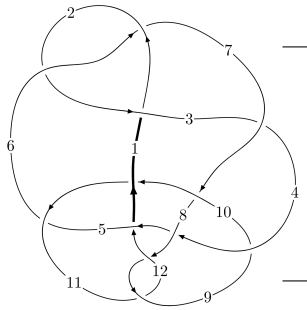
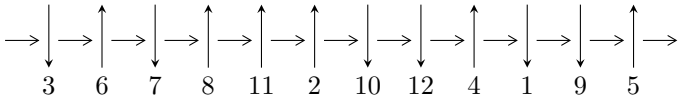
$12a_{0209}$ $(K12a_{0209})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$I_1^u = \langle -1.56131 \times 10^{18} u^{72} + 4.31036 \times 10^{18} u^{71} + \cdots + 2.30896 \times 10^{17} b + 2.90849 \times 10^{19},$
$2.90849 \times 10^{19} u^{72} + 2.93972 \times 10^{20} u^{71} + \cdots + 4.61791 \times 10^{17} a + 5.31033 \times 10^{19},\ u^{73} + 10u^{72} + \cdots + 17u +$

$I_2^u = \langle 9u^{48} - 22u^{47} + \cdots + 2b + 2,\ 2u^{48}a + 4u^{48} + \cdots - 15a - 7,\ u^{49} - 3u^{48} + \cdots - 3u + 1 \rangle$

$I_3^u = \langle 2u^{26} - 22u^{25} + \cdots + b + 16,\ 16u^{26} - 46u^{25} + \cdots + a + 9,\ u^{27} - 3u^{26} + \cdots + 5u - 1 \rangle$

$I_4^u = \langle a^3 u + a^3 - a^2 u - a^2 + b - a - u + 1,\ a^4 + a^2 u - a^2 - 2au - 2a - 2u - 2,\ u^2 + u + 1 \rangle$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 206 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. $\boldsymbol{I_1^u = \langle -1.56 \times 10^{18} u^{72} + 4.31 \times 10^{18} u^{71} + \cdots + 2.31 \times 10^{17} b + 2.91 \times 10^{19},\ 2.91 \times 10^{19} u^{72} + 2.94 \times 10^{20} u^{71} + \cdots + 4.62 \times 10^{17} a + 5.31 \times 10^{19},\ u^{73} + 10 u^{72} + \cdots + 17u + 2 \rangle}$

(i) Arc colorings

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

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

$$a_2 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} u^4 + u^2 + 1 \\ u^6 + 2u^4 + u^2 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -62.9827u^{72} - 636.589u^{71} + \cdots - 948.579u - 114.994 \\ 6.76197u^{72} - 18.6680u^{71} + \cdots - 955.713u - 125.965 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 44.3628u^{72} + 426.580u^{71} + \cdots + 440.294u + 50.3153 \\ 17.0477u^{72} + 207.544u^{71} + \cdots + 704.852u + 88.7256 \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} -12.7540u^{72} - 143.072u^{71} + \cdots - 330.334u - 40.7974 \\ 38.5297u^{72} + 343.881u^{71} + \cdots - 80.7329u - 18.6829 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -18.2285u^{72} - 181.746u^{71} + \cdots - 197.107u - 22.7670 \\ 9.87004u^{72} + 61.1843u^{71} + \cdots - 257.594u - 34.4057 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -28.7372u^{72} - 293.466u^{71} + \cdots - 456.109u - 56.4533 \\ 17.1086u^{72} + 131.737u^{71} + \cdots - 229.536u - 33.0173 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 1.86084u^{72} + 5.66695u^{71} + \cdots - 39.3331u - 0.499919 \\ 33.5377u^{72} + 304.934u^{71} + \cdots + 28.0721u - 1.32706 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{31874848749235508694}{2308957448137498 27}u^{72} - \frac{257490262863303824255}{230895744813749827}u^{71} + \cdots + \frac{54578403100783767899}{230895744813749827}u + \frac{6305572019569292940}{230895744813749827}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{73} + 38u^{72} + \cdots - 23u - 4$
c_2, c_6	$u^{73} - 10u^{72} + \cdots + 17u - 2$
c_3	$u^{73} + 10u^{72} + \cdots - 130207u - 16754$
c_4, c_{12}	$u^{73} + 2u^{72} + \cdots + u + 1$
c_5, c_9	$u^{73} + 7u^{71} + \cdots + 19u + 7$
c_7, c_{10}	$u^{73} - 3u^{72} + \cdots - 6u + 1$
c_8, c_{11}	$u^{73} - 17u^{72} + \cdots - 4311u + 160$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{73} - 2y^{72} + \cdots + 241y - 16$
c_2, c_6	$y^{73} + 38y^{72} + \cdots - 23y - 4$
c_3	$y^{73} - 36y^{72} + \cdots - 3279540855y - 280696516$
c_4, c_{12}	$y^{73} - 54y^{72} + \cdots + 127y - 1$
c_5, c_9	$y^{73} + 14y^{72} + \cdots - 1389y - 49$
c_7, c_{10}	$y^{73} + 21y^{72} + \cdots - 48y - 1$
c_8, c_{11}	$y^{73} + 37y^{72} + \cdots + 996881y - 25600$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.564959 + 0.847230I$ $a = -0.420644 + 0.433873I$ $b = 0.605237 + 0.111262I$	$6.48655 + 2.06213I$	0
$u = 0.564959 - 0.847230I$ $a = -0.420644 - 0.433873I$ $b = 0.605237 - 0.111262I$	$6.48655 - 2.06213I$	0
$u = -0.372313 + 0.889151I$ $a = 1.274400 + 0.272841I$ $b = 0.717072 - 1.031550I$	$1.56727 - 2.14796I$	0
$u = -0.372313 - 0.889151I$ $a = 1.274400 - 0.272841I$ $b = 0.717072 + 1.031550I$	$1.56727 + 2.14796I$	0
$u = 0.623366 + 0.835016I$ $a = -0.536860 - 0.095790I$ $b = 0.254674 + 0.507999I$	$2.20061 + 7.49260I$	0
$u = 0.623366 - 0.835016I$ $a = -0.536860 + 0.095790I$ $b = 0.254674 - 0.507999I$	$2.20061 - 7.49260I$	0
