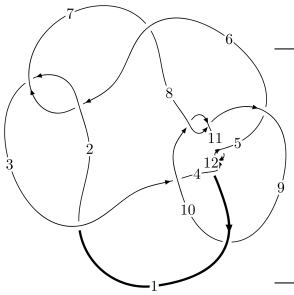
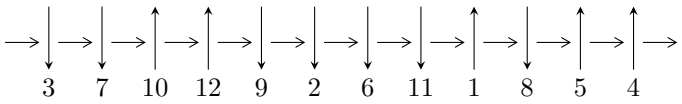
$12a_{0658}$ $(K12a_{0658})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -2.62898 \times 10^{65} u^{82} - 9.33541 \times 10^{66} u^{81} + \cdots + 9.04370 \times 10^{67} b + 3.29825 \times 10^{66},$$
$$2.10524 \times 10^{67} u^{82} + 1.26169 \times 10^{67} u^{81} + \cdots + 9.04370 \times 10^{67} a + 5.17635 \times 10^{66},\ u^{83} + u^{82} + \cdots - 3u^2 - 1 \rangle$$

* 1 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 83 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.

$$\boldsymbol{I_1^u = \langle -2.63\times 10^{65}u^{82} - 9.34\times 10^{66}u^{81} + \cdots + 9.04\times 10^{67}b + 3.30\times 10^{66},\ 2.11\times 10^{67}u^{82} + 1.26\times 10^{67}u^{81} + \cdots + 9.04\times 10^{67}a + 5.18\times 10^{66},\ u^{83} + u^{82} + \cdots - 3u^2 - 1\rangle}$$

(i) Arc colorings

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

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

$$a_3 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -0.232785u^{82} - 0.139510u^{81} + \cdots + 1.16873u - 0.0572371 \\ 0.00290698u^{82} + 0.103226u^{81} + \cdots + 2.00815u - 0.0364701 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 6.38689u^{82} + 8.65090u^{81} + \cdots + 6.46944u + 9.73885 \\ 0.0601500u^{82} - 4.03734u^{81} + \cdots + 6.62282u + 6.42267 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u^2 + 1 \\ -u^4 \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} -u^3 \\ -u^3 + u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -0.162336u^{82} - 0.0965383u^{81} + \cdots + 1.25096u - 0.0980678 \\ -0.00887391u^{82} + 0.104798u^{81} + \cdots + 0.973680u + 0.0160412 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -0.237869u^{82} - 0.170081u^{81} + \cdots - 0.811372u + 0.00168075 \\ 0.0182886u^{82} + 0.0928221u^{81} + \cdots + 1.99990u - 0.0425818 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -6.26650u^{82} - 6.25201u^{81} + \cdots + 4.47085u - 6.68810 \\ -2.39740u^{82} + 4.01692u^{81} + \cdots - 7.66722u - 6.36765 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 6.70384u^{82} + 19.4884u^{81} + \cdots - 5.38905u + 1.94050 \\ 12.8932u^{82} + 25.5557u^{81} + \cdots + 1.05907u + 6.64542 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 6.54849u^{82} + 10.1599u^{81} + \cdots - 0.291458u + 0.179307$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_7	$u^{83} + 25u^{82} + \cdots - 6u + 1$
c_2, c_6	$u^{83} - u^{82} + \cdots + 3u^2 + 1$
c_3	$u^{83} - 63u^{82} + \cdots + 2026u - 173$
