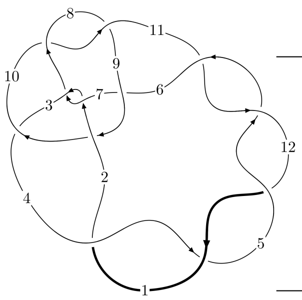
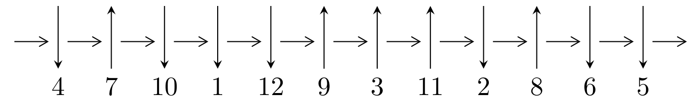
$12a_{1095}$ $(K12a_{1095})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 1.34837 \times 10^{27} u^{52} - 2.41782 \times 10^{27} u^{51} + \cdots + 2.76539 \times 10^{27} b - 4.01656 \times 10^{27},$$
$$- 3.41977 \times 10^{27} u^{52} + 6.63330 \times 10^{27} u^{51} + \cdots + 5.53078 \times 10^{27} a + 3.25207 \times 10^{27},\ u^{53} - 2u^{52} + \cdots - 3u -$$
$$I_2^u = \langle u^3 + 2u^2 + 4b + 5u + 3,\ -5u^3 - 2u^2 + 8a - 9u - 3,\ u^4 + u^3 + 3u^2 + 2u + 1 \rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 57 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.