$u = -0.951897 + 0.435766I$ $a = -0.211932 + 0.335549I$ $b = -0.055516 + 0.411761I$	$3.57693 - 3.95252I$	0
$u = -0.951897 - 0.435766I$ $a = -0.211932 - 0.335549I$ $b = -0.055516 - 0.411761I$	$3.57693 + 3.95252I$	0
$u = 0.640065 + 0.697540I$ $a = 0.461939 - 0.202848I$ $b = -0.437165 - 0.192384I$	$2.58609 - 2.60921I$	0
$u = 0.640065 - 0.697540I$ $a = 0.461939 + 0.202848I$ $b = -0.437165 + 0.192384I$	$2.58609 + 2.60921I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.735332 + 0.754639I$ $a = -0.331872 + 0.216445I$ $b = 0.407374 + 0.091284I$	$6.04236 - 7.53790I$	0
$u = 0.735332 - 0.754639I$ $a = -0.331872 - 0.216445I$ $b = 0.407374 - 0.091284I$	$6.04236 + 7.53790I$	0
$u = 0.584696 + 0.704579I$ $a = 0.677743 + 0.287959I$ $b = -0.193384 - 0.645892I$	$6.89806 + 2.50124I$	0
$u = 0.584696 - 0.704579I$ $a = 0.677743 - 0.287959I$ $b = -0.193384 + 0.645892I$	$6.89806 - 2.50124I$	0
$u = 0.699590 + 0.831919I$ $a = 0.441214 + 0.158398I$ $b = -0.176895 - 0.477868I$	$5.8069 + 12.9188I$	0
$u = 0.699590 - 0.831919I$ $a = 0.441214 - 0.158398I$ $b = -0.176895 + 0.477868I$	$5.8069 - 12.9188I$	0
$u = -0.858251 + 0.245632I$ $a = 2.04477 - 0.73888I$ $b = 1.57344 - 1.13641I$	$2.4244 + 15.2798I$	0
$u = -0.858251 - 0.245632I$ $a = 2.04477 + 0.73888I$ $b = 1.57344 + 1.13641I$	$2.4244 - 15.2798I$	0
$u = -0.877206 + 0.063922I$ $a = 0.167896 + 1.013510I$ $b = 0.212065 + 0.878323I$	$2.74376 + 2.31862I$	0
$u = -0.877206 - 0.063922I$ $a = 0.167896 - 1.013510I$ $b = 0.212065 - 0.878323I$	$2.74376 - 2.31862I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.462980+1.044570I$ $a=-1.21227+1.63748I$ $b=\ \ 1.14920+2.02442I$	$1.84428-3.74154I$	0
$u=-0.462980-1.044570I$ $a=-1.21227-1.63748I$ $b=\ \ 1.14920-2.02442I$	$1.84428+3.74154I$	0
$u=-0.827327+0.214004I$ $a=-2.12748+0.89618I$ $b=-1.56833+1.19672I$	$-1.09792+9.05839I$	0
$u=-0.827327-0.214004I$ $a=-2.12748-0.89618I$ $b=-1.56833-1.19672I$	$-1.09792-9.05839I$	0
$u=-0.329613+1.125430I$ $a=-0.41328-1.73581I$ $b=-2.08975-0.10703I$	$0.978618+0.650011I$	0
$u=-0.329613-1.125430I$ $a=-0.41328+1.73581I$ $b=-2.08975+0.10703I$	$0.978618-0.650011I$	0
$u=\ \ 0.430701+1.103910I$ $a=-0.307829+0.530608I$ $b=\ \ 0.718326+0.111283I$	$0.44267+3.11854I$	0
$u=\ \ 0.430701-1.103910I$ $a=-0.307829-0.530608I$ $b=\ \ 0.718326-0.111283I$	$0.44267-3.11854I$	0
$u=-0.481205+1.090910I$ $a=\ \ 0.305601-1.137950I$ $b=-1.094350-0.880971I$	$-0.84301-3.50419I$	0
$u=-0.481205-1.090910I$ $a=\ \ 0.305601+1.137950I$ $b=-1.094350+0.880971I$	$-0.84301+3.50419I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.655040+0.998408I$ $a=\ \ 0.259508+0.468234I$ $b=\ \ 0.637477+0.047617I$	$1.91895-1.89445I$	0
$u=-0.655040-0.998408I$ $a=\ \ 0.259508-0.468234I$ $b=\ \ 0.637477-0.047617I$	$1.91895+1.89445I$	0
$u=\ \ 0.391852+1.132880I$ $a=\ \ 0.026904-0.380383I$ $b=-0.441469+0.118575I$	$-4.28285+1.23646I$	0
$u=\ \ 0.391852-1.132880I$ $a=\ \ 0.026904+0.380383I$ $b=-0.441469-0.118575I$	$-4.28285-1.23646I$	0
$u=\ \ 0.474637+1.111440I$ $a=\ \ 0.247949-0.519379I$ $b=-0.694941-0.029063I$	$0.76792+4.34795I$	0
$u=\ \ 0.474637-1.111440I$ $a=\ \ 0.247949+0.519379I$ $b=-0.694941+0.029063I$	$0.76792-4.34795I$	0
$u=-0.448676+1.141650I$ $a=\ \ 0.16043+2.42119I$ $b=\ \ 2.83614+0.90318I$	$-5.80825-3.98070I$	0
$u=-0.448676-1.141650I$ $a=\ \ 0.16043-2.42119I$ $b=\ \ 2.83614-0.90318I$	$-5.80825+3.98070I$	0
$u=-0.728706+0.244433I$ $a=\ \ 2.46091-0.77289I$ $b=\ \ 1.60436-1.16473I$	$4.95442+3.81969I$	$6.95886-3.45256I$
$u=-0.728706-0.244433I$ $a=\ \ 2.46091+0.77289I$ $b=\ \ 1.60436+1.16473I$	$4.95442-3.81969I$	$6.95886+3.45256I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.162975+1.233720I$ $a=-0.450075+0.149399I$ $b=\ \ 0.110965+0.579614I$	$-3.98989-2.83689I$	0
$u=-0.162975-1.233720I$ $a=-0.450075-0.149399I$ $b=\ \ 0.110965-0.579614I$	$-3.98989+2.83689I$	0
$u=\ \ 0.493222+1.148200I$ $a=-0.148228+0.269409I$ $b=\ \ 0.382444+0.037316I$	$-3.55518+6.73900I$	0
$u=\ \ 0.493222-1.148200I$ $a=-0.148228-0.269409I$ $b=\ \ 0.382444-0.037316I$	$-3.55518-6.73900I$	0
$u=-0.527320+1.143810I$ $a=\ \ 0.38813-2.25183I$ $b=-2.37099-1.63138I$	$2.33960-8.57168I$	0
$u=-0.527320-1.143810I$ $a=\ \ 0.38813+2.25183I$ $b=-2.37099+1.63138I$	$2.33960+8.57168I$	0
$u=-0.315560+1.220770I$ $a=\ \ 0.55875+1.35033I$ $b=\ \ 1.82477-0.25599I$	$-5.57113+5.34756I$	0
