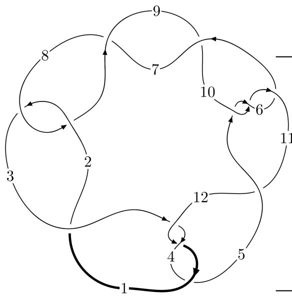
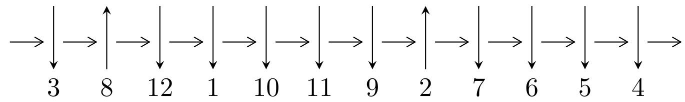
$12a_{0800}$ $(K12a_{0800})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned} I_1^u = \langle & b - u, \\ & u^{16} - u^{15} - 6u^{14} + 5u^{13} + 14u^{12} - 8u^{11} - 12u^{10} - u^9 - 6u^8 + 14u^7 + 16u^6 - 6u^5 - 4u^4 - 8u^3 - 4u^2 + a + 2 \\ & u^{17} - u^{16} + \cdots + 4u + 1 \rangle \\ I_2^u = \langle & u^{29} - 10u^{27} + \cdots + b + 1,\ -u^{28} + 9u^{26} + \cdots + a + 1,\ u^{30} - u^{29} + \cdots + 2u - 1 \rangle \\ I_3^u = \langle & b + 1,\ a,\ u - 1 \rangle \end{aligned}$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 48 representations.

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[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. $I_1^u = \langle b - u,\ u^{16} - u^{15} + \cdots + a + 2u,\ u^{17} - u^{16} + \cdots + 4u + 1\rangle$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u^{16} + u^{15} + \cdots + 4u^2 - 2u \\ u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} u^3 - 2u \\ -u^3 + u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} u^{15} - u^{14} + \cdots - 7u^2 - 4u \\ -u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u^{15} - u^{14} + \cdots - 5u^2 - 4u \\ u^4 - 2u^2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} u^5 - 2u^3 + u \\ u^7 - 3u^5 + 2u^3 + u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u^8 + 3u^6 - 3u^4 + 1 \\ -u^{10} + 4u^8 - 5u^6 + 3u^2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -u^{16} + u^{15} + \cdots + 4u^2 - 3u \\ u^7 - 3u^5 + 2u^3 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -2u^{16} + 6u^{15} + 12u^{14} - 38u^{13} - 32u^{12} + 92u^{11} + 48u^{10} - 78u^9 - 40u^8 - 56u^7 + 132u^5 + 48u^4 - 24u^3 - 40u^2 - 50u - 18$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_7, c_9 c_{11}	$u^{17} + 3u^{16} + \cdots - 20u - 4$
c_2, c_8	$u^{17} - 3u^{16} + \cdots + 4u - 2$
c_3, c_4, c_5 c_6, c_{10}, c_{12}	$u^{17} - u^{16} + \cdots + 4u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_7, c_9 c_{11}	$y^{17} + 19y^{16} + \cdots + 8y - 16$
c_2, c_8	$y^{17} + 3y^{16} + \cdots - 20y - 4$
c_3, c_4, c_5 c_6, c_{10}, c_{12}	$y^{17} - 15y^{16} + \cdots - 2y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.015819 + 0.919296I$ $a = 0.01726 - 1.91592I$ $b = -0.015819 + 0.919296I$	$12.59050 + 3.33698I$	$-1.74242 - 2.42496I$
$u = -0.015819 - 0.919296I$ $a = 0.01726 + 1.91592I$ $b = -0.015819 - 0.919296I$	$12.59050 - 3.33698I$	$-1.74242 + 2.42496I$
$u = -1.25414$ $a = -3.12432$ $b = -1.25414$	-6.31627	-14.3970
$u = -1.245520 + 0.229336I$ $a = -1.37037 - 2.30613I$ $b = -1.245520 + 0.229336I$	$-3.83323 + 4.04550I$	$-10.81210 - 4.36543I$
$u = -1.245520 - 0.229336I$ $a = -1.37037 + 2.30613I$ $b = -1.245520 - 0.229336I$	$-3.83323 - 4.04550I$	$-10.81210 + 4.36543I$
$u = -0.080998 + 0.665320I$ $a = 0.12402 - 1.59512I$ $b = -0.080998 + 0.665320I$	$3.24651 + 2.33383I$	$-1.26781 - 4.48047I$
$u = -0.080998 - 0.665320I$ $a = 0.12402 + 1.59512I$ $b = -0.080998 - 0.665320I$	$3.24651 - 2.33383I$	$-1.26781 + 4.48047I$
$u = 1.346580 + 0.091150I$ $a = 1.77757 - 0.81741I$ $b = 1.346580 + 0.091150I$	$-10.21630 - 3.30364I$	$-18.3839 + 4.0252I$
$u = 1.346580 - 0.091150I$ $a = 1.77757 + 0.81741I$ $b = 1.346580 - 0.091150I$	$-10.21630 + 3.30364I$	$-18.3839 - 4.0252I$
$u = 1.324670 + 0.275245I$ $a = 0.89163 - 1.84476I$ $b = 1.324670 + 0.275245I$	$-5.62027 - 9.18761I$	$-13.0093 + 8.4138I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.324670 - 0.275245I$ $a = 0.89163 + 1.84476I$ $b = 1.324670 - 0.275245I$	$-5.62027 + 9.18761I$	$-13.0093 - 8.4138I$
$u = -1.289570 + 0.434389I$ $a = -0.19449 - 2.10821I$ $b = -1.289570 + 0.434389I$	$4.65712 + 6.34473I$	$-8.38113 - 3.64612I$
$u = -1.289570 - 0.434389I$ $a = -0.19449 + 2.10821I$ $b = -1.289570 - 0.434389I$	$4.65712 - 6.34473I$	$-8.38113 + 3.64612I$
$u = 1.316590 + 0.436364I$ $a = 0.18956 - 2.01627I$ $b = 1.316590 + 0.436364I$	$4.26790 - 13.04860I$	$-8.96446 + 7.94392I$
$u = 1.316590 - 0.436364I$ $a = 0.18956 + 2.01627I$ $b = 1.316590 - 0.436364I$	$4.26790 + 13.04860I$	$-8.96446 - 7.94392I$
$u = -0.228864 + 0.240486I$ $a = 0.626966 - 0.762434I$ $b = -0.228864 + 0.240486I$	$-0.289179 + 0.793664I$	$-7.24014 - 8.54497I$
$u = -0.228864 - 0.240486I$ $a = 0.626966 + 0.762434I$ $b = -0.228864 - 0.240486I$	$-0.289179 - 0.793664I$	$-7.24014 + 8.54497I$

