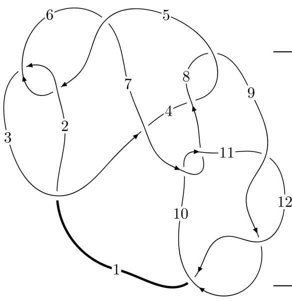
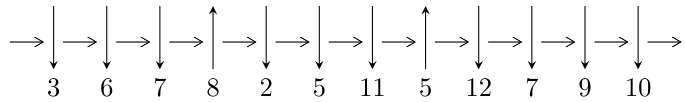
$12n_{0290}$ ($K12n_{0290}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I^u_1 = \langle & -2.68465\times 10^{94}u^{40} - 9.84743\times 10^{94}u^{39} + \cdots + 1.38333\times 10^{95}b - 5.11987\times 10^{96},\\
& -4.36327\times 10^{94}u^{40} - 1.61063\times 10^{95}u^{39} + \cdots + 2.76666\times 10^{95}a - 8.27022\times 10^{96},\\
& u^{41} + 4u^{40} + \cdots + 544u + 64\rangle\\
I^u_2 = \langle & b,\ a-1,\ u+1\rangle
\end{aligned}$$

$$I^v_1 = \langle a,\ 26v^5 + 33v^4 + 317v^3 + 123v^2 + 413b + 89v + 685,\ v^6 + 3v^5 + 15v^4 + 24v^3 + 11v^2 + 6v + 1\rangle$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 48 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. $I_1^u = \langle -2.68 \times 10^{94} u^{40} - 9.85 \times 10^{94} u^{39} + \cdots + 1.38 \times 10^{95} b - 5.12 \times 10^{96},\ -4.36 \times 10^{94} u^{40} - 1.61 \times 10^{95} u^{39} + \cdots + 2.77 \times 10^{95} a - 8.27 \times 10^{96},\ u^{41} + 4u^{40} + \cdots + 544u + 64 \rangle$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0.157709u^{40} + 0.582157u^{39} + \cdots + 171.531u + 29.8924 \\ 0.194072u^{40} + 0.711864u^{39} + \cdots + 205.306u + 37.0112 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -0.0560706u^{40} - 0.198690u^{39} + \cdots - 50.1633u - 10.2342 \\ 0.220015u^{40} + 0.806259u^{39} + \cdots + 232.028u + 41.7645 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -0.0860026u^{40} - 0.314486u^{39} + \cdots - 88.7056u - 16.8751 \\ 0.244795u^{40} + 0.889941u^{39} + \cdots + 248.405u + 43.2805 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -0.0998198u^{40} - 0.360991u^{39} + \cdots - 89.6766u - 14.8006 \\ 0.137856u^{40} + 0.501525u^{39} + \cdots + 141.893u + 24.7433 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -0.0860026u^{40} - 0.314486u^{39} + \cdots - 88.7056u - 16.8751 \\ 0.253986u^{40} + 0.923580u^{39} + \cdots + 258.962u + 45.1700 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -0.214458u^{40} - 0.770687u^{39} + \cdots - 201.880u - 34.5510 \\ 0.344343u^{40} + 1.25111u^{39} + \cdots + 349.391u + 60.8829 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -0.158792u^{40} - 0.575454u^{39} + \cdots - 159.700u - 26.4054 \\ 0.269010u^{40} + 0.976627u^{39} + \cdots + 270.728u + 47.1022 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0.357088u^{40} + 1.31046u^{39} + \cdots + 376.594u + 66.5801 \\ -0.262269u^{40} - 0.954859u^{39} + \cdots - 266.063u - 46.3657 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -2.16290u^{40} - 7.86224u^{39} + \cdots - 2195.29u - 401.897$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_6	$u^{41} + 10u^{40} + \cdots + 124u + 1$
