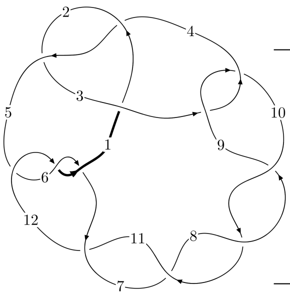
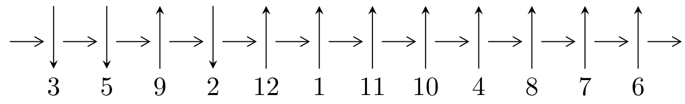
$12a_{0168}$ ($K12a_{0168}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -u^{28} + 10u^{26} + \cdots + 6u^2 + b,\ -u^{34} + u^{33} + \cdots + a - 8u,\ u^{35} - 2u^{34} + \cdots - u + 1\rangle$$
$$I_2^u = \langle u^5 - u^3 + b - u,\ u^3 + a,$$
$$u^{15} - 5u^{13} - u^{12} + 10u^{11} + 4u^{10} - 6u^9 - 6u^8 - 7u^7 + u^6 + 11u^5 + 5u^4 - u^3 - 3u^2 - 3u - 1\rangle$$
$$I_3^u = \langle b + 1,\ a - 1,\ u + 1\rangle$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 51 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. $\boldsymbol{I^u_1 =}$
$\boldsymbol{\langle -u^{28}+10u^{26}+\cdots+6u^2+b,\ -u^{34}+u^{33}+\cdots+a-8u,\ u^{35}-2u^{34}+\cdots-u+1\rangle}$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -u \\ -u^3+u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} u^{34}-u^{33}+\cdots+20u^2+8u \\ u^{28}-10u^{26}+\cdots-16u^3-6u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -u^2+1 \\ -u^4+2u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u^{33}+13u^{31}+\cdots+28u^2+8u \\ -u^{34}+u^{33}+\cdots-u+1 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} u^{34}-13u^{32}+\cdots-7u-1 \\ u^{34}-u^{33}+\cdots+u-1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} u^3-2u \\ -u^3+u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} u^6-3u^4+2u^2+1 \\ -u^6+2u^4-u^2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u^9-4u^7+5u^5-3u \\ -u^9+3u^7-3u^5+u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} u^{12}-5u^{10}+9u^8-4u^6-6u^4+5u^2+1 \\ -u^{12}+4u^{10}-6u^8+2u^6+3u^4-2u^2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -2u^{33}+4u^{32}+26u^{31}-48u^{30}-154u^{29}+252u^{28}+536u^{27}-724u^{26}-1162u^{25}+1096u^{24}+1448u^{23}-336u^{22}-448u^{21}-1792u^{20}-1708u^{19}+2984u^{18}+2926u^{17}-836u^{16}-1400u^{15}-2388u^{14}-1280u^{13}+2228u^{12}+1868u^{11}+404u^{10}-328u^9-1140u^8-596u^7+60u^6+196u^5+236u^4+100u^3+28u^2-6u$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{35} + 20u^{34} + \cdots + 3u + 1$
c_2, c_4	$u^{35} - 2u^{34} + \cdots + 3u - 1$
c_3, c_9	$u^{35} + 2u^{34} + \cdots - 2u - 2$
c_5, c_6, c_{12}	$u^{35} + 2u^{34} + \cdots - u - 1$
c_7, c_8, c_{10} c_{11}	$u^{35} - 6u^{34} + \cdots + 8u - 4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{35} - 8y^{34} + \cdots + 35y - 1$
c_2, c_4	$y^{35} - 20y^{34} + \cdots + 3y - 1$
c_3, c_9	$y^{35} - 6y^{34} + \cdots + 8y - 4$
c_5, c_6, c_{12}	$y^{35} - 28y^{34} + \cdots - 13y - 1$
c_7, c_8, c_{10} c_{11}	$y^{35} + 42y^{34} + \cdots - 136y - 16$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.029628 + 0.934102I$ $a = -3.61963 + 0.54565I$ $b = 4.19510 - 0.71037I$	$-14.7947 - 8.3253I$	$-0.91975 + 5.31258I$
$u = -0.029628 - 0.934102I$ $a = -3.61963 - 0.54565I$ $b = 4.19510 + 0.71037I$	$-14.7947 + 8.3253I$	$-0.91975 - 5.31258I$
$u = 0.004692 + 0.923942I$ $a = 3.64319 + 0.66960I$ $b = -4.10450 - 1.08656I$	$-14.9356 + 1.5707I$	$-1.236325 - 0.670783I$
$u = 0.004692 - 0.923942I$ $a = 3.64319 - 0.66960I$ $b = -4.10450 + 1.08656I$	$-14.9356 - 1.5707I$	$-1.236325 + 0.670783I$
$u = -1.140910 + 0.226464I$ $a = 0.0410600 + 0.0527107I$ $b = -0.796518 + 0.135470I$	$1.16280 - 0.99874I$	$6.67808 + 0.23087I$
$u = -1.140910 - 0.226464I$ $a = 0.0410600 - 0.0527107I$ $b = -0.796518 - 0.135470I$	$1.16280 + 0.99874I$	$6.67808 - 0.23087I$
$u = -1.211370 + 0.063006I$ $a = -0.024848 + 0.395141I$ $b = -0.93931 - 1.68300I$	$2.16189 - 1.54722I$	$7.54202 + 4.01814I$