$u=-0.315560-1.220770I$ $a=\ \ 0.55875-1.35033I$ $b=\ \ 1.82477+0.25599I$	$-5.57113-5.34756I$	0
$u=-0.619406+0.380540I$ $a=\ \ 0.799519-0.626257I$ $b=\ \ 0.256911-0.692156I$	$1.27436-0.77322I$	$6.44105+3.71170I$
$u=-0.619406-0.380540I$ $a=\ \ 0.799519+0.626257I$ $b=\ \ 0.256911+0.692156I$	$1.27436+0.77322I$	$6.44105-3.71170I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.282337+1.241870I$ $a=-0.428978-1.254830I$ $b=-1.67944+0.17845I$	$-2.35312+11.60620I$	0
$u=-0.282337-1.241870I$ $a=-0.428978+1.254830I$ $b=-1.67944-0.17845I$	$-2.35312-11.60620I$	0
$u=\ 0.172310+0.704869I$ $a=-1.048260-0.662941I$ $b=-0.286662+0.853117I$	$-2.11378+0.88555I$	$-9.63986-6.78270I$
$u=\ 0.172310-0.704869I$ $a=-1.048260+0.662941I$ $b=-0.286662-0.853117I$	$-2.11378-0.88555I$	$-9.63986+6.78270I$
$u=\ 0.684054+0.164877I$ $a=\ 0.198647+0.390145I$ $b=-0.071559-0.299632I$	$-0.74996-2.26785I$	$-1.36009+3.03346I$
$u=\ 0.684054-0.164877I$ $a=\ 0.198647-0.390145I$ $b=-0.071559+0.299632I$	$-0.74996+2.26785I$	$-1.36009-3.03346I$
$u=-0.545236+1.182220I$ $a=-0.42738+2.00521I$ $b=\ 2.13757+1.59857I$	$-3.9720-14.1161I$	0
$u=-0.545236-1.182220I$ $a=-0.42738-2.00521I$ $b=\ 2.13757-1.59857I$	$-3.9720+14.1161I$	0
$u=-0.565076+1.184860I$ $a=\ 0.29511-1.94998I$ $b=-2.14368-1.45155I$	$-0.3868-20.5075I$	0
$u=-0.565076-1.184860I$ $a=\ 0.29511+1.94998I$ $b=-2.14368+1.45155I$	$-0.3868+20.5075I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.478314+1.224030I$ $a=\ \ 0.532800-0.725722I$ $b=-0.633457-0.999285I$	$-1.03976-2.35344I$	0
$u=-0.478314-1.224030I$ $a=\ \ 0.532800+0.725722I$ $b=-0.633457+0.999285I$	$-1.03976+2.35344I$	0
$u=-0.273626+1.311600I$ $a=\ \ 0.310716-0.342732I$ $b=-0.364507-0.501315I$	$-2.18891-7.86650I$	0
$u=-0.273626-1.311600I$ $a=\ \ 0.310716+0.342732I$ $b=-0.364507+0.501315I$	$-2.18891+7.86650I$	0
$u=-0.541103+1.248870I$ $a=-0.496875+0.389960I$ $b=\ \ 0.218150+0.831543I$	$-0.77248-7.46711I$	0
$u=-0.541103-1.248870I$ $a=-0.496875-0.389960I$ $b=\ \ 0.218150-0.831543I$	$-0.77248+7.46711I$	0
$u=-0.610805$ $a=-3.15155$ $b=-1.92498$	-2.76756	-11.9810
$u=\ \ 0.015403+0.589231I$ $a=\ \ 1.83364-1.02386I$ $b=-0.631534-1.064670I$	$2.98921-0.06124I$	$3.65891-0.00158I$
$u=\ \ 0.015403-0.589231I$ $a=\ \ 1.83364+1.02386I$ $b=-0.631534+1.064670I$	$2.98921+0.06124I$	$3.65891+0.00158I$
$u=-0.379406+0.430206I$ $a=-2.47582+1.49166I$ $b=-0.29762+1.63106I$	$3.65190-0.06033I$	$6.66313-2.08391I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.379406-0.430206I$ $a=-2.47582-1.49166I$ $b=-0.29762-1.63106I$	$3.65190+0.06033I$	$6.66313+2.08391I$
$u=\ \ 0.478791+0.170504I$ $a=-0.58304-1.35827I$ $b=\ \ 0.047561+0.749736I$	$3.28795-0.31350I$	$6.50392-0.08687I$
$u=\ \ 0.478791-0.170504I$ $a=-0.58304+1.35827I$ $b=\ \ 0.047561-0.749736I$	$3.28795+0.31350I$	$6.50392+0.08687I$

II. $I_2^u =$
$\langle 9u^{48}-22u^{47}+\cdots+2b+2,\ 2u^{48}a+4u^{48}+\cdots-15a-7,\ u^{49}-3u^{48}+\cdots-3u+1\rangle$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u \\ u^3+u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} u^4+u^2+1 \\ u^6+2u^4+u^2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} a \\ -\frac{9}{2}u^{48}+11u^{47}+\cdots-\frac{9}{2}u-1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -\frac{5}{2}u^{48}a-3u^{48}+\cdots+\frac{3}{2}a-3 \\ 2u^{48}a-4u^{48}+\cdots+\frac{5}{2}a+5 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^2+1 \\ u^2 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} u^{48}-\frac{7}{2}u^{47}+\cdots+a-\frac{3}{2} \\ -6u^{48}+15u^{47}+\cdots-7u-1 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -\frac{3}{2}u^{48}a+\frac{3}{2}u^{48}+\cdots-a-4 \\ u^{48}a+\frac{5}{2}u^{48}+\cdots-3a-\frac{3}{2} \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 2u^{48}-4u^{47}+\cdots+a+1 \\ -\frac{9}{2}u^{48}+11u^{47}+\cdots-\frac{11}{2}u-1 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -\frac{1}{2}u^{48}a-3u^{48}+\cdots+\frac{3}{2}a-\frac{7}{2} \\ \frac{1}{2}u^{48}a-5u^{48}+\cdots+\frac{1}{2}a+5 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -16u^{48}+65u^{47}+\cdots-100u+27$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^{49}+25u^{48}+\cdots-3u-1)^2$
c_2, c_6	$(u^{49}+3u^{48}+\cdots-3u-1)^2$
c_3	$(u^{49}-3u^{48}+\cdots+39u-17)^2$
c_4, c_{12}	$u^{98}+u^{97}+\cdots+26u^2+4$
c_5, c_9	$u^{98}+u^{97}+\cdots+12856u+4796$
