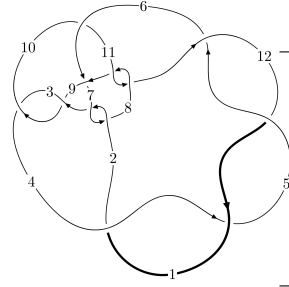
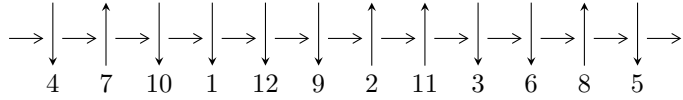


12a₁₀₉₄ (K12a₁₀₉₄)



A knot diagram¹

Linearized knot diagram



Solving Sequence

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

Ideals for irreducible components² of X_{par}

$$I_1^u = \langle 6.83030 \times 10^{106} u^{89} + 1.55405 \times 10^{107} u^{88} + \dots + 6.21904 \times 10^{106} b + 7.24350 \times 10^{106}, \\ 1.29538 \times 10^{107} u^{89} + 3.57847 \times 10^{107} u^{88} + \dots + 6.21904 \times 10^{106} a + 6.18948 \times 10^{106}, u^{90} + 3u^{89} + \dots + 12u \rangle$$

$$I_2^u = \langle u^{22} + 2u^{21} + \dots + b - 1, u^{23} + 2u^{22} + \dots + a - 7, u^{24} + 2u^{23} + \dots + 17u^2 + 1 \rangle$$

$$I_3^u = \langle u^2 + b, a - 1, u^7 + 3u^5 + 2u^3 + u - 1 \rangle$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 121 representations.

¹The 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>).

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

$$\mathbf{I. } I_1^u = \langle 6.83 \times 10^{106} u^{89} + 1.55 \times 10^{107} u^{88} + \dots + 6.22 \times 10^{106} b + 7.24 \times 10^{106}, 1.30 \times 10^{107} u^{89} + 3.58 \times 10^{107} u^{88} + \dots + 6.22 \times 10^{106} a + 6.19 \times 10^{106}, u^{90} + 3u^{89} + \dots + 12u + 1 \rangle$$

(i) Arc colorings

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

$$a_{12} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} -u^3 - 2u \\ u^5 + 3u^3 + u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -2.08292u^{89} - 5.75405u^{88} + \dots - 103.537u - 0.995248 \\ -1.09829u^{89} - 2.49885u^{88} + \dots - 36.1802u - 1.16473 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -2.30239u^{89} - 5.89176u^{88} + \dots - 92.0794u + 0.607952 \\ -0.686489u^{89} - 1.62055u^{88} + \dots - 35.8591u - 1.44130 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -0.0309762u^{89} - 0.977314u^{88} + \dots - 81.9158u - 10.9345 \\ -1.14038u^{89} - 3.23467u^{88} + \dots - 35.2548u - 4.73665 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 3.07250u^{89} + 8.58048u^{88} + \dots + 42.3487u + 8.12578 \\ 0.0736579u^{89} - 0.256335u^{88} + \dots - 40.1867u - 2.49488 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -1.17135u^{89} - 4.21198u^{88} + \dots - 117.171u - 15.6711 \\ -1.14038u^{89} - 3.23467u^{88} + \dots - 35.2548u - 4.73665 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -3.38625u^{89} - 10.3318u^{88} + \dots - 155.927u - 20.4178 \\ -1.23019u^{89} - 3.17312u^{88} + \dots - 10.9793u - 2.96508 \end{pmatrix}$$

