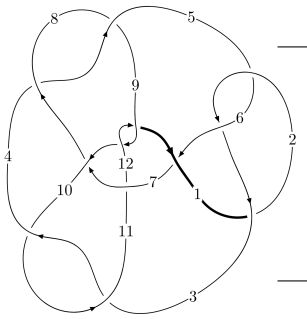
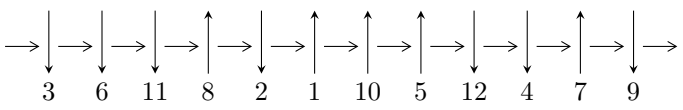
$12a_{0469}$ $(K12a_{0469})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 6.63633 \times 10^{186} u^{142} + 2.53542 \times 10^{189} u^{141} + \cdots + 9.01034 \times 10^{189} b + 3.59708 \times 10^{190},$$
$$- 8.67414 \times 10^{190} u^{142} + 3.49780 \times 10^{191} u^{141} + \cdots + 4.23486 \times 10^{191} a - 1.16899 \times 10^{193},$$
$$u^{143} - 3u^{142} + \cdots + 110u - 47 \rangle$$
$$I_2^u = \langle 4u^{34} + 7u^{33} + \cdots + b - 5,\ -3u^{34} - 2u^{33} + \cdots + a + 2,\ u^{35} + 2u^{34} + \cdots - 2u - 1 \rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 178 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. $\boldsymbol{I_1^u = \langle 6.64 \times 10^{186} u^{142} + 2.54 \times 10^{189} u^{141} + \cdots + 9.01 \times 10^{189} b + 3.60 \times 10^{190},\ -8.67 \times 10^{190} u^{142} + 3.50 \times 10^{191} u^{141} + \cdots + 4.23 \times 10^{191} a - 1.17 \times 10^{193},\ u^{143} - 3u^{142} + \cdots + 110u - 47 \rangle}$