$u = -1.211370 - 0.063006I$ $a = -0.024848 - 0.395141I$ $b = -0.93931 + 1.68300I$	$2.16189 + 1.54722I$	$7.54202 - 4.01814I$
$u = -0.139390 + 0.744521I$ $a = -2.63405 + 0.70052I$ $b = 1.81184 - 0.03604I$	$-4.64613 - 6.27110I$	$0.28899 + 7.66392I$
$u = -0.139390 - 0.744521I$ $a = -2.63405 - 0.70052I$ $b = 1.81184 + 0.03604I$	$-4.64613 + 6.27110I$	$0.28899 - 7.66392I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.233890+0.279365I$ $a=-0.14304+1.43122I$ $b=2.18803-1.44880I$	$-1.47413-4.67753I$	$3.26707+4.95430I$
$u=-1.233890-0.279365I$ $a=-0.14304-1.43122I$ $b=2.18803+1.44880I$	$-1.47413+4.67753I$	$3.26707-4.95430I$
$u=1.276390+0.259219I$ $a=-0.047693+0.240818I$ $b=0.432237+0.227863I$	$2.43611+5.45580I$	$9.29163-6.05568I$
$u=1.276390-0.259219I$ $a=-0.047693-0.240818I$ $b=0.432237-0.227863I$	$2.43611-5.45580I$	$9.29163+6.05568I$
$u=1.302250+0.054350I$ $a=0.287821-0.006470I$ $b=0.723841+0.741201I$	$6.06693+0.68963I$	$14.6543-0.4108I$
$u=1.302250-0.054350I$ $a=0.287821+0.006470I$ $b=0.723841-0.741201I$	$6.06693-0.68963I$	$14.6543+0.4108I$
$u=1.314130+0.126505I$ $a=0.477565+0.637528I$ $b=-0.035059-0.928052I$	$5.18133+4.97391I$	$11.84206-7.53779I$
$u=1.314130-0.126505I$ $a=0.477565-0.637528I$ $b=-0.035059+0.928052I$	$5.18133-4.97391I$	$11.84206+7.53779I$
$u=0.028586+0.673943I$ $a=2.75743+1.25369I$ $b=-1.39032-1.02302I$	$-5.31953+1.23761I$	$-2.13192-0.75441I$
$u=0.028586-0.673943I$ $a=2.75743-1.25369I$ $b=-1.39032+1.02302I$	$-5.31953-1.23761I$	$-2.13192+0.75441I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.306990 + 0.302770I$ $a = 0.54892 + 1.54089I$ $b = -2.14001 - 0.30607I$	$-0.13672 + 10.00530I$	$5.74688 - 9.45823I$
$u = 1.306990 - 0.302770I$ $a = 0.54892 - 1.54089I$ $b = -2.14001 + 0.30607I$	$-0.13672 - 10.00530I$	$5.74688 + 9.45823I$
$u = -1.274370 + 0.449256I$ $a = 0.464706 + 0.179729I$ $b = -0.289894 - 0.612925I$	$-7.05845 - 1.54689I$	$5.29634 + 0.63495I$
$u = -1.274370 - 0.449256I$ $a = 0.464706 - 0.179729I$ $b = -0.289894 + 0.612925I$	$-7.05845 + 1.54689I$	$5.29634 - 0.63495I$
$u = -1.292980 + 0.447168I$ $a = -0.48290 + 2.40208I$ $b = 4.44596 + 0.24017I$	$-10.90240 - 6.46399I$	$2.13256 + 3.64968I$
$u = -1.292980 - 0.447168I$ $a = -0.48290 - 2.40208I$ $b = 4.44596 - 0.24017I$	$-10.90240 + 6.46399I$	$2.13256 - 3.64968I$
$u = 1.300000 + 0.439361I$ $a = -0.464718 + 0.254925I$ $b = 0.131131 - 0.562319I$	$-6.86104 + 8.18007I$	$5.63732 - 5.18856I$
$u = 1.300000 - 0.439361I$ $a = -0.464718 - 0.254925I$ $b = 0.131131 + 0.562319I$	$-6.86104 - 8.18007I$	$5.63732 + 5.18856I$
$u = 1.313670 + 0.446415I$ $a = 0.61332 + 2.40054I$ $b = -4.34015 + 0.59580I$	$-10.6081 + 13.2523I$	$2.64420 - 8.00654I$
$u = 1.313670 - 0.446415I$ $a = 0.61332 - 2.40054I$ $b = -4.34015 - 0.59580I$	$-10.6081 - 13.2523I$	$2.64420 + 8.00654I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.605125$ $a = 0.150256$ $b = -0.724538$	0.878305	11.8450
$u = -0.357155 + 0.473523I$ $a = -1.032500 + 0.775837I$ $b = -0.077318 + 0.333065I$	$0.06389 - 3.04882I$	$6.31761 + 9.14792I$
$u = -0.357155 - 0.473523I$ $a = -1.032500 - 0.775837I$ $b = -0.077318 - 0.333065I$	$0.06389 + 3.04882I$	$6.31761 - 9.14792I$
$u = 0.135558 + 0.221933I$ $a = 0.04024 + 3.17604I$ $b = 0.547219 - 0.274542I$	$-1.63800 + 0.52732I$	$-3.97358 - 0.67184I$
$u = 0.135558 - 0.221933I$ $a = 0.04024 - 3.17604I$ $b = 0.547219 + 0.274542I$	$-1.63800 - 0.52732I$	$-3.97358 + 0.67184I$