(ii) Obstruction class = -1

(iii) Cusp Shapes = $0.162569u^{89} - 3.73818u^{88} + \dots - 145.744u - 28.3707$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4, c_5 c_{12}	$u^{90} - 3u^{89} + \dots - 12u + 1$
c_2, c_7	$u^{90} + u^{89} + \dots - 1472u + 37417$
c_3, c_9	$u^{90} - 6u^{89} + \dots - 13860u + 2776$
c_6	$u^{90} - 5u^{89} + \dots - 305292u + 114001$
c_8, c_{11}	$u^{90} + 5u^{89} + \dots + 7842u + 839$
c_{10}	$u^{90} + u^{89} + \dots + 13461u + 2479$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_5 c_{12}	$y^{90} + 109y^{89} + \dots + 174y + 1$
c_2, c_7	$y^{90} + 65y^{89} + \dots + 22616709052y + 1400031889$
c_3, c_9	$y^{90} - 58y^{89} + \dots - 11659600y + 7706176$
c_6	$y^{90} - 45y^{89} + \dots - 374166877836y + 12996228001$
c_8, c_{11}	$y^{90} + 53y^{89} + \dots + 29423788y + 703921$
c_{10}	$y^{90} - 19y^{89} + \dots - 310592405y + 6145441$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.673798 + 0.745251I$		
$a = 0.59357 - 1.29182I$	$-7.3826 + 13.2885I$	0
$b = 0.71141 + 1.77487I$		
$u = -0.673798 - 0.745251I$		
$a = 0.59357 + 1.29182I$	$-7.3826 - 13.2885I$	0
$b = 0.71141 - 1.77487I$		
$u = -0.318813 + 0.972274I$		
$a = 0.354309 - 0.417115I$	$-1.92726 - 1.07654I$	0
$b = 1.29131 + 0.58699I$		
$u = -0.318813 - 0.972274I$		
$a = 0.354309 + 0.417115I$	$-1.92726 + 1.07654I$	0
$b = 1.29131 - 0.58699I$		
$u = 0.554780 + 0.764528I$		
$a = 0.78623 + 1.29463I$	$-3.13661 - 7.27639I$	0
$b = 0.56005 - 1.47151I$		
$u = 0.554780 - 0.764528I$		
$a = 0.78623 - 1.29463I$	$-3.13661 + 7.27639I$	0
$b = 0.56005 + 1.47151I$		
$u = 0.623759 + 0.627084I$		
$a = -0.507263 - 0.842395I$	$-0.99512 - 2.46332I$	0
$b = -0.275207 + 1.385920I$		
$u = 0.623759 - 0.627084I$		
$a = -0.507263 + 0.842395I$	$-0.99512 + 2.46332I$	0
$b = -0.275207 - 1.385920I$		
$u = -0.842119 + 0.262679I$		
$a = -0.89625 + 1.19447I$	$-8.85310 - 8.28939I$	0
$b = 0.10031 - 1.55471I$		
$u = -0.842119 - 0.262679I$		
$a = -0.89625 - 1.19447I$	$-8.85310 + 8.28939I$	0
$b = 0.10031 + 1.55471I$		

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.333793 + 0.814040I$ $a = 0.333808 - 0.618859I$ $b = -0.397603 + 0.240312I$	$0.82127 - 2.96271I$	0
$u = 0.333793 - 0.814040I$ $a = 0.333808 + 0.618859I$ $b = -0.397603 - 0.240312I$	$0.82127 + 2.96271I$	0
$u = -0.728004 + 0.474895I$ $a = -0.012276 + 1.177780I$ $b = -0.64564 - 1.47165I$	$-2.24160 + 4.56943I$	0
$u = -0.728004 - 0.474895I$ $a = -0.012276 - 1.177780I$ $b = -0.64564 + 1.47165I$	$-2.24160 - 4.56943I$	0
$u = 0.482332 + 1.026280I$ $a = -0.881390 - 0.301898I$ $b = -0.096950 + 1.030020I$	$-1.64550 - 1.00721I$	0
$u = 0.482332 - 1.026280I$ $a = -0.881390 + 0.301898I$ $b = -0.096950 - 1.030020I$	$-1.64550 + 1.00721I$	0
$u = 0.460781 + 0.723596I$ $a = -0.95388 - 1.13852I$ $b = -0.92691 + 1.88015I$	$-2.60445 - 6.80426I$	0
$u = 0.460781 - 0.723596I$ $a = -0.95388 + 1.13852I$ $b = -0.92691 - 1.88015I$	$-2.60445 + 6.80426I$	0
$u = -0.480650 + 0.682439I$ $a = -0.840573 - 1.018620I$ $b = 0.325724 + 0.037139I$	$-3.54498 + 7.46328I$	0
$u = -0.480650 - 0.682439I$ $a = -0.840573 + 1.018620I$ $b = 0.325724 - 0.037139I$	$-3.54498 - 7.46328I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.606401 + 0.536748I$		
$a = 0.633565 + 0.941223I$	$-1.24922 - 1.84743I$	0
$b = 0.759168 - 1.129370I$		
$u = 0.606401 - 0.536748I$		
$a = 0.633565 - 0.941223I$	$-1.24922 + 1.84743I$	0
$b = 0.759168 + 1.129370I$		
$u = -0.435225 + 0.607327I$		
$a = 0.92412 - 1.62359I$	$-7.97752 + 1.18412I$	0
$b = -0.049735 + 1.375830I$		
$u = -0.435225 - 0.607327I$		
$a = 0.92412 + 1.62359I$	$-7.97752 - 1.18412I$	0
$b = -0.049735 - 1.375830I$		
$u = -0.023012 + 0.742460I$		
$a = 0.522236 + 0.983323I$	$2.61458 - 1.00048I$	$4.78491 + 0.I$
$b = -0.261413 - 0.072232I$		
$u = -0.023012 - 0.742460I$		
$a = 0.522236 - 0.983323I$	$2.61458 + 1.00048I$	$4.78491 + 0.I$
$b = -0.261413 + 0.072232I$		
$u = 0.719114 + 0.115823I$		
$a = -0.71219 - 1.64056I$	$-5.06440 + 3.04875I$	$-8.83314 + 0.I$
$b = 0.248123 + 1.314870I$		
$u = 0.719114 - 0.115823I$		
$a = -0.71219 + 1.64056I$	$-5.06440 - 3.04875I$	$-8.83314 + 0.I$
$b = 0.248123 - 1.314870I$		
$u = -0.351277 + 0.637125I$		
$a = -1.35884 + 0.80934I$	$-7.28579 + 3.28442I$	$-10.21600 - 5.71945I$
$b = 0.77567 - 1.76558I$		
$u = -0.351277 - 0.637125I$		
$a = -1.35884 - 0.80934I$	$-7.28579 - 3.28442I$	$-10.21600 + 5.71945I$
$b = 0.77567 + 1.76558I$		

