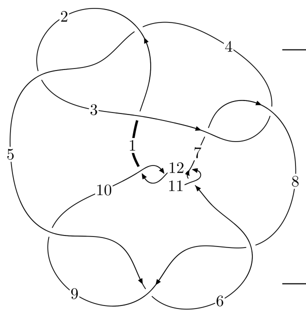
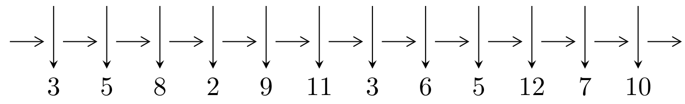
$12n_{0177}$ $(K12n_{0177})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned} I_1^u = \langle & 5.55413 \times 10^{18} u^{43} - 1.55873 \times 10^{20} u^{42} + \cdots + 7.63795 \times 10^{20} b + 1.57862 \times 10^{18}, \\ & - 5.19595 \times 10^{20} u^{43} - 8.80516 \times 10^{20} u^{42} + \cdots + 7.63795 \times 10^{20} a + 1.42510 \times 10^{21},\ u^{44} + 2u^{43} + \cdots + u - \\ I_2^u = \langle & u^3 - u^2 + b + 1,\ u^4 - u^2 + a + 2u + 1,\ u^5 - u^4 + u^2 + u - 1 \rangle \end{aligned}$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 49 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.
$\boldsymbol{I_1^u = \langle 5.55\times10^{18}u^{43} - 1.56\times10^{20}u^{42} + \cdots + 7.64\times10^{20}b + 1.58\times10^{18},\ -5.20\times10^{20}u^{43} - 8.81\times10^{20}u^{42} + \cdots + 7.64\times10^{20}a + 1.43\times10^{21},\ u^{44} + 2u^{43} + \cdots + u - 1\rangle}$

