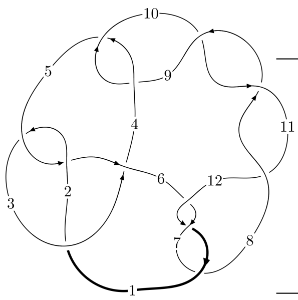
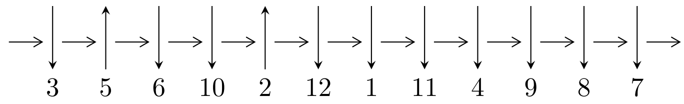
$12a_{0037}$ $(K12a_{0037})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 3u^{67} + 5u^{66} + \cdots + b - 2,\ 11u^{67} + 20u^{66} + \cdots + 2a - 9,\ u^{68} + 3u^{67} + \cdots - u - 1\rangle$$
$$I_2^u = \langle b,\ a^2 + a + 1,\ u - 1\rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 70 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.

$$I_1^u = \langle 3u^{67}+5u^{66}+\cdots+b-2,\ 11u^{67}+20u^{66}+\cdots+2a-9,\ u^{68}+3u^{67}+\cdots-u-1\rangle$$

(i) Arc colorings

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

$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

$$a_4 = \begin{pmatrix} -\frac{11}{2}u^{67} - 10u^{66} + \cdots - 2u + \frac{9}{2} \\ -3u^{67} - 5u^{66} + \cdots - 11u^2 + 2 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -u^2+1 \\ u^4 - 2u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -\frac{7}{2}u^{67} - 6u^{66} + \cdots - 3u + \frac{5}{2} \\ \frac{1}{2}u^{67} + u^{66} + \cdots - u - \frac{1}{2} \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -\frac{1}{2}u^{67} - u^{66} + \cdots + 8u - \frac{1}{2} \\ \frac{1}{2}u^{67} + u^{66} + \cdots + 2u - \frac{1}{2} \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -\frac{5}{2}u^{67} - 4u^{66} + \cdots - u + \frac{5}{2} \\ 6u^{67} + 11u^{66} + \cdots - u - 5 \end{pmatrix}$$

