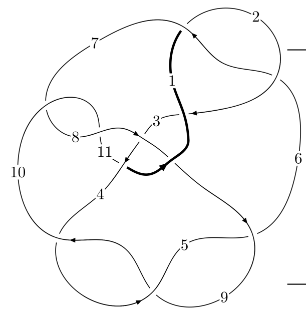
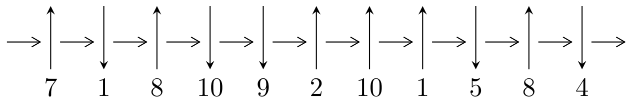
$11n_{116}$ ($K11n_{116}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned} I_1^u = \langle & 8u^7 + 2u^6 + 43u^5 - 42u^4 + 38u^3 - 164u^2 + 17b + 20u - 27, \\ & 28u^7 + 58u^6 + 244u^5 + 278u^4 + 490u^3 + 191u^2 + 17a + 53u + 33, \\ & u^8 + 2u^7 + 9u^6 + 10u^5 + 20u^4 + 8u^3 + 7u^2 + u + 1 \rangle \\ I_2^u = \langle & 56u^7 - 6u^6 + 421u^5 + 108u^4 + 1168u^3 + 208u^2 + 397b + 934u + 377, \\ & -418u^7 + 300u^6 - 2788u^5 + 158u^4 - 4408u^3 - 475u^2 + 1191a - 251u - 985, \\ & u^8 + 7u^6 + 4u^5 + 16u^4 + 10u^3 + 11u^2 + 7u + 3 \rangle \end{aligned}$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 16 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.
$\boldsymbol{I_1^u = \langle 8u^7+2u^6+\cdots+17b-27,\ 28u^7+58u^6+\cdots+17a+33,\ u^8+2u^7+\cdots+u+1\rangle}$

(i) Arc colorings

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

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

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

$$a_{10} = \begin{pmatrix}-1.64706u^7 - 3.41176u^6 + \cdots - 3.11765u - 1.94118\\-0.470588u^7 - 0.117647u^6 + \cdots - 1.17647u + 1.58824\end{pmatrix}$$

$$a_5 = \begin{pmatrix}1.35294u^7 + 0.588235u^6 + \cdots + 6.88235u - 2.94118\\-2.70588u^7 - 5.17647u^6 + \cdots - 6.76471u - 3.11765\end{pmatrix}$$

$$a_{11} = \begin{pmatrix}-1.64706u^7 - 3.41176u^6 + \cdots - 3.11765u - 1.94118\\-1.17647u^7 - 1.29412u^6 + \cdots - 2.94118u + 1.47059\end{pmatrix}$$

$$a_1 = \begin{pmatrix}-1.17647u^7 - 3.29412u^6 + \cdots - 1.94118u - 3.52941\\-1.11765u^7 - 1.52941u^6 + \cdots - 3.29412u + 0.647059\end{pmatrix}$$

$$a_2 = \begin{pmatrix}-7.58824u^7 - 14.6471u^6 + \cdots - 17.4706u - 8.76471\\0.176471u^7 + 2.29412u^6 + \cdots - 5.05882u + 8.52941\end{pmatrix}$$

$$a_7 = \begin{pmatrix}-1.64706u^7 - 1.41176u^6 + \cdots - 7.11765u + 3.05882\\2.41176u^7 + 4.35294u^6 + \cdots + 6.52941u + 3.23529\end{pmatrix}$$

$$a_6 = \begin{pmatrix}-3.64706u^7 - 12.4118u^6 + \cdots - 1.11765u - 20.9412\\-6.70588u^7 - 9.17647u^6 + \cdots - 21.7647u + 2.88235\end{pmatrix}$$

$$a_9 = \begin{pmatrix}6.52941u^7 + 11.8824u^6 + \cdots + 15.8235u + 6.58824\\-0.529412u^7 - 2.88235u^6 + \cdots + 3.17647u - 7.58824\end{pmatrix}$$