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.322032 + 0.582986I$ $a = -1.10239 + 1.43621I$ $b = -0.74002 - 1.37048I$	$0.31504 + 3.55410I$	$1.14398 - 3.08134I$
$u = -0.322032 - 0.582986I$ $a = -1.10239 - 1.43621I$ $b = -0.74002 + 1.37048I$	$0.31504 - 3.55410I$	$1.14398 + 3.08134I$
$u = 0.297325 + 0.534718I$ $a = -1.36743 + 1.56487I$ $b = 0.130393 - 0.297413I$	$0.640275 - 1.076890I$	$-9.95339 + 7.93804I$
$u = 0.297325 - 0.534718I$ $a = -1.36743 - 1.56487I$ $b = 0.130393 + 0.297413I$	$0.640275 + 1.076890I$	$-9.95339 - 7.93804I$
$u = -0.443413 + 1.318820I$ $a = -0.822661 + 0.037051I$ $b = -0.491648 - 0.873884I$	$-3.97398 - 3.73488I$	0
$u = -0.443413 - 1.318820I$ $a = -0.822661 - 0.037051I$ $b = -0.491648 + 0.873884I$	$-3.97398 + 3.73488I$	0
$u = 0.567850 + 0.053435I$ $a = 0.81195 + 1.80477I$ $b = 0.03229 - 1.65600I$	$-4.48683 + 3.36404I$	$-10.30131 - 3.00530I$
$u = 0.567850 - 0.053435I$ $a = 0.81195 - 1.80477I$ $b = 0.03229 + 1.65600I$	$-4.48683 - 3.36404I$	$-10.30131 + 3.00530I$
$u = -0.526246 + 0.154775I$ $a = -1.323770 - 0.193749I$ $b = 0.488101 + 0.678138I$	$-5.02204 - 3.97750I$	$-8.31267 + 2.01753I$
$u = -0.526246 - 0.154775I$ $a = -1.323770 + 0.193749I$ $b = 0.488101 - 0.678138I$	$-5.02204 + 3.97750I$	$-8.31267 - 2.01753I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.402344 + 0.338151I$ $a = -2.36158 + 1.72500I$ $b = -0.187161 - 0.764440I$	$-8.79879 + 1.84825I$	$-12.51899 - 6.35775I$
$u = -0.402344 - 0.338151I$ $a = -2.36158 - 1.72500I$ $b = -0.187161 + 0.764440I$	$-8.79879 - 1.84825I$	$-12.51899 + 6.35775I$
$u = -0.01524 + 1.48437I$ $a = -0.592770 - 0.554203I$ $b = -0.20835 + 1.83224I$	$0.18449 - 3.18606I$	0
$u = -0.01524 - 1.48437I$ $a = -0.592770 + 0.554203I$ $b = -0.20835 - 1.83224I$	$0.18449 + 3.18606I$	0
$u = -0.06610 + 1.50441I$ $a = -1.169580 - 0.132340I$ $b = -0.820952 - 0.055008I$	$-2.60634 + 3.24365I$	0
$u = -0.06610 - 1.50441I$ $a = -1.169580 + 0.132340I$ $b = -0.820952 + 0.055008I$	$-2.60634 - 3.24365I$	0
$u = 0.00019 + 1.50839I$ $a = 0.581366 + 0.107821I$ $b = 1.44483 - 2.50624I$	$0.80445 + 3.49717I$	0
$u = 0.00019 - 1.50839I$ $a = 0.581366 - 0.107821I$ $b = 1.44483 + 2.50624I$	$0.80445 - 3.49717I$	0
$u = -0.265297 + 0.365508I$ $a = 2.51098 - 1.84482I$ $b = 1.37513 + 0.76253I$	$-8.21913 - 0.94003I$	$-11.00888 - 5.54594I$
$u = -0.265297 - 0.365508I$ $a = 2.51098 + 1.84482I$ $b = 1.37513 - 0.76253I$	$-8.21913 + 0.94003I$	$-11.00888 + 5.54594I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.24051 + 1.54504I$ $a = -0.583822 + 0.503825I$ $b = -1.48518 - 1.54173I$	$4.44630 + 8.10930I$	0
$u = -0.24051 - 1.54504I$ $a = -0.583822 - 0.503825I$ $b = -1.48518 + 1.54173I$	$4.44630 - 8.10930I$	0
$u = 0.08098 + 1.57003I$ $a = -0.387253 + 0.899408I$ $b = 0.101032 - 0.825020I$	$7.88603 - 2.42265I$	0
$u = 0.08098 - 1.57003I$ $a = -0.387253 - 0.899408I$ $b = 0.101032 + 0.825020I$	$7.88603 + 2.42265I$	0
$u = 0.16159 + 1.56673I$ $a = 0.718608 + 0.293346I$ $b = 1.56681 - 0.88922I$	$5.85288 - 4.55236I$	0
$u = 0.16159 - 1.56673I$ $a = 0.718608 - 0.293346I$ $b = 1.56681 + 0.88922I$	$5.85288 + 4.55236I$	0
$u = 0.210687 + 0.367812I$ $a = 0.646563 + 0.374831I$ $b = 0.449259 + 0.341921I$	$-0.368069 - 0.991598I$	$-6.64400 + 6.37236I$
$u = 0.210687 - 0.367812I$ $a = 0.646563 - 0.374831I$ $b = 0.449259 - 0.341921I$	$-0.368069 + 0.991598I$	$-6.64400 - 6.37236I$
$u = -0.12311 + 1.57609I$ $a = 0.667344 - 0.560210I$ $b = 0.16269 + 1.64359I$	$-0.57357 + 3.21569I$	0
$u = -0.12311 - 1.57609I$ $a = 0.667344 + 0.560210I$ $b = 0.16269 - 1.64359I$	$-0.57357 - 3.21569I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.249981 + 0.334709I$ $a = 1.86702 - 0.71053I$ $b = 0.017814 + 0.949455I$	$-0.345879 - 1.288130I$	$-1.87491 + 4.22491I$
$u = -0.249981 - 0.334709I$ $a = 1.86702 + 0.71053I$ $b = 0.017814 - 0.949455I$	$-0.345879 + 1.288130I$	$-1.87491 - 4.22491I$
$u = -0.08703 + 1.58029I$ $a = -0.773840 + 0.437793I$ $b = -1.35053 - 1.57805I$	$7.74176 + 5.01802I$	0
$u = -0.08703 - 1.58029I$ $a = -0.773840 - 0.437793I$ $b = -1.35053 + 1.57805I$	$7.74176 - 5.01802I$	0
$u = -0.04716 + 1.58637I$ $a = 0.608497 - 0.272983I$ $b = 1.24121 + 1.11096I$	$6.69652 - 0.75939I$	0
$u = -0.04716 - 1.58637I$ $a = 0.608497 + 0.272983I$ $b = 1.24121 - 1.11096I$	$6.69652 + 0.75939I$	0
$u = -0.15493 + 1.58734I$ $a = 0.394991 + 0.485905I$ $b = 0.0701063 - 0.0944584I$	$5.86795 + 2.66890I$	0
$u = -0.15493 - 1.58734I$ $a = 0.394991 - 0.485905I$ $b = 0.0701063 + 0.0944584I$	$5.86795 - 2.66890I$	0
$u = -0.10045 + 1.59407I$ $a = -0.616669 + 0.144873I$ $b = 0.36074 - 2.32559I$	$0.36466 + 4.95042I$	0
$u = -0.10045 - 1.59407I$ $a = -0.616669 - 0.144873I$ $b = 0.36074 + 2.32559I$	$0.36466 - 4.95042I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.14035 + 1.59728I$		
$a = -0.207246 - 0.795941I$	$4.17834 + 9.77145I$	0
$b = 0.384197 + 0.588606I$		
$u = -0.14035 - 1.59728I$		
$a = -0.207246 + 0.795941I$	$4.17834 - 9.77145I$	0
$b = 0.384197 - 0.588606I$		
$u = 0.17472 + 1.60407I$		
$a = -0.546797 - 0.351402I$	$6.60181 - 5.38064I$	0
$b = -0.96998 + 1.55531I$		
$u = 0.17472 - 1.60407I$		
$a = -0.546797 + 0.351402I$	$6.60181 + 5.38064I$	0
$b = -0.96998 - 1.55531I$		
$u = 0.13507 + 1.61066I$		
$a = -0.788838 - 0.343903I$	$5.33185 - 9.04389I$	0
$b = -1.72870 + 1.86516I$		
$u = 0.13507 - 1.61066I$		
$a = -0.788838 + 0.343903I$	$5.33185 + 9.04389I$	0
$b = -1.72870 - 1.86516I$		
$u = -0.00140 + 1.61668I$		
$a = 0.191641 + 0.626922I$	$10.77350 - 0.92330I$	0
$b = -0.289391 - 0.590654I$		
$u = -0.00140 - 1.61668I$		
$a = 0.191641 - 0.626922I$	$10.77350 + 0.92330I$	0
$b = -0.289391 + 0.590654I$		
$u = 0.05624 + 1.62502I$		
$a = 0.465637 - 0.370971I$	$7.22717 - 1.13108I$	0
$b = 0.534327 + 0.634388I$		
$u = 0.05624 - 1.62502I$		
$a = 0.465637 + 0.370971I$	$7.22717 + 1.13108I$	0
$b = 0.534327 - 0.634388I$		

