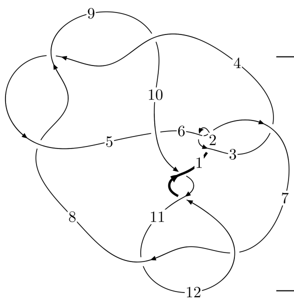
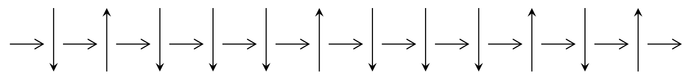
$12a_{0218}$ ($K12a_{0218}$)



A knot diagram[1]

Linearized knot diagam



3 6 7 9 10 2 12 5 4 1 8 11

Solving Sequence

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

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

$$I_1^u = \langle 1.83761 \times 10^{47} u^{83} + 6.75612 \times 10^{47} u^{82} + \cdots + 1.51134 \times 10^{48} b - 6.34548 \times 10^{47},$$
$$7.37805 \times 10^{46} u^{83} + 2.42262 \times 10^{47} u^{82} + \cdots + 7.55672 \times 10^{47} a + 6.02649 \times 10^{48},\ u^{84} + 4u^{83} + \cdots + 96u +$$
$$I_2^u = \langle 4b + 2a - u + 2,\ 2a^2 - 2au + 5,\ u^2 + 2 \rangle$$
$$I_3^u = \langle -12751 a^4 u^2 - 3476 a^3 u^2 + \cdots + 134987 a - 145138,$$
$$2a^4u^2 + a^5 - 2a^3u^2 + 2a^4 + 3a^3u + 4a^2u^2 + a^3 + 2a^2u + 5u^2a - 4a^2 - 2au - 3u^2 + 9a + 5u - 7,$$
$$u^3 - u^2 + 2u - 1 \rangle$$
$$I_4^u = \langle au + 9b + 4a + u + 4,\ 2a^2 + au - 3u + 5,\ u^2 + 2 \rangle$$

$$I_1^v = \langle a,\ b - v - 1,\ v^2 + v + 1 \rangle$$
$$I_2^v = \langle a,\ b^2 - b + 1,\ v - 1 \rangle$$

* 6 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 111 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. $\boldsymbol{I_1^u =}$
$\boldsymbol{\langle 1.84\times10^{47}u^{83}+6.76\times10^{47}u^{82}+\cdots+1.51\times10^{48}b-6.35\times10^{47},\ 7.38\times10^{46}u^{83}+ 2.42\times10^{47}u^{82}+\cdots+7.56\times10^{47}a+6.03\times10^{48},\ u^{84}+4u^{83}+\cdots+96u+16\rangle}$