(i) Arc colorings

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

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

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

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

$$a_7 = \begin{pmatrix} u^5 - 2u^3 + u \\ u^5 - u^3 + u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.204827u^{142} - 0.825954u^{141} + \cdots - 44.4711u + 27.6040 \\ -0.000736524u^{142} - 0.281390u^{141} + \cdots + 8.40058u - 3.99217 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.770473u^{142} - 2.27599u^{141} + \cdots - 96.6026u + 66.2237 \\ 0.589171u^{142} - 1.10912u^{141} + \cdots - 43.1569u + 23.0231 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -0.623467u^{142} + 0.435106u^{141} + \cdots + 70.3674u - 10.6358 \\ 0.402860u^{142} - 0.856118u^{141} + \cdots - 19.8741u + 12.8858 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -0.287141u^{142} + 0.974601u^{141} + \cdots + 31.1944u - 41.8783 \\ -1.17791u^{142} + 2.62231u^{141} + \cdots + 91.6207u - 54.4365 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -0.682533u^{142} + 1.81972u^{141} + \cdots + 86.3997u - 44.9083 \\ 0.128085u^{142} - 0.345952u^{141} + \cdots - 14.7059u + 8.01038 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -1.00812u^{142} + 1.95993u^{141} + \cdots + 46.9184u - 61.1004 \\ -0.281878u^{142} + 0.435375u^{141} + \cdots + 17.4712u - 15.1734 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -1.34172u^{142} + 2.00690u^{141} + \cdots + 81.0326u - 68.7918$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{143} + 69u^{142} + \cdots + 24038u + 2209$
c_2, c_5	$u^{143} + 3u^{142} + \cdots + 110u + 47$
c_3, c_{10}	$u^{143} + 2u^{142} + \cdots + 22312u + 8024$
c_4, c_8	$u^{143} - 60u^{141} + \cdots + 6466443u + 1229681$
c_6	$u^{143} + 9u^{142} + \cdots + 1198600u + 745279$
c_7	$u^{143} + 6u^{142} + \cdots + 586376963u + 10200841$
c_9, c_{12}	$u^{143} - 7u^{142} + \cdots - 220108u + 19079$
c_{11}	$u^{143} - 2u^{142} + \cdots + 111690u + 3457$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{143} + 15y^{142} + \cdots - 116759262y - 4879681$
c_2, c_5	$y^{143} - 69y^{142} + \cdots + 24038y - 2209$
c_3, c_{10}	$y^{143} + 100y^{142} + \cdots - 1978348960y - 64384576$
c_4, c_8	$y^{143} - 120y^{142} + \cdots + 46027317196279y - 1512115361761$
c_6	$y^{143} + 39y^{142} + \cdots - 20746243156102y - 555440787841$
c_7	$y^{143} - 64y^{142} + \cdots + 259743448139619271y - 104057157107281$
c_9, c_{12}	$y^{143} + 95y^{142} + \cdots - 14790500680y - 364008241$
c_{11}	$y^{143} - 32y^{142} + \cdots - 2418099900y - 11950849$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.972824 + 0.166718I$ $a = 0.457246 - 0.655270I$ $b = 0.443113 - 0.693346I$	$-1.56643 - 0.21461I$	0
$u = 0.972824 - 0.166718I$ $a = 0.457246 + 0.655270I$ $b = 0.443113 + 0.693346I$	$-1.56643 + 0.21461I$	0
$u = -0.708715 + 0.678500I$ $a = 0.523211 - 0.094624I$ $b = -0.299899 - 0.694127I$	$7.19922 + 5.10187I$	0
$u = -0.708715 - 0.678500I$ $a = 0.523211 + 0.094624I$ $b = -0.299899 + 0.694127I$	$7.19922 - 5.10187I$	0
$u = -0.880184 + 0.385121I$ $a = -1.185250 + 0.170640I$ $b = 1.064630 - 0.155834I$	$7.36065 - 0.12789I$	0
$u = -0.880184 - 0.385121I$ $a = -1.185250 - 0.170640I$ $b = 1.064630 + 0.155834I$	$7.36065 + 0.12789I$	0
$u = -0.155908 + 0.946772I$ $a = -0.532330 - 1.039930I$ $b = -0.284300 - 1.063160I$	$3.06061 - 2.11603I$	0
$u = -0.155908 - 0.946772I$ $a = -0.532330 + 1.039930I$ $b = -0.284300 + 1.063160I$	$3.06061 + 2.11603I$	0
$u = -0.833634 + 0.637751I$ $a = -0.666098 + 0.015768I$ $b = 0.581521 + 0.100790I$	$6.81184 - 0.08124I$	0
