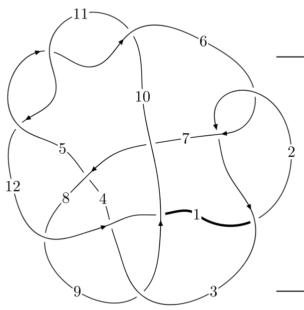
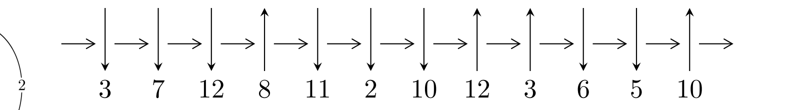
$12n_{0561}$ ($K12n_{0561}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned} I_1^u = \langle & 19514643174787u^{34} - 4572969237385u^{33} + \cdots + 352083910096192b - 115134997157437, \\ & -44181034772241u^{34} - 93208096612611u^{33} + \cdots + 176041955480960a - 34686663928811, \\ & u^{35} + u^{34} + \cdots - 4u - 5\rangle \\ I_2^u = \langle & -u^2a - u^2 + b + a,\ u^3a - 2u^2a + u^3 + a^2 - au + 2a - 1,\ u^4 - u^2 + 1\rangle \end{aligned}$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 43 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.

$\boldsymbol{I_1^u = \langle 1.95\times10^{13}u^{34} - 4.57\times10^{12}u^{33} + \cdots + 3.52\times10^{13}b - 1.15\times10^{14},\ -4.42\times10^{13}u^{34} - 9.32\times10^{13}u^{33} + \cdots + 1.76\times10^{14}a - 3.47\times10^{13},\ u^{35} + u^{34} + \cdots - 4u - 5\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0.250969u^{34} + 0.529465u^{33} + \cdots + 2.80218u + 0.197036 \\ -0.554261u^{34} + 0.129883u^{33} + \cdots + 0.868164u + 3.27010 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 0.791772u^{34} + 0.423142u^{33} + \cdots + 3.34243u - 2.71039 \\ -0.523385u^{34} + 0.0869282u^{33} + \cdots + 0.937584u + 2.29735 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0.805230u^{34} + 0.399582u^{33} + \cdots + 1.93402u - 3.07306 \\ -0.554261u^{34} + 0.129883u^{33} + \cdots + 0.868164u + 3.27010 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^3 \\ u^5 - u^3 + u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -0.472936u^{34} + 0.0799123u^{33} + \cdots + 0.438637u + 2.87741 \\ -0.556115u^{34} - 0.173472u^{33} + \cdots - 2.34087u + 2.38011 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -0.816166u^{34} + 0.145199u^{33} + \cdots + 1.79451u + 3.42292 \\ -1.06658u^{34} - 0.102045u^{33} + \cdots - 3.07330u + 6.87995 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0.601350u^{34} + 0.306853u^{33} + \cdots + 2.54938u - 1.70567 \\ -0.455033u^{34} + 0.135445u^{33} + \cdots + 0.580899u + 2.30784 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -0.528222u^{34} + 0.0504600u^{33} + \cdots - 1.61488u + 4.49023 \\ 0.662513u^{34} + 0.0170577u^{33} + \cdots + 1.34187u - 2.86220 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$= -\frac{3308824036235}{17604195548096}u^{34} + \frac{2338411391075}{17604195548096}u^{33} + \cdots + \frac{689023332437973}{8802097774048}u - \frac{143545741438237}{17604195548096}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{35} + 21u^{34} + \cdots - 74u + 25$
c_2, c_6	$u^{35} - u^{34} + \cdots - 4u + 5$
c_3	$u^{35} - 5u^{34} + \cdots + 296u + 28$
c_4, c_9	$u^{35} - u^{34} + \cdots - 16u + 4$
c_5, c_{10}, c_{11}	$u^{35} + u^{34} + \cdots - 6u + 1$
c_7	$u^{35} - 3u^{34} + \cdots + 6720u - 1472$