II.

$\boldsymbol{I^u_2 = \langle u^{29} - 10u^{27} + \cdots + b + 1,\ -u^{28} + 9u^{26} + \cdots + a + 1,\ u^{30} - u^{29} + \cdots + 2u - 1\rangle}$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

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

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

$$a_1 = \begin{pmatrix} u^{28} - 9u^{26} + \cdots - 5u - 1 \\ -u^{29} + 10u^{27} + \cdots - u - 1 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} u^3 - 2u \\ -u^3 + u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} u^{27} - 10u^{25} + \cdots - 16u^2 - 6u \\ -u^{29} + 9u^{27} + \cdots + u - 2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -u^{25} + 8u^{23} + \cdots - 5u - 1 \\ -2u^{29} + 19u^{27} + \cdots + u - 2 \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} -u^8 + 3u^6 - 3u^4 + 1 \\ -u^{10} + 4u^8 - 5u^6 + 3u^2 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u^{22} - 7u^{20} + \cdots - 4u - 1 \\ -2u^{29} + 20u^{27} + \cdots + u - 2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$= 4u^{29} - 40u^{27} - 4u^{26} + 176u^{25} + 36u^{24} - 416u^{23} - 140u^{22} + 476u^{21} + 280u^{20} + 56u^{19} - 228u^{18} - 892u^{17} - 176u^{16} + 920u^{15} + 540u^{14} + 112u^{13} - 300u^{12} - 784u^{11} - 236u^{10} + 296u^9 + 284u^8 + 240u^7 + 20u^6 - 112u^5 - 76u^4 - 48u^3 - 12u^2 - 2$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_7, c_9 c_{11}	$(u^{15} + 3u^{14} + \cdots + 8u^2 - 1)^2$
c_2, c_8	$(u^{15} + u^{14} + \cdots + 2u + 1)^2$
c_3, c_4, c_5 c_6, c_{10}, c_{12}	$u^{30} - u^{29} + \cdots + 2u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_7, c_9 c_{11}	$(y^{15} + 19y^{14} + \cdots + 16y - 1)^2$
c_2, c_8	$(y^{15} + 3y^{14} + \cdots + 8y^2 - 1)^2$
c_3, c_4, c_5 c_6, c_{10}, c_{12}	$y^{30} - 21y^{29} + \cdots - 16y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.003710 + 0.352470I$ $a = -0.310106 + 0.106023I$ $b = 1.197040 + 0.205439I$	$-3.26563 - 1.73642I$	$-11.57231 + 4.08118I$
$u = -1.003710 - 0.352470I$ $a = -0.310106 - 0.106023I$ $b = 1.197040 - 0.205439I$	$-3.26563 + 1.73642I$	$-11.57231 - 4.08118I$
$u = -0.039142 + 0.923066I$ $a = -1.25369 + 1.52176I$ $b = 1.299550 - 0.440363I$	$8.49724 + 8.19235I$	$-5.30498 - 5.35870I$
$u = -0.039142 - 0.923066I$ $a = -1.25369 - 1.52176I$ $b = 1.299550 + 0.440363I$	$8.49724 - 8.19235I$	$-5.30498 + 5.35870I$
$u = 0.006457 + 0.907657I$ $a = 1.26734 + 1.55206I$ $b = -1.275180 - 0.450373I$	$8.68612 - 1.54935I$	$-4.90398 + 0.66420I$
$u = 0.006457 - 0.907657I$ $a = 1.26734 - 1.55206I$ $b = -1.275180 + 0.450373I$	$8.68612 + 1.54935I$	$-4.90398 - 0.66420I$
$u = -1.09543$ $a = 0.681427$ $b = 0.231455$	-2.03422	-3.51620
$u = -1.144780 + 0.271378I$ $a = 0.776168 + 0.778536I$ $b = 0.050886 - 0.582477I$	$0.109911 + 1.108490I$	$-4.48602 - 0.68443I$