c_7, c_{10}	$u^{98}-15u^{97}+\cdots-38u+1$
c_8, c_{11}	$(u^{49}+15u^{48}+\cdots+41u+3)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^{49}+y^{48}+\cdots+21y-1)^2$
c_2, c_6	$(y^{49}+25y^{48}+\cdots-3y-1)^2$
c_3	$(y^{49}-23y^{48}+\cdots-12963y-289)^2$
c_4, c_{12}	$y^{98}+9y^{97}+\cdots+208y+16$
c_5, c_9	$y^{98}+y^{97}+\cdots+1102689744y+23001616$
c_7, c_{10}	$y^{98}-37y^{97}+\cdots-84y+1$
c_8, c_{11}	$(y^{49}+31y^{48}+\cdots-185y-9)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.565929+0.787955I$ $a=\ 0.927132-0.349022I$ $b=-0.330910-0.345790I$	$1.64922-2.25866I$	$0.69047+3.81619I$
$u=-0.565929+0.787955I$ $a=\ 0.090522-0.484976I$ $b=\ 0.249678-0.928060I$	$1.64922-2.25866I$	$0.69047+3.81619I$
$u=-0.565929-0.787955I$ $a=\ 0.927132+0.349022I$ $b=-0.330910+0.345790I$	$1.64922+2.25866I$	$0.69047-3.81619I$
$u=-0.565929-0.787955I$ $a=\ 0.090522+0.484976I$ $b=\ 0.249678+0.928060I$	$1.64922+2.25866I$	$0.69047-3.81619I$
$u=-0.719218+0.760676I$ $a=-0.475496-0.214594I$ $b=-0.421030-0.337819I$	$2.15174-3.63424I$	$0.+10.28689I$
$u=-0.719218+0.760676I$ $a=-0.041830-0.513945I$ $b=-0.505221+0.207358I$	$2.15174-3.63424I$	$0.+10.28689I$
$u=-0.719218-0.760676I$ $a=-0.475496+0.214594I$ $b=-0.421030+0.337819I$	$2.15174+3.63424I$	$0.-10.28689I$
$u=-0.719218-0.760676I$ $a=-0.041830+0.513945I$ $b=-0.505221-0.207358I$	$2.15174+3.63424I$	$0.-10.28689I$
$u=-0.685202+0.852788I$ $a=\ 0.599701+0.208690I$ $b=\ 0.285940-0.234881I$	$1.87535-1.69278I$	0
$u=-0.685202+0.852788I$ $a=\ 0.331089+0.069275I$ $b=\ 0.588885-0.368423I$	$1.87535-1.69278I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.685202-0.852788I$ $a=\ 0.599701-0.208690I$ $b=\ 0.285940+0.234881I$	$1.87535+1.69278I$	0
$u=-0.685202-0.852788I$ $a=\ 0.331089-0.069275I$ $b=\ 0.588885+0.368423I$	$1.87535+1.69278I$	0
$u=\ 0.849383+0.273394I$ $a=-1.54302-0.31399I$ $b=-1.36253-0.51886I$	$-0.65523-6.25327I$	$1.78852+8.06126I$
$u=\ 0.849383+0.273394I$ $a=\ 1.63172+0.08566I$ $b=\ 1.224780+0.688548I$	$-0.65523-6.25327I$	$1.78852+8.06126I$
$u=\ 0.849383-0.273394I$ $a=-1.54302+0.31399I$ $b=-1.36253+0.51886I$	$-0.65523+6.25327I$	$1.78852-8.06126I$
$u=\ 0.849383-0.273394I$ $a=\ 1.63172-0.08566I$ $b=\ 1.224780-0.688548I$	$-0.65523+6.25327I$	$1.78852-8.06126I$
$u=-0.041598+0.887284I$ $a=\ 0.448646-0.954904I$ $b=\ 0.64729-1.34517I$	$1.03584-4.42428I$	$-2.94212+4.09903I$
$u=-0.041598+0.887284I$ $a=\ 1.54686+0.65700I$ $b=-0.828608-0.437799I$	$1.03584-4.42428I$	$-2.94212+4.09903I$
$u=-0.041598-0.887284I$ $a=\ 0.448646+0.954904I$ $b=\ 0.64729+1.34517I$	$1.03584+4.42428I$	$-2.94212-4.09903I$
$u=-0.041598-0.887284I$ $a=\ 1.54686-0.65700I$ $b=-0.828608+0.437799I$	$1.03584+4.42428I$	$-2.94212-4.09903I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.383075 + 1.049290I$ $a = 0.44321 - 1.71504I$ $b = 2.49198 - 1.10702I$	$1.12559 - 3.30577I$	0
$u = 0.383075 + 1.049290I$ $a = 0.16587 + 2.43548I$ $b = -1.96935 + 0.19194I$	$1.12559 - 3.30577I$	0
$u = 0.383075 - 1.049290I$ $a = 0.44321 + 1.71504I$ $b = 2.49198 + 1.10702I$	$1.12559 + 3.30577I$	0
$u = 0.383075 - 1.049290I$ $a = 0.16587 - 2.43548I$ $b = -1.96935 - 0.19194I$	$1.12559 + 3.30577I$	0
$u = 0.826596 + 0.219765I$ $a = -1.43081 - 0.20550I$ $b = -1.190550 - 0.695210I$	$-1.61941 - 3.47961I$	$-1.033654 - 0.487263I$
$u = 0.826596 + 0.219765I$ $a = 1.55406 + 0.42788I$ $b = 1.137540 + 0.484310I$	$-1.61941 - 3.47961I$	$-1.033654 - 0.487263I$
$u = 0.826596 - 0.219765I$ $a = -1.43081 + 0.20550I$ $b = -1.190550 + 0.695210I$	$-1.61941 + 3.47961I$	$-1.033654 + 0.487263I$
$u = 0.826596 - 0.219765I$ $a = 1.55406 - 0.42788I$ $b = 1.137540 - 0.484310I$	$-1.61941 + 3.47961I$	$-1.033654 + 0.487263I$
$u = -0.580618 + 0.987322I$ $a = -0.761121 + 0.167915I$ $b = -1.20899 + 0.91047I$	$4.16206 - 0.64233I$	0
$u = -0.580618 + 0.987322I$ $a = -1.220260 - 0.506911I$ $b = -0.276134 + 0.848965I$	$4.16206 - 0.64233I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.580618-0.987322I$ $a=-0.761121-0.167915I$ $b=-1.20899-0.91047I$	$4.16206+0.64233I$	0
$u=-0.580618-0.987322I$ $a=-1.220260+0.506911I$ $b=-0.276134-0.848965I$	$4.16206+0.64233I$	0
$u=-0.633943+0.561300I$ $a=\ \ 0.679974+0.689772I$ $b=\ \ 0.633015+1.078690I$	$5.39723-4.11919I$	$10.16439+6.77635I$
$u=-0.633943+0.561300I$ $a=-0.28478+1.44940I$ $b=\ \ 0.818233+0.055607I$	$5.39723-4.11919I$	$10.16439+6.77635I$