$u = -0.833634 - 0.637751I$ $a = -0.666098 - 0.015768I$ $b = 0.581521 - 0.100790I$	$6.81184 + 0.08124I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.530366 + 0.908248I$ $a = 1.313440 - 0.227015I$ $b = 1.105910 - 0.828042I$	$5.17661 + 3.94715I$	0
$u = 0.530366 - 0.908248I$ $a = 1.313440 + 0.227015I$ $b = 1.105910 + 0.828042I$	$5.17661 - 3.94715I$	0
$u = -0.968963 + 0.409052I$ $a = -0.158932 - 0.732323I$ $b = -1.02996 - 1.13546I$	$6.92421 + 3.31324I$	0
$u = -0.968963 - 0.409052I$ $a = -0.158932 + 0.732323I$ $b = -1.02996 + 1.13546I$	$6.92421 - 3.31324I$	0
$u = -0.766524 + 0.558095I$ $a = -0.231162 - 0.487931I$ $b = -0.1077570 + 0.0220050I$	$2.91700 + 2.23279I$	0
$u = -0.766524 - 0.558095I$ $a = -0.231162 + 0.487931I$ $b = -0.1077570 - 0.0220050I$	$2.91700 - 2.23279I$	0
$u = -0.369709 + 0.868053I$ $a = -1.284080 - 0.591736I$ $b = -0.805909 - 1.045650I$	$3.40285 - 2.50921I$	0
$u = -0.369709 - 0.868053I$ $a = -1.284080 + 0.591736I$ $b = -0.805909 + 1.045650I$	$3.40285 + 2.50921I$	0
$u = 0.354373 + 0.870826I$ $a = -1.83010 + 0.96443I$ $b = -1.23920 + 1.44860I$	$9.7755 + 13.6299I$	0
$u = 0.354373 - 0.870826I$ $a = -1.83010 - 0.96443I$ $b = -1.23920 - 1.44860I$	$9.7755 - 13.6299I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.699661 + 0.812819I$ $a = -0.527943 + 0.204742I$ $b = 0.198819 - 0.419500I$	$11.8272 - 10.0325I$	0
$u = 0.699661 - 0.812819I$ $a = -0.527943 - 0.204742I$ $b = 0.198819 + 0.419500I$	$11.8272 + 10.0325I$	0
$u = -0.694266 + 0.614024I$ $a = -1.248230 - 0.210637I$ $b = -1.24064 - 1.19424I$	$5.89656 - 1.21715I$	0
$u = -0.694266 - 0.614024I$ $a = -1.248230 + 0.210637I$ $b = -1.24064 + 1.19424I$	$5.89656 + 1.21715I$	0
$u = -0.941272 + 0.516355I$ $a = -0.52190 - 1.94208I$ $b = 2.09560 - 0.87394I$	$5.18149 + 5.68292I$	0
$u = -0.941272 - 0.516355I$ $a = -0.52190 + 1.94208I$ $b = 2.09560 + 0.87394I$	$5.18149 - 5.68292I$	0
$u = -0.415880 + 0.824832I$ $a = 0.272830 - 0.206774I$ $b = 0.460703 + 0.565218I$	$3.60534 - 1.56932I$	0
$u = -0.415880 - 0.824832I$ $a = 0.272830 + 0.206774I$ $b = 0.460703 - 0.565218I$	$3.60534 + 1.56932I$	0
$u = -0.914124 + 0.097993I$ $a = 0.988930 - 0.614990I$ $b = -0.410080 - 0.078116I$	$-1.35267 + 2.48849I$	0
$u = -0.914124 - 0.097993I$ $a = 0.988930 + 0.614990I$ $b = -0.410080 + 0.078116I$	$-1.35267 - 2.48849I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.063140+0.251935I$ $a=\ \ 0.82056-1.44493I$ $b=\ \ 1.72251+0.95045I$	$5.54141+1.35505I$	0
$u=-1.063140-0.251935I$ $a=\ \ 0.82056+1.44493I$ $b=\ \ 1.72251-0.95045I$	$5.54141-1.35505I$	0
$u=\ \ 1.037820+0.343141I$ $a=\ \ 0.63923-1.34805I$ $b=-1.92675-0.46592I$	$-2.55857-1.59318I$	0
$u=\ \ 1.037820-0.343141I$ $a=\ \ 0.63923+1.34805I$ $b=-1.92675+0.46592I$	$-2.55857+1.59318I$	0
$u=\ \ 0.980544+0.502007I$ $a=-0.07536-2.40050I$ $b=-1.69153-1.68869I$	$4.85216-6.19501I$	0
$u=\ \ 0.980544-0.502007I$ $a=-0.07536+2.40050I$ $b=-1.69153+1.68869I$	$4.85216+6.19501I$	0
$u=-1.052390+0.329534I$ $a=-0.15226+1.68415I$ $b=-1.013310+0.564916I$	$-2.38585-0.84245I$	0
$u=-1.052390-0.329534I$ $a=-0.15226-1.68415I$ $b=-1.013310-0.564916I$	$-2.38585+0.84245I$	0
$u=-0.980995+0.505565I$ $a=-0.67298+1.49972I$ $b=-2.82321+0.22541I$	$4.85895-0.80993I$	0
$u=-0.980995-0.505565I$ $a=-0.67298-1.49972I$ $b=-2.82321-0.22541I$	$4.85895+0.80993I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.099640+0.098831I$ $a=\ \ 0.472703-0.379509I$ $b=-0.838676+0.036532I$	$-1.28064+2.45502I$	0
$u=-1.099640-0.098831I$ $a=\ \ 0.472703+0.379509I$ $b=-0.838676-0.036532I$	$-1.28064-2.45502I$	0
$u=\ \ 1.102080+0.150812I$ $a=\ \ 0.085422+0.816881I$ $b=\ \ 0.857151+0.292846I$	$-1.91809+0.00326I$	0