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

$$a_9 = \begin{pmatrix} u^6 - 3u^4 + 2u^2 + 1 \\ u^6 - 2u^4 + u^2 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -u^9 + 4u^7 - 5u^5 + 3u \\ -u^9 + 3u^7 - 3u^5 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 14u^{67} + 19u^{66} + \cdots - 9u - 17$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{68} + 30u^{67} + \cdots - 2u + 1$
c_2, c_5	$u^{68} + 2u^{67} + \cdots + 6u + 1$
c_3	$u^{68} - 2u^{67} + \cdots - 36u + 9$
c_4, c_9	$u^{68} + u^{67} + \cdots - 8u - 4$
c_6, c_7, c_{12}	$u^{68} - 3u^{67} + \cdots + u - 1$
c_8, c_{10}, c_{11}	$u^{68} + 15u^{67} + \cdots + 152u + 16$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{68} + 18y^{67} + \cdots - 62y + 1$
c_2, c_5	$y^{68} + 30y^{67} + \cdots - 2y + 1$
c_3	$y^{68} + 6y^{67} + \cdots + 4014y + 81$
c_4, c_9	$y^{68} - 15y^{67} + \cdots - 152y + 16$
c_6, c_7, c_{12}	$y^{68} - 53y^{67} + \cdots - 13y + 1$
c_8, c_{10}, c_{11}	$y^{68} + 73y^{67} + \cdots - 2592y + 256$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.895522 + 0.351354I$ $a = 0.535572 - 0.466640I$ $b = 0.419390 - 0.166116I$	$-2.40466 + 3.24426I$	$-12.79487 + 0.I$
$u = 0.895522 - 0.351354I$ $a = 0.535572 + 0.466640I$ $b = 0.419390 + 0.166116I$	$-2.40466 - 3.24426I$	$-12.79487 + 0.I$
$u = 1.030920 + 0.245142I$ $a = -0.144942 + 0.300433I$ $b = -0.536018 + 0.056317I$	$-0.929775 - 0.694625I$	0
$u = 1.030920 - 0.245142I$ $a = -0.144942 - 0.300433I$ $b = -0.536018 - 0.056317I$	$-0.929775 + 0.694625I$	0
$u = 0.057827 + 0.908622I$ $a = -1.03946 - 2.62331I$ $b = -0.97261 - 2.56092I$	$7.88380 - 10.29650I$	$-4.69943 + 7.27910I$
$u = 0.057827 - 0.908622I$ $a = -1.03946 + 2.62331I$ $b = -0.97261 + 2.56092I$	$7.88380 + 10.29650I$	$-4.69943 - 7.27910I$
$u = 0.042720 + 0.903115I$ $a = 0.65870 + 2.72612I$ $b = 0.70317 + 2.64498I$	$9.72190 - 4.90561I$	$-2.02313 + 2.74922I$
$u = 0.042720 - 0.903115I$ $a = 0.65870 - 2.72612I$ $b = 0.70317 - 2.64498I$	$9.72190 + 4.90561I$	$-2.02313 - 2.74922I$
$u = 0.003428 + 0.888270I$ $a = -0.34321 + 2.84573I$ $b = -0.00404 + 2.75361I$	$9.88596 - 1.57474I$	$-1.66767 + 2.29520I$
$u = 0.003428 - 0.888270I$ $a = -0.34321 - 2.84573I$ $b = -0.00404 - 2.75361I$	$9.88596 + 1.57474I$	$-1.66767 - 2.29520I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.013729+0.881119I$ $a=\ 0.78129-2.82252I$ $b=\ 0.31193-2.74554I$	$8.18285+3.81988I$	$-4.00036-2.43227I$
$u=-0.013729-0.881119I$ $a=\ 0.78129+2.82252I$ $b=\ 0.31193+2.74554I$	$8.18285-3.81988I$	$-4.00036+2.43227I$
$u=\ 0.040273+0.862504I$ $a=-0.13886-1.98365I$ $b=-0.31232-2.13385I$	$4.10183-3.09420I$	$-7.72899+2.66205I$
$u=\ 0.040273-0.862504I$ $a=-0.13886+1.98365I$ $b=-0.31232+2.13385I$	$4.10183+3.09420I$	$-7.72899-2.66205I$
$u=-1.186300+0.127926I$ $a=-0.90918-1.24102I$ $b=\ 0.436322-0.125183I$	$-2.19445-0.93220I$	0
$u=-1.186300-0.127926I$ $a=-0.90918+1.24102I$ $b=\ 0.436322+0.125183I$	$-2.19445+0.93220I$	0
$u=\ 1.187500+0.181105I$ $a=-0.228112+0.140426I$ $b=-1.199570+0.450826I$	$-1.34633-1.22738I$	0
$u=\ 1.187500-0.181105I$ $a=-0.228112-0.140426I$ $b=-1.199570-0.450826I$	$-1.34633+1.22738I$	0
$u=-1.213540+0.182772I$ $a=\ 0.391833+1.256010I$ $b=-0.311997+0.100144I$	$-1.54755+4.00408I$	0
$u=-1.213540-0.182772I$ $a=\ 0.391833-1.256010I$ $b=-0.311997-0.100144I$	$-1.54755-4.00408I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.247790 + 0.069716I$ $a = 0.262311 - 0.505966I$ $b = 0.81938 - 1.63973I$	$-4.41264 + 1.01414I$	0
$u = 1.247790 - 0.069716I$ $a = 0.262311 + 0.505966I$ $b = 0.81938 + 1.63973I$	$-4.41264 - 1.01414I$	0
$u = 0.626055 + 0.376261I$ $a = 0.779550 + 0.334297I$ $b = 0.620215 - 0.009222I$	$-3.00525 - 2.85440I$	$-15.4568 + 5.4193I$
$u = 0.626055 - 0.376261I$ $a = 0.779550 - 0.334297I$ $b = 0.620215 + 0.009222I$	$-3.00525 + 2.85440I$	$-15.4568 - 5.4193I$
$u = 1.260630 + 0.174920I$ $a = 0.502698 - 0.114267I$ $b = 1.88463 - 0.84447I$	$-3.25504 - 5.41820I$	0
$u = 1.260630 - 0.174920I$ $a = 0.502698 + 0.114267I$ $b = 1.88463 + 0.84447I$	$-3.25504 + 5.41820I$	0
$u = 0.260329 + 0.674892I$ $a = 0.059835 - 1.200510I$ $b = 0.036602 - 0.171621I$	$-0.54570 - 7.12975I$	$-8.28357 + 9.67470I$
$u = 0.260329 - 0.674892I$ $a = 0.059835 + 1.200510I$ $b = 0.036602 + 0.171621I$	$-0.54570 + 7.12975I$	$-8.28357 - 9.67470I$