$u = -1.144780 - 0.271378I$ $a = 0.776168 - 0.778536I$ $b = 0.050886 + 0.582477I$	$0.109911 - 1.108490I$	$-4.48602 + 0.68443I$
$u = 1.197040 + 0.205439I$ $a = 0.192214 - 0.213199I$ $b = -1.003710 + 0.352470I$	$-3.26563 - 1.73642I$	$-11.57231 + 4.08118I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.197040 - 0.205439I$ $a = 0.192214 + 0.213199I$ $b = -1.003710 - 0.352470I$	$-3.26563 + 1.73642I$	$-11.57231 - 4.08118I$
$u = 1.245200 + 0.056118I$ $a = -0.303735 + 0.483850I$ $b = -0.497721 - 0.447731I$	$-4.53214 - 1.75942I$	$-14.8508 + 5.0146I$
$u = 1.245200 - 0.056118I$ $a = -0.303735 - 0.483850I$ $b = -0.497721 + 0.447731I$	$-4.53214 + 1.75942I$	$-14.8508 - 5.0146I$
$u = -0.191672 + 0.711539I$ $a = -0.90899 + 1.57838I$ $b = 1.261970 - 0.268055I$	$-0.87635 + 5.68434I$	$-7.79510 - 7.47679I$
$u = -0.191672 - 0.711539I$ $a = -0.90899 - 1.57838I$ $b = 1.261970 + 0.268055I$	$-0.87635 - 5.68434I$	$-7.79510 + 7.47679I$
$u = 1.261970 + 0.268055I$ $a = -0.566534 + 0.872590I$ $b = -0.191672 - 0.711539I$	$-0.87635 - 5.68434I$	$-7.79510 + 7.47679I$
$u = 1.261970 - 0.268055I$ $a = -0.566534 - 0.872590I$ $b = -0.191672 + 0.711539I$	$-0.87635 + 5.68434I$	$-7.79510 - 7.47679I$
$u = -0.497721 + 0.447731I$ $a = -0.134683 + 1.055100I$ $b = 1.245200 - 0.056118I$	$-4.53214 + 1.75942I$	$-14.8508 - 5.0146I$
$u = -0.497721 - 0.447731I$ $a = -0.134683 - 1.055100I$ $b = 1.245200 + 0.056118I$	$-4.53214 - 1.75942I$	$-14.8508 + 5.0146I$
$u = -1.256250 + 0.462320I$ $a = -0.578274 - 0.179714I$ $b = 1.279350 + 0.437720I$	$4.73497 - 3.25615I$	$-8.32867 + 2.40088I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.256250 - 0.462320I$ $a = -0.578274 + 0.179714I$ $b = 1.279350 - 0.437720I$	$4.73497 + 3.25615I$	$-8.32867 - 2.40088I$
$u = 1.279350 + 0.437720I$ $a = 0.556509 - 0.222909I$ $b = -1.256250 + 0.462320I$	$4.73497 - 3.25615I$	$-8.32867 + 2.40088I$
$u = 1.279350 - 0.437720I$ $a = 0.556509 + 0.222909I$ $b = -1.256250 - 0.462320I$	$4.73497 + 3.25615I$	$-8.32867 - 2.40088I$
$u = -1.275180 + 0.450373I$ $a = 0.690774 + 1.153910I$ $b = 0.006457 - 0.907657I$	$8.68612 + 1.54935I$	$-4.90398 - 0.66420I$
$u = -1.275180 - 0.450373I$ $a = 0.690774 - 1.153910I$ $b = 0.006457 + 0.907657I$	$8.68612 - 1.54935I$	$-4.90398 + 0.66420I$
$u = 1.299550 + 0.440363I$ $a = -0.651100 + 1.156960I$ $b = -0.039142 - 0.923066I$	$8.49724 - 8.19235I$	$-5.30498 + 5.35870I$
$u = 1.299550 - 0.440363I$ $a = -0.651100 - 1.156960I$ $b = -0.039142 + 0.923066I$	$8.49724 + 8.19235I$	$-5.30498 - 5.35870I$
$u = 0.050886 + 0.582477I$ $a = 0.99593 + 1.97518I$ $b = -1.144780 - 0.271378I$	$0.109911 - 1.108490I$	$-4.48602 + 0.68443I$
$u = 0.050886 - 0.582477I$ $a = 0.99593 - 1.97518I$ $b = -1.144780 + 0.271378I$	$0.109911 + 1.108490I$	$-4.48602 - 0.68443I$
$u = 0.231455$ $a = -3.22507$ $b = -1.09543$	-2.03422	-3.51620