$u=\ \ 1.102080-0.150812I$ $a=\ \ 0.085422-0.816881I$ $b=\ \ 0.857151-0.292846I$	$-1.91809-0.00326I$	0
$u=\ \ 0.980875+0.541795I$ $a=\ \ 0.59391+2.19908I$ $b=\ \ 1.59194+0.45165I$	$5.54069+0.82722I$	0
$u=\ \ 0.980875-0.541795I$ $a=\ \ 0.59391-2.19908I$ $b=\ \ 1.59194-0.45165I$	$5.54069-0.82722I$	0
$u=\ \ 0.353397+0.805249I$ $a=\ \ 0.778414-0.593203I$ $b=\ \ 0.426361-0.044050I$	$3.81909+0.03447I$	0
$u=\ \ 0.353397-0.805249I$ $a=\ \ 0.778414+0.593203I$ $b=\ \ 0.426361+0.044050I$	$3.81909-0.03447I$	0
$u=-1.080150+0.308520I$ $a=-1.46234+1.31744I$ $b=-2.11381-0.78228I$	$5.01697-0.50877I$	0
$u=-1.080150-0.308520I$ $a=-1.46234-1.31744I$ $b=-2.11381+0.78228I$	$5.01697+0.50877I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.319767+0.810994I$ $a=\ \ 1.71954+1.20874I$ $b=\ \ 1.10695+1.54912I$	$5.13477-7.54242I$	0
$u=-0.319767-0.810994I$ $a=\ \ 1.71954-1.20874I$ $b=\ \ 1.10695-1.54912I$	$5.13477+7.54242I$	0
$u=\ \ 0.598493+0.627176I$ $a=-1.90623+0.02992I$ $b=-1.182720+0.231295I$	$6.66585-5.42992I$	0
$u=\ \ 0.598493-0.627176I$ $a=-1.90623-0.02992I$ $b=-1.182720-0.231295I$	$6.66585+5.42992I$	0
$u=\ \ 0.655071+0.556470I$ $a=\ \ 2.34251+0.28017I$ $b=\ \ 0.820805-0.996678I$	$5.85355+1.95630I$	0
$u=\ \ 0.655071-0.556470I$ $a=\ \ 2.34251-0.28017I$ $b=\ \ 0.820805+0.996678I$	$5.85355-1.95630I$	0
$u=-1.119770+0.232625I$ $a=-0.360988-0.758476I$ $b=\ \ 1.68688-0.20289I$	$0.89596-4.79112I$	0
$u=-1.119770-0.232625I$ $a=-0.360988+0.758476I$ $b=\ \ 1.68688+0.20289I$	$0.89596+4.79112I$	0
$u=-0.628500+0.580830I$ $a=\ \ 0.94403-1.22625I$ $b=\ \ 1.38369+0.91606I$	$5.89936+5.13045I$	0
$u=-0.628500-0.580830I$ $a=\ \ 0.94403+1.22625I$ $b=\ \ 1.38369-0.91606I$	$5.89936-5.13045I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.039260 + 0.524971I$ $a = 0.447858 - 0.559550I$ $b = 1.19179 - 1.01888I$	$7.90251 - 2.69052I$	0
$u = 1.039260 - 0.524971I$ $a = 0.447858 + 0.559550I$ $b = 1.19179 + 1.01888I$	$7.90251 + 2.69052I$	0
$u = 1.137490 + 0.254166I$ $a = 0.22161 + 1.48098I$ $b = 1.020090 + 0.663149I$	$-0.04528 + 4.02330I$	0
$u = 1.137490 - 0.254166I$ $a = 0.22161 - 1.48098I$ $b = 1.020090 - 0.663149I$	$-0.04528 - 4.02330I$	0
$u = 1.030140 + 0.553117I$ $a = 0.935402 + 0.725454I$ $b = -0.113045 - 0.252441I$	$8.88478 - 5.60498I$	0
$u = 1.030140 - 0.553117I$ $a = 0.935402 - 0.725454I$ $b = -0.113045 + 0.252441I$	$8.88478 + 5.60498I$	0
$u = 0.343261 + 0.751174I$ $a = -1.86707 + 0.48669I$ $b = -1.353350 + 0.329263I$	$5.40318 + 7.44818I$	$0. - 5.06717I$
$u = 0.343261 - 0.751174I$ $a = -1.86707 - 0.48669I$ $b = -1.353350 - 0.329263I$	$5.40318 - 7.44818I$	$0. + 5.06717I$
$u = 1.063360 + 0.507382I$ $a = -0.080114 + 0.841019I$ $b = 1.63402 + 0.60538I$	$-0.23235 - 2.30271I$	0
$u = 1.063360 - 0.507382I$ $a = -0.080114 - 0.841019I$ $b = 1.63402 - 0.60538I$	$-0.23235 + 2.30271I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.041265+0.817285I$ $a=-0.629740-0.365556I$ $b=-0.413784+0.307123I$	$2.74738-0.57734I$	$2.75565-1.84059I$
$u=-0.041265-0.817285I$ $a=-0.629740+0.365556I$ $b=-0.413784-0.307123I$	$2.74738+0.57734I$	$2.75565+1.84059I$
$u=0.513652+0.633449I$ $a=-1.066360-0.153909I$ $b=-0.160943-0.875108I$	$10.41030+0.93865I$	$8.38027+0.I$
$u=0.513652-0.633449I$ $a=-1.066360+0.153909I$ $b=-0.160943+0.875108I$	$10.41030-0.93865I$	$8.38027+0.I$
$u=-0.315496+0.751196I$ $a=-1.95287+0.24999I$ $b=-1.26102-1.00604I$	$4.38475-6.88202I$	$4.27738+6.29373I$
$u=-0.315496-0.751196I$ $a=-1.95287-0.24999I$ $b=-1.26102+1.00604I$	$4.38475+6.88202I$	$4.27738-6.29373I$
$u=-1.106880+0.432563I$ $a=0.72308+1.28589I$ $b=-1.09498+1.16407I$	$-4.40650+4.69872I$	0
$u=-1.106880-0.432563I$ $a=0.72308-1.28589I$ $b=-1.09498-1.16407I$	$-4.40650-4.69872I$	0
