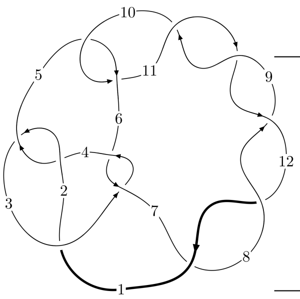
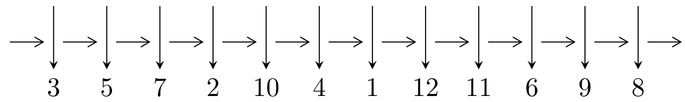
$12a_{0056}$ $(K12a_{0056})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -u^{48} - u^{47} + \cdots + b + 1,\ u^{45} - 4u^{43} + \cdots + a - 5u,\ u^{49} + 2u^{48} + \cdots + u - 1\rangle$$
$$I_2^u = \langle b + 1,\ u^4 - u^2 + a + u + 2,\ u^5 - u^4 + u^2 + u - 1\rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 54 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.

$$I_1^u = \langle -u^{48} - u^{47} + \cdots + b + 1,\ u^{45} - 4u^{43} + \cdots + a - 5u,\ u^{49} + 2u^{48} + \cdots + u - 1 \rangle$$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u^{45} + 4u^{43} + \cdots - 22u^3 + 5u \\ u^{48} + u^{47} + \cdots + 4u^2 - 1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} u^{48} + u^{47} + \cdots + 5u - 1 \\ u^{48} + u^{47} + \cdots + 4u^2 - 1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^9 + 3u^5 + u \\ u^{11} - u^9 + 4u^7 - 3u^5 + 3u^3 - u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 2u^{48} + 2u^{47} + \cdots + 6u - 1 \\ u^{48} + u^{47} + \cdots + u - 1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u^{11} + 4u^7 + 3u^3 \\ u^{13} - u^{11} + 5u^9 - 4u^7 + 6u^5 - 3u^3 + u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} u^3 \\ u^5 - u^3 + u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -u^5 - u \\ -u^7 + u^5 - 2u^3 + u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} u^7 + 2u^3 \\ u^9 - u^7 + 3u^5 - 2u^3 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 6u^{48} + 5u^{47} + \cdots + 9u - 20$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{49} + 20u^{48} + \cdots + 79u + 1$
c_2, c_4	$u^{49} - 6u^{48} + \cdots - u + 1$
c_3, c_6	$u^{49} - u^{48} + \cdots + 64u + 32$
c_5, c_{10}	$u^{49} - 2u^{48} + \cdots + u + 1$
c_7, c_8, c_9 c_{11}, c_{12}	$u^{49} + 8u^{48} + \cdots + 13u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{49} + 24y^{48} + \cdots + 2991y - 1$
c_2, c_4	$y^{49} - 20y^{48} + \cdots + 79y - 1$
c_3, c_6	$y^{49} + 33y^{48} + \cdots - 9728y - 1024$
c_5, c_{10}	$y^{49} - 8y^{48} + \cdots + 13y - 1$
c_7, c_8, c_9 c_{11}, c_{12}	$y^{49} + 68y^{48} + \cdots - 67y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.760736 + 0.719246I$ $a = 1.12247 + 1.09140I$ $b = -0.784658 - 0.558197I$	$3.14913 + 0.38825I$	$-7.13985 + 0.I$
$u = -0.760736 - 0.719246I$ $a = 1.12247 - 1.09140I$ $b = -0.784658 + 0.558197I$	$3.14913 - 0.38825I$	$-7.13985 + 0.I$