$\boldsymbol{I^u_1 = \langle 1.35\times10^{27}u^{52} - 2.42\times10^{27}u^{51} + \cdots + 2.77\times10^{27}b - 4.02\times10^{27},\ -3.42\times10^{27}u^{52} + 6.63\times10^{27}u^{51} + \cdots + 5.53\times10^{27}a + 3.25\times10^{27},\ u^{53} - 2u^{52} + \cdots - 3u + 1\rangle}$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -u \\ u^3 + u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0.618315u^{52} - 1.19934u^{51} + \cdots + 8.80138u - 0.587995 \\ -0.487586u^{52} + 0.874316u^{51} + \cdots - 2.83559u + 1.45244 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0.530284u^{52} - 1.04842u^{51} + \cdots + 8.32484u - 0.480894 \\ -0.408912u^{52} + 0.748136u^{51} + \cdots - 2.37166u + 1.32020 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 0.0838946u^{52} - 0.639715u^{51} + \cdots - 3.71956u - 0.610289 \\ -0.0738827u^{52} + 0.330937u^{51} + \cdots + 4.07454u - 0.785735 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u^2 + 1 \\ u^2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -1.11189u^{52} + 2.28145u^{51} + \cdots - 7.30635u - 0.400627 \\ 0.307946u^{52} - 0.571956u^{51} + \cdots + 6.37995u - 2.10022 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} u^3 + 2u \\ u^3 + u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 0.780510u^{52} - 1.54138u^{51} + \cdots + 7.33530u - 1.15081 \\ -0.419078u^{52} + 0.718479u^{51} + \cdots - 3.61371u + 1.17045 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -0.212314u^{52} + 1.34571u^{51} + \cdots + 2.23825u + 7.42547$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4, c_5 c_{11}, c_{12}	$u^{53} - 2u^{52} + \cdots - 3u + 1$
c_2, c_7	$u^{53} + 2u^{52} + \cdots + 3u - 1$
c_3	$8(8u^{53} - 11u^{52} + \cdots + 480u + 3943)$
c_6	$8(8u^{53} - 7u^{52} + \cdots + 348462u + 61297)$
c_8, c_{10}	$u^{53} + 5u^{52} + \cdots - 17u - 64$
c_9	$u^{53} - 3u^{52} + \cdots - 576u + 1024$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_5 c_{11}, c_{12}	$y^{53} + 72y^{52} + \cdots - 13y - 1$
c_2, c_7	$y^{53} - 36y^{52} + \cdots - 13y - 1$
c_3	$64(64y^{53} + 2007y^{52} + \cdots - 9.98193 \times 10^7 y - 1.55472 \times 10^7)$
c_6	$64(64y^{53} - 3105y^{52} + \cdots + 2.44146 \times 10^{10} y - 3.75732 \times 10^9)$
c_8, c_{10}	$y^{53} - 49y^{52} + \cdots + 68129y - 4096$
c_9	$y^{53} + 27y^{52} + \cdots - 8925184y - 1048576$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.097309 + 1.013130I$ $a = 1.06909 + 1.45901I$ $b = -0.293233 - 0.247581I$	$5.81488 + 0.01278I$	0
$u = 0.097309 - 1.013130I$ $a = 1.06909 - 1.45901I$ $b = -0.293233 + 0.247581I$	$5.81488 - 0.01278I$	0
$u = -0.170586 + 1.030690I$ $a = -0.621933 + 0.377743I$ $b = 0.745819 + 0.222778I$	$2.87981 + 2.52887I$	0
$u = -0.170586 - 1.030690I$ $a = -0.621933 - 0.377743I$ $b = 0.745819 - 0.222778I$	$2.87981 - 2.52887I$	0