$$a_9 = \begin{pmatrix}6.52941u^7 + 11.8824u^6 + \cdots + 15.8235u + 6.58824\\-0.529412u^7 - 2.88235u^6 + \cdots + 3.17647u - 7.58824\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{19}{17}u^7 - \frac{60}{17}u^6 - \frac{219}{17}u^5 - \frac{389}{17}u^4 - \frac{613}{17}u^3 - \frac{571}{17}u^2 - \frac{260}{17}u - \frac{57}{17}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_6	$u^8 + 3u^7 + 12u^6 + 15u^5 + 32u^4 + 9u^3 + 27u^2 - 21u + 11$
c_2	$u^8 + 15u^7 + \cdots + 153u + 121$
c_3	$u^8 + 2u^7 + 9u^6 + 10u^5 + 20u^4 + 8u^3 + 7u^2 + u + 1$
c_4, c_5, c_9	$u^8 + 8u^6 - 4u^5 + 36u^4 - 29u^3 + 41u^2 + 17u + 19$
c_7, c_{10}	$u^8 + 2u^7 + 8u^6 + 3u^5 + 38u^4 - 38u^3 + 58u^2 - 12u + 7$
c_8	$u^8 - 2u^7 + 10u^6 + 6u^5 + 168u^4 + 139u^3 + 116u^2 - 60u + 47$
c_{11}	$u^8 - 4u^7 + 13u^6 - 28u^5 + 90u^4 + 60u^3 + 85u^2 + 23u + 11$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_6	$y^8 + 15y^7 + \cdots + 153y + 121$
c_2	$y^8 + 11y^7 + \cdots + 414853y + 14641$
c_3	$y^8 + 14y^7 + 81y^6 + 242y^5 + 364y^4 + 214y^3 + 73y^2 + 13y + 1$
c_4, c_5, c_9	$y^8 + 16y^7 + \cdots + 1269y + 361$
c_7, c_{10}	$y^8 + 12y^7 + \cdots + 668y + 49$
c_8	$y^8 + 16y^7 + \cdots + 7304y + 2209$
c_{11}	$y^8 + 10y^7 + \cdots + 1341y + 121$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.270939 + 0.522049I$ $a = -3.45142 + 1.23452I$ $b = -0.44567 - 2.88321I$	$4.85825 - 1.12061I$	$1.61393 + 0.60117I$
$u = -0.270939 - 0.522049I$ $a = -3.45142 - 1.23452I$ $b = -0.44567 + 2.88321I$	$4.85825 + 1.12061I$	$1.61393 - 0.60117I$
$u = 0.104875 + 0.438980I$ $a = 0.849602 + 0.031731I$ $b = -0.136204 + 0.426385I$	$0.137633 + 1.005540I$	$2.51610 - 6.63610I$
$u = 0.104875 - 0.438980I$ $a = 0.849602 - 0.031731I$ $b = -0.136204 - 0.426385I$	$0.137633 - 1.005540I$	$2.51610 + 6.63610I$
$u = -0.66203 + 1.74906I$ $a = -0.565751 - 0.130138I$ $b = -0.274053 - 0.658590I$	$-5.40704 - 2.79901I$	$1.66145 + 4.10976I$
$u = -0.66203 - 1.74906I$ $a = -0.565751 + 0.130138I$ $b = -0.274053 + 0.658590I$	$-5.40704 + 2.79901I$	$1.66145 - 4.10976I$
$u = -0.17191 + 2.00694I$ $a = 1.16757 + 0.88058I$ $b = 2.85593 + 2.12606I$	$-19.3281 - 7.7545I$	$1.70851 + 2.41364I$
$u = -0.17191 - 2.00694I$ $a = 1.16757 - 0.88058I$ $b = 2.85593 - 2.12606I$	$-19.3281 + 7.7545I$	$1.70851 - 2.41364I$

II. $\boldsymbol{I_2^u = \langle 56u^7 - 6u^6 + \cdots + 397b + 377,\ -418u^7 + 300u^6 + \cdots + 1191a - 985,\ u^8 + 7u^6 + 4u^5 + 16u^4 + 10u^3 + 11u^2 + 7u + 3\rangle}$

(i) Arc colorings

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

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

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

$$a_{10} = \begin{pmatrix}0.350966u^7 - 0.251889u^6 + \cdots + 0.210747u + 0.827036\\-0.141058u^7 + 0.0151134u^6 + \cdots - 2.35264u - 0.949622\end{pmatrix}$$

$$a_5 = \begin{pmatrix}-0.316541u^7 + 0.141058u^6 + \cdots - 2.95802u + 1.13686\\-0.251889u^7 - 0.115869u^6 + \cdots - 1.62972u - 2.05290\end{pmatrix}$$

$$a_{11} = \begin{pmatrix}0.350966u^7 - 0.251889u^6 + \cdots + 0.210747u + 0.827036\\-0.0251889u^7 - 0.211587u^6 + \cdots - 3.06297u - 1.70529\end{pmatrix}$$