(i) Arc colorings

$$a_6 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_3 = \begin{pmatrix}0.680281u^{43} + 1.15282u^{42} + \cdots + 2.62761u - 1.86582\\-0.00727175u^{43} + 0.204078u^{42} + \cdots + 1.80199u - 0.00206682\end{pmatrix}$$
$$a_7 = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_8 = \begin{pmatrix}0.380377u^{43} + 0.278454u^{42} + \cdots - 1.47705u + 0.357193\\0.725562u^{43} + 1.09260u^{42} + \cdots + 2.20628u - 1.03029\end{pmatrix}$$
$$a_4 = \begin{pmatrix}0.157495u^{43} + 0.219673u^{42} + \cdots + 2.88571u - 1.49128\\-0.100370u^{43} + 0.294432u^{42} + \cdots + 2.99466u - 0.234008\end{pmatrix}$$
$$a_9 = \begin{pmatrix}-0.345186u^{43} - 0.814150u^{42} + \cdots - 3.68333u + 1.38748\\0.725562u^{43} + 1.09260u^{42} + \cdots + 2.20628u - 1.03029\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}-u\\-u^3 + u\end{pmatrix}$$
$$a_5 = \begin{pmatrix}-0.727339u^{43} - 1.22924u^{42} + \cdots + 0.506371u + 1.13240\\-0.0878881u^{43} - 0.762349u^{42} + \cdots - 1.82252u + 0.614206\end{pmatrix}$$
$$a_2 = \begin{pmatrix}0.141633u^{43} - 0.0701701u^{42} + \cdots + 2.62190u - 1.14094\\-0.0770011u^{43} - 0.0103397u^{42} + \cdots + 2.58613u - 0.141084\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}u^3\\u^5 - u^3 + u\end{pmatrix}$$
$$a_1 = \begin{pmatrix}-u^5 - u\\-u^7 + u^5 - 2u^3 + u\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{222219558030096608554 2}{763794622492335702017}u^{43} + \frac{3198001597405456212425}{763794622492335702017}u^{42} + \cdots - \frac{5752714676140583930170}{763794622492335702017}u - \frac{8762178869972642405852}{763794622492335702017}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{44} + 46u^{43} + \cdots + 113u + 1$
c_2, c_4	$u^{44} - 6u^{43} + \cdots - u - 1$
c_3, c_7	$u^{44} - u^{43} + \cdots + 416u + 32$
c_5, c_8, c_9	$u^{44} - 2u^{43} + \cdots - u - 1$
c_6, c_{11}	$u^{44} - 2u^{43} + \cdots - u - 1$
c_{10}, c_{12}	$u^{44} + 18u^{43} + \cdots + 7u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{44} - 90y^{43} + \cdots - 1337y + 1$
c_2, c_4	$y^{44} - 46y^{43} + \cdots - 113y + 1$
c_3, c_7	$y^{44} - 33y^{43} + \cdots - 42496y + 1024$
c_5, c_8, c_9	$y^{44} + 30y^{43} + \cdots - 7y + 1$
c_6, c_{11}	$y^{44} - 18y^{43} + \cdots - 7y + 1$
c_{10}, c_{12}	$y^{44} + 18y^{43} + \cdots - 7y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.932256 + 0.333118I$ $a = 2.11928 + 0.73637I$ $b = 1.213880 + 0.113209I$	$-3.19612 + 1.16436I$	$-18.0367 - 4.2407I$
$u = -0.932256 - 0.333118I$ $a = 2.11928 - 0.73637I$ $b = 1.213880 - 0.113209I$	$-3.19612 - 1.16436I$	$-18.0367 + 4.2407I$
$u = -0.811966 + 0.606824I$ $a = -0.214198 - 0.517770I$ $b = -0.639085 - 0.323465I$	$1.69246 + 2.33995I$	$-6.03512 - 4.58901I$
$u = -0.811966 - 0.606824I$ $a = -0.214198 + 0.517770I$ $b = -0.639085 + 0.323465I$	$1.69246 - 2.33995I$	$-6.03512 + 4.58901I$
$u = 0.832515 + 0.488298I$ $a = -8.47385 - 3.13565I$ $b = -1.08225 - 8.34772I$	$0.05907 - 2.03841I$	$-80.5474 - 19.3778I$
$u = 0.832515 - 0.488298I$ $a = -8.47385 + 3.13565I$ $b = -1.08225 + 8.34772I$	$0.05907 + 2.03841I$	$-80.5474 + 19.3778I$
$u = -0.462434 + 0.927925I$ $a = 0.0471309 + 0.1087380I$ $b = 1.40403 + 0.74743I$	$-2.93440 - 8.69141I$	$-10.66822 + 4.32970I$
$u = -0.462434 - 0.927925I$ $a = 0.0471309 - 0.1087380I$ $b = 1.40403 - 0.74743I$	$-2.93440 + 8.69141I$	$-10.66822 - 4.32970I$
$u = 0.934426 + 0.187999I$ $a = -2.13830 + 1.36144I$ $b = -0.759161 + 0.468019I$	$-1.48992 + 2.07213I$	$-15.1717 - 3.4409I$
$u = 0.934426 - 0.187999I$ $a = -2.13830 - 1.36144I$ $b = -0.759161 - 0.468019I$	$-1.48992 - 2.07213I$	$-15.1717 + 3.4409I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.482142 + 0.949428I$ $a = -0.0877578 - 0.0008070I$ $b = -1.354460 + 0.278382I$	$-6.98988 + 2.57441I$	$-14.1642 - 0.9556I$
$u = 0.482142 - 0.949428I$ $a = -0.0877578 + 0.0008070I$ $b = -1.354460 - 0.278382I$	$-6.98988 - 2.57441I$	$-14.1642 + 0.9556I$