$u = 0.043294 + 1.080920I$ $a = 0.98039 - 1.04863I$ $b = -0.415517 - 0.941732I$	$5.95677 - 1.10474I$	0
$u = 0.043294 - 1.080920I$ $a = 0.98039 + 1.04863I$ $b = -0.415517 + 0.941732I$	$5.95677 + 1.10474I$	0
$u = 0.183709 + 1.096700I$ $a = 0.615073 + 0.266917I$ $b = -1.40828 + 0.31772I$	$6.45837 - 5.82425I$	0
$u = 0.183709 - 1.096700I$ $a = 0.615073 - 0.266917I$ $b = -1.40828 - 0.31772I$	$6.45837 + 5.82425I$	0
$u = -0.060804 + 1.151400I$ $a = -0.235310 - 0.453905I$ $b = 1.07199 - 1.72723I$	$10.49640 + 2.30207I$	0
$u = -0.060804 - 1.151400I$ $a = -0.235310 + 0.453905I$ $b = 1.07199 + 1.72723I$	$10.49640 - 2.30207I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.697220 + 0.415437I$ $a = 0.367510 - 0.569917I$ $b = 0.598266 + 0.118968I$	$2.58042 + 2.27566I$	$5.54808 - 4.42595I$
$u = -0.697220 - 0.415437I$ $a = 0.367510 + 0.569917I$ $b = 0.598266 - 0.118968I$	$2.58042 - 2.27566I$	$5.54808 + 4.42595I$
$u = 0.348979 + 1.163470I$ $a = -0.789223 - 0.400014I$ $b = 0.803943 + 0.133985I$	$12.4109 - 11.7818I$	0
$u = 0.348979 - 1.163470I$ $a = -0.789223 + 0.400014I$ $b = 0.803943 - 0.133985I$	$12.4109 + 11.7818I$	0
$u = 0.400033 + 1.148970I$ $a = -0.209336 - 0.368266I$ $b = 0.537132 + 0.552257I$	$11.91410 + 0.46291I$	0
$u = 0.400033 - 1.148970I$ $a = -0.209336 + 0.368266I$ $b = 0.537132 - 0.552257I$	$11.91410 - 0.46291I$	0
$u = 0.638183 + 0.414259I$ $a = -0.885666 - 0.562368I$ $b = -0.877415 + 0.319431I$	$7.44710 - 8.39986I$	$4.21700 + 7.17865I$
$u = 0.638183 - 0.414259I$ $a = -0.885666 + 0.562368I$ $b = -0.877415 - 0.319431I$	$7.44710 + 8.39986I$	$4.21700 - 7.17865I$
$u = 0.673423 + 0.351163I$ $a = -0.043002 - 1.043460I$ $b = -0.615958 - 0.222480I$	$7.23787 + 4.15053I$	$4.88455 - 1.78073I$
$u = 0.673423 - 0.351163I$ $a = -0.043002 + 1.043460I$ $b = -0.615958 + 0.222480I$	$7.23787 - 4.15053I$	$4.88455 + 1.78073I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.369763 + 1.185950I$ $a = 0.519790 - 0.236280I$ $b = -0.595932 + 0.252414I$	$7.64201 + 5.93448I$	0
$u = -0.369763 - 1.185950I$ $a = 0.519790 + 0.236280I$ $b = -0.595932 - 0.252414I$	$7.64201 - 5.93448I$	0
$u = -0.284491 + 0.620702I$ $a = 0.089749 + 0.451278I$ $b = 0.078976 + 0.540092I$	$0.33460 + 1.76623I$	$-3.26918 - 5.78660I$
$u = -0.284491 - 0.620702I$ $a = 0.089749 - 0.451278I$ $b = 0.078976 - 0.540092I$	$0.33460 - 1.76623I$	$-3.26918 + 5.78660I$
$u = 0.392790 + 0.323030I$ $a = 2.01412 + 0.72401I$ $b = 0.535471 - 0.302352I$	$1.98439 - 3.87908I$	$1.02310 + 8.63789I$
$u = 0.392790 - 0.323030I$ $a = 2.01412 - 0.72401I$ $b = 0.535471 + 0.302352I$	$1.98439 + 3.87908I$	$1.02310 - 8.63789I$
$u = -0.166207 + 0.454728I$ $a = -1.06595 + 3.13668I$ $b = -0.335420 - 0.115389I$	$5.39007 + 1.57476I$	$8.26638 - 4.56003I$
$u = -0.166207 - 0.454728I$ $a = -1.06595 - 3.13668I$ $b = -0.335420 + 0.115389I$	$5.39007 - 1.57476I$	$8.26638 + 4.56003I$