$u=-1.088060+0.482697I$ $a=0.037166-1.260340I$ $b=0.722615-0.744111I$	$-0.52510+4.54564I$	0
$u=-1.088060-0.482697I$ $a=0.037166+1.260340I$ $b=0.722615+0.744111I$	$-0.52510-4.54564I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.142590 + 0.338869I$ $a = -0.341870 + 0.900979I$ $b = 0.996317 + 0.809975I$	$-3.33340 - 0.19145I$	0
$u = 1.142590 - 0.338869I$ $a = -0.341870 - 0.900979I$ $b = 0.996317 - 0.809975I$	$-3.33340 + 0.19145I$	0
$u = 1.112800 + 0.443412I$ $a = -0.418349 - 1.070480I$ $b = -1.335090 + 0.190699I$	$-4.33577 - 2.82257I$	0
$u = 1.112800 - 0.443412I$ $a = -0.418349 + 1.070480I$ $b = -1.335090 - 0.190699I$	$-4.33577 + 2.82257I$	0
$u = 0.374933 + 0.707223I$ $a = -1.97347 + 1.54875I$ $b = -1.09571 + 1.74529I$	$9.74954 + 0.95514I$	$7.29179 + 0.I$
$u = 0.374933 - 0.707223I$ $a = -1.97347 - 1.54875I$ $b = -1.09571 - 1.74529I$	$9.74954 - 0.95514I$	$7.29179 + 0.I$
$u = -1.131250 + 0.399092I$ $a = -0.117006 - 1.086150I$ $b = 0.390296 - 0.729978I$	$-0.66581 + 4.69744I$	0
$u = -1.131250 - 0.399092I$ $a = -0.117006 + 1.086150I$ $b = 0.390296 + 0.729978I$	$-0.66581 - 4.69744I$	0
$u = -1.078340 + 0.534415I$ $a = -0.31479 + 2.23263I$ $b = -1.76896 + 0.51547I$	$-1.17966 + 5.21827I$	0
$u = -1.078340 - 0.534415I$ $a = -0.31479 - 2.23263I$ $b = -1.76896 - 0.51547I$	$-1.17966 - 5.21827I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.188380 + 0.223267I$ $a = -0.595313 - 1.060500I$ $b = -1.35584 + 0.61308I$	$0.28461 + 4.49742I$	0
$u = 1.188380 - 0.223267I$ $a = -0.595313 + 1.060500I$ $b = -1.35584 - 0.61308I$	$0.28461 - 4.49742I$	0
$u = 1.090120 + 0.535407I$ $a = 0.15356 - 1.42737I$ $b = -2.11704 - 0.94380I$	$-0.92239 - 7.86140I$	0
$u = 1.090120 - 0.535407I$ $a = 0.15356 + 1.42737I$ $b = -2.11704 + 0.94380I$	$-0.92239 + 7.86140I$	0
$u = 1.161740 + 0.358048I$ $a = -0.354856 + 0.411136I$ $b = 1.149140 + 0.646764I$	$-1.07191 - 3.32802I$	0
$u = 1.161740 - 0.358048I$ $a = -0.354856 - 0.411136I$ $b = 1.149140 - 0.646764I$	$-1.07191 + 3.32802I$	0
$u = 0.954903 + 0.753538I$ $a = 0.332770 + 0.297611I$ $b = -0.413702 + 0.194495I$	$11.08670 + 4.23142I$	0
$u = 0.954903 - 0.753538I$ $a = 0.332770 - 0.297611I$ $b = -0.413702 - 0.194495I$	$11.08670 - 4.23142I$	0
$u = 1.104380 + 0.541873I$ $a = 1.12120 - 2.12601I$ $b = -1.62520 - 2.74262I$	$6.63347 - 7.81407I$	0
$u = 1.104380 - 0.541873I$ $a = 1.12120 + 2.12601I$ $b = -1.62520 + 2.74262I$	$6.63347 + 7.81407I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.099250 + 0.562689I$ $a = -1.12421 + 2.06158I$ $b = 1.58518 + 2.10470I$	$7.63591 - 5.83063I$	0
$u = 1.099250 - 0.562689I$ $a = -1.12421 - 2.06158I$ $b = 1.58518 - 2.10470I$	$7.63591 + 5.83063I$	0
$u = -0.206083 + 0.731369I$ $a = -1.232460 + 0.382744I$ $b = -0.890098 + 0.074368I$	$0.59474 - 3.17310I$	$-2.06425 + 3.72611I$
$u = -0.206083 - 0.731369I$ $a = -1.232460 - 0.382744I$ $b = -0.890098 - 0.074368I$	$0.59474 + 3.17310I$	$-2.06425 - 3.72611I$
$u = -1.235100 + 0.167614I$ $a = 0.454999 - 0.986798I$ $b = 1.36426 + 0.37356I$	$4.37144 - 10.54680I$	0
$u = -1.235100 - 0.167614I$ $a = 0.454999 + 0.986798I$ $b = 1.36426 - 0.37356I$	$4.37144 + 10.54680I$	0
$u = 0.491676 + 0.568739I$ $a = 1.06008 - 1.39885I$ $b = -0.697525 + 0.255146I$	$9.52507 - 1.72118I$	$9.60795 + 1.73984I$
$u = 0.491676 - 0.568739I$ $a = 1.06008 + 1.39885I$ $b = -0.697525 - 0.255146I$	$9.52507 + 1.72118I$	$9.60795 - 1.73984I$
$u = 0.333909 + 0.667903I$ $a = 2.61572 - 1.68046I$ $b = 0.82010 - 1.90888I$	$8.85396 + 3.11371I$	$9.02540 - 3.09080I$
$u = 0.333909 - 0.667903I$ $a = 2.61572 + 1.68046I$ $b = 0.82010 + 1.90888I$	$8.85396 - 3.11371I$	$9.02540 + 3.09080I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.119880 + 0.568440I$ $a = 0.19758 + 1.92402I$ $b = 1.58340 + 0.67474I$	$3.12696 - 12.44270I$	0