II. $I_2^u = \langle u^5 - u^3 + b - u,\ u^3 + a,\ u^{15} - 5u^{13} + \cdots - 3u - 1\rangle$

(i) Arc colorings

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

$$a_7 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

$$a_2 = \begin{pmatrix} -u^3 \\ -u^5 + u^3 + u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} u^4 - u^2 + 1 \\ u^6 - 2u^4 + u^2 \end{pmatrix}$$

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

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

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

$$a_9 = \begin{pmatrix} u^{12} - 5u^{10} + 9u^8 - 4u^6 - 6u^4 + 5u^2 + 1 \\ -u^{12} + 4u^{10} - 6u^8 + 2u^6 + 3u^4 - 2u^2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= 4u^{12} - 16u^{10} - 4u^9 + 24u^8 + 12u^7 - 12u^5 - 28u^4 - 8u^3 + 16u^2 + 12u + 14$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{15} + 10u^{14} + \cdots + 3u + 1$
c_2, c_4, c_5 c_6, c_{12}	$u^{15} - 5u^{13} + \cdots - 3u + 1$
c_3, c_9	$(u^5 - u^4 + u^2 + u - 1)^3$
c_7, c_8, c_{10} c_{11}	$(u^5 - u^4 + 4u^3 - 3u^2 + 3u - 1)^3$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{15} - 10y^{14} + \cdots + 23y - 1$
c_2, c_4, c_5 c_6, c_{12}	$y^{15} - 10y^{14} + \cdots + 3y - 1$
c_3, c_9	$(y^5 - y^4 + 4y^3 - 3y^2 + 3y - 1)^3$
c_7, c_8, c_{10} c_{11}	$(y^5 + 7y^4 + 16y^3 + 13y^2 + 3y - 1)^3$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.016489 + 0.918115I$ $a = -0.041693 + 0.773164I$ $b = 0.083746 - 0.505303I$	$-10.95830 - 3.33174I$	$2.08126 + 2.36228I$
$u = -0.016489 - 0.918115I$ $a = -0.041693 - 0.773164I$ $b = 0.083746 + 0.505303I$	$-10.95830 + 3.33174I$	$2.08126 - 2.36228I$
$u = -1.088950 + 0.365332I$ $a = 0.85527 - 1.25089I$ $b = -2.03946 - 0.38065I$	$-1.81981 + 2.21397I$	$3.11432 - 4.22289I$
$u = -1.088950 - 0.365332I$ $a = 0.85527 + 1.25089I$ $b = -2.03946 + 0.38065I$	$-1.81981 - 2.21397I$	$3.11432 + 4.22289I$
$u = 1.16504$ $a = -1.58132$ $b = 0.600011$	0.882183	11.6090
$u = 1.193940 + 0.276748I$ $a = -1.42761 - 1.16230I$ $b = 1.46394 - 1.07220I$	$-1.81981 + 2.21397I$	$3.11432 - 4.22289I$
$u = 1.193940 - 0.276748I$ $a = -1.42761 + 1.16230I$ $b = 1.46394 + 1.07220I$	$-1.81981 - 2.21397I$	$3.11432 + 4.22289I$
