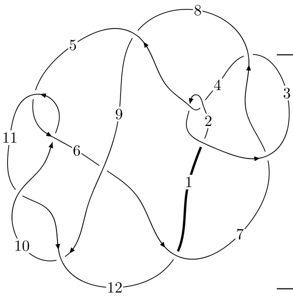
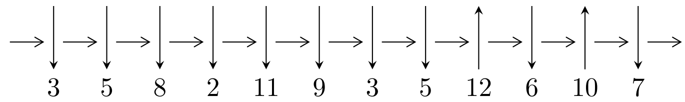
$12n_{0172}$ ($K12n_{0172}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -u^{19} - 2u^{18} + \cdots + b + 1,\ -u^{19} - u^{18} + \cdots + a - 1,\ u^{20} + 2u^{19} + \cdots - 3u - 1 \rangle$$
$$I_2^u = \langle u^7 + u^5 + 2u^3 + u^2 + b + u,\ u^6 + u^4 + 2u^2 + a + u + 1,\ u^9 - u^8 + 2u^7 - u^6 + 3u^5 - u^4 + 2u^3 + u + 1 \rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 29 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.

$$\boldsymbol{I_1^u = \langle -u^{19}-2u^{18}+\cdots+b+1,\ -u^{19}-u^{18}+\cdots+a-1,\ u^{20}+2u^{19}+\cdots-3u-1\rangle}$$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} u^2+1 \\ u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} u^{19}+u^{18}+\cdots+u^2+1 \\ u^{19}+2u^{18}+\cdots-4u-1 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u \\ u^3+u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 2u^{19}+2u^{18}+\cdots-4u^3+1 \\ 2u^{19}+4u^{18}+\cdots-6u-2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u^{16}-3u^{14}-7u^{12}-10u^{10}-11u^8-8u^6-4u^4+1 \\ -u^{16}-2u^{14}-4u^{12}-4u^{10}-2u^8+2u^4+2u^2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -3u^{19}-3u^{18}+\cdots+u^2+2u \\ -3u^{19}-6u^{18}+\cdots+9u+3 \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} -u^9-2u^7-3u^5-2u^3-u \\ -u^9-u^7-u^5+u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u^8-u^6-u^4+1 \\ -u^{10}-2u^8-3u^6-2u^4-u^2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 4u^{19}+2u^{18}+12u^{17}+2u^{16}+32u^{15}+51u^{13}-13u^{12}+70u^{11}-37u^{10}+68u^9-56u^8+60u^7-63u^6+33u^5-47u^4+20u^3-17u^2+4u-10$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{20} + 42u^{19} + \cdots + 23u + 1$
c_2, c_4	$u^{20} - 10u^{19} + \cdots + 5u - 1$
c_3, c_7	$u^{20} - u^{19} + \cdots + 512u + 512$
c_5, c_{10}	$u^{20} + 2u^{19} + \cdots - 3u - 1$
c_6	$u^{20} - 10u^{19} + \cdots + 85u - 43$
c_8, c_{12}	$u^{20} + 2u^{19} + \cdots - 3u - 1$
c_9, c_{11}	$u^{20} - 6u^{19} + \cdots + 3u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{20} - 198y^{19} + \cdots - 639y + 1$
c_2, c_4	$y^{20} - 42y^{19} + \cdots - 23y + 1$
c_3, c_7	$y^{20} - 57y^{19} + \cdots + 1310720y + 262144$
c_5, c_{10}	$y^{20} + 6y^{19} + \cdots - 3y + 1$
c_6	$y^{20} - 18y^{19} + \cdots - 4731y + 1849$
c_8, c_{12}	$y^{20} - 42y^{19} + \cdots - 3y + 1$
c_9, c_{11}	$y^{20} + 18y^{19} + \cdots - 91y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.124469 + 0.908169I$ $a = -0.110121 - 0.528184I$ $b = -0.493387 + 0.034266I$	$1.75893 + 1.54466I$	$-2.08831 - 4.86880I$
$u = -0.124469 - 0.908169I$ $a = -0.110121 + 0.528184I$ $b = -0.493387 - 0.034266I$	$1.75893 - 1.54466I$	$-2.08831 + 4.86880I$
$u = -0.654133 + 0.871364I$ $a = 0.515368 - 0.661677I$ $b = -0.239442 - 0.881898I$	$-0.94442 + 2.54047I$	$-4.33649 - 2.91190I$
$u = -0.654133 - 0.871364I$ $a = 0.515368 + 0.661677I$ $b = -0.239442 + 0.881898I$	$-0.94442 - 2.54047I$	$-4.33649 + 2.91190I$