III. $I_3^u = \langle b+1,\ a,\ u-1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.00000$ $a = 0$ $b = -1.00000$	-3.28987	-12.0000

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_7, c_9 c_{11}	$u(u^{15} + 3u^{14} + \cdots + 8u^2 - 1)^2(u^{17} + 3u^{16} + \cdots - 20u - 4)$
c_2, c_8	$u(u^{15} + u^{14} + \cdots + 2u + 1)^2(u^{17} - 3u^{16} + \cdots + 4u - 2)$
c_3, c_4, c_{10}	$(u + 1)(u^{17} - u^{16} + \cdots + 4u + 1)(u^{30} - u^{29} + \cdots + 2u - 1)$
c_5, c_6, c_{12}	$(u - 1)(u^{17} - u^{16} + \cdots + 4u + 1)(u^{30} - u^{29} + \cdots + 2u - 1)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_7, c_9 c_{11}	$y(y^{15} + 19y^{14} + \cdots + 16y - 1)^2(y^{17} + 19y^{16} + \cdots + 8y - 16)$
c_2, c_8	$y(y^{15} + 3y^{14} + \cdots + 8y^2 - 1)^2(y^{17} + 3y^{16} + \cdots - 20y - 4)$
c_3, c_4, c_5 c_6, c_{10}, c_{12}	$(y - 1)(y^{17} - 15y^{16} + \cdots - 2y - 1)(y^{30} - 21y^{29} + \cdots - 16y + 1)$