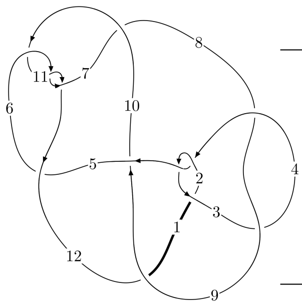
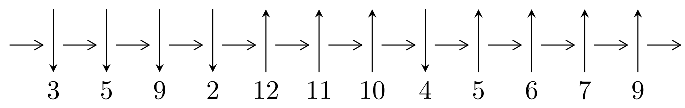
$12n_{0241}$ ($K12n_{0241}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned} I_1^u = \langle & -1.03137 \times 10^{66} u^{36} + 6.98280 \times 10^{65} u^{35} + \cdots + 2.95081 \times 10^{68} b - 1.06268 \times 10^{68}, \\ & 3.77823 \times 10^{67} u^{36} - 2.87660 \times 10^{67} u^{35} + \cdots + 2.36065 \times 10^{69} a + 2.08922 \times 10^{69}, \\ & u^{37} - u^{36} + \cdots + 128u + 256 \rangle \end{aligned}$$

$$I_1^v = \langle a,\ b-1,\ v^8 - v^7 - v^6 + 2v^5 + v^4 - 2v^3 + 2v - 1 \rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 45 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. $\boldsymbol{I_1^u = \langle -1.03 \times 10^{66} u^{36} + 6.98 \times 10^{65} u^{35} + \cdots + 2.95 \times 10^{68} b - 1.06 \times 10^{68},\ 3.78 \times 10^{67} u^{36} - 2.88 \times 10^{67} u^{35} + \cdots + 2.36 \times 10^{69} a + 2.09 \times 10^{69},\ u^{37} - u^{36} + \cdots + 128u + 256 \rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

$$a_5 = \begin{pmatrix} -0.0160050u^{36} + 0.0121856u^{35} + \cdots - 8.06518u - 0.885020 \\ 0.00349520u^{36} - 0.00236640u^{35} + \cdots + 1.79889u + 0.360133 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -0.0133199u^{36} + 0.0418348u^{35} + \cdots + 0.507839u + 12.6265 \\ 0.00381941u^{36} - 0.0132824u^{35} + \cdots + 0.836374u - 4.09729 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.0160050u^{36} + 0.0121856u^{35} + \cdots - 8.06518u - 0.885020 \\ 0.00596782u^{36} - 0.00520306u^{35} + \cdots + 2.78728u + 0.617635 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -0.0100372u^{36} + 0.00698258u^{35} + \cdots - 5.27790u - 0.267385 \\ 0.00596782u^{36} - 0.00520306u^{35} + \cdots + 2.78728u + 0.617635 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -0.0154489u^{36} + 0.0231599u^{35} + \cdots - 4.79943u + 5.30651 \\ -0.000302840u^{36} + 0.00840424u^{35} + \cdots + 2.35144u + 2.54004 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -0.0100372u^{36} + 0.00698258u^{35} + \cdots - 5.27790u - 0.267385 \\ 0.0110751u^{36} - 0.00839995u^{35} + \cdots + 5.74781u + 1.39963 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.0440610u^{36} + 0.0321408u^{35} + \cdots - 23.2326u - 5.35412 \\ 0.0221974u^{36} - 0.0147892u^{35} + \cdots + 12.6696u + 3.48847 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -0.0148066u^{36} + 0.00829427u^{35} + \cdots - 11.4914u - 1.08615 \\ -0.00186082u^{36} + 0.00671544u^{35} + \cdots + 3.81289u + 3.67874 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -0.0751690u^{36} + 0.0952069u^{35} + \cdots - 23.9143u + 7.79267$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{37} + 5u^{36} + \cdots - 5u + 1$
c_2, c_4	$u^{37} - 9u^{36} + \cdots - 7u + 1$