$u=-0.633943-0.561300I$ $a=\ \ 0.679974-0.689772I$ $b=\ \ 0.633015-1.078690I$	$5.39723+4.11919I$	$10.16439-6.77635I$
$u=-0.633943-0.561300I$ $a=-0.28478-1.44940I$ $b=\ \ 0.818233-0.055607I$	$5.39723+4.11919I$	$10.16439-6.77635I$
$u=-0.409974+1.134200I$ $a=\ \ 0.88233-1.48572I$ $b=-2.28830-1.14589I$	$-1.90389+2.54668I$	0
$u=-0.409974+1.134200I$ $a=\ \ 0.24855-2.10739I$ $b=-1.32337-1.60984I$	$-1.90389+2.54668I$	0
$u=-0.409974-1.134200I$ $a=\ \ 0.88233+1.48572I$ $b=-2.28830+1.14589I$	$-1.90389-2.54668I$	0
$u=-0.409974-1.134200I$ $a=\ \ 0.24855+2.10739I$ $b=-1.32337+1.60984I$	$-1.90389-2.54668I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.403660 + 1.145150I$ $a = -0.643338 + 0.518061I$ $b = -1.62151 - 0.17912I$	$-4.50913 + 1.14133I$	0
$u = 0.403660 + 1.145150I$ $a = 0.583091 - 1.210450I$ $b = 0.852947 + 0.527598I$	$-4.50913 + 1.14133I$	0
$u = 0.403660 - 1.145150I$ $a = -0.643338 - 0.518061I$ $b = -1.62151 + 0.17912I$	$-4.50913 - 1.14133I$	0
$u = 0.403660 - 1.145150I$ $a = 0.583091 + 1.210450I$ $b = 0.852947 - 0.527598I$	$-4.50913 - 1.14133I$	0
$u = -0.448278 + 1.138950I$ $a = 0.12576 + 2.03616I$ $b = 2.79062 + 0.80667I$	$-5.76355 - 3.96156I$	0
$u = -0.448278 + 1.138950I$ $a = 0.22174 + 2.36289I$ $b = 2.37547 + 0.76953I$	$-5.76355 - 3.96156I$	0
$u = -0.448278 - 1.138950I$ $a = 0.12576 - 2.03616I$ $b = 2.79062 - 0.80667I$	$-5.76355 + 3.96156I$	0
$u = -0.448278 - 1.138950I$ $a = 0.22174 - 2.36289I$ $b = 2.37547 - 0.76953I$	$-5.76355 + 3.96156I$	0
$u = 0.526930 + 1.106360I$ $a = -0.01941 - 2.10573I$ $b = 2.11960 - 1.79710I$	$2.30518 + 10.40670I$	0
$u = 0.526930 + 1.106360I$ $a = 0.58025 + 2.19219I$ $b = -2.31947 + 1.13105I$	$2.30518 + 10.40670I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.526930 - 1.106360I$ $a = -0.01941 + 2.10573I$ $b = 2.11960 + 1.79710I$	$2.30518 - 10.40670I$	0
$u = 0.526930 - 1.106360I$ $a = 0.58025 - 2.19219I$ $b = -2.31947 - 1.13105I$	$2.30518 - 10.40670I$	0
$u = -0.480363 + 1.138030I$ $a = -0.90835 - 1.41643I$ $b = -2.99361 - 0.05585I$	$-1.40396 - 10.43590I$	0
$u = -0.480363 + 1.138030I$ $a = -0.90078 - 2.25031I$ $b = -2.04827 + 0.35332I$	$-1.40396 - 10.43590I$	0
$u = -0.480363 - 1.138030I$ $a = -0.90835 + 1.41643I$ $b = -2.99361 + 0.05585I$	$-1.40396 + 10.43590I$	0
$u = -0.480363 - 1.138030I$ $a = -0.90078 + 2.25031I$ $b = -2.04827 - 0.35332I$	$-1.40396 + 10.43590I$	0
$u = 0.261024 + 1.224380I$ $a = -0.122328 - 0.934957I$ $b = 1.361490 - 0.182120I$	$-5.49216 - 2.78317I$	0
$u = 0.261024 + 1.224380I$ $a = -0.084478 + 1.093970I$ $b = -1.112810 + 0.393822I$	$-5.49216 - 2.78317I$	0
$u = 0.261024 - 1.224380I$ $a = -0.122328 + 0.934957I$ $b = 1.361490 + 0.182120I$	$-5.49216 + 2.78317I$	0
$u = 0.261024 - 1.224380I$ $a = -0.084478 - 1.093970I$ $b = -1.112810 - 0.393822I$	$-5.49216 + 2.78317I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.477685 + 1.157630I$ $a = -0.878685 - 0.868884I$ $b = 1.28704 - 1.23579I$	$-3.98228 + 6.98387I$	0
$u = 0.477685 + 1.157630I$ $a = 0.52018 + 1.32644I$ $b = -0.58611 + 1.43224I$	$-3.98228 + 6.98387I$	0
$u = 0.477685 - 1.157630I$ $a = -0.878685 + 0.868884I$ $b = 1.28704 + 1.23579I$	$-3.98228 - 6.98387I$	0
$u = 0.477685 - 1.157630I$ $a = 0.52018 - 1.32644I$ $b = -0.58611 - 1.43224I$	$-3.98228 - 6.98387I$	0
$u = 0.305940 + 1.219010I$ $a = -0.038028 + 0.901730I$ $b = -1.41165 + 0.29591I$	$-6.12924 + 0.18565I$	0
$u = 0.305940 + 1.219010I$ $a = 0.045050 - 1.146730I$ $b = 1.110850 - 0.229518I$	$-6.12924 + 0.18565I$	0
$u = 0.305940 - 1.219010I$ $a = -0.038028 - 0.901730I$ $b = -1.41165 - 0.29591I$	$-6.12924 - 0.18565I$	0
$u = 0.305940 - 1.219010I$ $a = 0.045050 + 1.146730I$ $b = 1.110850 + 0.229518I$	$-6.12924 - 0.18565I$	0
$u = 0.660704 + 0.334495I$ $a = 1.81872 + 0.62320I$ $b = 1.65690 + 1.06347I$	$4.55286 - 5.78809I$	$9.50823 + 6.30264I$
$u = 0.660704 + 0.334495I$ $a = -2.64478 - 0.27063I$ $b = -0.99318 - 1.02010I$	$4.55286 - 5.78809I$	$9.50823 + 6.30264I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.660704 - 0.334495I$ $a = 1.81872 - 0.62320I$ $b = 1.65690 - 1.06347I$	$4.55286 + 5.78809I$	$9.50823 - 6.30264I$
$u = 0.660704 - 0.334495I$ $a = -2.64478 + 0.27063I$ $b = -0.99318 + 1.02010I$	$4.55286 + 5.78809I$	$9.50823 - 6.30264I$
$u = 0.162863 + 0.708987I$ $a = -0.547257 - 0.905838I$ $b = -0.117217 + 1.104610I$	$-2.12945 + 0.88125I$	$-6.88602 - 7.29927I$