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.16723 + 1.62344I$ $a = 0.766081 + 0.539659I$ $b = 0.91859 - 1.57853I$	$4.94508 - 10.01770I$	0
$u = 0.16723 - 1.62344I$ $a = 0.766081 - 0.539659I$ $b = 0.91859 + 1.57853I$	$4.94508 + 10.01770I$	0
$u = -0.20976 + 1.62271I$ $a = 0.767884 - 0.515829I$ $b = 1.26336 + 1.81701I$	$0.5584 + 16.6299I$	0
$u = -0.20976 - 1.62271I$ $a = 0.767884 + 0.515829I$ $b = 1.26336 - 1.81701I$	$0.5584 - 16.6299I$	0
$u = 0.07507 + 1.64495I$ $a = 0.032254 - 0.465580I$ $b = -0.479350 + 0.580447I$	$9.34725 - 4.44995I$	0
$u = 0.07507 - 1.64495I$ $a = 0.032254 + 0.465580I$ $b = -0.479350 - 0.580447I$	$9.34725 + 4.44995I$	0
$u = 0.07066 + 1.74802I$ $a = -0.434726 - 0.045937I$ $b = -0.115807 + 0.391296I$	$8.44677 - 3.19875I$	0
$u = 0.07066 - 1.74802I$ $a = -0.434726 + 0.045937I$ $b = -0.115807 - 0.391296I$	$8.44677 + 3.19875I$	0
$u = -0.0303102 + 0.1028030I$ $a = 5.56338 - 4.06589I$ $b = 0.70788 - 1.78101I$	$-5.11888 + 3.47075I$	$-9.80251 + 3.71753I$
$u = -0.0303102 - 0.1028030I$ $a = 5.56338 + 4.06589I$ $b = 0.70788 + 1.78101I$	$-5.11888 - 3.47075I$	$-9.80251 - 3.71753I$