(i) Arc colorings

$$a_5 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_8 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_9 = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_4 = \begin{pmatrix}u\\u^3+u\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}u^2+1\\u^4+2u^2\end{pmatrix}$$
$$a_6 = \begin{pmatrix}-u^5-2u^3-u\\-u^7-3u^5-2u^3+u\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}-0.0976356u^{83}-0.320592u^{82}+\cdots-30.0041u-7.97502\\-0.121588u^{83}-0.447027u^{82}+\cdots-3.28280u+0.419857\end{pmatrix}$$
$$a_7 = \begin{pmatrix}0.198396u^{83}+0.413274u^{82}+\cdots+2.76813u+0.709068\\0.112403u^{83}+0.314145u^{82}+\cdots-2.45717u-1.02935\end{pmatrix}$$
$$a_3 = \begin{pmatrix}0.405056u^{83}+1.56056u^{82}+\cdots+59.3006u+12.8650\\0.138509u^{83}+0.543278u^{82}+\cdots+26.3533u+5.30097\end{pmatrix}$$
$$a_2 = \begin{pmatrix}0.411073u^{83}+1.58363u^{82}+\cdots+39.6138u+7.75297\\0.123419u^{83}+0.481396u^{82}+\cdots+31.0917u+6.38943\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-0.219223u^{83}-0.767619u^{82}+\cdots-33.2869u-7.55516\\-0.121588u^{83}-0.447027u^{82}+\cdots-3.28280u+0.419857\end{pmatrix}$$
$$a_1 = \begin{pmatrix}0.325649u^{83}+1.35250u^{82}+\cdots+47.3100u+8.96150\\0.0405219u^{83}+0.178471u^{82}+\cdots+36.9975u+8.48326\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -1.25888u^{83}-3.47330u^{82}+\cdots-45.0684u-15.7517$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{84} + 43u^{83} + \cdots + 80u + 9$
c_2, c_6	$u^{84} - 3u^{83} + \cdots - 8u + 3$
c_3	$u^{84} + 3u^{83} + \cdots + 44270u + 12039$
c_4, c_8, c_9	$u^{84} - 4u^{83} + \cdots - 96u + 16$
c_5	$u^{84} + 4u^{83} + \cdots + 192992u + 185296$
c_7, c_{11}	$u^{84} + 3u^{83} + \cdots - 22u + 3$
c_{10}, c_{12}	$u^{84} - 27u^{83} + \cdots - 80u + 9$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{84} + 3y^{83} + \cdots + 1988y + 81$
c_2, c_6	$y^{84} + 43y^{83} + \cdots + 80y + 9$
c_3	$y^{84} - 37y^{83} + \cdots + 1982120948y + 144937521$
c_4, c_8, c_9	$y^{84} + 76y^{83} + \cdots + 9728y^2 + 256$
c_5	$y^{84} - 4y^{83} + \cdots + 562686205952y + 34334607616$
c_7, c_{11}	$y^{84} + 27y^{83} + \cdots + 80y + 9$
c_{10}, c_{12}	$y^{84} + 67y^{83} + \cdots + 35684y + 81$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.350754 + 0.942596I$ $a = 0.642858 - 0.879615I$ $b = 0.771585 + 0.815019I$	$-2.14146 - 2.52752I$	0
$u = 0.350754 - 0.942596I$ $a = 0.642858 + 0.879615I$ $b = 0.771585 - 0.815019I$	$-2.14146 + 2.52752I$	0
$u = 0.540304 + 0.822649I$ $a = -0.042257 + 0.688019I$ $b = 0.755822 - 0.974029I$	$-4.62886 + 7.84102I$	0
$u = 0.540304 - 0.822649I$ $a = -0.042257 - 0.688019I$ $b = 0.755822 + 0.974029I$	$-4.62886 - 7.84102I$	0
$u = -0.495294 + 0.887879I$ $a = 0.473834 + 0.922359I$ $b = 0.821705 - 0.771878I$	$-5.25459 - 1.93039I$	0
$u = -0.495294 - 0.887879I$ $a = 0.473834 - 0.922359I$ $b = 0.821705 + 0.771878I$	$-5.25459 + 1.93039I$	0