c_4, c_{11}, c_{12}	$u^{83} + 3u^{82} + \cdots - 2u - 1$
c_5	$u^{83} + 57u^{82} + \cdots + 4370580u - 516739$
c_8, c_{10}	$u^{83} - u^{82} + \cdots + 62u + 1$
c_9	$u^{83} - 7u^{82} + \cdots + 8u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_7	$y^{83} + 67y^{82} + \cdots - 278y - 1$
c_2, c_6	$y^{83} - 25y^{82} + \cdots - 6y - 1$
c_3	$y^{83} - 1525y^{82} + \cdots - 812330y - 29929$
c_4, c_{11}, c_{12}	$y^{83} + 87y^{82} + \cdots - 6y - 1$
c_5	$y^{83} - 1549y^{82} + \cdots - 1262101601146y - 267019194121$
c_8, c_{10}	$y^{83} - 57y^{82} + \cdots + 1394y - 1$
c_9	$y^{83} + 3y^{82} + \cdots - 254y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.755268+0.689868I$ $a=1.39106-0.73110I$ $b=-0.85372-1.59878I$	$-6.36702-1.67327I$	0
$u=-0.755268-0.689868I$ $a=1.39106+0.73110I$ $b=-0.85372+1.59878I$	$-6.36702+1.67327I$	0
$u=0.955926+0.196493I$ $a=-0.22750-2.08453I$ $b=-0.156061-1.022080I$	$-7.37611-5.46942I$	0
$u=0.955926-0.196493I$ $a=-0.22750+2.08453I$ $b=-0.156061+1.022080I$	$-7.37611+5.46942I$	0
$u=0.956828+0.058122I$ $a=-2.00868-1.22339I$ $b=-1.63195-0.51030I$	$-11.35230-2.20989I$	$-15.1094+3.1648I$
$u=0.956828-0.058122I$ $a=-2.00868+1.22339I$ $b=-1.63195+0.51030I$	$-11.35230+2.20989I$	$-15.1094-3.1648I$
$u=0.687528+0.643247I$ $a=0.926393-0.698284I$ $b=1.132660+0.246219I$	$-1.83104-2.29304I$	0
$u=0.687528-0.643247I$ $a=0.926393+0.698284I$ $b=1.132660-0.246219I$	$-1.83104+2.29304I$	0
$u=0.792394+0.712520I$ $a=-1.54071-0.89895I$ $b=0.35084-1.82511I$	$0.299391+0.398880I$	0
$u=0.792394-0.712520I$ $a=-1.54071+0.89895I$ $b=0.35084+1.82511I$	$0.299391-0.398880I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.904497+0.220913I$ $a=\ 0.17765-1.52628I$ $b=-0.029075-0.629089I$	$-1.20857+3.31837I$	$-4.51564-9.28081I$
$u=-0.904497-0.220913I$ $a=\ 0.17765+1.52628I$ $b=-0.029075+0.629089I$	$-1.20857-3.31837I$	$-4.51564+9.28081I$
$u=-0.910106+0.059437I$ $a=\ 1.27235-0.99553I$ $b=\ 1.354240-0.173525I$	$-4.57106+1.49550I$	$-13.9394-4.6490I$
$u=-0.910106-0.059437I$ $a=\ 1.27235+0.99553I$ $b=\ 1.354240+0.173525I$	$-4.57106-1.49550I$	$-13.9394+4.6490I$
$u=-0.887492+0.636493I$ $a=\ 0.683971-0.824958I$ $b=-0.671063+0.175785I$	$-8.30238+2.46513I$	0
$u=-0.887492-0.636493I$ $a=\ 0.683971+0.824958I$ $b=-0.671063-0.175785I$	$-8.30238-2.46513I$	0
$u=\ 0.875962+0.673460I$ $a=-0.806933+0.072405I$ $b=-0.225907+0.407373I$	$-1.37629-2.60149I$	0
$u=\ 0.875962-0.673460I$ $a=-0.806933-0.072405I$ $b=-0.225907-0.407373I$	$-1.37629+2.60149I$	0
$u=-0.661827+0.885032I$ $a=-0.964523+0.509781I$ $b=\ 0.022493+1.391210I$	$2.87924-1.90637I$	0