c_3, c_8	$u^{37} - u^{36} + \cdots + 128u + 256$
c_5, c_7	$u^{37} + 6u^{36} + \cdots + 35u + 5$
c_6, c_{10}, c_{11}	$u^{37} - 2u^{36} + \cdots + 3u + 1$
c_9	$u^{37} + 2u^{36} + \cdots + 3u + 1$
c_{12}	$u^{37} - 8u^{36} + \cdots + 2082719u - 154033$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{37} + 63y^{36} + \cdots - y - 1$
c_2, c_4	$y^{37} - 5y^{36} + \cdots - 5y - 1$
c_3, c_8	$y^{37} + 51y^{36} + \cdots - 475136y - 65536$
c_5, c_7	$y^{37} + 16y^{36} + \cdots + 735y - 25$
c_6, c_{10}, c_{11}	$y^{37} - 32y^{36} + \cdots + 27y - 1$
c_9	$y^{37} - 48y^{36} + \cdots + 27y - 1$
c_{12}	$y^{37} - 84y^{36} + \cdots + 1848165923715y - 23726165089$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.878368 + 0.497461I$ $a = 0.626443 + 0.343621I$ $b = 0.227102 - 0.673098I$	$-0.66892 + 2.27408I$	$1.99793 - 4.76069I$
$u = -0.878368 - 0.497461I$ $a = 0.626443 - 0.343621I$ $b = 0.227102 + 0.673098I$	$-0.66892 - 2.27408I$	$1.99793 + 4.76069I$
$u = -0.756357 + 0.569885I$ $a = 0.466384 - 0.081501I$ $b = 1.080620 + 0.363590I$	$0.61705 - 4.41139I$	$2.87485 + 3.50022I$
$u = -0.756357 - 0.569885I$ $a = 0.466384 + 0.081501I$ $b = 1.080620 - 0.363590I$	$0.61705 + 4.41139I$	$2.87485 - 3.50022I$
$u = -0.491761 + 0.952107I$ $a = 0.695040 + 0.682945I$ $b = -0.267990 - 0.719272I$	$6.82750 - 1.30632I$	$10.37535 + 1.68426I$
$u = -0.491761 - 0.952107I$ $a = 0.695040 - 0.682945I$ $b = -0.267990 + 0.719272I$	$6.82750 + 1.30632I$	$10.37535 - 1.68426I$
$u = 0.886724 + 0.087993I$ $a = 0.586081 - 0.184026I$ $b = 0.553122 + 0.487673I$	$2.29551 + 0.52381I$	$5.03075 + 0.94889I$
$u = 0.886724 - 0.087993I$ $a = 0.586081 + 0.184026I$ $b = 0.553122 - 0.487673I$	$2.29551 - 0.52381I$	$5.03075 - 0.94889I$
$u = -0.366615 + 0.752594I$ $a = 0.451654 - 0.034286I$ $b = 1.201400 + 0.167112I$	$0.11703 + 2.14687I$	$4.21868 - 4.14096I$
$u = -0.366615 - 0.752594I$ $a = 0.451654 + 0.034286I$ $b = 1.201400 - 0.167112I$	$0.11703 - 2.14687I$	$4.21868 + 4.14096I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.040136 + 0.830344I$ $a = 1.19957 - 1.19424I$ $b = -0.581327 + 0.416814I$	$1.73939 + 7.30260I$	$6.40314 - 7.32057I$
$u = 0.040136 - 0.830344I$ $a = 1.19957 + 1.19424I$ $b = -0.581327 - 0.416814I$	$1.73939 - 7.30260I$	$6.40314 + 7.32057I$
$u = 0.563224 + 0.605095I$ $a = 0.466156 + 0.056547I$ $b = 1.114100 - 0.256450I$	$-3.61155 + 1.05730I$	$-2.65114 + 0.19593I$
$u = 0.563224 - 0.605095I$ $a = 0.466156 - 0.056547I$ $b = 1.114100 + 0.256450I$	$-3.61155 - 1.05730I$	$-2.65114 - 0.19593I$
$u = 0.981996 + 0.654437I$ $a = 0.572407 - 0.396675I$ $b = 0.180218 + 0.817886I$	$4.10036 - 5.71187I$	$7.23097 + 5.43034I$
$u = 0.981996 - 0.654437I$ $a = 0.572407 + 0.396675I$ $b = 0.180218 - 0.817886I$	$4.10036 + 5.71187I$	$7.23097 - 5.43034I$