$u = 1.239520 + 0.401715I$ $a = 1.098620 - 0.433220I$ $b = -0.64232 - 1.99545I$	$0.39705 - 1.43860I$	0
$u = 1.239520 - 0.401715I$ $a = 1.098620 + 0.433220I$ $b = -0.64232 + 1.99545I$	$0.39705 + 1.43860I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.232810 + 0.456922I$ $a = 1.83683 - 0.03858I$ $b = 0.38520 - 2.25306I$	$4.26036 + 5.42868I$	0
$u = 1.232810 - 0.456922I$ $a = 1.83683 + 0.03858I$ $b = 0.38520 + 2.25306I$	$4.26036 - 5.42868I$	0
$u = -1.32040$ $a = -0.354230$ $b = 0.972963$	-6.07475	0
$u = 1.245710 + 0.445929I$ $a = -1.76468 + 0.31816I$ $b = -0.09620 + 2.45581I$	$6.00508 + 0.09093I$	0
$u = 1.245710 - 0.445929I$ $a = -1.76468 - 0.31816I$ $b = -0.09620 - 2.45581I$	$6.00508 - 0.09093I$	0
$u = -1.313060 + 0.227651I$ $a = 0.198042 + 0.731027I$ $b = 0.288228 + 0.423614I$	$-3.29836 + 5.64762I$	0
$u = -1.313060 - 0.227651I$ $a = 0.198042 - 0.731027I$ $b = 0.288228 - 0.423614I$	$-3.29836 - 5.64762I$	0
$u = -1.266290 + 0.417661I$ $a = -1.99000 - 0.31891I$ $b = 0.23911 - 2.26817I$	$4.29886 + 0.82820I$	0
$u = -1.266290 - 0.417661I$ $a = -1.99000 + 0.31891I$ $b = 0.23911 + 2.26817I$	$4.29886 - 0.82820I$	0
$u = 1.276200 + 0.421764I$ $a = -1.50037 + 0.93745I$ $b = 0.67185 + 2.85731I$	$5.93444 - 3.11164I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.276200 - 0.421764I$ $a = -1.50037 - 0.93745I$ $b = 0.67185 - 2.85731I$	$5.93444 + 3.11164I$	0
$u = 0.194231 + 0.624177I$ $a = 0.200700 + 0.974073I$ $b = 0.166804 - 0.050748I$	$1.39398 - 2.63459I$	$-3.83138 + 5.30336I$
$u = 0.194231 - 0.624177I$ $a = 0.200700 - 0.974073I$ $b = 0.166804 + 0.050748I$	$1.39398 + 2.63459I$	$-3.83138 - 5.30336I$
$u = -1.281690 + 0.420235I$ $a = 1.86247 + 0.63495I$ $b = -0.54582 + 2.40594I$	$5.89281 + 6.25632I$	0
$u = -1.281690 - 0.420235I$ $a = 1.86247 - 0.63495I$ $b = -0.54582 - 2.40594I$	$5.89281 - 6.25632I$	0
$u = -1.339060 + 0.171690I$ $a = -0.296922 - 0.787136I$ $b = 0.164287 - 0.826587I$	$-7.45261 + 2.99913I$	0
$u = -1.339060 - 0.171690I$ $a = -0.296922 + 0.787136I$ $b = 0.164287 + 0.826587I$	$-7.45261 - 2.99913I$	0
$u = 1.288500 + 0.412732I$ $a = 1.35888 - 1.17047I$ $b = -1.01417 - 2.98905I$	$4.13145 - 8.45277I$	0
$u = 1.288500 - 0.412732I$ $a = 1.35888 + 1.17047I$ $b = -1.01417 + 2.98905I$	$4.13145 + 8.45277I$	0
$u = -1.305290 + 0.396523I$ $a = -1.154370 - 0.714946I$ $b = 1.13010 - 1.94509I$	$-0.09743 + 7.61245I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.305290-0.396523I$ $a=-1.154370+0.714946I$ $b=\ \ 1.13010+1.94509I$	$-0.09743-7.61245I$	0
$u=-1.364380+0.036473I$ $a=\ \ 0.061668+0.259510I$ $b=-1.252540+0.333167I$	$-9.10989+3.71218I$	0
$u=-1.364380-0.036473I$ $a=\ \ 0.061668-0.259510I$ $b=-1.252540-0.333167I$	$-9.10989-3.71218I$	0
$u=-1.347280+0.239850I$ $a=-0.322191-0.625658I$ $b=-0.620089-0.700964I$	$-5.60593+10.34200I$	0
$u=-1.347280-0.239850I$ $a=-0.322191+0.625658I$ $b=-0.620089+0.700964I$	$-5.60593-10.34200I$	0
$u=\ \ 0.352806+0.523351I$ $a=-0.429659-1.178270I$ $b=-0.416900-0.230397I$	$-2.23370-0.62660I$	$-12.61670+3.83528I$
$u=\ \ 0.352806-0.523351I$ $a=-0.429659+1.178270I$ $b=-0.416900+0.230397I$	$-2.23370+0.62660I$	$-12.61670-3.83528I$
$u=-1.313460+0.421883I$ $a=\ \ 1.43757+1.23124I$ $b=-1.29435+2.56292I$	$5.48960+9.64527I$	0
$u=-1.313460-0.421883I$ $a=\ \ 1.43757-1.23124I$ $b=-1.29435-2.56292I$	$5.48960-9.64527I$	0
$u=-1.324500+0.421925I$ $a=-1.24973-1.42112I$ $b=\ \ 1.58602-2.58289I$	$3.5636+15.0559I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.324500-0.421925I$ $a=-1.24973+1.42112I$ $b=1.58602+2.58289I$	$3.5636-15.0559I$	0
$u=0.013858+0.538053I$ $a=0.93729+1.22313I$ $b=0.676344-0.109112I$	$2.08272-1.40752I$	$-0.96646+3.79117I$
$u=0.013858-0.538053I$ $a=0.93729-1.22313I$ $b=0.676344+0.109112I$	$2.08272+1.40752I$	$-0.96646-3.79117I$
$u=-0.099088+0.477326I$ $a=-1.27945-1.92708I$ $b=-0.871503-0.181323I$	$0.87080+3.06361I$	$-3.02049-3.15038I$
$u=-0.099088-0.477326I$ $a=-1.27945+1.92708I$ $b=-0.871503+0.181323I$	$0.87080-3.06361I$	$-3.02049+3.15038I$
$u=0.440851$ $a=0.0522081$ $b=-0.459473$	-0.831706	-11.9310
$u=-0.189182+0.115386I$ $a=-0.02171-3.59531I$ $b=-0.205879-0.531302I$	$-0.30583-1.79467I$	$-2.23312+3.53008I$
$u=-0.189182-0.115386I$ $a=-0.02171+3.59531I$ $b=-0.205879+0.531302I$	$-0.30583+1.79467I$	$-2.23312-3.53008I$