II.

$$I_2^u = \langle u^{22} + 2u^{21} + \dots + b - 1, u^{23} + 2u^{22} + \dots + a - 7, u^{24} + 2u^{23} + \dots + 17u^2 + 1 \rangle$$

(i) Arc colorings

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

$$a_{12} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} -u^3 - 2u \\ u^5 + 3u^3 + u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u^{23} - 2u^{22} + \dots + u + 7 \\ -u^{22} - 2u^{21} + \dots + 2u + 1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^{23} - 2u^{22} + \dots + u + 8 \\ u^8 + u^7 + 6u^6 + 5u^5 + 11u^4 + 7u^3 + 6u^2 + 2u + 1 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -3u^{23} - 6u^{22} + \dots - 37u - 4 \\ -2u^{21} - 4u^{20} + \dots - 6u + 1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u^{23} + 2u^{22} + \dots + 12u - 8 \\ -u^{20} - 2u^{19} + \dots - 2u - 2 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -3u^{23} - 6u^{22} + \dots - 43u - 3 \\ -2u^{21} - 4u^{20} + \dots - 6u + 1 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 5u^{23} + 11u^{22} + \dots + 60u^2 + 49u \\ u^{23} + 2u^{22} + \dots + 7u - 1 \end{pmatrix}$$