$u = 0.796734 + 0.681722I$ $a = -0.291180 + 1.036890I$ $b = -1.281700 + 0.033312I$	$1.51702 - 2.54299I$	$-6.23264 + 3.96997I$
$u = 0.796734 - 0.681722I$ $a = -0.291180 - 1.036890I$ $b = -1.281700 - 0.033312I$	$1.51702 + 2.54299I$	$-6.23264 - 3.96997I$
$u = -0.892137 + 0.327379I$ $a = 2.17207 + 1.31935I$ $b = 1.005090 - 0.623169I$	$0.43580 + 6.91892I$	$-11.9536 - 9.3736I$
$u = -0.892137 - 0.327379I$ $a = 2.17207 - 1.31935I$ $b = 1.005090 + 0.623169I$	$0.43580 - 6.91892I$	$-11.9536 + 9.3736I$
$u = -0.844082 + 0.428322I$ $a = -0.187763 + 0.837953I$ $b = 0.617924 + 0.579853I$	$1.59253 + 2.02971I$	$-8.12894 - 3.92342I$
$u = -0.844082 - 0.428322I$ $a = -0.187763 - 0.837953I$ $b = 0.617924 - 0.579853I$	$1.59253 - 2.02971I$	$-8.12894 + 3.92342I$
$u = 0.693592 + 0.795699I$ $a = -0.527393 + 1.026490I$ $b = 1.070340 - 0.723216I$	$7.01029 + 5.24368I$	$-5.42899 - 3.02603I$
$u = 0.693592 - 0.795699I$ $a = -0.527393 - 1.026490I$ $b = 1.070340 + 0.723216I$	$7.01029 - 5.24368I$	$-5.42899 + 3.02603I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.842140+0.687789I$ $a=-0.05555-2.42181I$ $b=-0.868271+0.553100I$	$2.88211+4.83632I$	$-8.23420-6.42667I$
$u=-0.842140-0.687789I$ $a=-0.05555+2.42181I$ $b=-0.868271-0.553100I$	$2.88211-4.83632I$	$-8.23420+6.42667I$
$u=0.749509+0.792916I$ $a=-0.060126-1.378320I$ $b=0.588767+0.880625I$	$8.45422-0.68674I$	$-3.54074+1.96318I$
$u=0.749509-0.792916I$ $a=-0.060126+1.378320I$ $b=0.588767-0.880625I$	$8.45422+0.68674I$	$-3.54074-1.96318I$
$u=-0.737633+0.516972I$ $a=0.414474+0.300895I$ $b=0.346209+0.168150I$	$1.34830+2.00478I$	$-4.48597-4.55079I$
$u=-0.737633-0.516972I$ $a=0.414474-0.300895I$ $b=0.346209-0.168150I$	$1.34830-2.00478I$	$-4.48597+4.55079I$
$u=0.880418+0.058419I$ $a=1.79760-0.81935I$ $b=0.877222-0.561628I$	$-0.98474+2.22735I$	$-14.5110-2.6928I$
$u=0.880418-0.058419I$ $a=1.79760+0.81935I$ $b=0.877222+0.561628I$	$-0.98474-2.22735I$	$-14.5110+2.6928I$
$u=0.892884+0.720049I$ $a=-1.122640+0.355505I$ $b=0.517458-0.877459I$	$7.97137-4.88104I$	$-4.58899+4.14916I$
$u=0.892884-0.720049I$ $a=-1.122640-0.355505I$ $b=0.517458+0.877459I$	$7.97137+4.88104I$	$-4.58899-4.14916I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.922095 + 0.682387I$ $a = 0.94618 - 2.27074I$ $b = 1.097470 + 0.693580I$	$6.24237 - 10.68800I$	$-7.37912 + 8.93754I$
$u = 0.922095 - 0.682387I$ $a = 0.94618 + 2.27074I$ $b = 1.097470 - 0.693580I$	$6.24237 + 10.68800I$	$-7.37912 - 8.93754I$
$u = 0.740442 + 0.287353I$ $a = -1.50962 + 2.57763I$ $b = -0.946359 - 0.333388I$	$-2.14769 - 2.41886I$	$-15.9646 + 6.9978I$