$u = -0.996393 + 0.394966I$ $a = 1.48606 - 0.29444I$ $b = 0.886377 + 0.223778I$	$-3.65397 + 1.39656I$	$-17.3361 - 0.7595I$
$u = -0.996393 - 0.394966I$ $a = 1.48606 + 0.29444I$ $b = 0.886377 - 0.223778I$	$-3.65397 - 1.39656I$	$-17.3361 + 0.7595I$
$u = -0.940835 + 0.551460I$ $a = -0.76026 - 1.52020I$ $b = -1.52495 - 0.13898I$	$1.36697 + 2.08215I$	$-9.41465 - 2.27806I$
$u = -0.940835 - 0.551460I$ $a = -0.76026 + 1.52020I$ $b = -1.52495 + 0.13898I$	$1.36697 - 2.08215I$	$-9.41465 + 2.27806I$
$u = -0.519753 + 0.965172I$ $a = 0.0449987 - 0.1105440I$ $b = 1.073030 - 0.166548I$	$-2.51155 + 3.63795I$	$-12.71077 - 3.32802I$
$u = -0.519753 - 0.965172I$ $a = 0.0449987 + 0.1105440I$ $b = 1.073030 + 0.166548I$	$-2.51155 - 3.63795I$	$-12.71077 + 3.32802I$
$u = 1.025600 + 0.460789I$ $a = -0.04638 - 1.42837I$ $b = 0.097152 + 0.226092I$	$-3.18176 - 4.85577I$	$-16.2664 + 7.5137I$
$u = 1.025600 - 0.460789I$ $a = -0.04638 + 1.42837I$ $b = 0.097152 - 0.226092I$	$-3.18176 + 4.85577I$	$-16.2664 - 7.5137I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.005340 + 0.543119I$ $a = 1.45241 - 1.16375I$ $b = 1.010000 + 0.655687I$	$-1.71867 - 4.49690I$	$-15.4552 + 5.1685I$
$u = 1.005340 - 0.543119I$ $a = 1.45241 + 1.16375I$ $b = 1.010000 - 0.655687I$	$-1.71867 + 4.49690I$	$-15.4552 - 5.1685I$
$u = -1.042980 + 0.576491I$ $a = -2.06544 - 1.02569I$ $b = -1.108870 + 0.723364I$	$0.96122 + 8.18685I$	$-10.86677 - 8.84051I$
$u = -1.042980 - 0.576491I$ $a = -2.06544 + 1.02569I$ $b = -1.108870 - 0.723364I$	$0.96122 - 8.18685I$	$-10.86677 + 8.84051I$
$u = -0.484164 + 0.645863I$ $a = -0.335926 + 0.386406I$ $b = -0.946963 - 0.737557I$	$2.57983 - 3.38804I$	$-7.14865 + 3.85146I$
$u = -0.484164 - 0.645863I$ $a = -0.335926 - 0.386406I$ $b = -0.946963 + 0.737557I$	$2.57983 + 3.38804I$	$-7.14865 - 3.85146I$
$u = 0.572656 + 0.492792I$ $a = -0.479357 + 0.261809I$ $b = 0.622384 - 0.489340I$	$-0.415071 + 0.135386I$	$-12.51812 - 0.53462I$
$u = 0.572656 - 0.492792I$ $a = -0.479357 - 0.261809I$ $b = 0.622384 + 0.489340I$	$-0.415071 - 0.135386I$	$-12.51812 + 0.53462I$
$u = 1.272740 + 0.019314I$ $a = 1.88935 - 0.59100I$ $b = 1.50663 - 0.34571I$	$-9.39659 + 6.06487I$	$-16.0679 - 3.3672I$
$u = 1.272740 - 0.019314I$ $a = 1.88935 + 0.59100I$ $b = 1.50663 + 0.34571I$	$-9.39659 - 6.06487I$	$-16.0679 + 3.3672I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.27574$ $a=-2.04286$ $b=-1.59279$	-13.6601	-18.7020
$u=\ \ 0.928890+0.877784I$ $a=\ \ 0.288927+0.058403I$ $b=-0.0255637-0.0518981I$	$9.64608-3.25423I$	$3.42401+0.I$
$u=\ \ 0.928890-0.877784I$ $a=\ \ 0.288927-0.058403I$ $b=-0.0255637+0.0518981I$	$9.64608+3.25423I$	$3.42401+0.I$
$u=-1.140930+0.668019I$ $a=\ \ 1.78965+0.99216I$ $b=\ \ 1.58220-0.85694I$	$-5.0177+14.5388I$	$-12.0000-8.1006I$
$u=-1.140930-0.668019I$ $a=\ \ 1.78965-0.99216I$ $b=\ \ 1.58220+0.85694I$	$-5.0177-14.5388I$	$-12.0000+8.1006I$
$u=\ \ 1.147110+0.679799I$ $a=-1.30957+1.19970I$ $b=-1.45466-0.44146I$	$-9.05324-8.53642I$	$-12.00000+5.03243I$
$u=\ \ 1.147110-0.679799I$ $a=-1.30957-1.19970I$ $b=-1.45466+0.44146I$	$-9.05324+8.53642I$	$-12.00000-5.03243I$
$u=-0.454054+0.487305I$ $a=-0.035389-0.728908I$ $b=-0.876425+0.512471I$	$2.46066+2.02868I$	$-5.66385-3.37535I$
$u=-0.454054-0.487305I$ $a=-0.035389+0.728908I$ $b=-0.876425-0.512471I$	$2.46066-2.02868I$	$-5.66385+3.37535I$
$u=-1.152990+0.700059I$ $a=\ \ 0.682516+1.130440I$ $b=\ \ 1.087850-0.088161I$	$-4.49244+2.47578I$	$-12.00000+0.I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.152990 - 0.700059I$ $a = 0.682516 - 1.130440I$ $b = 1.087850 + 0.088161I$	$-4.49244 - 2.47578I$	$-12.00000 + 0.I$
$u = 0.435796$ $a = -0.661080$ $b = 0.319506$	-0.646256	-15.3650
$u = 0.157314 + 0.396862I$ $a = -0.50192 + 2.61945I$ $b = 0.425511 + 0.468538I$	$-1.15253 + 1.27543I$	$-10.53847 - 1.56080I$
$u = 0.157314 - 0.396862I$ $a = -0.50192 - 2.61945I$ $b = 0.425511 - 0.468538I$	$-1.15253 - 1.27543I$	$-10.53847 + 1.56080I$