$u = 1.119880 - 0.568440I$ $a = 0.19758 - 1.92402I$ $b = 1.58340 - 0.67474I$	$3.12696 + 12.44270I$	0
$u = -1.127840 + 0.560790I$ $a = 0.14680 - 1.53067I$ $b = 2.37872 - 1.04523I$	$2.01141 + 11.83950I$	0
$u = -1.127840 - 0.560790I$ $a = 0.14680 + 1.53067I$ $b = 2.37872 + 1.04523I$	$2.01141 - 11.83950I$	0
$u = -1.150450 + 0.513816I$ $a = 0.390565 - 1.011470I$ $b = 1.303450 - 0.161910I$	$-2.14519 + 7.85574I$	0
$u = -1.150450 - 0.513816I$ $a = 0.390565 + 1.011470I$ $b = 1.303450 + 0.161910I$	$-2.14519 - 7.85574I$	0
$u = 0.735658$ $a = 0.399640$ $b = 0.645718$	-1.25008	-9.92610
$u = -1.113720 + 0.600652I$ $a = 0.089458 + 0.459286I$ $b = -1.125210 + 0.316433I$	$1.49604 + 6.86714I$	0
$u = -1.113720 - 0.600652I$ $a = 0.089458 - 0.459286I$ $b = -1.125210 - 0.316433I$	$1.49604 - 6.86714I$	0
$u = 1.125260 + 0.582666I$ $a = -0.046136 - 1.066780I$ $b = -0.504735 - 0.459395I$	$1.52970 - 5.20102I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.125260 - 0.582666I$ $a = -0.046136 + 1.066780I$ $b = -0.504735 + 0.459395I$	$1.52970 + 5.20102I$	0
$u = 0.356915 + 0.631268I$ $a = 1.53034 + 0.20503I$ $b = 1.09240 - 1.04252I$	$1.18596 + 3.26458I$	$-1.45850 - 1.99046I$
$u = 0.356915 - 0.631268I$ $a = 1.53034 - 0.20503I$ $b = 1.09240 + 1.04252I$	$1.18596 - 3.26458I$	$-1.45850 + 1.99046I$
$u = -0.392543 + 0.607402I$ $a = 2.18891 + 0.36222I$ $b = 1.47244 + 0.19125I$	$0.807086 - 0.669632I$	$8.89402 + 2.39156I$
$u = -0.392543 - 0.607402I$ $a = 2.18891 - 0.36222I$ $b = 1.47244 - 0.19125I$	$0.807086 + 0.669632I$	$8.89402 - 2.39156I$
$u = -1.144970 + 0.579395I$ $a = 0.80012 + 1.81003I$ $b = -1.64124 + 1.85982I$	$2.68875 + 12.72060I$	0
$u = -1.144970 - 0.579395I$ $a = 0.80012 - 1.81003I$ $b = -1.64124 - 1.85982I$	$2.68875 - 12.72060I$	0
$u = 0.451622 + 0.549105I$ $a = -0.816243 - 0.354677I$ $b = -0.570145 + 1.029060I$	$1.58137 - 1.99121I$	$0.23530 + 4.86768I$
$u = 0.451622 - 0.549105I$ $a = -0.816243 + 0.354677I$ $b = -0.570145 - 1.029060I$	$1.58137 + 1.99121I$	$0.23530 - 4.86768I$
$u = -1.143830 + 0.597208I$ $a = -0.33479 - 1.42337I$ $b = 1.46668 - 1.35519I$	$1.04273 + 7.89242I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.143830-0.597208I$ $a=-0.33479+1.42337I$ $b=\ \ 1.46668+1.35519I$	$1.04273-7.89242I$	0
$u=\ \ 1.253100+0.355708I$ $a=\ \ 0.867905+0.120534I$ $b=\ \ 0.477864-0.951677I$	$-1.49310-2.16005I$	0
$u=\ \ 1.253100-0.355708I$ $a=\ \ 0.867905-0.120534I$ $b=\ \ 0.477864+0.951677I$	$-1.49310+2.16005I$	0
$u=\ \ 1.118380+0.672325I$ $a=\ \ 0.01056-1.46218I$ $b=-1.57916-0.92809I$	$3.33228-9.78419I$	0
$u=\ \ 1.118380-0.672325I$ $a=\ \ 0.01056+1.46218I$ $b=-1.57916+0.92809I$	$3.33228+9.78419I$	0
$u=\ \ 1.155800+0.609147I$ $a=-0.52062+1.87681I$ $b=\ \ 1.80637+1.75057I$	$7.3617-19.0862I$	0
$u=\ \ 1.155800-0.609147I$ $a=-0.52062-1.87681I$ $b=\ \ 1.80637-1.75057I$	$7.3617+19.0862I$	0
$u=-1.258900+0.501380I$ $a=-0.700011-0.506248I$ $b=\ \ 0.260037-1.194030I$	$-0.46524+7.38731I$	0
$u=-1.258900-0.501380I$ $a=-0.700011+0.506248I$ $b=\ \ 0.260037+1.194030I$	$-0.46524-7.38731I$	0
$u=-0.390776+0.507703I$ $a=-1.45495-0.56596I$ $b=-0.284838-0.272662I$	$1.51459-0.44779I$	$6.65638+0.77042I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.390776-0.507703I$ $a=-1.45495+0.56596I$ $b=-0.284838+0.272662I$	$1.51459+0.44779I$	$6.65638-0.77042I$
$u=0.022899+0.558695I$ $a=1.077830+0.890973I$ $b=0.824747+0.478628I$	$-1.49976-1.00247I$	$-5.82785+2.83454I$
$u=0.022899-0.558695I$ $a=1.077830-0.890973I$ $b=0.824747-0.478628I$	$-1.49976+1.00247I$	$-5.82785-2.83454I$