$u = 0.162863 + 0.708987I$ $a = -1.44385 - 0.49700I$ $b = -0.553099 + 0.535526I$	$-2.12945 + 0.88125I$	$-6.88602 - 7.29927I$
$u = 0.162863 - 0.708987I$ $a = -0.547257 + 0.905838I$ $b = -0.117217 - 1.104610I$	$-2.12945 - 0.88125I$	$-6.88602 + 7.29927I$
$u = 0.162863 - 0.708987I$ $a = -1.44385 + 0.49700I$ $b = -0.553099 - 0.535526I$	$-2.12945 - 0.88125I$	$-6.88602 + 7.29927I$
$u = 0.702353 + 0.115740I$ $a = -0.896146 - 0.621689I$ $b = -0.791467 - 1.071980I$	$-1.00004 - 2.57700I$	$-1.85140 + 5.02776I$
$u = 0.702353 + 0.115740I$ $a = 1.34195 + 1.30513I$ $b = 0.557456 + 0.540365I$	$-1.00004 - 2.57700I$	$-1.85140 + 5.02776I$
$u = 0.702353 - 0.115740I$ $a = -0.896146 + 0.621689I$ $b = -0.791467 + 1.071980I$	$-1.00004 + 2.57700I$	$-1.85140 - 5.02776I$
$u = 0.702353 - 0.115740I$ $a = 1.34195 - 1.30513I$ $b = 0.557456 - 0.540365I$	$-1.00004 + 2.57700I$	$-1.85140 - 5.02776I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.314326 + 0.637004I$ $a = -1.63310 + 1.45974I$ $b = -0.43576 - 1.76614I$	$2.49963 + 6.33743I$	$3.80393 - 12.96994I$
$u = 0.314326 + 0.637004I$ $a = 2.50114 + 0.55009I$ $b = 1.44318 + 0.58146I$	$2.49963 + 6.33743I$	$3.80393 - 12.96994I$
$u = 0.314326 - 0.637004I$ $a = -1.63310 - 1.45974I$ $b = -0.43576 + 1.76614I$	$2.49963 - 6.33743I$	$3.80393 + 12.96994I$
$u = 0.314326 - 0.637004I$ $a = 2.50114 - 0.55009I$ $b = 1.44318 - 0.58146I$	$2.49963 - 6.33743I$	$3.80393 + 12.96994I$
$u = 0.546718 + 1.178980I$ $a = -0.121654 - 1.393520I$ $b = 1.81615 - 0.87585I$	$-4.46584 + 8.53970I$	0
$u = 0.546718 + 1.178980I$ $a = 0.02350 + 1.55134I$ $b = -1.57641 + 0.90529I$	$-4.46584 + 8.53970I$	0
$u = 0.546718 - 1.178980I$ $a = -0.121654 + 1.393520I$ $b = 1.81615 + 0.87585I$	$-4.46584 - 8.53970I$	0
$u = 0.546718 - 1.178980I$ $a = 0.02350 - 1.55134I$ $b = -1.57641 - 0.90529I$	$-4.46584 - 8.53970I$	0
$u = 0.572173 + 1.174870I$ $a = -0.09641 + 1.44640I$ $b = -1.91971 + 0.89272I$	$-3.35263 + 11.49570I$	0
$u = 0.572173 + 1.174870I$ $a = 0.02903 - 1.61984I$ $b = 1.75450 - 0.71433I$	$-3.35263 + 11.49570I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.572173 - 1.174870I$ $a = -0.09641 - 1.44640I$ $b = -1.91971 - 0.89272I$	$-3.35263 - 11.49570I$	0
$u = 0.572173 - 1.174870I$ $a = 0.02903 + 1.61984I$ $b = 1.75450 + 0.71433I$	$-3.35263 - 11.49570I$	0
$u = -0.626585 + 0.120026I$ $a = 2.25928 + 0.22829I$ $b = 1.80768 + 0.72863I$	$1.39664 + 6.16977I$	$-0.60759 - 8.72781I$
$u = -0.626585 + 0.120026I$ $a = 2.56799 + 1.65477I$ $b = 1.44303 - 0.12813I$	$1.39664 + 6.16977I$	$-0.60759 - 8.72781I$
$u = -0.626585 - 0.120026I$ $a = 2.25928 - 0.22829I$ $b = 1.80768 - 0.72863I$	$1.39664 - 6.16977I$	$-0.60759 + 8.72781I$
$u = -0.626585 - 0.120026I$ $a = 2.56799 - 1.65477I$ $b = 1.44303 + 0.12813I$	$1.39664 - 6.16977I$	$-0.60759 + 8.72781I$
$u = -0.603445$ $a = -2.93143 + 0.25607I$ $b = -1.76896 - 0.15452I$	-2.74282	-8.35200
$u = -0.603445$ $a = -2.93143 - 0.25607I$ $b = -1.76896 + 0.15452I$	-2.74282	-8.35200

III. $I_3^u =$
$\langle 2u^{26}-22u^{25}+\cdots+b+16,\ 16u^{26}-46u^{25}+\cdots+a+9,\ u^{27}-3u^{26}+\cdots+5u-1\rangle$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u \\ u^3+u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} u^4+u^2+1 \\ u^6+2u^4+u^2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -16u^{26}+46u^{25}+\cdots+50u-9 \\ -2u^{26}+22u^{25}+\cdots+71u-16 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -2u^{26}+7u^{25}+\cdots+24u-9 \\ u^{26}-u^{25}+\cdots+2u-2 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^2+1 \\ u^2 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -5u^{26}+14u^{25}+\cdots-30u^2+6u \\ 3u^{26}-3u^{25}+\cdots+22u-5 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} u^{26}-7u^{25}+\cdots+39u^2-11u \\ -4u^{26}+7u^{25}+\cdots-5u+1 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -8u^{26}+23u^{25}+\cdots+18u-3 \\ 9u^{25}-23u^{24}+\cdots+41u-9 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 4u^{26}-13u^{25}+\cdots-17u+6 \\ -u^{26}-3u^{25}+\cdots-15u+4 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 11u^{26}-13u^{25}+83u^{24}-85u^{23}+301u^{22}-290u^{21}+690u^{20}-661u^{19}+1132u^{18}-1121u^{17}+1438u^{16}-1444u^{15}+1497u^{14}-1439u^{13}+1360u^{12}-1168u^{11}+1121u^{10}-852u^9+774u^8-503u^7+349u^6-170u^5+70u^4+5u^3+8u^2+2u+5$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{27} - 15u^{26} + \cdots - 7u + 1$