c_2, c_5	$u^{41} + 4u^{40} + \cdots - 8u + 1$
c_3	$u^{41} - 2u^{40} + \cdots - 56802u + 4129$
c_4, c_8	$u^{41} + 4u^{40} + \cdots + 544u + 64$
c_7, c_{10}	$u^{41} + 4u^{40} + \cdots - 2u + 2$
c_9, c_{11}, c_{12}	$u^{41} - 5u^{40} + \cdots - 11u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_6	$y^{41} + 46y^{40} + \cdots + 12420y - 1$
c_2, c_5	$y^{41} - 10y^{40} + \cdots + 124y - 1$
c_3	$y^{41} + 106y^{40} + \cdots + 3427830276y - 17048641$
c_4, c_8	$y^{41} - 36y^{40} + \cdots + 46080y - 4096$
c_7, c_{10}	$y^{41} + 42y^{39} + \cdots + 24y - 4$
c_9, c_{11}, c_{12}	$y^{41} - 29y^{40} + \cdots + 141y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.900371 + 0.275130I$ $a = -0.07966 - 1.47335I$ $b = 0.570501 + 0.849499I$	$-1.03538 + 3.10516I$	$-9.19728 - 4.58914I$
$u = 0.900371 - 0.275130I$ $a = -0.07966 + 1.47335I$ $b = 0.570501 - 0.849499I$	$-1.03538 - 3.10516I$	$-9.19728 + 4.58914I$
$u = -0.863117 + 0.163519I$ $a = 0.530392 - 1.038990I$ $b = 0.906841 + 0.441301I$	$-0.434343 - 0.606208I$	$-8.36824 + 3.20718I$
$u = -0.863117 - 0.163519I$ $a = 0.530392 + 1.038990I$ $b = 0.906841 - 0.441301I$	$-0.434343 + 0.606208I$	$-8.36824 - 3.20718I$
$u = -1.118190 + 0.134810I$ $a = 0.285482 + 1.154880I$ $b = -0.692354 - 0.679657I$	$2.14754 - 4.46827I$	$-5.46325 + 6.31020I$
$u = -1.118190 - 0.134810I$ $a = 0.285482 - 1.154880I$ $b = -0.692354 + 0.679657I$	$2.14754 + 4.46827I$	$-5.46325 - 6.31020I$
$u = -0.208887 + 0.817072I$ $a = 0.191298 - 0.000456I$ $b = -1.390780 + 0.124154I$	$-6.67711 + 2.45351I$	$-15.2931 - 1.4222I$
$u = -0.208887 - 0.817072I$ $a = 0.191298 + 0.000456I$ $b = -1.390780 - 0.124154I$	$-6.67711 - 2.45351I$	$-15.2931 + 1.4222I$
$u = -0.142298 + 0.686085I$ $a = 0.754137 - 0.156560I$ $b = 0.609820 - 0.257002I$	$-0.95163 + 1.08981I$	$-8.28855 - 6.14268I$
$u = -0.142298 - 0.686085I$ $a = 0.754137 + 0.156560I$ $b = 0.609820 + 0.257002I$	$-0.95163 - 1.08981I$	$-8.28855 + 6.14268I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.320790 + 0.205247I$ $a = 0.272392 + 0.830191I$ $b = -0.359803 - 0.924561I$	$3.58935 + 0.36497I$	0
$u = 1.320790 - 0.205247I$ $a = 0.272392 - 0.830191I$ $b = -0.359803 + 0.924561I$	$3.58935 - 0.36497I$	0
$u = -1.47758 + 0.08314I$ $a = -0.028558 + 0.821385I$ $b = 1.27898 - 1.15594I$	$7.32002 + 1.31400I$	0
$u = -1.47758 - 0.08314I$ $a = -0.028558 - 0.821385I$ $b = 1.27898 + 1.15594I$	$7.32002 - 1.31400I$	0
$u = 1.47211 + 0.17758I$ $a = -0.081855 - 0.839711I$ $b = 1.19530 + 1.24551I$	$7.22140 + 5.18811I$	0