$u = -0.066568 + 0.771395I$ $a = 1.33592 + 1.03307I$ $b = -0.531570 - 0.362239I$	$-2.71712 - 3.28265I$	$1.87410 + 4.96573I$
$u = -0.066568 - 0.771395I$ $a = 1.33592 - 1.03307I$ $b = -0.531570 + 0.362239I$	$-2.71712 + 3.28265I$	$1.87410 - 4.96573I$
$u = 0.419103 + 0.595983I$ $a = 0.910599 - 0.447643I$ $b = -0.115558 + 0.434784I$	$1.109940 + 0.478757I$	$7.85612 - 2.59030I$
$u = 0.419103 - 0.595983I$ $a = 0.910599 + 0.447643I$ $b = -0.115558 - 0.434784I$	$1.109940 - 0.478757I$	$7.85612 + 2.59030I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.077849 + 0.690240I$ $a = 1.50612 - 0.77029I$ $b = -0.473705 + 0.269170I$	$0.539059 - 0.667337I$	$5.56096 - 0.61157I$
$u = 0.077849 - 0.690240I$ $a = 1.50612 + 0.77029I$ $b = -0.473705 - 0.269170I$	$0.539059 + 0.667337I$	$5.56096 + 0.61157I$
$u = -0.407194$ $a = 0.525318$ $b = 0.903607$	-1.31151	-10.2650
$u = 0.39124 + 1.82665I$ $a = -0.068005 + 0.975912I$ $b = -1.07106 - 1.01973I$	$9.29659 - 4.13983I$	0
$u = 0.39124 - 1.82665I$ $a = -0.068005 - 0.975912I$ $b = -1.07106 + 1.01973I$	$9.29659 + 4.13983I$	0
$u = 0.24251 + 1.87487I$ $a = 0.000094 + 0.931629I$ $b = -0.99989 - 1.07339I$	$9.54816 - 3.51968I$	0
$u = 0.24251 - 1.87487I$ $a = 0.000094 - 0.931629I$ $b = -0.99989 + 1.07339I$	$9.54816 + 3.51968I$	0
$u = -0.48778 + 1.83564I$ $a = -0.120525 - 0.976988I$ $b = -1.12438 + 1.00821I$	$6.99297 + 8.38148I$	0
$u = -0.48778 - 1.83564I$ $a = -0.120525 + 0.976988I$ $b = -1.12438 - 1.00821I$	$6.99297 - 8.38148I$	0
$u = -0.13124 + 1.93107I$ $a = 0.037828 - 0.886275I$ $b = -0.95193 + 1.12627I$	$7.58072 - 0.60625I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.13124 - 1.93107I$ $a = 0.037828 + 0.886275I$ $b = -0.95193 - 1.12627I$	$7.58072 + 0.60625I$	0
$u = 0.53822 + 1.86696I$ $a = -0.147624 + 0.960917I$ $b = -1.15619 - 1.01668I$	$12.0430 - 12.4368I$	0
$u = 0.53822 - 1.86696I$ $a = -0.147624 - 0.960917I$ $b = -1.15619 + 1.01668I$	$12.0430 + 12.4368I$	0
$u = 0.09684 + 2.00647I$ $a = 0.036196 + 0.850721I$ $b = -0.95008 - 1.17335I$	$12.76300 + 4.48472I$	0
$u = 0.09684 - 2.00647I$ $a = 0.036196 - 0.850721I$ $b = -0.95008 + 1.17335I$	$12.76300 - 4.48472I$	0
$u = -0.35556 + 2.00636I$ $a = -0.066983 - 0.886854I$ $b = -1.08468 + 1.12119I$	$16.7972 + 4.0807I$	0
$u = -0.35556 - 2.00636I$ $a = -0.066983 + 0.886854I$ $b = -1.08468 - 1.12119I$	$16.7972 - 4.0807I$	0

II. $I_1^v = \langle a,\ b-1,\ v^8 - v^7 - v^6 + 2v^5 + v^4 - 2v^3 + 2v - 1 \rangle$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} v \\ 0 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} v \\ -v \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 1 \\ -1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} v \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -v^3 + v \\ v^3 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} v^2 \\ -1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} v^4 \\ -v^2 + 1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -v^7 + v^6 + 2v^5 - v^4 - 2v^3 + 2v^2 + 2v - 1 \\ v^7 - 2v^5 + 2v^3 - 2v \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 6v^7 - v^6 - 11v^5 + 7v^4 + 12v^3 - 6v^2 - 6v + 10$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2	$(u-1)^8$