II.

$\boldsymbol{I_2^u = \langle 4u^{34}+7u^{33}+\cdots+b-5,\ -3u^{34}-2u^{33}+\cdots+a+2,\ u^{35}+2u^{34}+\cdots-2u-1\rangle}$

(i) Arc colorings

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

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

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

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

$$a_7 = \begin{pmatrix} u^5-2u^3+u \\ u^5-u^3+u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u \\ -u^3+u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 3u^{34}+2u^{33}+\cdots-5u-2 \\ -4u^{34}-7u^{33}+\cdots-2u+5 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 5u^{34}+5u^{33}+\cdots-6u-4 \\ -2u^{34}-5u^{33}+\cdots-3u+4 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -4u^{34}+2u^{33}+\cdots+6u-4 \\ 5u^{34}+8u^{33}+\cdots+40u^2-7 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -6u^{34}-12u^{33}+\cdots+6u+13 \\ -13u^{34}-13u^{33}+\cdots+14u+7 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 9u^{34}+13u^{33}+\cdots-7u-12 \\ -3u^{33}-4u^{32}+\cdots-7u+1 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -12u^{34}-18u^{33}+\cdots+13u+19 \\ -11u^{34}-13u^{33}+\cdots+11u+8 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes

$= 3u^{34}+20u^{33}-7u^{32}-160u^{31}-64u^{30}+621u^{29}+474u^{28}-1464u^{27}-1606u^{26}+2192u^{25}+3499u^{24}-1803u^{23}-5407u^{22}-215u^{21}+6133u^{20}+3021u^{19}-5057u^{18}-5009u^{17}+2688u^{16}+5339u^{15}-207u^{14}-4379u^{13}-1374u^{12}+2925u^{11}+1734u^{10}-1546u^9-1271u^8+573u^7+656u^6-102u^5-254u^4-25u^3+70u^2+17u-7$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{35} - 18u^{34} + \cdots + 12u - 1$
c_2	$u^{35} + 2u^{34} + \cdots - 2u - 1$
c_3	$u^{35} - u^{34} + \cdots + u + 1$
c_4	$u^{35} - 3u^{34} + \cdots - 5u + 1$
c_5	$u^{35} - 2u^{34} + \cdots - 2u + 1$
c_6	$u^{35} - 6u^{34} + \cdots - 4u + 1$
c_7	$u^{35} + 13u^{34} + \cdots + 13u + 1$
c_8	$u^{35} + 3u^{34} + \cdots - 5u - 1$
c_9	$u^{35} - 6u^{34} + \cdots + 6u - 1$
c_{10}	$u^{35} + u^{34} + \cdots + u - 1$
c_{11}	$u^{35} + u^{34} + \cdots + 2u - 1$
c_{12}	$u^{35} + 6u^{34} + \cdots + 6u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{35} + 2y^{34} + \cdots - 8y - 1$
c_2, c_5	$y^{35} - 18y^{34} + \cdots + 12y - 1$
c_3, c_{10}	$y^{35} + 23y^{34} + \cdots - 13y - 1$
c_4, c_8	$y^{35} - 37y^{34} + \cdots + 17y - 1$
c_6	$y^{35} + 14y^{34} + \cdots + 74y^2 - 1$
c_7	$y^{35} - 9y^{34} + \cdots + 29y - 1$
c_9, c_{12}	$y^{35} + 22y^{34} + \cdots - 18y - 1$
c_{11}	$y^{35} - 5y^{34} + \cdots - 34y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.449369+0.898502I$ $a=-1.110200-0.295377I$ $b=-0.896959-0.890229I$	$3.70649-3.34500I$	$2.74211+6.90028I$
$u=-0.449369-0.898502I$ $a=-1.110200+0.295377I$ $b=-0.896959+0.890229I$	$3.70649+3.34500I$	$2.74211-6.90028I$
$u=1.010410+0.175150I$ $a=-0.238179+1.250430I$ $b=0.626124+0.416942I$	$-1.75961+1.63791I$	$-2.51606-1.84050I$
$u=1.010410-0.175150I$ $a=-0.238179-1.250430I$ $b=0.626124-0.416942I$	$-1.75961-1.63791I$	$-2.51606+1.84050I$
$u=-0.192206+0.951147I$ $a=-0.219742-0.160230I$ $b=-0.074720+0.297541I$	$2.14913-1.40179I$	$-4.53646+2.43995I$
$u=-0.192206-0.951147I$ $a=-0.219742+0.160230I$ $b=-0.074720-0.297541I$	$2.14913+1.40179I$	$-4.53646-2.43995I$
$u=-1.014930+0.374470I$ $a=-1.29182+1.96382I$ $b=-2.64183-0.46406I$	$3.49468-1.38652I$	$-3.72020+2.10391I$
$u=-1.014930-0.374470I$ $a=-1.29182-1.96382I$ $b=-2.64183+0.46406I$	$3.49468+1.38652I$	$-3.72020-2.10391I$
$u=-0.996058+0.458165I$ $a=-0.103645+0.336403I$ $b=-1.95660-0.35708I$	$7.15053+1.30099I$	$2.08686-1.88043I$
$u=-0.996058-0.458165I$ $a=-0.103645-0.336403I$ $b=-1.95660+0.35708I$	$7.15053-1.30099I$	$2.08686+1.88043I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.006900 + 0.497557I$ $a = -0.223255 - 1.378620I$ $b = -0.057991 - 0.961392I$	$7.44041 - 4.56762I$	$2.73556 + 6.57357I$
$u = 1.006900 - 0.497557I$ $a = -0.223255 + 1.378620I$ $b = -0.057991 + 0.961392I$	$7.44041 + 4.56762I$	$2.73556 - 6.57357I$
$u = 0.544307 + 0.669422I$ $a = 2.39954 - 0.29392I$ $b = 1.32687 - 1.45521I$	$6.51161 + 2.95580I$	$7.14645 - 4.00467I$
$u = 0.544307 - 0.669422I$ $a = 2.39954 + 0.29392I$ $b = 1.32687 + 1.45521I$	$6.51161 - 2.95580I$	$7.14645 + 4.00467I$