$u = 1.47211 - 0.17758I$ $a = -0.081855 + 0.839711I$ $b = 1.19530 - 1.24551I$	$7.22140 - 5.18811I$	0
$u = -0.493631$ $a = 1.54896$ $b = -0.291712$	-1.40989	-5.76550
$u = 0.55563 + 1.40865I$ $a = 0.332513 + 0.052129I$ $b = -0.033282 - 0.910556I$	$4.81513 + 1.29204I$	0
$u = 0.55563 - 1.40865I$ $a = 0.332513 - 0.052129I$ $b = -0.033282 + 0.910556I$	$4.81513 - 1.29204I$	0
$u = 0.279316 + 0.386457I$ $a = -3.05813 - 4.36695I$ $b = -0.098053 + 0.379909I$	$-2.86863 - 0.30349I$	$1.29089 - 11.45256I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.279316 - 0.386457I$ $a = -3.05813 + 4.36695I$ $b = -0.098053 - 0.379909I$	$-2.86863 + 0.30349I$	$1.29089 + 11.45256I$
$u = -0.012640 + 0.387805I$ $a = -8.88584 + 0.60443I$ $b = -0.500213 + 0.034819I$	$1.80837 - 2.87388I$	$-39.8656 + 3.3819I$
$u = -0.012640 - 0.387805I$ $a = -8.88584 - 0.60443I$ $b = -0.500213 - 0.034819I$	$1.80837 + 2.87388I$	$-39.8656 - 3.3819I$
$u = -0.64609 + 1.49909I$ $a = 0.280505 - 0.050822I$ $b = -0.227266 + 0.902339I$	$4.34862 + 5.20839I$	0
$u = -0.64609 - 1.49909I$ $a = 0.280505 + 0.050822I$ $b = -0.227266 - 0.902339I$	$4.34862 - 5.20839I$	0
$u = -0.353952$ $a = 0.190811$ $b = -1.66327$	-9.84381	14.6310
$u = -1.50019 + 0.69974I$ $a = -0.107163 - 0.866028I$ $b = 0.797327 + 0.867883I$	$-1.34409 - 8.57415I$	0
$u = -1.50019 - 0.69974I$ $a = -0.107163 + 0.866028I$ $b = 0.797327 - 0.867883I$	$-1.34409 + 8.57415I$	0
$u = -0.305001$ $a = 1.67143$ $b = 0.580690$	-1.10346	-8.70760
$u = -1.63935 + 0.45660I$ $a = -0.069974 + 0.912206I$ $b = -1.19023 - 1.18604I$	$11.66750 - 7.74036I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.63935-0.45660I$ $a=-0.069974-0.912206I$ $b=-1.19023+1.18604I$	$11.66750+7.74036I$	0
$u=1.56194+0.67841I$ $a=0.009027+0.726408I$ $b=0.492906-0.964772I$	$1.69219+4.01190I$	0
$u=1.56194-0.67841I$ $a=0.009027-0.726408I$ $b=0.492906+0.964772I$	$1.69219-4.01190I$	0
$u=1.67787+0.37565I$ $a=-0.035629-0.893097I$ $b=-1.10249+1.25882I$	$11.97710+1.09300I$	0
$u=1.67787-0.37565I$ $a=-0.035629+0.893097I$ $b=-1.10249-1.25882I$	$11.97710-1.09300I$	0
$u=-1.49517+0.90641I$ $a=0.139383-0.997291I$ $b=1.11424+1.19188I$	$7.3447-13.9917I$	0
$u=-1.49517-0.90641I$ $a=0.139383+0.997291I$ $b=1.11424-1.19188I$	$7.3447+13.9917I$	0
$u=1.54232+0.88599I$ $a=0.131039+0.948244I$ $b=1.03138-1.24212I$	$8.03425+7.41571I$	0
$u=1.54232-0.88599I$ $a=0.131039-0.948244I$ $b=1.03138+1.24212I$	$8.03425-7.41571I$	0
$u=-1.63054+0.83010I$ $a=-0.034959-0.425949I$ $b=0.284331+0.549059I$	$-3.12842-0.82148I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.63054 - 0.83010I$ $a = -0.034959 + 0.425949I$ $b = 0.284331 - 0.549059I$	$-3.12842 + 0.82148I$	0