$u = 0.740442 - 0.287353I$ $a = -1.50962 - 2.57763I$ $b = -0.946359 + 0.333388I$	$-2.14769 + 2.41886I$	$-15.9646 - 6.9978I$
$u = -0.359412 + 0.611149I$ $a = -0.165040 + 1.109630I$ $b = 0.758551 - 0.696515I$	$3.14714 + 1.64287I$	$-3.84623 - 3.06683I$
$u = -0.359412 - 0.611149I$ $a = -0.165040 - 1.109630I$ $b = 0.758551 + 0.696515I$	$3.14714 - 1.64287I$	$-3.84623 + 3.06683I$
$u = 0.931772 + 0.895572I$ $a = 0.237488 - 0.406711I$ $b = 0.694049 - 0.014591I$	$9.96355 - 3.30520I$	0
$u = 0.931772 - 0.895572I$ $a = 0.237488 + 0.406711I$ $b = 0.694049 + 0.014591I$	$9.96355 + 3.30520I$	0
$u = -0.682651 + 0.184302I$ $a = -2.50646 - 0.45724I$ $b = -1.096840 - 0.143397I$	$-2.69048 + 0.60292I$	$-15.3689 - 9.6396I$
$u = -0.682651 - 0.184302I$ $a = -2.50646 + 0.45724I$ $b = -1.096840 + 0.143397I$	$-2.69048 - 0.60292I$	$-15.3689 + 9.6396I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.948044+0.926579I$ $a=\ \ 0.195056-0.777042I$ $b=-1.395190-0.006072I$	$11.83110+3.40658I$	0
$u=-0.948044-0.926579I$ $a=\ \ 0.195056+0.777042I$ $b=-1.395190+0.006072I$	$11.83110-3.40658I$	0
$u=\ \ 0.942403+0.933530I$ $a=\ \ 1.03952-1.20944I$ $b=-0.855209+0.703197I$	$13.54070-0.72694I$	0
$u=\ \ 0.942403-0.933530I$ $a=\ \ 1.03952+1.20944I$ $b=-0.855209-0.703197I$	$13.54070+0.72694I$	0
$u=-0.927792+0.948411I$ $a=-0.633748-1.030830I$ $b=\ \ 1.155820+0.749430I$	$17.4053-6.0517I$	0
$u=-0.927792-0.948411I$ $a=-0.633748+1.030830I$ $b=\ \ 1.155820-0.749430I$	$17.4053+6.0517I$	0
$u=\ \ 0.956706+0.925364I$ $a=\ \ 0.22666+2.17249I$ $b=-0.870319-0.699281I$	$13.4933-6.1049I$	0
$u=\ \ 0.956706-0.925364I$ $a=\ \ 0.22666-2.17249I$ $b=-0.870319+0.699281I$	$13.4933+6.1049I$	0
$u=-0.939680+0.946771I$ $a=-0.07120+1.53829I$ $b=\ \ 0.540687-1.020080I$	$19.3115+0.3590I$	0
$u=-0.939680-0.946771I$ $a=-0.07120-1.53829I$ $b=\ \ 0.540687+1.020080I$	$19.3115-0.3590I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.975390+0.920268I$ $a=\ 0.26091+2.26210I$ $b=\ 1.161320-0.741973I$	$17.2463+12.9142I$	0
$u=-0.975390-0.920268I$ $a=\ 0.26091-2.26210I$ $b=\ 1.161320+0.741973I$	$17.2463-12.9142I$	0
$u=-0.968824+0.929241I$ $a=-1.16534-0.91357I$ $b=\ 0.526652+1.020740I$	$19.2138+6.5292I$	0
$u=-0.968824-0.929241I$ $a=-1.16534+0.91357I$ $b=\ 0.526652-1.020740I$	$19.2138-6.5292I$	0
$u=-0.222542+0.611946I$ $a=-0.356092-1.021050I$ $b=\ 0.934438+0.678142I$	$2.61636-3.65615I$	$-4.75819+3.34819I$
$u=-0.222542-0.611946I$ $a=-0.356092+1.021050I$ $b=\ 0.934438-0.678142I$	$2.61636+3.65615I$	$-4.75819-3.34819I$