c_8	$u^{35} - 3u^{34} + \cdots + 6u + 5$
c_{12}	$u^{35} + 3u^{34} + \cdots + 12u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{35} - 9y^{34} + \cdots + 39626y - 625$
c_2, c_6	$y^{35} - 21y^{34} + \cdots - 74y - 25$
c_3	$y^{35} - 57y^{34} + \cdots - 32784y - 784$
c_4, c_9	$y^{35} + 43y^{34} + \cdots + 184y - 16$
c_5, c_{10}, c_{11}	$y^{35} + 39y^{34} + \cdots + 34y - 1$
c_7	$y^{35} - 31y^{34} + \cdots + 22678016y - 2166784$
c_8	$y^{35} + 39y^{34} + \cdots + 126y - 25$
c_{12}	$y^{35} + 51y^{34} + \cdots + 154y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.203911 + 0.973360I$ $a = -0.519106 + 0.963683I$ $b = -0.26045 - 1.53546I$	$-1.43478 - 6.20512I$	$-1.86669 + 2.78198I$
$u = -0.203911 - 0.973360I$ $a = -0.519106 - 0.963683I$ $b = -0.26045 + 1.53546I$	$-1.43478 + 6.20512I$	$-1.86669 - 2.78198I$
$u = 0.066320 + 0.984954I$ $a = -0.448541 - 0.317717I$ $b = -0.750046 + 0.533829I$	$-8.19601 + 2.49744I$	$-5.06408 - 2.60195I$
$u = 0.066320 - 0.984954I$ $a = -0.448541 + 0.317717I$ $b = -0.750046 - 0.533829I$	$-8.19601 - 2.49744I$	$-5.06408 + 2.60195I$
$u = 0.801249 + 0.559810I$ $a = 1.36028 - 1.03030I$ $b = 0.01451 + 1.59501I$	$8.83899 - 2.24678I$	$4.64462 + 3.81835I$
$u = 0.801249 - 0.559810I$ $a = 1.36028 + 1.03030I$ $b = 0.01451 - 1.59501I$	$8.83899 + 2.24678I$	$4.64462 - 3.81835I$
$u = 1.014440 + 0.137733I$ $a = -1.44237 + 0.41096I$ $b = -0.391237 + 0.679863I$	$-2.29834 - 0.76813I$	$-7.21756 - 0.78239I$
$u = 1.014440 - 0.137733I$ $a = -1.44237 - 0.41096I$ $b = -0.391237 - 0.679863I$	$-2.29834 + 0.76813I$	$-7.21756 + 0.78239I$
$u = 0.910408 + 0.541398I$ $a = -0.378721 + 0.991836I$ $b = -0.212665 - 0.039123I$	$-1.75949 - 2.05479I$	$-11.09061 + 3.13209I$
$u = 0.910408 - 0.541398I$ $a = -0.378721 - 0.991836I$ $b = -0.212665 + 0.039123I$	$-1.75949 + 2.05479I$	$-11.09061 - 3.13209I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.922478 + 0.127300I$ $a = -1.96495 + 0.18361I$ $b = -0.05491 + 1.64507I$	$5.90539 + 0.64255I$	$-5.75392 + 0.64646I$
$u = -0.922478 - 0.127300I$ $a = -1.96495 - 0.18361I$ $b = -0.05491 - 1.64507I$	$5.90539 - 0.64255I$	$-5.75392 - 0.64646I$
$u = -0.812370 + 0.424392I$ $a = 0.773162 + 0.362489I$ $b = 0.109550 - 0.685718I$	$1.05382 + 1.86722I$	$3.18128 - 4.59075I$
$u = -0.812370 - 0.424392I$ $a = 0.773162 - 0.362489I$ $b = 0.109550 + 0.685718I$	$1.05382 - 1.86722I$	$3.18128 + 4.59075I$
$u = 0.912261$ $a = 1.05610$ $b = 0.463900$	-1.34236	-8.12570
$u = -0.842169 + 0.777146I$ $a = -0.89892 - 1.28817I$ $b = -0.050273 + 1.397230I$	$3.07114 + 2.89052I$	$-2.21100 - 2.95071I$
$u = -0.842169 - 0.777146I$ $a = -0.89892 + 1.28817I$ $b = -0.050273 - 1.397230I$	$3.07114 - 2.89052I$	$-2.21100 + 2.95071I$
$u = -1.137850 + 0.335834I$ $a = -1.53286 + 0.05803I$ $b = -0.587577 + 0.359881I$	$-3.27817 + 4.26600I$	$-8.05552 - 6.74990I$