$u = 1.088390 + 0.375965I$ $a = -0.083784 + 0.890656I$ $b = 1.46987 + 0.04042I$	$-2.98962 - 2.46227I$	$-4.95258 + 4.56593I$
$u = 1.088390 - 0.375965I$ $a = -0.083784 - 0.890656I$ $b = 1.46987 - 0.04042I$	$-2.98962 + 2.46227I$	$-4.95258 - 4.56593I$
$u = 0.639424 + 0.490668I$ $a = 1.82886 + 0.22400I$ $b = -0.076616 + 0.157585I$	$8.64821 + 0.48732I$	$6.29202 - 0.07140I$
$u = 0.639424 - 0.490668I$ $a = 1.82886 - 0.22400I$ $b = -0.076616 - 0.157585I$	$8.64821 - 0.48732I$	$6.29202 + 0.07140I$
$u = 1.059290 + 0.560379I$ $a = 0.56557 - 2.32838I$ $b = -2.05401 - 2.02252I$	$4.89620 - 7.75104I$	$1.45717 + 8.60266I$
$u = 1.059290 - 0.560379I$ $a = 0.56557 + 2.32838I$ $b = -2.05401 + 2.02252I$	$4.89620 + 7.75104I$	$1.45717 - 8.60266I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.090060+0.511998I$ $a=-0.02057-1.80947I$ $b=\ \ 1.30444-0.74848I$	$-2.02615+4.71468I$	$-4.99057-3.42368I$
$u=-1.090060-0.511998I$ $a=-0.02057+1.80947I$ $b=\ \ 1.30444+0.74848I$	$-2.02615-4.71468I$	$-4.99057+3.42368I$
$u=-0.683002+0.402288I$ $a=-0.568125-0.589675I$ $b=\ \ 1.41680+0.76512I$	$8.24806+2.36497I$	$5.11886-3.46260I$
$u=-0.683002-0.402288I$ $a=-0.568125+0.589675I$ $b=\ \ 1.41680-0.76512I$	$8.24806-2.36497I$	$5.11886+3.46260I$
$u=\ \ 1.177930+0.296852I$ $a=-0.301713-0.029308I$ $b=\ \ 0.506002+0.231271I$	$-2.63916-2.34984I$	$-7.91591+2.86774I$
$u=\ \ 1.177930-0.296852I$ $a=-0.301713+0.029308I$ $b=\ \ 0.506002-0.231271I$	$-2.63916+2.34984I$	$-7.91591-2.86774I$
$u=-0.741427+0.239127I$ $a=\ \ 0.39173-2.28162I$ $b=\ \ 1.78561-0.01141I$	$4.65599+4.15432I$	$0.53542-2.48270I$
$u=-0.741427-0.239127I$ $a=\ \ 0.39173+2.28162I$ $b=\ \ 1.78561+0.01141I$	$4.65599-4.15432I$	$0.53542+2.48270I$
$u=-1.136130+0.619981I$ $a=-0.200361-1.275210I$ $b=\ \ 1.51537-1.04651I$	$1.54325+8.92726I$	$1.19351-8.93789I$
$u=-1.136130-0.619981I$ $a=-0.200361+1.275210I$ $b=\ \ 1.51537+1.04651I$	$1.54325-8.92726I$	$1.19351+8.93789I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.220220+0.517846I$ $a=\ \ 0.170515-0.298998I$ $b=-0.0415555-0.0757451I$	$-1.13336+6.63370I$	$-3.91761-3.85524I$
$u=-1.220220-0.517846I$ $a=\ \ 0.170515+0.298998I$ $b=-0.0415555+0.0757451I$	$-1.13336-6.63370I$	$-3.91761+3.85524I$
$u=\ \ 0.646098$ $a=-0.0548820$ $b=-1.22335$	-0.661557	6.22930
$u=-0.326293+0.536744I$ $a=-1.96738-0.75045I$ $b=-1.039130-0.285726I$	$0.137208-0.387332I$	$-2.37322-1.38221I$
$u=-0.326293-0.536744I$ $a=-1.96738+0.75045I$ $b=-1.039130+0.285726I$	$0.137208+0.387332I$	$-2.37322+1.38221I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^{35}-18u^{34}+\cdots+12u-1)(u^{143}+69u^{142}+\cdots+24038u+2209)$
c_2	$(u^{35}+2u^{34}+\cdots-2u-1)(u^{143}+3u^{142}+\cdots+110u+47)$
c_3	$(u^{35}-u^{34}+\cdots+u+1)(u^{143}+2u^{142}+\cdots+22312u+8024)$
c_4	$(u^{35}-3u^{34}+\cdots-5u+1)$ $\cdot(u^{143}-60u^{141}+\cdots+6466443u+1229681)$
c_5	$(u^{35}-2u^{34}+\cdots-2u+1)(u^{143}+3u^{142}+\cdots+110u+47)$
c_6	$(u^{35}-6u^{34}+\cdots-4u+1)(u^{143}+9u^{142}+\cdots+1198600u+745279)$
c_7	$(u^{35}+13u^{34}+\cdots+13u+1)$ $\cdot(u^{143}+6u^{142}+\cdots+586376963u+10200841)$
c_8	$(u^{35}+3u^{34}+\cdots-5u-1)$ $\cdot(u^{143}-60u^{141}+\cdots+6466443u+1229681)$
c_9	$(u^{35}-6u^{34}+\cdots+6u-1)(u^{143}-7u^{142}+\cdots-220108u+19079)$
c_{10}	$(u^{35}+u^{34}+\cdots+u-1)(u^{143}+2u^{142}+\cdots+22312u+8024)$
c_{11}	$(u^{35}+u^{34}+\cdots+2u-1)(u^{143}-2u^{142}+\cdots+111690u+3457)$
c_{12}	$(u^{35}+6u^{34}+\cdots+6u+1)(u^{143}-7u^{142}+\cdots-220108u+19079)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y^{35}+2y^{34}+\cdots-8y-1)$ $\cdot(y^{143}+15y^{142}+\cdots-116759262y-4879681)$
c_2, c_5	$(y^{35}-18y^{34}+\cdots+12y-1)(y^{143}-69y^{142}+\cdots+24038y-2209)$
c_3, c_{10}	$(y^{35}+23y^{34}+\cdots-13y-1)$ $\cdot(y^{143}+100y^{142}+\cdots-1978348960y-64384576)$
c_4, c_8	$(y^{35}-37y^{34}+\cdots+17y-1)$ $\cdot(y^{143}-120y^{142}+\cdots+46027317196279y-1512115361761)$
c_6	$(y^{35}+14y^{34}+\cdots+74y^2-1)$ $\cdot(y^{143}+39y^{142}+\cdots-20746243156102y-555440787841)$
c_7	$(y^{35}-9y^{34}+\cdots+29y-1)$ $\cdot(y^{143}-64y^{142}+\cdots+259743448139619271y-104057157107281)$
c_9, c_{12}	$(y^{35}+22y^{34}+\cdots-18y-1)$ $\cdot(y^{143}+95y^{142}+\cdots-14790500680y-364008241)$
c_{11}	$(y^{35}-5y^{34}+\cdots-34y-1)$ $\cdot(y^{143}-32y^{142}+\cdots-2418099900y-11950849)$