$$a_1 = \begin{pmatrix}0.492024u^7 - 0.267003u^6 + \cdots + 2.56339u + 1.77666\\-0.0982368u^7 - 0.0251889u^6 + \cdots - 2.74559u - 1.75063\end{pmatrix}$$

$$a_2 = \begin{pmatrix}0.306465u^7 - 0.425693u^6 + \cdots + 2.93283u + 1.58102\\-0.365239u^7 - 0.0680101u^6 + \cdots - 4.41310u - 1.22670\end{pmatrix}$$

$$a_7 = \begin{pmatrix}-0.0772460u^7 + 0.151134u^6 + \cdots + 2.14022u + 1.83711\\-0.410579u^7 + 0.151134u^6 + \cdots - 0.526448u - 0.496222\end{pmatrix}$$

$$a_6 = \begin{pmatrix}-0.518892u^7 - 0.158690u^6 + \cdots - 3.29723u - 2.52897\\-0.0251889u^7 - 0.211587u^6 + \cdots - 1.06297u + 0.294710\end{pmatrix}$$

$$a_9 = \begin{pmatrix}-0.590260u^7 + 0.241814u^6 + \cdots - 5.30898u - 2.52729\\0.425693u^7 - 0.224181u^6 + \cdots + 2.56423u + 0.919395\end{pmatrix}$$