$u = -0.400179 + 0.184061I$ $a = -1.113230 + 0.254594I$ $b = -0.294175 - 0.144169I$	$-0.906294 + 0.638936I$	$-7.84585 - 3.54441I$
$u = -0.400179 - 0.184061I$ $a = -1.113230 - 0.254594I$ $b = -0.294175 + 0.144169I$	$-0.906294 - 0.638936I$	$-7.84585 + 3.54441I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.337976 + 0.277219I$ $a = 0.080619 + 1.061220I$ $b = 0.612117 + 0.741472I$	$1.91837 + 1.38671I$	$0.37102 + 1.92125I$
$u = 0.337976 - 0.277219I$ $a = 0.080619 - 1.061220I$ $b = 0.612117 - 0.741472I$	$1.91837 - 1.38671I$	$0.37102 - 1.92125I$
$u = -0.08231 + 1.59104I$ $a = 0.098365 + 0.362333I$ $b = 0.061723 + 0.202369I$	$7.93934 + 3.04380I$	0
$u = -0.08231 - 1.59104I$ $a = 0.098365 - 0.362333I$ $b = 0.061723 - 0.202369I$	$7.93934 - 3.04380I$	0
$u = -0.309511$ $a = -0.285999$ $b = -1.99031$	3.96788	-11.2160
$u = 0.146397 + 0.259785I$ $a = 0.26789 + 2.10948I$ $b = 0.661555 - 0.546534I$	$1.70235 - 0.53525I$	$5.77546 - 2.21892I$
$u = 0.146397 - 0.259785I$ $a = 0.26789 - 2.10948I$ $b = 0.661555 + 0.546534I$	$1.70235 + 0.53525I$	$5.77546 + 2.21892I$
$u = 0.02066 + 1.73571I$ $a = -2.64807 - 1.49652I$ $b = -5.03892 - 2.83332I$	$15.7407 - 0.4328I$	0
$u = 0.02066 - 1.73571I$ $a = -2.64807 + 1.49652I$ $b = -5.03892 + 2.83332I$	$15.7407 + 0.4328I$	0
$u = -0.03957 + 1.74066I$ $a = 2.21887 - 0.02192I$ $b = 3.84932 - 0.12795I$	$12.88280 + 3.36516I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.03957 - 1.74066I$ $a = 2.21887 + 0.02192I$ $b = 3.84932 + 0.12795I$	$12.88280 - 3.36516I$	0
$u = 0.00922 + 1.75210I$ $a = -1.76414 + 0.35710I$ $b = -3.28376 + 1.33114I$	$16.2367 - 1.3130I$	0
$u = 0.00922 - 1.75210I$ $a = -1.76414 - 0.35710I$ $b = -3.28376 - 1.33114I$	$16.2367 + 1.3130I$	0
$u = 0.04422 + 1.75495I$ $a = -2.98121 + 0.32099I$ $b = -4.98803 + 0.54697I$	$16.7715 - 6.7678I$	0
$u = 0.04422 - 1.75495I$ $a = -2.98121 - 0.32099I$ $b = -4.98803 - 0.54697I$	$16.7715 + 6.7678I$	0
$u = -0.01406 + 1.76783I$ $a = 1.92068 - 1.63644I$ $b = 3.22687 - 2.19591I$	$-18.3521 + 2.6162I$	0
$u = -0.01406 - 1.76783I$ $a = 1.92068 + 1.63644I$ $b = 3.22687 + 2.19591I$	$-18.3521 - 2.6162I$	0
$u = 0.09238 + 1.77000I$ $a = 2.54868 + 0.19679I$ $b = 4.60054 + 0.16183I$	$-16.5345 - 13.6959I$	0
$u = 0.09238 - 1.77000I$ $a = 2.54868 - 0.19679I$ $b = 4.60054 - 0.16183I$	$-16.5345 + 13.6959I$	0
$u = 0.10675 + 1.77331I$ $a = 1.50063 + 0.72497I$ $b = 2.72216 + 1.03571I$	$-17.0899 - 1.7379I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.10675 - 1.77331I$ $a = 1.50063 - 0.72497I$ $b = 2.72216 - 1.03571I$	$-17.0899 + 1.7379I$	0
$u = -0.09538 + 1.77635I$ $a = -1.97891 + 0.19640I$ $b = -3.58909 + 0.12592I$	$18.2869 + 7.9543I$	0
$u = -0.09538 - 1.77635I$ $a = -1.97891 - 0.19640I$ $b = -3.58909 - 0.12592I$	$18.2869 - 7.9543I$	0