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

(i) Arc colorings

$a_1 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$

$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$

$a_7 = \begin{pmatrix} 1 \\ -1 \end{pmatrix}$

$a_{12} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$

$a_4 = \begin{pmatrix} a \\ 0 \end{pmatrix}$

$a_6 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$

$a_3 = \begin{pmatrix} a \\ -a \end{pmatrix}$

$a_2 = \begin{pmatrix} a + 1 \\ -a \end{pmatrix}$

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

$a_{11} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$

$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$

$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4a - 11$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.00000$ $a = -0.500000 + 0.866025I$ $b = 0$	$-1.64493 + 2.02988I$	$-9.00000 - 3.46410I$
$u = 1.00000$ $a = -0.500000 - 0.866025I$ $b = 0$	$-1.64493 - 2.02988I$	$-9.00000 + 3.46410I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^2-u+1)(u^{68}+30u^{67}+\cdots-2u+1)$
c_2	$(u^2+u+1)(u^{68}+2u^{67}+\cdots+6u+1)$
c_3	$(u^2-u+1)(u^{68}-2u^{67}+\cdots-36u+9)$
c_4, c_9	$u^2(u^{68}+u^{67}+\cdots-8u-4)$
c_5	$(u^2-u+1)(u^{68}+2u^{67}+\cdots+6u+1)$
c_6, c_7	$((u-1)^2)(u^{68}-3u^{67}+\cdots+u-1)$
c_8, c_{10}, c_{11}	$u^2(u^{68}+15u^{67}+\cdots+152u+16)$
c_{12}	$((u+1)^2)(u^{68}-3u^{67}+\cdots+u-1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y^2+y+1)(y^{68}+18y^{67}+\cdots-62y+1)$
c_2, c_5	$(y^2+y+1)(y^{68}+30y^{67}+\cdots-2y+1)$
c_3	$(y^2+y+1)(y^{68}+6y^{67}+\cdots+4014y+81)$
c_4, c_9	$y^2(y^{68}-15y^{67}+\cdots-152y+16)$
c_6, c_7, c_{12}	$((y-1)^2)(y^{68}-53y^{67}+\cdots-13y+1)$
c_8, c_{10}, c_{11}	$y^2(y^{68}+73y^{67}+\cdots-2592y+256)$