c_2	$u^{27} - 3u^{26} + \cdots + 5u - 1$
c_3	$u^{27} + 3u^{26} + \cdots + u - 5$
c_4, c_{12}	$u^{27} - 2u^{26} + \cdots - u + 1$
c_5, c_9	$u^{27} - 4u^{25} + \cdots + u - 1$
c_6	$u^{27} + 3u^{26} + \cdots + 5u + 1$
c_7, c_{10}	$u^{27} - 3u^{26} + \cdots - 2u - 1$
c_8	$u^{27} - 14u^{26} + \cdots + 31u - 5$
c_{11}	$u^{27} + 14u^{26} + \cdots + 31u + 5$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{27} - y^{26} + \cdots + 17y - 1$
c_2, c_6	$y^{27} + 15y^{26} + \cdots - 7y - 1$
c_3	$y^{27} - 11y^{26} + \cdots - 289y - 25$
c_4, c_{12}	$y^{27} + 4y^{26} + \cdots + 15y - 1$
c_5, c_9	$y^{27} - 8y^{26} + \cdots + 7y - 1$
c_7, c_{10}	$y^{27} - 25y^{26} + \cdots + 4y - 1$
c_8, c_{11}	$y^{27} + 10y^{26} + \cdots - 609y - 25$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.818202+0.518239I$ $a=\ 0.049044-0.187866I$ $b=\ 0.057231+0.179129I$	$3.29851-4.03046I$	$-0.54058+11.83565I$
$u=-0.818202-0.518239I$ $a=\ 0.049044+0.187866I$ $b=\ 0.057231-0.179129I$	$3.29851+4.03046I$	$-0.54058-11.83565I$
$u=\ 0.856295+0.259733I$ $a=-1.38117-0.30400I$ $b=-1.103730-0.619052I$	$-1.15919-4.70290I$	$1.30732+5.25329I$
$u=\ 0.856295-0.259733I$ $a=-1.38117+0.30400I$ $b=-1.103730+0.619052I$	$-1.15919+4.70290I$	$1.30732-5.25329I$
$u=-0.321339+1.075910I$ $a=-0.213440+0.363458I$ $b=-0.322462-0.346436I$	$-3.37950-1.83231I$	$-1.49661+5.41088I$
$u=-0.321339-1.075910I$ $a=-0.213440-0.363458I$ $b=-0.322462+0.346436I$	$-3.37950+1.83231I$	$-1.49661-5.41088I$
$u=\ 0.396175+1.093580I$ $a=\ 0.11793+2.42589I$ $b=-2.60618+1.09004I$	$-0.10491-2.85244I$	$-2.53341+2.43779I$
$u=\ 0.396175-1.093580I$ $a=\ 0.11793-2.42589I$ $b=-2.60618-1.09004I$	$-0.10491+2.85244I$	$-2.53341-2.43779I$
$u=-0.773799+0.899843I$ $a=-0.145465-0.015545I$ $b=\ 0.126549-0.118867I$	$2.28334-1.82374I$	$21.0281+7.1552I$
$u=-0.773799-0.899843I$ $a=-0.145465+0.015545I$ $b=\ 0.126549+0.118867I$	$2.28334+1.82374I$	$21.0281-7.1552I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.512106 + 1.112540I$ $a = -0.32986 + 2.28826I$ $b = -2.71470 + 0.80484I$	$0.76047 + 10.24880I$	$-0.65047 - 9.89487I$
$u = 0.512106 - 1.112540I$ $a = -0.32986 - 2.28826I$ $b = -2.71470 - 0.80484I$	$0.76047 - 10.24880I$	$-0.65047 + 9.89487I$
$u = 0.449869 + 1.139450I$ $a = 0.21445 - 2.64882I$ $b = 3.11467 - 0.94727I$	$-5.48770 + 3.96367I$	$10.76886 - 2.87818I$
$u = 0.449869 - 1.139450I$ $a = 0.21445 + 2.64882I$ $b = 3.11467 + 0.94727I$	$-5.48770 - 3.96367I$	$10.76886 + 2.87818I$
$u = 0.266773 + 1.225060I$ $a = -0.003531 - 0.907091I$ $b = 1.110300 - 0.246314I$	$-5.97636 - 1.16209I$	$-5.61582 + 2.62970I$
$u = 0.266773 - 1.225060I$ $a = -0.003531 + 0.907091I$ $b = 1.110300 + 0.246314I$	$-5.97636 + 1.16209I$	$-5.61582 - 2.62970I$
$u = -0.414172 + 1.228500I$ $a = 0.101784 - 0.161129I$ $b = 0.155792 + 0.191778I$	$-1.49433 - 7.63354I$	$-0.31814 + 9.35955I$
$u = -0.414172 - 1.228500I$ $a = 0.101784 + 0.161129I$ $b = 0.155792 - 0.191778I$	$-1.49433 + 7.63354I$	$-0.31814 - 9.35955I$
$u = 0.567130 + 1.180460I$ $a = -0.060020 - 1.393360I$ $b = 1.61076 - 0.86107I$	$-3.92076 + 9.93747I$	$-1.53098 - 7.83108I$
$u = 0.567130 - 1.180460I$ $a = -0.060020 + 1.393360I$ $b = 1.61076 + 0.86107I$	$-3.92076 - 9.93747I$	$-1.53098 + 7.83108I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.208965+0.651390I$ $a=-1.07346+1.02118I$ $b=-0.440872-0.912633I$	$-1.87151-0.68379I$	$11.0014-9.1043I$
$u=-0.208965-0.651390I$ $a=-1.07346-1.02118I$ $b=-0.440872+0.912633I$	$-1.87151+0.68379I$	$11.0014+9.1043I$
$u=\ 0.600134+0.312319I$ $a=\ 2.46111-0.64860I$ $b=\ 1.67957+0.37941I$	$3.08324-5.79734I$	$3.32758+6.29569I$
$u=\ 0.600134-0.312319I$ $a=\ 2.46111+0.64860I$ $b=\ 1.67957-0.37941I$	$3.08324+5.79734I$	$3.32758-6.29569I$
$u=\ 0.090904+0.646995I$ $a=\ 2.03848-1.08648I$ $b=\ 0.88825+1.22012I$	$2.05041+5.51654I$	$-0.04074-4.60744I$
$u=\ 0.090904-0.646995I$ $a=\ 2.03848+1.08648I$ $b=\ 0.88825-1.22012I$	$2.05041-5.51654I$	$-0.04074+4.60744I$
$u=\ 0.594182$ $a=-3.55170$ $b=-2.11036$	-2.48233	16.5870

IV. $I_4^u =$
$\langle a^3u+a^3-a^2u-a^2+b-a-u+1,\ a^4+a^2u-a^2-2au-2a-2u-2,\ u^2+u+1\rangle$

(i) Arc colorings

$$a_3 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_6 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_2 = \begin{pmatrix}1\\-u-1\end{pmatrix}$$
$$a_7 = \begin{pmatrix}u\\u+1\end{pmatrix}$$