$u = -0.408826 + 0.824363I$ $a = 0.073344 - 0.595451I$ $b = 0.731673 + 0.929862I$	$-1.78240 - 3.16007I$	0
$u = -0.408826 - 0.824363I$ $a = 0.073344 + 0.595451I$ $b = 0.731673 - 0.929862I$	$-1.78240 + 3.16007I$	0
$u = 0.449775 + 0.998287I$ $a = -0.107414 + 0.446418I$ $b = 0.793035 - 0.902515I$	$-5.77493 - 0.50478I$	0
$u = 0.449775 - 0.998287I$ $a = -0.107414 - 0.446418I$ $b = 0.793035 + 0.902515I$	$-5.77493 + 0.50478I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.826469 + 0.301584I$ $a = -1.43413 + 1.02708I$ $b = -0.752423 - 1.020840I$	$-6.29688 - 12.60120I$	$-7.95324 + 9.37514I$
$u = 0.826469 - 0.301584I$ $a = -1.43413 - 1.02708I$ $b = -0.752423 + 1.020840I$	$-6.29688 + 12.60120I$	$-7.95324 - 9.37514I$
$u = -0.829199 + 0.256834I$ $a = -0.196573 - 0.451034I$ $b = -0.858127 - 0.711648I$	$-7.24866 + 6.60173I$	$-9.74629 - 4.48762I$
$u = -0.829199 - 0.256834I$ $a = -0.196573 + 0.451034I$ $b = -0.858127 + 0.711648I$	$-7.24866 - 6.60173I$	$-9.74629 + 4.48762I$
$u = 0.834377 + 0.184117I$ $a = -1.35063 + 0.57913I$ $b = -0.779630 - 0.965446I$	$-8.29808 - 4.07556I$	$-10.87765 + 3.19682I$
$u = 0.834377 - 0.184117I$ $a = -1.35063 - 0.57913I$ $b = -0.779630 + 0.965446I$	$-8.29808 + 4.07556I$	$-10.87765 - 3.19682I$
$u = -0.839410 + 0.127426I$ $a = -0.581311 - 0.311001I$ $b = -0.839261 - 0.795078I$	$-8.82615 - 1.96225I$	$-11.76893 + 2.26917I$
$u = -0.839410 - 0.127426I$ $a = -0.581311 + 0.311001I$ $b = -0.839261 + 0.795078I$	$-8.82615 + 1.96225I$	$-11.76893 - 2.26917I$
$u = -0.433217 + 1.076530I$ $a = 0.663567 + 1.117850I$ $b = 0.814296 - 0.862710I$	$-5.90386 + 6.51028I$	0
$u = -0.433217 - 1.076530I$ $a = 0.663567 - 1.117850I$ $b = 0.814296 + 0.862710I$	$-5.90386 - 6.51028I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.783250 + 0.264115I$ $a = -1.60999 - 0.87791I$ $b = -0.739512 + 0.994581I$	$-3.62130 + 7.46949I$	$-5.36276 - 6.04622I$
$u = -0.783250 - 0.264115I$ $a = -1.60999 + 0.87791I$ $b = -0.739512 - 0.994581I$	$-3.62130 - 7.46949I$	$-5.36276 + 6.04622I$
$u = 0.068050 + 1.173920I$ $a = 0.11077 - 2.34272I$ $b = -0.412731 + 1.054140I$	$2.11004 + 4.12289I$	0
$u = 0.068050 - 1.173920I$ $a = 0.11077 + 2.34272I$ $b = -0.412731 - 1.054140I$	$2.11004 - 4.12289I$	0
$u = -0.239259 + 1.168840I$ $a = 0.380988 - 0.383419I$ $b = -0.714493 + 0.091333I$	$-0.762339 - 0.275947I$	0
$u = -0.239259 - 1.168840I$ $a = 0.380988 + 0.383419I$ $b = -0.714493 - 0.091333I$	$-0.762339 + 0.275947I$	0
$u = 0.777544 + 0.209804I$ $a = -0.362630 + 0.599070I$ $b = -0.815410 + 0.732335I$	$-4.42446 - 1.63033I$	$-7.06387 + 0.91981I$
$u = 0.777544 - 0.209804I$ $a = -0.362630 - 0.599070I$ $b = -0.815410 - 0.732335I$	$-4.42446 + 1.63033I$	$-7.06387 - 0.91981I$
$u = -0.168003 + 1.255030I$ $a = -0.019540 + 0.607170I$ $b = 0.711034 + 0.763554I$	$2.47373 - 2.56298I$	0
$u = -0.168003 - 1.255030I$ $a = -0.019540 - 0.607170I$ $b = 0.711034 - 0.763554I$	$2.47373 + 2.56298I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.713006+0.095615I$ $a=\ 0.334802+0.120967I$ $b=\ 0.722210-0.106046I$	$-3.96162+3.79092I$	$-11.61122-4.56726I$