$u=-0.661827-0.885032I$ $a=-0.964523-0.509781I$ $b=\ 0.022493-1.391210I$	$2.87924+1.90637I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.835653+0.725148I$ $a=\ 2.60784-1.24490I$ $b=\ 0.75247-2.72826I$	$1.27283+1.90992I$	0
$u=-0.835653-0.725148I$ $a=\ 2.60784+1.24490I$ $b=\ 0.75247+2.72826I$	$1.27283-1.90992I$	0
$u=-0.759362+0.807841I$ $a=\ 1.143780-0.638739I$ $b=\ 0.10158-2.38329I$	$-0.92315-4.32848I$	0
$u=-0.759362-0.807841I$ $a=\ 1.143780+0.638739I$ $b=\ 0.10158+2.38329I$	$-0.92315+4.32848I$	0
$u=\ 0.146295+0.862891I$ $a=\ 0.502919-0.599119I$ $b=\ 0.318232+0.048877I$	$-1.16072-3.54724I$	$-1.48488+10.43399I$
$u=\ 0.146295-0.862891I$ $a=\ 0.502919+0.599119I$ $b=\ 0.318232-0.048877I$	$-1.16072+3.54724I$	$-1.48488-10.43399I$
$u=\ 0.781550+0.815567I$ $a=-0.931448-0.568907I$ $b=-0.16327-1.94279I$	$5.31516+1.68799I$	0
$u=\ 0.781550-0.815567I$ $a=-0.931448+0.568907I$ $b=-0.16327+1.94279I$	$5.31516-1.68799I$	0
$u=\ 0.700806+0.886878I$ $a=\ 1.07343+0.97806I$ $b=-0.40330+1.95285I$	$2.12600+7.17684I$	0
$u=\ 0.700806-0.886878I$ $a=\ 1.07343-0.97806I$ $b=-0.40330-1.95285I$	$2.12600-7.17684I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.835930+0.195360I$ $a=\ \ 1.46241-0.35911I$ $b=-0.380020+0.200495I$	$-6.95212-0.78250I$	$-9.57348-2.76568I$
$u=-0.835930-0.195360I$ $a=\ \ 1.46241+0.35911I$ $b=-0.380020-0.200495I$	$-6.95212+0.78250I$	$-9.57348+2.76568I$
$u=-0.715123+0.890294I$ $a=-1.04148+1.30724I$ $b=\ \ 0.78013+2.24858I$	$-5.16586-10.89950I$	0
$u=-0.715123-0.890294I$ $a=-1.04148-1.30724I$ $b=\ \ 0.78013-2.24858I$	$-5.16586+10.89950I$	0
$u=\ \ 1.115590+0.254027I$ $a=\ \ 0.455845+0.985086I$ $b=\ \ 0.752013+0.094668I$	$-12.8738-10.9955I$	0
$u=\ \ 1.115590-0.254027I$ $a=\ \ 0.455845-0.985086I$ $b=\ \ 0.752013-0.094668I$	$-12.8738+10.9955I$	0
$u=\ \ 0.873414+0.747229I$ $a=-18.3435-31.1898I$ $b=\ \ 7.4711-40.6923I$	$-3.55022-2.83360I$	0
$u=\ \ 0.873414-0.747229I$ $a=-18.3435+31.1898I$ $b=\ \ 7.4711+40.6923I$	$-3.55022+2.83360I$	0
$u=-0.904821+0.717976I$ $a=-1.83061+1.76546I$ $b=-0.38042+3.47812I$	$1.05940+3.60208I$	0
$u=-0.904821-0.717976I$ $a=-1.83061-1.76546I$ $b=-0.38042-3.47812I$	$1.05940-3.60208I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.893817 + 0.740208I$ $a = 1.00833 - 1.34709I$ $b = 1.86663 - 0.41544I$	$-1.93473 - 2.81075I$	0
$u = 0.893817 - 0.740208I$ $a = 1.00833 + 1.34709I$ $b = 1.86663 + 0.41544I$	$-1.93473 + 2.81075I$	0
$u = -1.137010 + 0.238482I$ $a = -0.311301 + 0.663025I$ $b = -0.670008 + 0.007941I$	$-5.49259 + 7.04236I$	0