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.00000$ $a = 1.00000$ $b = 0$	-3.28987	-12.0000

III.

$\boldsymbol{I_1^v = \langle a,\ 26v^5+33v^4+\cdots+413b+685,\ v^6+3v^5+15v^4+24v^3+11v^2+6v+1\rangle}$

(i) Arc colorings

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

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

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

$$a_{11} = \begin{pmatrix} 0 \\ -0.0629540v^5 - 0.0799031v^4 + \cdots - 0.215496v - 1.65860 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 0.0629540v^5 + 0.0799031v^4 + \cdots + 0.215496v + 1.65860 \\ -0.0629540v^5 - 0.0799031v^4 + \cdots - 0.215496v - 1.65860 \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} 1 \\ -0.0629540v^5 - 0.0799031v^4 + \cdots - 0.215496v - 2.65860 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -0.108959v^5 - 0.176755v^4 + \cdots + 3.28087v - 0.0629540 \\ 0.326877v^5 + 0.530266v^4 + \cdots - 5.84262v + 0.188862 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.150121v^5 - 0.421308v^4 + \cdots - 0.590799v + 0.891041 \\ -0.0629540v^5 - 0.0799031v^4 + \cdots - 0.215496v - 2.65860 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.600484v^5 - 1.68523v^4 + \cdots - 2.36320v - 1.43584 \\ 1.26392v^5 + 3.45036v^4 + \cdots + 4.94189v + 3.53027 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -1 \\ 0.0629540v^5 + 0.0799031v^4 + \cdots + 0.215496v + 2.65860 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -0.0629540v^5 - 0.0799031v^4 + \cdots - 0.215496v - 1.65860 \\ 0.0629540v^5 + 0.0799031v^4 + \cdots + 0.215496v + 2.65860 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -\frac{3042}{413}v^5 - \frac{8817}{413}v^4 - \frac{44523}{413}v^3 - \frac{68494}{413}v^2 - \frac{24042}{413}v - \frac{18195}{413}$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$v=-1.49186$ $a=0$ $b=0.618034$	-2.10041	-19.6940
$v=-0.082153+0.499284I$ $a=0$ $b=-1.61803$	$-5.85852+2.82812I$	$-6.54788-4.14885I$
$v=-0.082153-0.499284I$ $a=0$ $b=-1.61803$	$-5.85852-2.82812I$	$-6.54788+4.14885I$
$v=-0.217660$ $a=0$ $b=-1.61803$	-9.99610	-38.1750
$v=-0.56309+3.42214I$ $a=0$ $b=0.618034$	$2.03717+2.82812I$	$0.982489+0.847836I$
$v=-0.56309-3.42214I$ $a=0$ $b=0.618034$	$2.03717-2.82812I$	$0.982489-0.847836I$

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u-1)(u^3-u^2+2u-1)^2(u^{41}+10u^{40}+\cdots+124u+1)$
c_2	$(u-1)(u^3+u^2-1)^2(u^{41}+4u^{40}+\cdots-8u+1)$
c_3	$(u-1)(u^3-u^2+2u-1)^2(u^{41}-2u^{40}+\cdots-56802u+4129)$
c_4	$u^6(u-1)(u^{41}+4u^{40}+\cdots+544u+64)$
c_5	$(u+1)(u^3-u^2+1)^2(u^{41}+4u^{40}+\cdots-8u+1)$
c_6	$(u+1)(u^3+u^2+2u+1)^2(u^{41}+10u^{40}+\cdots+124u+1)$
c_7	$u(u^2+u-1)^3(u^{41}+4u^{40}+\cdots-2u+2)$
c_8	$u^6(u+1)(u^{41}+4u^{40}+\cdots+544u+64)$
c_9	$(u-1)(u^2+u-1)^3(u^{41}-5u^{40}+\cdots-11u-1)$
c_{10}	$u(u^2-u-1)^3(u^{41}+4u^{40}+\cdots-2u+2)$
c_{11}, c_{12}	$(u+1)(u^2-u-1)^3(u^{41}-5u^{40}+\cdots-11u-1)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_6	$(y-1)(y^3+3y^2+2y-1)^2(y^{41}+46y^{40}+\cdots+12420y-1)$
c_2, c_5	$(y-1)(y^3-y^2+2y-1)^2(y^{41}-10y^{40}+\cdots+124y-1)$
c_3	$(y-1)(y^3+3y^2+2y-1)^2$ $\cdot(y^{41}+106y^{40}+\cdots+3427830276y-17048641)$
c_4, c_8	$y^6(y-1)(y^{41}-36y^{40}+\cdots+46080y-4096)$
c_7, c_{10}	$y(y^2-3y+1)^3(y^{41}+42y^{39}+\cdots+24y-4)$
c_9, c_{11}, c_{12}	$(y-1)(y^2-3y+1)^3(y^{41}-29y^{40}+\cdots+141y-1)$