$$a_4 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}a\\-a^3u-a^3+a^2u+a^2+a+u-1\end{pmatrix}$$
$$a_8 = \begin{pmatrix}-a^3-a^2u+a+3u+2\\a^3u-a^2u-a^2-au+2u+4\end{pmatrix}$$
$$a_1 = \begin{pmatrix}-u\\-u-1\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-a^3u+a^2u+au+a-u-2\\-2a^3u-2a^3+2a^2u+2a^2+au+2a+2u-2\end{pmatrix}$$
$$a_5 = \begin{pmatrix}2a^3u+2a^3-a^2u-2a^2-2au-2a-4u+1\\3a^3+2a^2u-a^2-3a-7u-6\end{pmatrix}$$
$$a_9 = \begin{pmatrix}a\\-a^3u-a^3+a^2u+a^2-au+u-1\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}-a^3u-a^3+au+2a+u\\-a^3+a^2u-au+a+u+1\end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4u+8$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_3, c_6	$(u^2-u+1)^4$
c_2	$(u^2+u+1)^4$
c_4, c_{12}	$u^8-2u^7-u^6+4u^5+3u^4-6u^3-6u^2+4u+4$
c_5, c_9	$u^8+3u^6-2u^5+7u^4-6u^3+10u^2-4u+4$
c_7, c_8, c_{10} c_{11}	$(u^2+1)^4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_3 c_6	$(y^2+y+1)^4$
c_4, c_{12}	$y^8-6y^7+23y^6-58y^5+93y^4-112y^3+108y^2-64y+16$
c_5, c_9	$y^8+6y^7+23y^6+58y^5+93y^4+112y^3+108y^2+64y+16$
c_7, c_8, c_{10} c_{11}	$(y+1)^8$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.500000+0.866025I$ $a=\ \ 0.250175-1.091290I$ $b=\ \ 0.046027-1.262300I$	$3.28987-2.02988I$	$6.00000+3.46410I$
$u=-0.500000+0.866025I$ $a=-0.789593+0.311148I$ $b=-0.99136+1.33938I$	$3.28987-2.02988I$	$6.00000+3.46410I$
$u=-0.500000+0.866025I$ $a=-1.116200+0.591291I$ $b=\ \ 0.819998+0.762303I$	$3.28987-2.02988I$	$6.00000+3.46410I$
$u=-0.500000+0.866025I$ $a=\ \ 1.65562+0.18885I$ $b=\ \ 0.125335-0.839381I$	$3.28987-2.02988I$	$6.00000+3.46410I$
$u=-0.500000-0.866025I$ $a=\ \ 0.250175+1.091290I$ $b=\ \ 0.046027+1.262300I$	$3.28987+2.02988I$	$6.00000-3.46410I$
$u=-0.500000-0.866025I$ $a=-0.789593-0.311148I$ $b=-0.99136-1.33938I$	$3.28987+2.02988I$	$6.00000-3.46410I$
$u=-0.500000-0.866025I$ $a=-1.116200-0.591291I$ $b=\ \ 0.819998-0.762303I$	$3.28987+2.02988I$	$6.00000-3.46410I$
$u=-0.500000-0.866025I$ $a=\ \ 1.65562-0.18885I$ $b=\ \ 0.125335+0.839381I$	$3.28987+2.02988I$	$6.00000-3.46410I$

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^2-u+1)^4)(u^{27}-15u^{26}+\cdots-7u+1)$ $\cdot((u^{49}+25u^{48}+\cdots-3u-1)^2)(u^{73}+38u^{72}+\cdots-23u-4)$
c_2	$((u^2+u+1)^4)(u^{27}-3u^{26}+\cdots+5u-1)(u^{49}+3u^{48}+\cdots-3u-1)^2$ $\cdot(u^{73}-10u^{72}+\cdots+17u-2)$
c_3	$((u^2-u+1)^4)(u^{27}+3u^{26}+\cdots+u-5)(u^{49}-3u^{48}+\cdots+39u-17)^2$ $\cdot(u^{73}+10u^{72}+\cdots-130207u-16754)$
c_4, c_{12}	$(u^8-2u^7-u^6+4u^5+3u^4-6u^3-6u^2+4u+4)$ $\cdot(u^{27}-2u^{26}+\cdots-u+1)(u^{73}+2u^{72}+\cdots+u+1)$ $\cdot(u^{98}+u^{97}+\cdots+26u^2+4)$
c_5, c_9	$(u^8+3u^6+\cdots-4u+4)(u^{27}-4u^{25}+\cdots+u-1)$ $\cdot(u^{73}+7u^{71}+\cdots+19u+7)(u^{98}+u^{97}+\cdots+12856u+4796)$
c_6	$((u^2-u+1)^4)(u^{27}+3u^{26}+\cdots+5u+1)(u^{49}+3u^{48}+\cdots-3u-1)^2$ $\cdot(u^{73}-10u^{72}+\cdots+17u-2)$
c_7, c_{10}	$((u^2+1)^4)(u^{27}-3u^{26}+\cdots-2u-1)(u^{73}-3u^{72}+\cdots-6u+1)$ $\cdot(u^{98}-15u^{97}+\cdots-38u+1)$
c_8	$((u^2+1)^4)(u^{27}-14u^{26}+\cdots+31u-5)(u^{49}+15u^{48}+\cdots+41u+3)^2$ $\cdot(u^{73}-17u^{72}+\cdots-4311u+160)$
c_{11}	$((u^2+1)^4)(u^{27}+14u^{26}+\cdots+31u+5)(u^{49}+15u^{48}+\cdots+41u+3)^2$ $\cdot(u^{73}-17u^{72}+\cdots-4311u+160)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y^2+y+1)^4)(y^{27}-y^{26}+\cdots+17y-1)(y^{49}+y^{48}+\cdots+21y-1)^2$ $\cdot(y^{73}-2y^{72}+\cdots+241y-16)$
c_2, c_6	$((y^2+y+1)^4)(y^{27}+15y^{26}+\cdots-7y-1)$ $\cdot((y^{49}+25y^{48}+\cdots-3y-1)^2)(y^{73}+38y^{72}+\cdots-23y-4)$
c_3	$((y^2+y+1)^4)(y^{27}-11y^{26}+\cdots-289y-25)$ $\cdot(y^{49}-23y^{48}+\cdots-12963y-289)^2$ $\cdot(y^{73}-36y^{72}+\cdots-3279540855y-280696516)$
c_4, c_{12}	$(y^8-6y^7+23y^6-58y^5+93y^4-112y^3+108y^2-64y+16)$ $\cdot(y^{27}+4y^{26}+\cdots+15y-1)(y^{73}-54y^{72}+\cdots+127y-1)$ $\cdot(y^{98}+9y^{97}+\cdots+208y+16)$
c_5, c_9	$(y^8+6y^7+23y^6+58y^5+93y^4+112y^3+108y^2+64y+16)$ $\cdot(y^{27}-8y^{26}+\cdots+7y-1)(y^{73}+14y^{72}+\cdots-1389y-49)$ $\cdot(y^{98}+y^{97}+\cdots+1102689744y+23001616)$
c_7, c_{10}	$((y+1)^8)(y^{27}-25y^{26}+\cdots+4y-1)(y^{73}+21y^{72}+\cdots-48y-1)$ $\cdot(y^{98}-37y^{97}+\cdots-84y+1)$
c_8, c_{11}	$((y+1)^8)(y^{27}+10y^{26}+\cdots-609y-25)$ $\cdot(y^{49}+31y^{48}+\cdots-185y-9)^2$ $\cdot(y^{73}+37y^{72}+\cdots+996881y-25600)$