$u = -1.137010 - 0.238482I$ $a = -0.311301 - 0.663025I$ $b = -0.670008 - 0.007941I$	$-5.49259 - 7.04236I$	0
$u = -0.816117 + 0.827408I$ $a = 0.526716 - 0.470929I$ $b = 0.079622 - 1.300680I$	$4.85499 + 2.01628I$	0
$u = -0.816117 - 0.827408I$ $a = 0.526716 + 0.470929I$ $b = 0.079622 + 1.300680I$	$4.85499 - 2.01628I$	0
$u = 0.830299$ $a = 0.547895$ $b = -2.11831$	-3.06730	24.2670
$u = 0.933394 + 0.705292I$ $a = 1.70582 + 0.14953I$ $b = 1.11542 + 2.14592I$	$-0.13209 - 5.84066I$	0
$u = 0.933394 - 0.705292I$ $a = 1.70582 - 0.14953I$ $b = 1.11542 - 2.14592I$	$-0.13209 + 5.84066I$	0
$u = -1.126850 + 0.320440I$ $a = -0.982231 - 0.060209I$ $b = -0.846664 - 0.369957I$	$-12.47050 - 3.50305I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.126850-0.320440I$ $a=-0.982231+0.060209I$ $b=-0.846664+0.369957I$	$-12.47050+3.50305I$	0
$u=-0.949439+0.690480I$ $a=-1.78958-0.48224I$ $b=-1.41736+1.90620I$	$-6.95269+7.01395I$	0
$u=-0.949439-0.690480I$ $a=-1.78958+0.48224I$ $b=-1.41736-1.90620I$	$-6.95269-7.01395I$	0
$u=0.803038+0.172342I$ $a=-0.518092-0.756682I$ $b=0.179057-0.068091I$	$-1.39137-0.61321I$	$-5.51396-0.21738I$
$u=0.803038-0.172342I$ $a=-0.518092+0.756682I$ $b=0.179057+0.068091I$	$-1.39137+0.61321I$	$-5.51396+0.21738I$
$u=-0.059613+0.818292I$ $a=-0.575775-1.028540I$ $b=-0.428264-0.253862I$	$-8.89496+7.47739I$	$-5.21237-5.39640I$
$u=-0.059613-0.818292I$ $a=-0.575775+1.028540I$ $b=-0.428264+0.253862I$	$-8.89496-7.47739I$	$-5.21237+5.39640I$
$u=-0.950078+0.777082I$ $a=-1.238970+0.334127I$ $b=-0.496426+1.145190I$	$4.43453+3.98266I$	0
$u=-0.950078-0.777082I$ $a=-1.238970-0.334127I$ $b=-0.496426-1.145190I$	$4.43453-3.98266I$	0
$u=0.967952+0.758860I$ $a=1.72181+0.71910I$ $b=0.43237+1.88463I$	$4.73983-7.59390I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.967952 - 0.758860I$ $a = 1.72181 - 0.71910I$ $b = 0.43237 - 1.88463I$	$4.73983 + 7.59390I$	0
$u = -0.977354 + 0.747017I$ $a = -2.13319 + 0.86878I$ $b = -0.50320 + 2.36095I$	$-1.59108 + 10.17270I$	0
$u = -0.977354 - 0.747017I$ $a = -2.13319 - 0.86878I$ $b = -0.50320 - 2.36095I$	$-1.59108 - 10.17270I$	0
$u = 1.214100 + 0.292688I$ $a = 0.387971 + 0.106501I$ $b = 0.584747 - 0.216212I$	$-4.94592 - 1.05019I$	0
$u = 1.214100 - 0.292688I$ $a = 0.387971 - 0.106501I$ $b = 0.584747 + 0.216212I$	$-4.94592 + 1.05019I$	0
$u = 0.812519 + 0.989271I$ $a = -0.056345 + 0.335138I$ $b = -0.677629 + 0.060020I$	$-3.56075 - 3.87886I$	0
$u = 0.812519 - 0.989271I$ $a = -0.056345 - 0.335138I$ $b = -0.677629 - 0.060020I$	$-3.56075 + 3.87886I$	0
$u = 1.037630 + 0.760789I$ $a = -1.89193 - 0.59324I$ $b = -1.15940 - 2.23054I$	$1.08407 - 13.28350I$	0