$u = -1.137850 - 0.335834I$ $a = -1.53286 - 0.05803I$ $b = -0.587577 - 0.359881I$	$-3.27817 - 4.26600I$	$-8.05552 + 6.74990I$
$u = -1.152990 + 0.388555I$ $a = 0.878906 - 1.034180I$ $b = 0.002872 - 1.337860I$	$2.24498 + 1.33286I$	$-3.24945 - 0.69819I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.152990-0.388555I$ $a=0.878906+1.034180I$ $b=0.002872+1.337860I$	$2.24498-1.33286I$	$-3.24945+0.69819I$
$u=0.098226+0.753815I$ $a=0.468379+0.420561I$ $b=0.09057-1.46639I$	$5.88674+2.52249I$	$1.23506-2.87985I$
$u=0.098226-0.753815I$ $a=0.468379-0.420561I$ $b=0.09057+1.46639I$	$5.88674-2.52249I$	$1.23506+2.87985I$
$u=1.194500+0.470305I$ $a=-1.80401-0.60694I$ $b=-0.19201-1.46324I$	$2.66330-7.05772I$	$-2.51905+5.88692I$
$u=1.194500-0.470305I$ $a=-1.80401+0.60694I$ $b=-0.19201+1.46324I$	$2.66330+7.05772I$	$-2.51905-5.88692I$
$u=1.330550+0.340353I$ $a=0.175592-0.683458I$ $b=0.33732-1.47223I$	$-6.45071+1.73894I$	$-5.86337-0.49500I$
$u=1.330550-0.340353I$ $a=0.175592+0.683458I$ $b=0.33732+1.47223I$	$-6.45071-1.73894I$	$-5.86337+0.49500I$
$u=-1.252450+0.585255I$ $a=1.89880+0.08113I$ $b=0.27080-1.59119I$	$-4.64525+11.83980I$	$-4.29756-5.89282I$
$u=-1.252450-0.585255I$ $a=1.89880-0.08113I$ $b=0.27080+1.59119I$	$-4.64525-11.83980I$	$-4.29756+5.89282I$
$u=-1.326130+0.448294I$ $a=0.903307+0.583518I$ $b=0.842224+0.446428I$	$-12.58030+2.55008I$	$-8.43526-0.60252I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.326130 - 0.448294I$ $a = 0.903307 - 0.583518I$ $b = 0.842224 - 0.446428I$	$-12.58030 - 2.55008I$	$-8.43526 + 0.60252I$
$u = 1.297550 + 0.525631I$ $a = 1.45281 - 0.36988I$ $b = 0.780540 + 0.640043I$	$-11.9977 - 7.9047I$	$-7.36295 + 5.50788I$
$u = 1.297550 - 0.525631I$ $a = 1.45281 + 0.36988I$ $b = 0.780540 - 0.640043I$	$-11.9977 + 7.9047I$	$-7.36295 - 5.50788I$
$u = -0.019019 + 0.438455I$ $a = 0.850181 + 0.183537I$ $b = 0.318829 + 0.391878I$	$-0.204022 - 1.109310I$	$-3.01108 + 6.25704I$
$u = -0.019019 - 0.438455I$ $a = 0.850181 - 0.183537I$ $b = 0.318829 - 0.391878I$	$-0.204022 + 1.109310I$	$-3.01108 - 6.25704I$

II. $\boldsymbol{I^u_2 = \langle -u^2a - u^2 + b + a,\ u^3a - 2u^2a + u^3 + a^2 - au + 2a - 1,\ u^4 - u^2 + 1\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} a \\ u^2a + u^2 - a \end{pmatrix}$$
$$a_8 = \begin{pmatrix} u^3a - u^2a + u^3 - au + 2a \\ -u^3a + u^2a + u^2 - a - u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u^2a - u^2 + 2a \\ u^2a + u^2 - a \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^3 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -u^3a + u^2a + u^3 - au - u^2 - 2u + 1 \\ -u^3 + au + u + 1 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -2u^3a + 2u^2a + u^3 - 2au - u^2 - 2u + 2 \\ -2u^3 + 2au + u^2 - a + 2u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -u^2 + a + 1 \\ u^2a + 2u^2 - a \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -u^3a + u^3 + au + u^2 - a - u - 1 \\ -u^2a - u^3 - u^2 + a \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4u^2 - 4$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^2-u+1)^4$