$u=-0.713006-0.095615I$ $a=\ 0.334802-0.120967I$ $b=\ 0.722210+0.106046I$	$-3.96162-3.79092I$	$-11.61122+4.56726I$
$u=\ 0.668399+0.237900I$ $a=\ 0.67448-1.39382I$ $b=\ 0.213868+1.083920I$	$-0.04595-6.79511I$	$-4.41057+8.39005I$
$u=\ 0.668399-0.237900I$ $a=\ 0.67448+1.39382I$ $b=\ 0.213868-1.083920I$	$-0.04595+6.79511I$	$-4.41057-8.39005I$
$u=-0.288293+1.320130I$ $a=\ 0.367736-0.623675I$ $b=-0.776388+0.237242I$	$0.47634+7.41480I$	0
$u=-0.288293-1.320130I$ $a=\ 0.367736+0.623675I$ $b=-0.776388-0.237242I$	$0.47634-7.41480I$	0
$u=-0.576067+0.282806I$ $a=\ 0.82703+1.32861I$ $b=\ 0.165831-1.001990I$	$2.06976+2.29339I$	$-0.00881-4.82687I$
$u=-0.576067-0.282806I$ $a=\ 0.82703-1.32861I$ $b=\ 0.165831+1.001990I$	$2.06976-2.29339I$	$-0.00881+4.82687I$
$u=-0.132078+1.355200I$ $a=\ 0.22554+2.00262I$ $b=-0.514621-1.021830I$	$5.19651-1.43194I$	0
$u=-0.132078-1.355200I$ $a=\ 0.22554-2.00262I$ $b=-0.514621+1.021830I$	$5.19651+1.43194I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.247258 + 1.348180I$ $a = 1.55578 + 1.82417I$ $b = 0.698833 - 0.975302I$	$3.79061 + 8.31615I$	0
$u = -0.247258 - 1.348180I$ $a = 1.55578 - 1.82417I$ $b = 0.698833 + 0.975302I$	$3.79061 - 8.31615I$	0
$u = -0.362756 + 1.332060I$ $a = -0.581243 + 0.024357I$ $b = 0.851771 + 0.728928I$	$-4.25572 + 2.35314I$	0
$u = -0.362756 - 1.332060I$ $a = -0.581243 - 0.024357I$ $b = 0.851771 - 0.728928I$	$-4.25572 - 2.35314I$	0
$u = 0.038709 + 1.381560I$ $a = -0.681056 + 0.333747I$ $b = -0.200806 - 0.178820I$	$4.96495 - 2.19922I$	0
$u = 0.038709 - 1.381560I$ $a = -0.681056 - 0.333747I$ $b = -0.200806 + 0.178820I$	$4.96495 + 2.19922I$	0
$u = -0.600064 + 0.128543I$ $a = -2.60142 + 0.17153I$ $b = -0.673393 + 0.902935I$	$-0.89912 + 5.19420I$	$-7.11874 - 7.76852I$
$u = -0.600064 - 0.128543I$ $a = -2.60142 - 0.17153I$ $b = -0.673393 - 0.902935I$	$-0.89912 - 5.19420I$	$-7.11874 + 7.76852I$
$u = -0.454019 + 0.410951I$ $a = 1.32194 + 1.40913I$ $b = -0.032813 - 0.909390I$	$2.60505 + 0.90512I$	$2.28754 - 4.05492I$
$u = -0.454019 - 0.410951I$ $a = 1.32194 - 1.40913I$ $b = -0.032813 + 0.909390I$	$2.60505 - 0.90512I$	$2.28754 + 4.05492I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.23621+1.39451I$ $a=-0.71816-2.47299I$ $b=-0.144636+1.099660I$	$7.38356+5.30799I$	0
$u=-0.23621-1.39451I$ $a=-0.71816+2.47299I$ $b=-0.144636-1.099660I$	$7.38356-5.30799I$	0
$u=\ \ 0.35405+1.37132I$ $a=\ \ 1.00055-1.87993I$ $b=\ \ 0.757561+1.008790I$	$-3.39478-8.35215I$	0
$u=\ \ 0.35405-1.37132I$ $a=\ \ 1.00055+1.87993I$ $b=\ \ 0.757561-1.008790I$	$-3.39478+8.35215I$	0
$u=\ \ 0.27368+1.39259I$ $a=-0.67813+2.52469I$ $b=-0.157124-1.142510I$	$5.14150-10.24960I$	0
$u=\ \ 0.27368-1.39259I$ $a=-0.67813-2.52469I$ $b=-0.157124+1.142510I$	$5.14150+10.24960I$	0
$u=\ \ 0.354969+0.458153I$ $a=\ \ 1.89488-1.64861I$ $b=-0.181249+0.882030I$	$1.20125+3.56606I$	$0.00892-1.69990I$