(ii) Obstruction class = 1

(iii) Cusp Shapes

$$= 3u^{21} + 2u^{20} + 39u^{19} + 22u^{18} + 209u^{17} + 94u^{16} + 593u^{15} + 178u^{14} + 945u^{13} + 57u^{12} + 808u^{11} - 355u^{10} + 285u^9 - 621u^8 - 8u^7 - 405u^6 + 55u^5 - 97u^4 + 96u^3 - 4u^2 + 24u - 4$$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{12}	$u^{24} - 2u^{23} + \dots + 17u^2 + 1$
c_2	$u^{24} + 12u^{22} + \dots + 10u^2 + 1$
c_3	$u^{24} - 8u^{22} + \dots - 7u^2 + 1$
c_4, c_5	$u^{24} + 2u^{23} + \dots + 17u^2 + 1$
c_6	$u^{24} - 8u^{23} + \dots - 8u + 1$
c_7	$u^{24} + 12u^{22} + \dots + 10u^2 + 1$
c_8	$u^{24} + 4u^{23} + \dots + 4u + 1$
c_9	$u^{24} - 8u^{22} + \dots - 7u^2 + 1$
c_{10}	$u^{24} - 12u^{21} + \dots + 17u + 5$
c_{11}	$u^{24} - 4u^{23} + \dots - 4u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_5 c_{12}	$y^{24} + 32y^{23} + \cdots + 34y + 1$
c_2, c_7	$y^{24} + 24y^{23} + \cdots + 20y + 1$
c_3, c_9	$y^{24} - 16y^{23} + \cdots - 14y + 1$
c_6	$y^{24} - 10y^{23} + \cdots - 16y + 1$
c_8, c_{11}	$y^{24} + 16y^{23} + \cdots + 16y + 1$
c_{10}	$y^{24} - 16y^{21} + \cdots + 431y + 25$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.556124 + 0.806900I$		
$a = 0.822523 - 0.184284I$	$-0.169220 + 0.554447I$	$0.807433 - 0.716512I$
$b = 0.340365 + 0.918768I$		
$u = -0.556124 - 0.806900I$		
$a = 0.822523 + 0.184284I$	$-0.169220 - 0.554447I$	$0.807433 + 0.716512I$
$b = 0.340365 - 0.918768I$		
$u = 0.238121 + 1.132010I$		
$a = 0.638508 + 0.005594I$	$-2.55299 + 1.99625I$	$-8.04434 - 3.57329I$
$b = 1.28860 - 1.32573I$		
$u = 0.238121 - 1.132010I$		
$a = 0.638508 - 0.005594I$	$-2.55299 - 1.99625I$	$-8.04434 + 3.57329I$
$b = 1.28860 + 1.32573I$		
$u = -0.637603 + 0.505766I$		
$a = -0.362804 + 1.254520I$	$-1.05781 + 3.70114I$	$-4.75043 - 6.52555I$
$b = -0.60332 - 1.46985I$		
$u = -0.637603 - 0.505766I$		
$a = -0.362804 - 1.254520I$	$-1.05781 - 3.70114I$	$-4.75043 + 6.52555I$
$b = -0.60332 + 1.46985I$		
$u = 0.052505 + 1.200480I$		
$a = -1.081330 - 0.101440I$	$-5.00318 + 1.08105I$	$-8.07466 - 0.48442I$
$b = -0.397770 - 0.393742I$		
$u = 0.052505 - 1.200480I$		
$a = -1.081330 + 0.101440I$	$-5.00318 - 1.08105I$	$-8.07466 + 0.48442I$
$b = -0.397770 + 0.393742I$		
$u = -0.188719 + 0.597536I$		
$a = 0.71388 + 1.34999I$	$1.102000 + 0.641161I$	$0.911832 + 0.772275I$
$b = 0.358333 - 0.208954I$		
$u = -0.188719 - 0.597536I$		
$a = 0.71388 - 1.34999I$	$1.102000 - 0.641161I$	$0.911832 - 0.772275I$
$b = 0.358333 + 0.208954I$		

