.17354I$ $c = 0.0100774 + 0.0710674I$ $d = -0.347517 - 0.964881I$	$-10.01530 - 3.44751I$	0
$u = 1.55076 - 0.46120I$ $a = -0.979860 - 0.150029I$ $b = -2.56948 - 0.17354I$ $c = 0.0100774 - 0.0710674I$ $d = -0.347517 + 0.964881I$	$-10.01530 + 3.44751I$	0
$u = 1.43192 + 0.83141I$ $a = -0.924993 + 0.257013I$ $b = -2.45089 + 0.28141I$ $c = 1.54648 + 0.31162I$ $d = 2.32957 + 1.80759I$	$-10.6565 - 15.7212I$	0
$u = 1.43192 - 0.83141I$ $a = -0.924993 - 0.257013I$ $b = -2.45089 - 0.28141I$ $c = 1.54648 - 0.31162I$ $d = 2.32957 - 1.80759I$	$-10.6565 + 15.7212I$	0
$u = -1.59024 + 0.63743I$ $a = 0.938344 + 0.185530I$ $b = 2.50574 + 0.19991I$ $c = 0.028561 + 0.229108I$ $d = 0.361646 - 0.685663I$	$-13.2358 + 8.9369I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.59024 - 0.63743I$ $a = 0.938344 - 0.185530I$ $b = 2.50574 - 0.19991I$ $c = 0.028561 - 0.229108I$ $d = 0.361646 + 0.685663I$	$-13.2358 - 8.9369I$	0
$u = 1.61640 + 0.61957I$ $a = -0.936055 + 0.176897I$ $b = -2.50694 + 0.18872I$ $c = 1.188010 + 0.269021I$ $d = 1.66723 + 1.72517I$	$-13.4084 - 6.2441I$	0
$u = 1.61640 - 0.61957I$ $a = -0.936055 - 0.176897I$ $b = -2.50694 - 0.18872I$ $c = 1.188010 - 0.269021I$ $d = 1.66723 - 1.72517I$	$-13.4084 + 6.2441I$	0
$u = -1.74703 + 0.30124I$ $a = 0.947443 + 0.082473I$ $b = 2.55085 + 0.08714I$ $c = -0.250062 + 0.065643I$ $d = -0.059801 - 1.037630I$	$-14.9547 - 0.9173I$	0
$u = -1.74703 - 0.30124I$ $a = 0.947443 - 0.082473I$ $b = 2.55085 - 0.08714I$ $c = -0.250062 - 0.065643I$ $d = -0.059801 + 1.037630I$	$-14.9547 + 0.9173I$	0