$u=\ \ 0.354969-0.458153I$ $a=\ \ 1.89488+1.64861I$ $b=-0.181249-0.882030I$	$1.20125-3.56606I$	$0.00892+1.69990I$
$u=\ \ 0.31969+1.38632I$ $a=-0.720461-0.134519I$ $b=\ \ 0.839786-0.673215I$	$0.63547-5.59776I$	0
$u=\ \ 0.31969-1.38632I$ $a=-0.720461+0.134519I$ $b=\ \ 0.839786+0.673215I$	$0.63547+5.59776I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.16228+1.42710I$ $a=-0.95852-2.33237I$ $b=-0.069061+0.988963I$	$8.46071+3.17427I$	0
$u=-0.16228-1.42710I$ $a=-0.95852+2.33237I$ $b=-0.069061-0.988963I$	$8.46071-3.17427I$	0
$u=\ \ 0.07272+1.44133I$ $a=-0.081833+1.365030I$ $b=-0.512649-0.683277I$	$4.65094-2.50593I$	0
$u=\ \ 0.07272-1.44133I$ $a=-0.081833-1.365030I$ $b=-0.512649+0.683277I$	$4.65094+2.50593I$	0
$u=\ \ 0.13184+1.43845I$ $a=-1.17422+2.21897I$ $b=-0.018498-0.919588I$	$7.23839+1.71145I$	0
$u=\ \ 0.13184-1.43845I$ $a=-1.17422-2.21897I$ $b=-0.018498+0.919588I$	$7.23839-1.71145I$	0
$u=-0.31835+1.41515I$ $a=\ \ 1.08570+2.10712I$ $b=\ \ 0.728768-1.031050I$	$1.72641+11.46270I$	0
$u=-0.31835-1.41515I$ $a=\ \ 1.08570-2.10712I$ $b=\ \ 0.728768+1.031050I$	$1.72641-11.46270I$	0
$u=-0.34234+1.41472I$ $a=-0.781229+0.066281I$ $b=\ \ 0.870421+0.660227I$	$-1.93901+10.83450I$	0
$u=-0.34234-1.41472I$ $a=-0.781229-0.066281I$ $b=\ \ 0.870421-0.660227I$	$-1.93901-10.83450I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.07678 + 1.47131I$ $a = 0.25274 + 1.75932I$ $b = -0.604385 - 0.938277I$	$5.41135 - 2.06230I$	0
$u = -0.07678 - 1.47131I$ $a = 0.25274 - 1.75932I$ $b = -0.604385 + 0.938277I$	$5.41135 + 2.06230I$	0
$u = 0.33452 + 1.43819I$ $a = 0.97375 - 2.16552I$ $b = 0.735962 + 1.048690I$	$-0.7474 - 16.8065I$	0
$u = 0.33452 - 1.43819I$ $a = 0.97375 + 2.16552I$ $b = 0.735962 - 1.048690I$	$-0.7474 + 16.8065I$	0
$u = 0.409816 + 0.325133I$ $a = 0.638033 - 0.588897I$ $b = 0.475752 + 0.559238I$	$-1.05079 - 0.99662I$	$-8.88984 + 5.17874I$
$u = 0.409816 - 0.325133I$ $a = 0.638033 + 0.588897I$ $b = 0.475752 - 0.559238I$	$-1.05079 + 0.99662I$	$-8.88984 - 5.17874I$
$u = 0.226772 + 0.416872I$ $a = 1.164160 + 0.133562I$ $b = -0.317397 + 0.274980I$	$-0.50948 - 1.44830I$	$-5.05239 + 5.14744I$
$u = 0.226772 - 0.416872I$ $a = 1.164160 - 0.133562I$ $b = -0.317397 - 0.274980I$	$-0.50948 + 1.44830I$	$-5.05239 - 5.14744I$
$u = -0.02923 + 1.54028I$ $a = 0.29040 - 1.47834I$ $b = -0.696662 + 0.798330I$	$2.96237 - 0.76259I$	0
$u = -0.02923 - 1.54028I$ $a = 0.29040 + 1.47834I$ $b = -0.696662 - 0.798330I$	$2.96237 + 0.76259I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.367236 + 0.275592I$ $a = \;\; 0.364861 - 0.926737I$ $b = \;\; 0.540306 + 0.956806I$	$0.03876 - 3.21058I$	$-4.83770 - 1.13154I$
$u = -0.367236 - 0.275592I$ $a = \;\; 0.364861 + 0.926737I$ $b = \;\; 0.540306 - 0.956806I$	$0.03876 + 3.21058I$	$-4.83770 + 1.13154I$
$u = \;\; 0.06999 + 1.54596I$ $a = \;\; 0.36301 - 1.66914I$ $b = -0.688951 + 0.926678I$	$3.36051 + 6.09970I$	0
$u = \;\; 0.06999 - 1.54596I$ $a = \;\; 0.36301 + 1.66914I$ $b = -0.688951 - 0.926678I$	$3.36051 - 6.09970I$	0