$u=\ 0.560438$ $a=\ 0.882793$ $b=-0.134956$	-0.730326	-14.0240
$u=\ 0.314290+0.268544I$ $a=\ 1.79832-0.55498I$ $b=-0.725982+0.146511I$	$-0.980654+0.106245I$	$-9.70626+1.04735I$
$u=\ 0.314290-0.268544I$ $a=\ 1.79832+0.55498I$ $b=-0.725982-0.146511I$	$-0.980654-0.106245I$	$-9.70626-1.04735I$

II. $I_2^u = \langle b+1,\ u^4 - u^2 + a + u + 2,\ u^5 - u^4 + u^2 + u - 1\rangle$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u^4 + u^2 - u - 2 \\ -1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -u^4 + u^2 - u - 3 \\ -1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -u^4 + u^2 - u - 2 \\ -1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} u^3 \\ u^4 - u^3 - u^2 + 1 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -u^4 + u^2 - 1 \\ u^4 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u^2 + 1 \\ u^2 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -u^3 + 3u^2 - u - 14$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y-1)^5$
c_3, c_6	y^5
c_5, c_{10}	$y^5 - y^4 + 4y^3 - 3y^2 + 3y - 1$
c_7, c_8, c_9 c_{11}, c_{12}	$y^5 + 7y^4 + 16y^3 + 13y^2 + 3y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.758138 + 0.584034I$ $a = -0.278580 - 1.055720I$ $b = -1.00000$	$0.17487 + 2.21397I$	$-12.88087 - 4.04855I$
$u = -0.758138 - 0.584034I$ $a = -0.278580 + 1.055720I$ $b = -1.00000$	$0.17487 - 2.21397I$	$-12.88087 + 4.04855I$
$u = 0.935538 + 0.903908I$ $a = -0.020316 + 0.590570I$ $b = -1.00000$	$9.31336 - 3.33174I$	$-13.28666 + 2.53508I$
$u = 0.935538 - 0.903908I$ $a = -0.020316 - 0.590570I$ $b = -1.00000$	$9.31336 + 3.33174I$	$-13.28666 - 2.53508I$
$u = 0.645200$ $a = -2.40221$ $b = -1.00000$	-2.52712	-13.6650

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^5)(u^{49}+20u^{48}+\cdots+79u+1)$
c_2	$((u-1)^5)(u^{49}-6u^{48}+\cdots-u+1)$
c_3, c_6	$u^5(u^{49}-u^{48}+\cdots+64u+32)$
c_4	$((u+1)^5)(u^{49}-6u^{48}+\cdots-u+1)$
c_5	$(u^5-u^4+u^2+u-1)(u^{49}-2u^{48}+\cdots+u+1)$
c_7, c_8, c_9	$(u^5-u^4+4u^3-3u^2+3u-1)(u^{49}+8u^{48}+\cdots+13u+1)$
c_{10}	$(u^5+u^4-u^2+u+1)(u^{49}-2u^{48}+\cdots+u+1)$
c_{11}, c_{12}	$(u^5+u^4+4u^3+3u^2+3u+1)(u^{49}+8u^{48}+\cdots+13u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^5)(y^{49}+24y^{48}+\cdots+2991y-1)$
c_2, c_4	$((y-1)^5)(y^{49}-20y^{48}+\cdots+79y-1)$
c_3, c_6	$y^5(y^{49}+33y^{48}+\cdots-9728y-1024)$
c_5, c_{10}	$(y^5-y^4+4y^3-3y^2+3y-1)(y^{49}-8y^{48}+\cdots+13y-1)$
c_7, c_8, c_9 c_{11}, c_{12}	$(y^5+7y^4+16y^3+13y^2+3y-1)(y^{49}+68y^{48}+\cdots-67y-1)$