II.

$$\boldsymbol{I_2^u = \langle u^3+2u^2+4b+5u+3,\ -5u^3-2u^2+8a-9u-3,\ u^4+u^3+3u^2+2u+1\rangle}$$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

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

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

$$a_9 = \begin{pmatrix} \frac{5}{8}u^3+\frac{1}{4}u^2+\frac{9}{8}u+\frac{3}{8} \\ -\frac{1}{4}u^3-\frac{1}{2}u^2-\frac{5}{4}u-\frac{3}{4} \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} \frac{5}{8}u^3+\frac{1}{4}u^2+\frac{9}{8}u+\frac{3}{8} \\ -\frac{1}{4}u^3-\frac{1}{2}u^2-\frac{5}{4}u-\frac{3}{4} \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 0.109375u^3+0.0937500u^2+0.171875u+0.765625 \\ 0.0312500u^3-0.687500u^2-0.0937500u+0.218750 \end{pmatrix}$$

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

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

$$a_7 = \begin{pmatrix} 0.296875u^3+0.968750u^2+0.609375u+1.07813 \\ -0.343750u^3+0.562500u^2-0.968750u-0.406250 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} u^3+2u \\ u^3+u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -\frac{3}{8}u^3+\frac{1}{4}u^2-\frac{7}{8}u+\frac{3}{8} \\ -\frac{5}{4}u^3-\frac{1}{2}u^2-\frac{9}{4}u-\frac{3}{4} \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -\frac{233}{64}u^3-\frac{205}{32}u^2-\frac{805}{64}u-\frac{159}{64}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{11}, c_{12}	$u^4 - u^3 + 3u^2 - 2u + 1$
c_2	$u^4 - u^3 + u^2 + 1$
c_3	$8(8u^4 + 3u^3 + 6u^2 + u + 1)$
c_4, c_5	$u^4 + u^3 + 3u^2 + 2u + 1$
c_6	$8(8u^4 + 15u^3 + 12u^2 + 5u + 1)$
c_7	$u^4 + u^3 + u^2 + 1$
c_8	$(u + 1)^4$
c_9	u^4
c_{10}	$(u - 1)^4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_5 c_{11}, c_{12}	$y^4 + 5y^3 + 7y^2 + 2y + 1$
c_2, c_7	$y^4 + y^3 + 3y^2 + 2y + 1$
c_3	$64(64y^4 + 87y^3 + 46y^2 + 11y + 1)$
c_6	$64(64y^4 - 33y^3 + 10y^2 - y + 1)$
c_8, c_{10}	$(y-1)^4$
c_9	y^4

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.395123 + 0.506844I$ $a = 0.057058 + 0.537058I$ $b = -0.266417 - 0.460085I$	$1.43393 + 1.41510I$	$2.24706 - 4.19946I$
$u = -0.395123 - 0.506844I$ $a = 0.057058 - 0.537058I$ $b = -0.266417 + 0.460085I$	$1.43393 - 1.41510I$	$2.24706 + 4.19946I$
$u = -0.10488 + 1.55249I$ $a = 0.130442 - 0.641504I$ $b = 0.391417 - 0.855136I$	$8.43568 + 3.16396I$	$11.44826 - 4.00508I$
$u = -0.10488 - 1.55249I$ $a = 0.130442 + 0.641504I$ $b = 0.391417 + 0.855136I$	$8.43568 - 3.16396I$	$11.44826 + 4.00508I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_{11}, c_{12}	$(u^4 - u^3 + 3u^2 - 2u + 1)(u^{53} - 2u^{52} + \cdots - 3u + 1)$
c_2	$(u^4 - u^3 + u^2 + 1)(u^{53} + 2u^{52} + \cdots + 3u - 1)$
c_3	$64(8u^4 + 3u^3 + \cdots + u + 1)(8u^{53} - 11u^{52} + \cdots + 480u + 3943)$
c_4, c_5	$(u^4 + u^3 + 3u^2 + 2u + 1)(u^{53} - 2u^{52} + \cdots - 3u + 1)$
c_6	$64(8u^4 + 15u^3 + 12u^2 + 5u + 1)$ $\cdot (8u^{53} - 7u^{52} + \cdots + 348462u + 61297)$
c_7	$(u^4 + u^3 + u^2 + 1)(u^{53} + 2u^{52} + \cdots + 3u - 1)$
c_8	$((u + 1)^4)(u^{53} + 5u^{52} + \cdots - 17u - 64)$
c_9	$u^4(u^{53} - 3u^{52} + \cdots - 576u + 1024)$
c_{10}	$((u - 1)^4)(u^{53} + 5u^{52} + \cdots - 17u - 64)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_5 c_{11}, c_{12}	$(y^4 + 5y^3 + 7y^2 + 2y + 1)(y^{53} + 72y^{52} + \cdots - 13y - 1)$
c_2, c_7	$(y^4 + y^3 + 3y^2 + 2y + 1)(y^{53} - 36y^{52} + \cdots - 13y - 1)$
c_3	$4096(64y^4 + 87y^3 + 46y^2 + 11y + 1)$ $\cdot (64y^{53} + 2007y^{52} + \cdots - 99819282y - 15547249)$
c_6	$4096(64y^4 - 33y^3 + 10y^2 - y + 1)$ $\cdot (64y^{53} - 3105y^{52} + \cdots + 24414558770y - 3757322209)$
c_8, c_{10}	$((y-1)^4)(y^{53} - 49y^{52} + \cdots + 68129y - 4096)$
c_9	$y^4(y^{53} + 27y^{52} + \cdots - 8925184y - 1048576)$