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4a - 2u$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.414210I$ $a = -1.024940I$ $b = -0.500000 + 0.866025I$	$4.93480 + 4.05977I$	$-6.92820I$
$u = 1.414210I$ $a = 2.43916I$ $b = -0.500000 - 0.866025I$	$4.93480 - 4.05977I$	$6.92820I$
$u = -1.414210I$ $a = 1.024940I$ $b = -0.500000 - 0.866025I$	$4.93480 - 4.05977I$	$6.92820I$
$u = -1.414210I$ $a = -2.43916I$ $b = -0.500000 + 0.866025I$	$4.93480 + 4.05977I$	$-6.92820I$

III. $\boldsymbol{I^u_3 = \langle -1.28 \times 10^4 a^4u^2 - 3476a^3u^2 + \cdots + 1.35 \times 10^5 a - 1.45 \times 10^5,\ 2a^4u^2 - 2a^3u^2 + \cdots + 9a - 7,\ u^3 - u^2 + 2u - 1\rangle}$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} u \\ u^2 - u + 1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u^2 + 1 \\ u^2 - u + 1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} a \\ 0.0814401a^4u^2 + 0.0222011a^3u^2 + \cdots - 0.862157a + 0.926991 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0.0462799a^4u^2 + 0.214908a^3u^2 + \cdots - 0.0906182a + 0.639309 \\ -0.156046a^4u^2 - 0.152054a^3u^2 + \cdots + 0.525174a - 0.606940 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 0.0814401a^4u^2 + 0.0222011a^3u^2 + \cdots + 0.137843a + 0.926991 \\ 0.0814401a^4u^2 + 0.0222011a^3u^2 + \cdots - 0.862157a + 0.926991 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} a \\ 0.0814401a^4u^2 + 0.0222011a^3u^2 + \cdots - 0.862157a + 0.926991 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0.0814401a^4u^2 + 0.0222011a^3u^2 + \cdots + 0.137843a + 0.926991 \\ 0.0814401a^4u^2 + 0.0222011a^3u^2 + \cdots - 0.862157a + 0.926991 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 0.100799a^4u^2 + 0.139817a^3u^2 + \cdots + 0.601377a + 0.480325 \\ 0.0848572a^4u^2 + 0.182661a^3u^2 + \cdots - 0.604583a + 0.979083 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^2 + 4u - 10$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{15} + 6u^{14} + \cdots + 2u - 1$
c_2, c_6, c_7 c_{11}	$u^{15} + 3u^{13} + \cdots - u^2 + 1$
c_3	$u^{15} + 3u^{13} + \cdots + 12u + 5$
c_4, c_8, c_9	$(u^3 + u^2 + 2u + 1)^5$
c_5	$(u^3 - u^2 + 1)^5$
c_{10}, c_{12}	$u^{15} - 6u^{14} + \cdots + 2u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{10}, c_{12}	$y^{15} + 6y^{14} + \cdots + 10y - 1$
c_2, c_6, c_7 c_{11}	$y^{15} + 6y^{14} + \cdots + 2y - 1$
c_3	$y^{15} + 6y^{14} + \cdots + 214y - 25$
c_4, c_8, c_9	$(y^3 + 3y^2 + 2y - 1)^5$
c_5	$(y^3 - y^2 + 2y - 1)^5$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.215080 + 1.307140I$ $a = -0.408569 - 0.516978I$ $b = 0.736794 - 0.720585I$	$3.02413 - 2.82812I$	$-2.49024 + 2.97945I$
$u = 0.215080 + 1.307140I$ $a = 0.232241 + 0.578143I$ $b = -0.683915 - 0.233449I$	$3.02413 - 2.82812I$	$-2.49024 + 2.97945I$
$u = 0.215080 + 1.307140I$ $a = 0.33425 - 2.10096I$ $b = -0.502216 + 1.085210I$	$3.02413 - 2.82812I$	$-2.49024 + 2.97945I$
$u = 0.215080 + 1.307140I$ $a = 1.72552 - 1.49654I$ $b = 0.692676 + 0.944809I$	$3.02413 - 2.82812I$	$-2.49024 + 2.97945I$
$u = 0.215080 + 1.307140I$ $a = -0.55873 + 2.41178I$ $b = -0.243339 - 1.075990I$	$3.02413 - 2.82812I$	$-2.49024 + 2.97945I$
$u = 0.215080 - 1.307140I$ $a = -0.408569 + 0.516978I$ $b = 0.736794 + 0.720585I$	$3.02413 + 2.82812I$	$-2.49024 - 2.97945I$
$u = 0.215080 - 1.307140I$ $a = 0.232241 - 0.578143I$ $b = -0.683915 + 0.233449I$	$3.02413 + 2.82812I$	$-2.49024 - 2.97945I$
$u = 0.215080 - 1.307140I$ $a = 0.33425 + 2.10096I$ $b = -0.502216 - 1.085210I$	$3.02413 + 2.82812I$	$-2.49024 - 2.97945I$
$u = 0.215080 - 1.307140I$ $a = 1.72552 + 1.49654I$ $b = 0.692676 - 0.944809I$	$3.02413 + 2.82812I$	$-2.49024 - 2.97945I$
$u = 0.215080 - 1.307140I$ $a = -0.55873 - 2.41178I$ $b = -0.243339 + 1.075990I$	$3.02413 + 2.82812I$	$-2.49024 - 2.97945I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.569840$ $a = 0.486937 + 1.149840I$ $b = 0.395722 - 1.025370I$	-1.11345	-9.01950
$u = 0.569840$ $a = 0.486937 - 1.149840I$ $b = 0.395722 + 1.025370I$	-1.11345	-9.01950
$u = 0.569840$ $a = 0.528223$ $b = 0.544964$	-1.11345	-9.01950
$u = 0.569840$ $a = -2.07577 + 1.38334I$ $b = -0.668204 + 0.836779I$	-1.11345	-9.01950
$u = 0.569840$ $a = -2.07577 - 1.38334I$ $b = -0.668204 - 0.836779I$	-1.11345	-9.01950