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

(i) Arc colorings

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

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.21774$ $a = -0.586248 + 0.597241I$ $b = -0.602091 - 0.255494I$ $c = -0.015843 - 0.852735I$ $d = -0.602091 - 0.255494I$	-2.40108	-3.48110
$u = -1.21774$ $a = -0.586248 - 0.597241I$ $b = -0.602091 + 0.255494I$ $c = -0.015843 + 0.852735I$ $d = -0.602091 + 0.255494I$	-2.40108	-3.48110
$u = -1.21774$ $a = 1.17250$ $b = 2.84657$ $c = 1.67408$ $d = 2.84657$	-2.40108	-3.48110
$u = -0.309916 + 0.549911I$ $a = -0.331889 + 0.475420I$ $b = -0.541336 + 0.441339I$ $c = -0.209448 - 0.034081I$ $d = -0.541336 + 0.441339I$	$-0.32910 + 1.53058I$	$-2.51511 - 4.43065I$
$u = -0.309916 + 0.549911I$ $a = 1.02081 + 1.15644I$ $b = 2.22763 + 2.05055I$ $c = 1.20682 + 0.89411I$ $d = 2.22763 + 2.05055I$	$-0.32910 + 1.53058I$	$-2.51511 - 4.43065I$
$u = -0.309916 + 0.549911I$ $a = -0.68892 - 1.63186I$ $b = -0.130685 + 0.268368I$ $c = 0.55823 + 1.90023I$ $d = -0.130685 + 0.268368I$	$-0.32910 + 1.53058I$	$-2.51511 - 4.43065I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.309916-0.549911I$ $a=-0.331889-0.475420I$ $b=-0.541336-0.441339I$ $c=-0.209448+0.034081I$ $d=-0.541336-0.441339I$	$-0.32910-1.53058I$	$-2.51511+4.43065I$
$u=-0.309916-0.549911I$ $a=\ \ 1.02081-1.15644I$ $b=\ \ 2.22763-2.05055I$ $c=\ \ 1.20682-0.89411I$ $d=\ \ 2.22763-2.05055I$	$-0.32910-1.53058I$	$-2.51511+4.43065I$
$u=-0.309916-0.549911I$ $a=-0.68892+1.63186I$ $b=-0.130685-0.268368I$ $c=\ \ 0.55823-1.90023I$ $d=-0.130685-0.268368I$	$-0.32910-1.53058I$	$-2.51511+4.43065I$
$u=\ \ 1.41878+0.21917I$ $a=-1.060130+0.090162I$ $b=-2.68504+0.11685I$ $c=-1.62491+0.02669I$ $d=-2.68504+0.11685I$	$-5.87256-4.40083I$	$-6.74431+3.49859I$
$u=\ \ 1.41878+0.21917I$ $a=\ \ 0.532546-0.656825I$ $b=\ \ 0.588938+0.368121I$ $c=\ \ 0.056392+1.024950I$ $d=\ \ 0.588938+0.368121I$	$-5.87256-4.40083I$	$-6.74431+3.49859I$
$u=\ \ 1.41878+0.21917I$ $a=\ \ 0.527587+0.566662I$ $b=\ \ 0.719297-0.272295I$ $c=\ \ 0.191710-0.838957I$ $d=\ \ 0.719297-0.272295I$	$-5.87256-4.40083I$	$-6.74431+3.49859I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.41878 - 0.21917I$ $a = -1.060130 - 0.090162I$ $b = -2.68504 - 0.11685I$ $c = -1.62491 - 0.02669I$ $d = -2.68504 - 0.11685I$	$-5.87256 + 4.40083I$	$-6.74431 - 3.49859I$
$u = 1.41878 - 0.21917I$ $a = 0.532546 + 0.656825I$ $b = 0.588938 - 0.368121I$ $c = 0.056392 - 1.024950I$ $d = 0.588938 - 0.368121I$	$-5.87256 + 4.40083I$	$-6.74431 - 3.49859I$
$u = 1.41878 - 0.21917I$ $a = 0.527587 - 0.566662I$ $b = 0.719297 + 0.272295I$ $c = 0.191710 + 0.838957I$ $d = 0.719297 + 0.272295I$	$-5.87256 + 4.40083I$	$-6.74431 - 3.49859I$

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

(i) Arc colorings

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

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

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

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

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

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

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

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

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

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

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

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4v + 5$

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

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

(i) Arc colorings

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

(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	$(u-1)^2$
c_9, 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
$v = -0.500000 + 0.866025I$ $a = 0$ $b = 0.500000 + 0.866025I$ $c = 0$ $d = -0.500000 - 0.866025I$	$-1.64493 - 2.02988I$	$-9.00000 + 3.46410I$
$v = -0.500000 - 0.866025I$ $a = 0$ $b = 0.500000 - 0.866025I$ $c = 0$ $d = -0.500000 + 0.866025I$	$-1.64493 + 2.02988I$	$-9.00000 - 3.46410I$

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

(i) Arc colorings

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

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

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

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

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

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

$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$

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

$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$

$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$

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

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

(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_3 c_4, c_5, c_8	u
c_6, c_7	$u - 1$
c_9, c_{10}, c_{11} c_{12}	$u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_3 c_4, c_5, c_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
$v = 1.00000$		
$a = 0$		
$b = -1.00000$	0	0
$c = 1.00000$		
$d = 1.00000$		

VI. $I_4^v = \langle a,\ d^2 + 2db + \cdots + b + 1,\ -dv - av + \cdots + a + 2,\ da - cb - 1,\ a^2v^2 + v^2a + \cdots + 2ca + a^2,\ bv + 1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

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

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

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

(iv) Complex Volumes and Cusp Shapes

Solution to I_4^v	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$v = \cdots$		
$a = \cdots$		
$b = \cdots$	$-\ 2.02988I$	$-1.30108 + 3.68445I$
$c = \cdots$		
$d = \cdots$		

VII. u-Polynomials

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

VIII. Riley Polynomials

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