c_3, c_8	u^8
c_4	$(u+1)^8$
c_5, c_7	$u^8+3u^7+7u^6+10u^5+11u^4+10u^3+6u^2+4u+1$
c_6	$u^8-u^7-3u^6+2u^5+3u^4-2u-1$
c_9, c_{12}	$u^8-u^7-u^6+2u^5+u^4-2u^3+2u-1$
c_{10}, c_{11}	$u^8+u^7-3u^6-2u^5+3u^4+2u-1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y-1)^8$
c_3, c_8	y^8
c_5, c_7	$y^8 + 5y^7 + 11y^6 + 6y^5 - 17y^4 - 34y^3 - 22y^2 - 4y + 1$
c_6, c_{10}, c_{11}	$y^8 - 7y^7 + 19y^6 - 22y^5 + 3y^4 + 14y^3 - 6y^2 - 4y + 1$
c_9, c_{12}	$y^8 - 3y^7 + 7y^6 - 10y^5 + 11y^4 - 10y^3 + 6y^2 - 4y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = 0.570868 + 0.730671I$ $a = 0$ $b = 1.00000$	$-0.604279 - 1.131230I$	$-1.074136 + 0.216470I$
$v = 0.570868 - 0.730671I$ $a = 0$ $b = 1.00000$	$-0.604279 + 1.131230I$	$-1.074136 - 0.216470I$
$v = -0.855237 + 0.665892I$ $a = 0$ $b = 1.00000$	$-3.80435 - 2.57849I$	$-3.22623 + 3.25417I$
$v = -0.855237 - 0.665892I$ $a = 0$ $b = 1.00000$	$-3.80435 + 2.57849I$	$-3.22623 - 3.25417I$
$v = -1.09818$ $a = 0$ $b = 1.00000$	4.85780	7.89920
$v = 1.031810 + 0.655470I$ $a = 0$ $b = 1.00000$	$0.73474 + 6.44354I$	$2.34782 - 4.54733I$
$v = 1.031810 - 0.655470I$ $a = 0$ $b = 1.00000$	$0.73474 - 6.44354I$	$2.34782 + 4.54733I$
$v = 0.603304$ $a = 0$ $b = 1.00000$	-0.799899	7.00590

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^8)(u^{37}+5u^{36}+\cdots-5u+1)$
c_2	$((u-1)^8)(u^{37}-9u^{36}+\cdots-7u+1)$
c_3, c_8	$u^8(u^{37}-u^{36}+\cdots+128u+256)$
c_4	$((u+1)^8)(u^{37}-9u^{36}+\cdots-7u+1)$
c_5, c_7	$(u^8+3u^7+7u^6+10u^5+11u^4+10u^3+6u^2+4u+1)$ $\cdot(u^{37}+6u^{36}+\cdots+35u+5)$
c_6	$(u^8-u^7-3u^6+2u^5+3u^4-2u-1)(u^{37}-2u^{36}+\cdots+3u+1)$
c_9	$(u^8-u^7+\cdots+2u-1)(u^{37}+2u^{36}+\cdots+3u+1)$
c_{10}, c_{11}	$(u^8+u^7-3u^6-2u^5+3u^4+2u-1)(u^{37}-2u^{36}+\cdots+3u+1)$
c_{12}	$(u^8-u^7-u^6+2u^5+u^4-2u^3+2u-1)$ $\cdot(u^{37}-8u^{36}+\cdots+2082719u-154033)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^8)(y^{37}+63y^{36}+\cdots-y-1)$
c_2, c_4	$((y-1)^8)(y^{37}-5y^{36}+\cdots-5y-1)$
c_3, c_8	$y^8(y^{37}+51y^{36}+\cdots-475136y-65536)$
c_5, c_7	$(y^8+5y^7+11y^6+6y^5-17y^4-34y^3-22y^2-4y+1)$ $\cdot(y^{37}+16y^{36}+\cdots+735y-25)$
c_6, c_{10}, c_{11}	$(y^8-7y^7+19y^6-22y^5+3y^4+14y^3-6y^2-4y+1)$ $\cdot(y^{37}-32y^{36}+\cdots+27y-1)$
c_9	$(y^8-3y^7+7y^6-10y^5+11y^4-10y^3+6y^2-4y+1)$ $\cdot(y^{37}-48y^{36}+\cdots+27y-1)$
c_{12}	$(y^8-3y^7+7y^6-10y^5+11y^4-10y^3+6y^2-4y+1)$ $\cdot(y^{37}-84y^{36}+\cdots+1848165923715y-23726165089)$