IV. $I_4^u = \langle au + 9b + 4a + u + 4,\ 2a^2 + au - 3u + 5,\ u^2 + 2 \rangle$

(i) Arc colorings

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

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

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

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

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

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

$$a_{12} = \begin{pmatrix} a \\ -\frac{1}{9}au - \frac{4}{9}a - \frac{1}{9}u - \frac{4}{9} \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -\frac{1}{9}au + \frac{5}{9}a + \frac{7}{18}u - \frac{4}{9} \\ -\frac{1}{9}au - \frac{4}{9}a - \frac{1}{9}u + \frac{5}{9} \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -\frac{1}{9}au + \frac{5}{9}a + \frac{8}{9}u + \frac{5}{9} \\ -\frac{1}{9}au - \frac{4}{9}a - \frac{10}{9}u - \frac{4}{9} \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -\frac{5}{9}au + \frac{7}{9}a + \frac{4}{9}u + \frac{7}{9} \\ \frac{1}{3}au - \frac{2}{3}a - \frac{2}{3}u - \frac{2}{3} \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -\frac{1}{9}au + \frac{5}{9}a - \frac{1}{9}u - \frac{4}{9} \\ -\frac{1}{9}au - \frac{4}{9}a - \frac{1}{9}u - \frac{4}{9} \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -\frac{1}{9}au + \frac{5}{9}a + \frac{7}{18}u - \frac{4}{9} \\ -\frac{1}{9}au - \frac{4}{9}a - \frac{1}{9}u + \frac{5}{9} \end{pmatrix}$$

(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_{11} c_{12}	$(u^2 - u + 1)^2$
c_3, c_6, c_7 c_{10}	$(u^2 + u + 1)^2$
c_4, c_5, c_8 c_9	$(u^2 + 2)^2$