$$a_9 = \begin{pmatrix}-0.590260u^7 + 0.241814u^6 + \cdots - 5.30898u - 2.52729\\0.425693u^7 - 0.224181u^6 + \cdots + 2.56423u + 0.919395\end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= \frac{543}{397}u^7 - \frac{44}{397}u^6 + \frac{3749}{397}u^5 + \frac{1983}{397}u^4 + \frac{8433}{397}u^3 + \frac{5363}{397}u^2 + \frac{5526}{397}u + \frac{4485}{397}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^8+u^7+4u^6+3u^5+6u^4+3u^3+5u^2+u+1$
c_2	$u^8+7u^7+22u^6+43u^5+58u^4+53u^3+31u^2+9u+1$
c_3	$u^8+7u^6+4u^5+16u^4+10u^3+11u^2+7u+3$
c_4, c_5	$u^8+4u^6+6u^4-u^3+5u^2-u+1$
c_6	$u^8-u^7+4u^6-3u^5+6u^4-3u^3+5u^2-u+1$
c_7	$u^8+2u^7+2u^6+u^5-2u^4-2u^3+1$
c_8	$u^8-2u^5-2u^4+u^3+2u^2+2u+1$
c_9	$u^8+4u^6+6u^4+u^3+5u^2+u+1$
c_{10}	$u^8-2u^7+2u^6-u^5-2u^4+2u^3+1$
c_{11}	$u^8-2u^7+u^6-2u^4+2u^3+u^2-u+1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_6	$y^8 + 7y^7 + 22y^6 + 43y^5 + 58y^4 + 53y^3 + 31y^2 + 9y + 1$
c_2	$y^8 - 5y^7 - 2y^6 + 23y^5 + 46y^4 + 57y^3 + 123y^2 - 19y + 1$
c_3	$y^8 + 14y^7 + 81y^6 + 230y^5 + 336y^4 + 238y^3 + 77y^2 + 17y + 9$
c_4, c_5, c_9	$y^8 + 8y^7 + 28y^6 + 58y^5 + 78y^4 + 67y^3 + 35y^2 + 9y + 1$
c_7, c_{10}	$y^8 - 4y^6 - y^5 + 10y^4 - 4y^2 + 1$
c_8	$y^8 - 4y^6 + 10y^4 - y^3 - 4y^2 + 1$
c_{11}	$y^8 - 2y^7 - 3y^6 + 6y^5 + 4y^4 - 6y^3 + y^2 + y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.186474 + 0.912486I$ $a = 0.013874 - 1.371960I$ $b = -0.307955 - 0.595773I$	$2.35558 - 2.73711I$	$0.76054 + 3.80045I$
$u = 0.186474 - 0.912486I$ $a = 0.013874 + 1.371960I$ $b = -0.307955 + 0.595773I$	$2.35558 + 2.73711I$	$0.76054 - 3.80045I$
$u = -0.456155 + 0.354859I$ $a = 1.219070 + 0.568101I$ $b = -0.188647 - 1.156400I$	$6.52667 - 1.60807I$	$7.81804 + 3.92468I$
$u = -0.456155 - 0.354859I$ $a = 1.219070 - 0.568101I$ $b = -0.188647 + 1.156400I$	$6.52667 + 1.60807I$	$7.81804 - 3.92468I$
$u = -0.26697 + 1.43177I$ $a = -0.909444 - 0.062444I$ $b = -1.377940 + 0.156538I$	$-2.57180 - 1.45446I$	$1.40377 + 1.96166I$
$u = -0.26697 - 1.43177I$ $a = -0.909444 + 0.062444I$ $b = -1.377940 - 0.156538I$	$-2.57180 + 1.45446I$	$1.40377 - 1.96166I$
$u = 0.53665 + 2.14327I$ $a = 0.343167 + 0.006141I$ $b = 0.874540 + 0.277933I$	$-6.31045 + 2.33823I$	$-5.48234 - 1.59126I$
$u = 0.53665 - 2.14327I$ $a = 0.343167 - 0.006141I$ $b = 0.874540 - 0.277933I$	$-6.31045 - 2.33823I$	$-5.48234 + 1.59126I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^8+u^7+4u^6+3u^5+6u^4+3u^3+5u^2+u+1)$ $\cdot(u^8+3u^7+12u^6+15u^5+32u^4+9u^3+27u^2-21u+11)$
c_2	$(u^8+7u^7+22u^6+43u^5+58u^4+53u^3+31u^2+9u+1)$ $\cdot(u^8+15u^7+\cdots+153u+121)$
c_3	$(u^8+7u^6+4u^5+16u^4+10u^3+11u^2+7u+3)$ $\cdot(u^8+2u^7+9u^6+10u^5+20u^4+8u^3+7u^2+u+1)$
c_4, c_5	$(u^8+4u^6+6u^4-u^3+5u^2-u+1)$ $\cdot(u^8+8u^6-4u^5+36u^4-29u^3+41u^2+17u+19)$
c_6	$(u^8-u^7+4u^6-3u^5+6u^4-3u^3+5u^2-u+1)$ $\cdot(u^8+3u^7+12u^6+15u^5+32u^4+9u^3+27u^2-21u+11)$
c_7	$(u^8+2u^7+2u^6+u^5-2u^4-2u^3+1)$ $\cdot(u^8+2u^7+8u^6+3u^5+38u^4-38u^3+58u^2-12u+7)$
c_8	$(u^8-2u^5-2u^4+u^3+2u^2+2u+1)$ $\cdot(u^8-2u^7+10u^6+6u^5+168u^4+139u^3+116u^2-60u+47)$
c_9	$(u^8+4u^6+6u^4+u^3+5u^2+u+1)$ $\cdot(u^8+8u^6-4u^5+36u^4-29u^3+41u^2+17u+19)$
c_{10}	$(u^8-2u^7+2u^6-u^5-2u^4+2u^3+1)$ $\cdot(u^8+2u^7+8u^6+3u^5+38u^4-38u^3+58u^2-12u+7)$
c_{11}	$(u^8-4u^7+13u^6-28u^5+90u^4+60u^3+85u^2+23u+11)$ $\cdot(u^8-2u^7+u^6-2u^4+2u^3+u^2-u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_6	$(y^8+7y^7+22y^6+43y^5+58y^4+53y^3+31y^2+9y+1)$ $\cdot(y^8+15y^7+\cdots+153y+121)$
c_2	$(y^8-5y^7-2y^6+23y^5+46y^4+57y^3+123y^2-19y+1)$ $\cdot(y^8+11y^7+\cdots+414853y+14641)$
c_3	$(y^8+14y^7+81y^6+230y^5+336y^4+238y^3+77y^2+17y+9)$ $\cdot(y^8+14y^7+81y^6+242y^5+364y^4+214y^3+73y^2+13y+1)$
c_4, c_5, c_9	$(y^8+8y^7+28y^6+58y^5+78y^4+67y^3+35y^2+9y+1)$ $\cdot(y^8+16y^7+\cdots+1269y+361)$
c_7, c_{10}	$(y^8-4y^6-y^5+10y^4-4y^2+1)(y^8+12y^7+\cdots+668y+49)$
c_8	$(y^8-4y^6+10y^4-y^3-4y^2+1)(y^8+16y^7+\cdots+7304y+2209)$
c_{11}	$(y^8-2y^7-3y^6+6y^5+4y^4-6y^3+y^2+y+1)$ $\cdot(y^8+10y^7+\cdots+1341y+121)$