$u = 0.783905 + 0.795880I$ $a = 0.264051 + 0.040665I$ $b = -0.174627 - 0.242030I$	$-3.99381 + 0.03901I$	$-12.11070 - 0.38222I$
$u = 0.783905 - 0.795880I$ $a = 0.264051 - 0.040665I$ $b = -0.174627 + 0.242030I$	$-3.99381 - 0.03901I$	$-12.11070 + 0.38222I$
$u = 0.284303 + 1.108040I$ $a = -1.021690 - 0.407132I$ $b = -0.160650 + 1.247820I$	$-15.4921 - 3.6755I$	$-8.75395 + 3.01938I$
$u = 0.284303 - 1.108040I$ $a = -1.021690 + 0.407132I$ $b = -0.160650 - 1.247820I$	$-15.4921 + 3.6755I$	$-8.75395 - 3.01938I$
$u = -0.903441 + 0.739223I$ $a = 0.70712 - 2.78319I$ $b = -1.41856 - 3.03717I$	$15.9851 - 3.3273I$	$-13.99686 + 0.12457I$
$u = -0.903441 - 0.739223I$ $a = 0.70712 + 2.78319I$ $b = -1.41856 + 3.03717I$	$15.9851 + 3.3273I$	$-13.99686 - 0.12457I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.806281$ $a = 1.15429$ $b = -0.930683$	-19.2190	-14.0620
$u = -0.803779 + 0.892292I$ $a = -1.76637 + 2.05694I$ $b = 0.41562 + 3.22944I$	$-6.89324 + 3.01130I$	$-13.76983 - 2.67964I$
$u = -0.803779 - 0.892292I$ $a = -1.76637 - 2.05694I$ $b = 0.41562 - 3.22944I$	$-6.89324 - 3.01130I$	$-13.76983 + 2.67964I$
$u = 0.745691 + 0.953776I$ $a = -0.209775 + 0.092781I$ $b = 0.244919 + 0.130892I$	$-3.50610 - 5.81808I$	$-10.51658 + 5.66339I$
$u = 0.745691 - 0.953776I$ $a = -0.209775 - 0.092781I$ $b = 0.244919 - 0.130892I$	$-3.50610 + 5.81808I$	$-10.51658 - 5.66339I$
$u = -0.784642 + 1.031280I$ $a = 2.58208 - 1.12211I$ $b = 0.86881 - 3.54329I$	$16.8999 + 9.5713I$	$-12.72981 - 4.75135I$
$u = -0.784642 - 1.031280I$ $a = 2.58208 + 1.12211I$ $b = 0.86881 + 3.54329I$	$16.8999 - 9.5713I$	$-12.72981 + 4.75135I$
$u = 0.216278 + 0.660670I$ $a = 0.396693 + 1.247630I$ $b = 0.738473 - 0.531917I$	$-1.26262 - 0.98137I$	$-9.38815 + 0.54437I$
$u = 0.216278 - 0.660670I$ $a = 0.396693 - 1.247630I$ $b = 0.738473 + 0.531917I$	$-1.26262 + 0.98137I$	$-9.38815 - 0.54437I$
$u = -0.325708$ $a = 1.13099$ $b = 0.368372$	-0.688798	-14.5570

II. $\boldsymbol{I_2^u = \langle u^7 + u^5 + 2u^3 + u^2 + b + u,\ u^6 + u^4 + 2u^2 + a + u + 1,\ u^9 - u^8 + 2u^7 - u^6 + 3u^5 - u^4 + 2u^3 + u + 1\rangle}$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} u^2 + 1 \\ u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -u^6 - u^4 - 2u^2 - u - 1 \\ -u^7 - u^5 - 2u^3 - u^2 - u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -u^6 - u^4 - 2u^2 - 2u - 1 \\ -u^7 - u^5 - 3u^3 - u^2 - 2u \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u \\ -u^3 - u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u^6 - u^4 - 2u^2 - u - 1 \\ -u^7 - u^5 - 2u^3 - u^2 - u \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} -u^8 - u^6 - u^4 + 1 \\ -u^8 + u^7 - u^6 + 2u^5 - u^4 + 2u^3 + 2u + 1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u^8 - u^6 - u^4 + 1 \\ -u^8 + u^7 - u^6 + 2u^5 - u^4 + 2u^3 + 2u + 1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4u^7 - 4u^6 + 3u^5 - 3u^4 + 6u^3 - 3u^2 - u - 13$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2	$(u-1)^9$
c_3, c_7	u^9
c_4	$(u+1)^9$
c_5	$u^9 + u^8 + 2u^7 + u^6 + 3u^5 + u^4 + 2u^3 + u - 1$