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.414210I$ $a = 0.61237 + 1.37850I$ $b = -0.500000 - 0.866025I$	4.93480	0
$u = 1.414210I$ $a = -0.61237 - 2.08560I$ $b = -0.500000 + 0.866025I$	4.93480	0
$u = -1.414210I$ $a = 0.61237 - 1.37850I$ $b = -0.500000 + 0.866025I$	4.93480	0
$u = -1.414210I$ $a = -0.61237 + 2.08560I$ $b = -0.500000 - 0.866025I$	4.93480	0

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 8v - 2$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$v = -0.500000 + 0.866025I$ $a = 0$ $b = 0.500000 + 0.866025I$	$-4.05977I$	$-6.00000 + 6.92820I$
$v = -0.500000 - 0.866025I$ $a = 0$ $b = 0.500000 - 0.866025I$	$4.05977I$	$-6.00000 - 6.92820I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 0$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

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

VII. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^2-u+1)^6)(u^{15}+6u^{14}+\cdots+2u-1)(u^{84}+43u^{83}+\cdots+80u+9)$
c_2	$((u^2-u+1)^4)(u^2+u+1)^2(u^{15}+3u^{13}+\cdots-u^2+1)$ $\cdot(u^{84}-3u^{83}+\cdots-8u+3)$
c_3	$((u^2-u+1)^2)(u^2+u+1)^4(u^{15}+3u^{13}+\cdots+12u+5)$ $\cdot(u^{84}+3u^{83}+\cdots+44270u+12039)$
c_4, c_8, c_9	$u^4(u^2+2)^4(u^3+u^2+2u+1)^5(u^{84}-4u^{83}+\cdots-96u+16)$
c_5	$u^4(u^2+2)^4(u^3-u^2+1)^5(u^{84}+4u^{83}+\cdots+192992u+185296)$
c_6	$((u^2-u+1)^2)(u^2+u+1)^4(u^{15}+3u^{13}+\cdots-u^2+1)$ $\cdot(u^{84}-3u^{83}+\cdots-8u+3)$
c_7	$((u^2-u+1)^2)(u^2+u+1)^4(u^{15}+3u^{13}+\cdots-u^2+1)$ $\cdot(u^{84}+3u^{83}+\cdots-22u+3)$
c_{10}	$((u^2+u+1)^6)(u^{15}-6u^{14}+\cdots+2u+1)(u^{84}-27u^{83}+\cdots-80u+9)$
c_{11}	$((u^2-u+1)^4)(u^2+u+1)^2(u^{15}+3u^{13}+\cdots-u^2+1)$ $\cdot(u^{84}+3u^{83}+\cdots-22u+3)$
c_{12}	$((u^2-u+1)^6)(u^{15}-6u^{14}+\cdots+2u+1)(u^{84}-27u^{83}+\cdots-80u+9)$

VIII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y^2+y+1)^6)(y^{15}+6y^{14}+\cdots+10y-1)$ $\cdot(y^{84}+3y^{83}+\cdots+1988y+81)$
c_2, c_6	$((y^2+y+1)^6)(y^{15}+6y^{14}+\cdots+2y-1)(y^{84}+43y^{83}+\cdots+80y+9)$
c_3	$((y^2+y+1)^6)(y^{15}+6y^{14}+\cdots+214y-25)$ $\cdot(y^{84}-37y^{83}+\cdots+1982120948y+144937521)$
c_4, c_8, c_9	$y^4(y+2)^8(y^3+3y^2+2y-1)^5(y^{84}+76y^{83}+\cdots+9728y^2+256)$
c_5	$y^4(y+2)^8(y^3-y^2+2y-1)^5$ $\cdot(y^{84}-4y^{83}+\cdots+562686205952y+34334607616)$
c_7, c_{11}	$((y^2+y+1)^6)(y^{15}+6y^{14}+\cdots+2y-1)(y^{84}+27y^{83}+\cdots+80y+9)$
c_{10}, c_{12}	$((y^2+y+1)^6)(y^{15}+6y^{14}+\cdots+10y-1)$ $\cdot(y^{84}+67y^{83}+\cdots+35684y+81)$