$u = -0.104987 + 0.642080I$ $a = -0.128690 + 0.243477I$ $b = 0.108165 + 0.318259I$	$-1.81981 - 2.21397I$	$3.11432 + 4.22289I$
$u = -0.104987 - 0.642080I$ $a = -0.128690 - 0.243477I$ $b = 0.108165 - 0.318259I$	$-1.81981 + 2.21397I$	$3.11432 - 4.22289I$
$u = -1.269280 + 0.467945I$ $a = 1.21110 - 2.15922I$ $b = -3.35937 - 1.81738I$	$-10.95830 + 3.33174I$	$2.08126 - 2.36228I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.269280 - 0.467945I$ $a = 1.21110 + 2.15922I$ $b = -3.35937 + 1.81738I$	$-10.95830 - 3.33174I$	$2.08126 + 2.36228I$
$u = 1.285770 + 0.450170I$ $a = -1.34395 - 2.14145I$ $b = 3.15926 - 2.07048I$	$-10.95830 + 3.33174I$	$2.08126 - 2.36228I$
$u = 1.285770 - 0.450170I$ $a = -1.34395 + 2.14145I$ $b = 3.15926 + 2.07048I$	$-10.95830 - 3.33174I$	$2.08126 + 2.36228I$
$u = -0.582519 + 0.134108I$ $a = 0.166235 - 0.134108I$ $b = -0.716289 + 0.199149I$	0.882183	$11.60884 + 0.I$
$u = -0.582519 - 0.134108I$ $a = 0.166235 + 0.134108I$ $b = -0.716289 - 0.199149I$	0.882183	$11.60884 + 0.I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 0$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

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

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u-1)(u^{15}+10u^{14}+\cdots+3u+1)(u^{35}+20u^{34}+\cdots+3u+1)$
c_2	$(u-1)(u^{15}-5u^{13}+\cdots-3u+1)(u^{35}-2u^{34}+\cdots+3u-1)$
c_3, c_9	$u(u^5-u^4+u^2+u-1)^3(u^{35}+2u^{34}+\cdots-2u-2)$
c_4	$(u+1)(u^{15}-5u^{13}+\cdots-3u+1)(u^{35}-2u^{34}+\cdots+3u-1)$
c_5, c_6	$(u+1)(u^{15}-5u^{13}+\cdots-3u+1)(u^{35}+2u^{34}+\cdots-u-1)$
c_7, c_8, c_{10} c_{11}	$u(u^5-u^4+\cdots+3u-1)^3(u^{35}-6u^{34}+\cdots+8u-4)$
c_{12}	$(u-1)(u^{15}-5u^{13}+\cdots-3u+1)(u^{35}+2u^{34}+\cdots-u-1)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y-1)(y^{15}-10y^{14}+\cdots+23y-1)(y^{35}-8y^{34}+\cdots+35y-1)$
c_2, c_4	$(y-1)(y^{15}-10y^{14}+\cdots+3y-1)(y^{35}-20y^{34}+\cdots+3y-1)$
c_3, c_9	$y(y^5-y^4+\cdots+3y-1)^3(y^{35}-6y^{34}+\cdots+8y-4)$
c_5, c_6, c_{12}	$(y-1)(y^{15}-10y^{14}+\cdots+3y-1)(y^{35}-28y^{34}+\cdots-13y-1)$
c_7, c_8, c_{10} c_{11}	$y(y^5+7y^4+\cdots+3y-1)^3(y^{35}+42y^{34}+\cdots-136y-16)$