c_6	$u^9 - 5u^8 + 12u^7 - 15u^6 + 9u^5 + u^4 - 4u^3 + 2u^2 + u - 1$
c_8, c_{12}	$u^9 - u^8 - 2u^7 + 3u^6 + u^5 - 3u^4 + 2u^3 - u + 1$
c_9	$u^9 + 3u^8 + 8u^7 + 13u^6 + 17u^5 + 17u^4 + 12u^3 + 6u^2 + u - 1$
c_{10}	$u^9 - u^8 + 2u^7 - u^6 + 3u^5 - u^4 + 2u^3 + u + 1$
c_{11}	$u^9 - 3u^8 + 8u^7 - 13u^6 + 17u^5 - 17u^4 + 12u^3 - 6u^2 + u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y-1)^9$
c_3, c_7	y^9
c_5, c_{10}	$y^9+3y^8+8y^7+13y^6+17y^5+17y^4+12y^3+6y^2+y-1$
c_6	$y^9-y^8+12y^7-7y^6+37y^5+y^4-10y^2+5y-1$
c_8, c_{12}	$y^9-5y^8+12y^7-15y^6+9y^5+y^4-4y^3+2y^2+y-1$
c_9, c_{11}	$y^9+7y^8+20y^7+25y^6+5y^5-15y^4+22y^2+13y-1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.140343 + 0.966856I$ $a = 0.770941 - 0.258974I$ $b = 0.142194 + 0.781734I$	$0.13850 + 2.09337I$	$-6.69021 - 3.87975I$
$u = -0.140343 - 0.966856I$ $a = 0.770941 + 0.258974I$ $b = 0.142194 - 0.781734I$	$0.13850 - 2.09337I$	$-6.69021 + 3.87975I$
$u = -0.628449 + 0.875112I$ $a = 0.147409 - 0.367985I$ $b = 0.229389 + 0.360259I$	$-2.26187 + 2.45442I$	$-12.49381 - 3.35442I$
$u = -0.628449 - 0.875112I$ $a = 0.147409 + 0.367985I$ $b = 0.229389 - 0.360259I$	$-2.26187 - 2.45442I$	$-12.49381 + 3.35442I$
$u = 0.796005 + 0.733148I$ $a = -0.24323 - 1.73417I$ $b = 1.07779 - 1.55873I$	$-6.01628 + 1.33617I$	$-13.53709 - 1.22905I$
$u = 0.796005 - 0.733148I$ $a = -0.24323 + 1.73417I$ $b = 1.07779 + 1.55873I$	$-6.01628 - 1.33617I$	$-13.53709 + 1.22905I$
$u = 0.728966 + 0.986295I$ $a = -1.62529 - 0.46000I$ $b = -0.73109 - 1.93833I$	$-5.24306 - 7.08493I$	$-12.02676 + 6.64241I$
$u = 0.728966 - 0.986295I$ $a = -1.62529 + 0.46000I$ $b = -0.73109 + 1.93833I$	$-5.24306 + 7.08493I$	$-12.02676 - 6.64241I$
$u = -0.512358$ $a = -1.09967$ $b = 0.563422$	-2.84338	-14.5040

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^9)(u^{20}+42u^{19}+\cdots+23u+1)$
c_2	$((u-1)^9)(u^{20}-10u^{19}+\cdots+5u-1)$
c_3, c_7	$u^9(u^{20}-u^{19}+\cdots+512u+512)$
c_4	$((u+1)^9)(u^{20}-10u^{19}+\cdots+5u-1)$
c_5	$(u^9+u^8+\cdots+u-1)(u^{20}+2u^{19}+\cdots-3u-1)$
c_6	$(u^9-5u^8+12u^7-15u^6+9u^5+u^4-4u^3+2u^2+u-1)$ $\cdot(u^{20}-10u^{19}+\cdots+85u-43)$
c_8, c_{12}	$(u^9-u^8+\cdots-u+1)(u^{20}+2u^{19}+\cdots-3u-1)$
c_9	$(u^9+3u^8+8u^7+13u^6+17u^5+17u^4+12u^3+6u^2+u-1)$ $\cdot(u^{20}-6u^{19}+\cdots+3u+1)$
c_{10}	$(u^9-u^8+\cdots+u+1)(u^{20}+2u^{19}+\cdots-3u-1)$
c_{11}	$(u^9-3u^8+8u^7-13u^6+17u^5-17u^4+12u^3-6u^2+u+1)$ $\cdot(u^{20}-6u^{19}+\cdots+3u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^9)(y^{20}-198y^{19}+\cdots-639y+1)$
c_2, c_4	$((y-1)^9)(y^{20}-42y^{19}+\cdots-23y+1)$
c_3, c_7	$y^9(y^{20}-57y^{19}+\cdots+1310720y+262144)$
c_5, c_{10}	$(y^9+3y^8+8y^7+13y^6+17y^5+17y^4+12y^3+6y^2+y-1)$ $\cdot(y^{20}+6y^{19}+\cdots-3y+1)$
c_6	$(y^9-y^8+12y^7-7y^6+37y^5+y^4-10y^2+5y-1)$ $\cdot(y^{20}-18y^{19}+\cdots-4731y+1849)$
c_8, c_{12}	$(y^9-5y^8+12y^7-15y^6+9y^5+y^4-4y^3+2y^2+y-1)$ $\cdot(y^{20}-42y^{19}+\cdots-3y+1)$
c_9, c_{11}	$(y^9+7y^8+20y^7+25y^6+5y^5-15y^4+22y^2+13y-1)$ $\cdot(y^{20}+18y^{19}+\cdots-91y+1)$