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

(i) Arc colorings

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

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

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

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

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

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

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

$$a_1 = \begin{pmatrix} -u^4 + u^2 - 1 \\ u^4 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= u^4 - u^3 + 6u^2 - 4u - 15$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.758138 + 0.584034I$ $a = 1.47956 - 1.63976I$ $b = -1.10636 - 1.69341I$	$0.17487 + 2.21397I$	$-11.6350 - 8.8712I$
$u = -0.758138 - 0.584034I$ $a = 1.47956 + 1.63976I$ $b = -1.10636 + 1.69341I$	$0.17487 - 2.21397I$	$-11.6350 + 8.8712I$
$u = 0.935538 + 0.903908I$ $a = 0.044146 - 0.313338I$ $b = 0.532511 + 0.056433I$	$9.31336 - 3.33174I$	$-19.7758 + 5.0940I$
$u = 0.935538 - 0.903908I$ $a = 0.044146 + 0.313338I$ $b = 0.532511 - 0.056433I$	$9.31336 + 3.33174I$	$-19.7758 - 5.0940I$
$u = 0.645200$ $a = -2.04741$ $b = -0.852303$	-2.52712	-15.1780

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^5)(u^{44}+46u^{43}+\cdots+113u+1)$
c_2	$((u-1)^5)(u^{44}-6u^{43}+\cdots-u-1)$
c_3, c_7	$u^5(u^{44}-u^{43}+\cdots+416u+32)$
c_4	$((u+1)^5)(u^{44}-6u^{43}+\cdots-u-1)$
c_5	$(u^5-u^4+4u^3-3u^2+3u-1)(u^{44}-2u^{43}+\cdots-u-1)$
c_6	$(u^5-u^4+u^2+u-1)(u^{44}-2u^{43}+\cdots-u-1)$
c_8, c_9	$(u^5+u^4+4u^3+3u^2+3u+1)(u^{44}-2u^{43}+\cdots-u-1)$
c_{10}	$(u^5-u^4+4u^3-3u^2+3u-1)(u^{44}+18u^{43}+\cdots+7u+1)$
c_{11}	$(u^5+u^4-u^2+u+1)(u^{44}-2u^{43}+\cdots-u-1)$
c_{12}	$(u^5+u^4+4u^3+3u^2+3u+1)(u^{44}+18u^{43}+\cdots+7u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^5)(y^{44} - 90y^{43} + \cdots - 1337y + 1)$
c_2, c_4	$((y-1)^5)(y^{44} - 46y^{43} + \cdots - 113y + 1)$
c_3, c_7	$y^5(y^{44} - 33y^{43} + \cdots - 42496y + 1024)$
c_5, c_8, c_9	$(y^5 + 7y^4 + 16y^3 + 13y^2 + 3y - 1)(y^{44} + 30y^{43} + \cdots - 7y + 1)$
c_6, c_{11}	$(y^5 - y^4 + 4y^3 - 3y^2 + 3y - 1)(y^{44} - 18y^{43} + \cdots - 7y + 1)$
c_{10}, c_{12}	$(y^5 + 7y^4 + 16y^3 + 13y^2 + 3y - 1)(y^{44} + 18y^{43} + \cdots - 7y + 1)$