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.01703 + 1.52852I$		
$a = 0.998710 - 0.123388I$	$-1.53461 - 1.75524I$	$-5.42911 + 2.64882I$
$b = 1.87123 + 0.89007I$		
$u = 0.01703 - 1.52852I$		
$a = 0.998710 + 0.123388I$	$-1.53461 + 1.75524I$	$-5.42911 - 2.64882I$
$b = 1.87123 - 0.89007I$		
$u = 0.269205 + 0.369321I$		
$a = -0.87619 - 1.56230I$	$-5.03257 - 3.89563I$	$-5.9842 + 13.4510I$
$b = 0.60303 + 1.98366I$		
$u = 0.269205 - 0.369321I$		
$a = -0.87619 + 1.56230I$	$-5.03257 + 3.89563I$	$-5.9842 - 13.4510I$
$b = 0.60303 - 1.98366I$		
$u = 0.08512 + 1.55611I$		
$a = -0.463718 - 0.342100I$	$1.75526 - 5.18528I$	$-2.04679 + 5.57462I$
$b = 0.21456 + 2.34805I$		
$u = 0.08512 - 1.55611I$		
$a = -0.463718 + 0.342100I$	$1.75526 + 5.18528I$	$-2.04679 - 5.57462I$
$b = 0.21456 - 2.34805I$		
$u = -0.18031 + 1.58187I$		
$a = -0.682667 + 0.395242I$	$6.06933 + 6.64817I$	$-3.40989 - 5.56122I$
$b = -1.34888 - 1.52119I$		
$u = -0.18031 - 1.58187I$		
$a = -0.682667 - 0.395242I$	$6.06933 - 6.64817I$	$-3.40989 + 5.56122I$
$b = -1.34888 + 1.52119I$		
$u = -0.06571 + 1.59428I$		
$a = 0.280021 + 0.662678I$	$8.74120 + 1.63961I$	$1.117347 + 0.019665I$
$b = 0.222354 - 0.684451I$		
$u = -0.06571 - 1.59428I$		
$a = 0.280021 - 0.662678I$	$8.74120 - 1.63961I$	$1.117347 - 0.019665I$
$b = 0.222354 + 0.684451I$		

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.055807 + 0.298741I$	$-7.97814 - 1.49651I$	$-4.08753 + 5.14572I$
$a = 4.71727 + 0.37884I$		
$b = 0.960356 + 0.621623I$		
$u = 0.055807 - 0.298741I$	$-7.97814 + 1.49651I$	$-4.08753 - 5.14572I$
$a = 4.71727 - 0.37884I$		
$b = 0.960356 - 0.621623I$		
$u = -0.08933 + 1.71019I$	$8.95061 + 2.87283I$	$2.99029 + 1.35526I$
$a = 0.295800 + 0.084001I$		
$b = 0.491146 + 0.017403I$		
$u = -0.08933 - 1.71019I$	$8.95061 - 2.87283I$	$2.99029 - 1.35526I$
$a = 0.295800 - 0.084001I$		
$b = 0.491146 - 0.017403I$		

$$\text{III. } I_3^u = \langle u^2 + b, a - 1, u^7 + 3u^5 + 2u^3 + u - 1 \rangle$$

(i) Arc colorings

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

$$a_{12} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} -u^3 - 2u \\ u^5 + 3u^3 + u \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} -u^6 - 3u^4 - 2u^2 + 1 \\ u^6 + 2u^4 - u^2 + u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u^2 + 1 \\ -u^4 - 2u^2 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u^3 \\ u^3 + u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -u^3 + u^2 + 1 \\ -u^4 - u^3 - 2u^2 - u \end{pmatrix}$$

(ii) Obstruction class = -1

(iii) Cusp Shapes = -6

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_5 c_8, c_{11}, c_{12}	$y^7 + 6y^6 + 13y^5 + 14y^4 + 10y^3 + 4y^2 + y - 1$
c_2, c_7, c_{10}	$y^7 + 10y^6 + 33y^5 + 34y^4 + 6y^3 + y - 4$
c_3, c_9	$(y - 1)^7$
c_6	$y^7 - 2y^6 + y^5 - 10y^4 + 46y^3 - 56y^2 + 37y - 9$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.376499 + 0.939075I$ $a = 1.00000$ $b = 0.740110 - 0.707121I$	-1.64493	-6.00000
$u = 0.376499 - 0.939075I$ $a = 1.00000$ $b = 0.740110 + 0.707121I$	-1.64493	-6.00000
$u = -0.597941 + 0.642727I$ $a = 1.00000$ $b = 0.055565 + 0.768625I$	-1.64493	-6.00000
$u = -0.597941 - 0.642727I$ $a = 1.00000$ $b = 0.055565 - 0.768625I$	-1.64493	-6.00000
$u = 0.538551$ $a = 1.00000$ $b = -0.290037$	-1.64493	-6.00000
$u = -0.04783 + 1.53350I$ $a = 1.00000$ $b = 2.34934 + 0.14671I$	-1.64493	-6.00000
$u = -0.04783 - 1.53350I$ $a = 1.00000$ $b = 2.34934 - 0.14671I$	-1.64493	-6.00000