c_2, c_6, c_8	$(u^4-u^2+1)^2$
c_3	$u^8+4u^7+16u^6+34u^5+57u^4+62u^3+46u^2+20u+4$
c_4, c_9	$(u^2+1)^4$
c_5, c_{10}, c_{11}	$(u^4+3u^2+1)^2$
c_7	$u^8-8u^7+25u^6-38u^5+33u^4-28u^3+28u^2-16u+4$
c_{12}	$(u^2+u-1)^4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^2+y+1)^4$
c_2, c_6, c_8	$(y^2-y+1)^4$
c_3	$y^8+16y^7+98y^6+264y^5+353y^4+168y^3+92y^2-32y+16$
c_4, c_9	$(y+1)^8$
c_5, c_{10}, c_{11}	$(y^2+3y+1)^4$
c_7	$y^8-14y^7+83y^6-186y^5+113y^4+48y^3+152y^2-32y+16$
c_{12}	$(y^2-3y+1)^4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.866025 + 0.500000I$ $a = 0.901259 + 0.057008I$ $b = 1.61803I$	$7.23771 - 2.02988I$	$-2.00000 + 3.46410I$
$u = 0.866025 + 0.500000I$ $a = -1.03523 + 1.17504I$ $b = -0.618034I$	$-0.65797 - 2.02988I$	$-2.00000 + 3.46410I$
$u = 0.866025 - 0.500000I$ $a = 0.901259 - 0.057008I$ $b = -1.61803I$	$7.23771 + 2.02988I$	$-2.00000 - 3.46410I$
$u = 0.866025 - 0.500000I$ $a = -1.03523 - 1.17504I$ $b = 0.618034I$	$-0.65797 + 2.02988I$	$-2.00000 - 3.46410I$
$u = -0.866025 + 0.500000I$ $a = 0.035233 - 0.557008I$ $b = -0.618034I$	$-0.65797 + 2.02988I$	$-2.00000 - 3.46410I$
$u = -0.866025 + 0.500000I$ $a = -1.90126 - 1.67504I$ $b = 1.61803I$	$7.23771 + 2.02988I$	$-2.00000 - 3.46410I$
$u = -0.866025 - 0.500000I$ $a = 0.035233 + 0.557008I$ $b = 0.618034I$	$-0.65797 - 2.02988I$	$-2.00000 + 3.46410I$
$u = -0.866025 - 0.500000I$ $a = -1.90126 + 1.67504I$ $b = -1.61803I$	$7.23771 - 2.02988I$	$-2.00000 + 3.46410I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^2-u+1)^4)(u^{35}+21u^{34}+\cdots-74u+25)$
c_2, c_6	$((u^4-u^2+1)^2)(u^{35}-u^{34}+\cdots-4u+5)$
c_3	$(u^8+4u^7+16u^6+34u^5+57u^4+62u^3+46u^2+20u+4)$ $\cdot(u^{35}-5u^{34}+\cdots+296u+28)$
c_4, c_9	$((u^2+1)^4)(u^{35}-u^{34}+\cdots-16u+4)$
c_5, c_{10}, c_{11}	$((u^4+3u^2+1)^2)(u^{35}+u^{34}+\cdots-6u+1)$
c_7	$(u^8-8u^7+25u^6-38u^5+33u^4-28u^3+28u^2-16u+4)$ $\cdot(u^{35}-3u^{34}+\cdots+6720u-1472)$
c_8	$((u^4-u^2+1)^2)(u^{35}-3u^{34}+\cdots+6u+5)$
c_{12}	$((u^2+u-1)^4)(u^{35}+3u^{34}+\cdots+12u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y^2+y+1)^4)(y^{35}-9y^{34}+\cdots+39626y-625)$
c_2, c_6	$((y^2-y+1)^4)(y^{35}-21y^{34}+\cdots-74y-25)$
c_3	$(y^8+16y^7+98y^6+264y^5+353y^4+168y^3+92y^2-32y+16)$ $\cdot(y^{35}-57y^{34}+\cdots-32784y-784)$
c_4, c_9	$((y+1)^8)(y^{35}+43y^{34}+\cdots+184y-16)$
c_5, c_{10}, c_{11}	$((y^2+3y+1)^4)(y^{35}+39y^{34}+\cdots+34y-1)$
c_7	$(y^8-14y^7+83y^6-186y^5+113y^4+48y^3+152y^2-32y+16)$ $\cdot(y^{35}-31y^{34}+\cdots+22678016y-2166784)$
c_8	$((y^2-y+1)^4)(y^{35}+39y^{34}+\cdots+126y-25)$
c_{12}	$((y^2-3y+1)^4)(y^{35}+51y^{34}+\cdots+154y-1)$