$u = 1.037630 - 0.760789I$ $a = -1.89193 + 0.59324I$ $b = -1.15940 + 2.23054I$	$1.08407 + 13.28350I$	0
$u = -1.033520 + 0.767579I$ $a = 2.27501 - 0.43958I$ $b = 1.58296 - 2.40705I$	$-6.1557 + 17.0416I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.033520-0.767579I$ $a=\ \ 2.27501+0.43958I$ $b=\ \ 1.58296+2.40705I$	$-6.1557-17.0416I$	0
$u=-1.051130+0.750004I$ $a=\ \ 1.34289-0.60568I$ $b=\ \ 0.71268-1.80857I$	$1.69398+7.96545I$	0
$u=-1.051130-0.750004I$ $a=\ \ 1.34289+0.60568I$ $b=\ \ 0.71268+1.80857I$	$1.69398-7.96545I$	0
$u=\ \ 1.110610+0.807171I$ $a=-0.563340+0.047867I$ $b=-0.614033-0.652470I$	$-4.61076-2.95718I$	0
$u=\ \ 1.110610-0.807171I$ $a=-0.563340-0.047867I$ $b=-0.614033+0.652470I$	$-4.61076+2.95718I$	0
$u=\ \ 0.002893+0.524651I$ $a=\ \ 1.37326+0.34097I$ $b=\ \ 0.498150+0.732993I$	$-4.47756+3.05000I$	$-1.23985-2.98660I$
$u=\ \ 0.002893-0.524651I$ $a=\ \ 1.37326-0.34097I$ $b=\ \ 0.498150-0.732993I$	$-4.47756-3.05000I$	$-1.23985+2.98660I$
$u=-0.158256+0.499482I$ $a=-0.848821+0.049190I$ $b=-0.450699+0.399594I$	$1.094660-0.749184I$	$5.57918+2.32776I$
$u=-0.158256-0.499482I$ $a=-0.848821-0.049190I$ $b=-0.450699-0.399594I$	$1.094660+0.749184I$	$5.57918-2.32776I$
$u=-0.297722+0.336751I$ $a=\ \ 2.38324+1.06586I$ $b=-0.651932+0.763398I$	$-7.89690+1.23833I$	$-3.73303-1.37380I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.297722-0.336751I$ $a=\ \ 2.38324-1.06586I$ $b=-0.651932-0.763398I$	$-7.89690-1.23833I$	$-3.73303+1.37380I$
$u=\ \ 0.149787+0.224828I$ $a=-2.59164+2.46924I$ $b=\ \ 0.282178+0.465935I$	$-1.77014-0.63400I$	$-5.01585-1.19253I$
$u=\ \ 0.149787-0.224828I$ $a=-2.59164-2.46924I$ $b=\ \ 0.282178-0.465935I$	$-1.77014+0.63400I$	$-5.01585+1.19253I$

II. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_7	$u^{83} + 25u^{82} + \cdots - 6u + 1$
c_2, c_6	$u^{83} - u^{82} + \cdots + 3u^2 + 1$
c_3	$u^{83} - 63u^{82} + \cdots + 2026u - 173$
c_4, c_{11}, c_{12}	$u^{83} + 3u^{82} + \cdots - 2u - 1$
c_5	$u^{83} + 57u^{82} + \cdots + 4370580u - 516739$
c_8, c_{10}	$u^{83} - u^{82} + \cdots + 62u + 1$
c_9	$u^{83} - 7u^{82} + \cdots + 8u - 1$

III. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_7	$y^{83} + 67y^{82} + \cdots - 278y - 1$
c_2, c_6	$y^{83} - 25y^{82} + \cdots - 6y - 1$
c_3	$y^{83} - 1525y^{82} + \cdots - 812330y - 29929$
c_4, c_{11}, c_{12}	$y^{83} + 87y^{82} + \cdots - 6y - 1$
c_5	$y^{83} - 1549y^{82} + \cdots - 1262101601146y - 267019194121$
c_8, c_{10}	$y^{83} - 57y^{82} + \cdots + 1394y - 1$
c_9	$y^{83} + 3y^{82} + \cdots - 254y - 1$