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_{12}	$(u^7 + 3u^5 + 2u^3 + u + 1)(u^{24} - 2u^{23} + \dots + 17u^2 + 1)$ $\cdot (u^{90} - 3u^{89} + \dots - 12u + 1)$
c_2	$(u^7 + 5u^5 - 2u^4 + 4u^3 - u + 2)(u^{24} + 12u^{22} + \dots + 10u^2 + 1)$ $\cdot (u^{90} + u^{89} + \dots - 1472u + 37417)$
c_3	$((u + 1)^7)(u^{24} - 8u^{22} + \dots - 7u^2 + 1)$ $\cdot (u^{90} - 6u^{89} + \dots - 13860u + 2776)$
c_4, c_5	$(u^7 + 3u^5 + 2u^3 + u + 1)(u^{24} + 2u^{23} + \dots + 17u^2 + 1)$ $\cdot (u^{90} - 3u^{89} + \dots - 12u + 1)$
c_6	$(u^7 + 2u^6 + \dots + 5u - 3)(u^{24} - 8u^{23} + \dots - 8u + 1)$ $\cdot (u^{90} - 5u^{89} + \dots - 305292u + 114001)$
c_7	$(u^7 + 5u^5 - 2u^4 + 4u^3 - u + 2)(u^{24} + 12u^{22} + \dots + 10u^2 + 1)$ $\cdot (u^{90} + u^{89} + \dots - 1472u + 37417)$
c_8	$(u^7 + 3u^5 + 2u^3 + u + 1)(u^{24} + 4u^{23} + \dots + 4u + 1)$ $\cdot (u^{90} + 5u^{89} + \dots + 7842u + 839)$
c_9	$((u + 1)^7)(u^{24} - 8u^{22} + \dots - 7u^2 + 1)$ $\cdot (u^{90} - 6u^{89} + \dots - 13860u + 2776)$
c_{10}	$(u^7 + 5u^5 - 2u^4 + 4u^3 - u + 2)(u^{24} - 12u^{21} + \dots + 17u + 5)$ $\cdot (u^{90} + u^{89} + \dots + 13461u + 2479)$
c_{11}	$(u^7 + 3u^5 + 2u^3 + u + 1)(u^{24} - 4u^{23} + \dots - 4u + 1)$ $\cdot (u^{90} + 5u^{89} + \dots + 7842u + 839)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_5 c_{12}	$(y^7 + 6y^6 + 13y^5 + 14y^4 + 10y^3 + 4y^2 + y - 1)$ $\cdot (y^{24} + 32y^{23} + \dots + 34y + 1)(y^{90} + 109y^{89} + \dots + 174y + 1)$
c_2, c_7	$(y^7 + 10y^6 + \dots + y - 4)(y^{24} + 24y^{23} + \dots + 20y + 1)$ $\cdot (y^{90} + 65y^{89} + \dots + 22616709052y + 1400031889)$
c_3, c_9	$((y - 1)^7)(y^{24} - 16y^{23} + \dots - 14y + 1)$ $\cdot (y^{90} - 58y^{89} + \dots - 11659600y + 7706176)$
c_6	$(y^7 - 2y^6 + y^5 - 10y^4 + 46y^3 - 56y^2 + 37y - 9)$ $\cdot (y^{24} - 10y^{23} + \dots - 16y + 1)$ $\cdot (y^{90} - 45y^{89} + \dots - 374166877836y + 12996228001)$
c_8, c_{11}	$(y^7 + 6y^6 + 13y^5 + 14y^4 + 10y^3 + 4y^2 + y - 1)$ $\cdot (y^{24} + 16y^{23} + \dots + 16y + 1)$ $\cdot (y^{90} + 53y^{89} + \dots + 29423788y + 703921)$
c_{10}	$(y^7 + 10y^6 + \dots + y - 4)(y^{24} - 16y^{21} + \dots + 431y + 25)$ $\cdot (y^{90} - 19y^{89} + \dots - 310592405y + 6145441)$