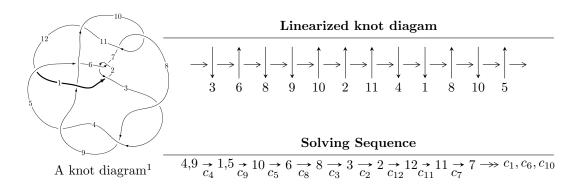
$12n_{0351} \ (K12n_{0351})$



Ideals for irreducible components² of X_{par}

$$\begin{split} I_1^u &= \langle -8.11138 \times 10^{47} u^{32} + 5.57581 \times 10^{46} u^{31} + \dots + 2.13390 \times 10^{50} b + 2.41977 \times 10^{50}, \\ &- 2.54097 \times 10^{51} u^{32} + 4.05282 \times 10^{50} u^{31} + \dots + 3.69165 \times 10^{52} a + 5.61038 \times 10^{53}, \\ &u^{33} - u^{32} + \dots - 106 u + 173 \rangle \\ I_2^u &= \langle -3 u^{17} + 4 u^{16} + \dots + 5 b + 14, \ -19 u^{17} + 2 u^{16} + \dots + 5 a + 57, \ u^{18} - 9 u^{16} + \dots - 2 u + 1 \rangle \end{split}$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 51 representations.

¹The 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.
$$I_1^u = \langle -8.11 \times 10^{47} u^{32} + 5.58 \times 10^{46} u^{31} + \dots + 2.13 \times 10^{50} b + 2.42 \times 10^{50}, \ -2.54 \times 10^{51} u^{32} + 4.05 \times 10^{50} u^{31} + \dots + 3.69 \times 10^{52} a + 5.61 \times 10^{53}, \ u^{33} - u^{32} + \dots - 106 u + 173 \rangle$$

(i) Arc colorings

$$a_{4} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{9} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_{1} = \begin{pmatrix} 0.0688301u^{32} - 0.0109783u^{31} + \cdots - 9.38616u - 15.1975 \\ 0.00380120u^{32} - 0.000261296u^{31} + \cdots - 0.303063u - 1.13396 \end{pmatrix}$$

$$a_{5} = \begin{pmatrix} 1 \\ u^{2} \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.0543141u^{32} - 0.00150099u^{31} + \cdots - 4.29999u - 10.4669 \\ 0.0221013u^{32} - 0.00297101u^{31} + \cdots - 2.07083u - 4.65333 \end{pmatrix}$$

$$a_{6} = \begin{pmatrix} 0.0489761u^{32} - 0.00899494u^{31} + \cdots - 8.55348u - 10.6501 \\ 0.0256145u^{32} - 0.00501638u^{31} + \cdots - 3.35159u - 6.23090 \end{pmatrix}$$

$$a_{8} = \begin{pmatrix} u \\ u \end{pmatrix}$$

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

$$a_{2} = \begin{pmatrix} 0.0537482u^{32} - 0.00848860u^{31} + \cdots - 7.70974u - 11.3277 \\ 0.0361202u^{32} - 0.00667465u^{31} + \cdots - 4.42265u - 7.79409 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 0.112795u^{32} - 0.0212720u^{31} + \cdots - 14.8584u - 24.0719 \\ 0.0284035u^{32} - 0.00624395u^{31} + \cdots - 4.33982u - 6.95902 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0.0229993u^{32} + 0.000676223u^{31} + \cdots - 2.29755u - 4.63975 \\ -0.00921351u^{32} - 0.000793791u^{31} + \cdots - 0.0683872u + 1.17380 \end{pmatrix}$$

$$a_{7} = \begin{pmatrix} -0.0659945u^{32} + 0.0142976u^{31} + \cdots + 11.0084u + 15.2187 \\ -0.007616661u^{32} - 0.0000982334u^{31} + \cdots + 2.05310u + 2.41838 \end{pmatrix}$$

- (ii) Obstruction class = -1
- (iii) Cusp Shapes = $-0.280111u^{32} + 0.0673788u^{31} + \cdots + 28.5160u + 51.9527$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{33} + 31u^{32} + \dots - 108u - 1$
c_2, c_6	$u^{33} - 3u^{32} + \dots + 10u + 1$
c_3, c_4, c_8	$u^{33} - u^{32} + \dots - 106u + 173$
c_5	$u^{33} + u^{32} + \dots + 72271u + 18731$
c_7, c_{10}	$u^{33} + u^{32} + \dots + 698u + 391$
<i>c</i> ₉	$u^{33} - 5u^{32} + \dots + 28u - 11$
c_{11}	$u^{33} + 55u^{32} + \dots - 781200u - 152881$
c_{12}	$u^{33} - u^{32} + \dots - 428u + 187$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{33} - 45y^{32} + \dots - 3432y - 1$
c_2, c_6	$y^{33} + 31y^{32} + \dots - 108y - 1$
c_3, c_4, c_8	$y^{33} - 43y^{32} + \dots + 292880y - 29929$
c_5	$y^{33} + 77y^{32} + \dots - 6878739425y - 350850361$
c_7,c_{10}	$y^{33} + 55y^{32} + \dots - 781200y - 152881$
c_9	$y^{33} - 7y^{32} + \dots - 778y - 121$
c_{11}	$y^{33} - 149y^{32} + \dots - 105634649180y - 23372600161$
c_{12}	$y^{33} + 57y^{32} + \dots - 214378y - 34969$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
u = 0.881268 + 0.494274I		
a = 1.028140 - 0.103856I	-7.71312 - 1.78537I	-0.85266 + 4.65753I
b = 0.744044 - 0.822426I		
u = 0.881268 - 0.494274I		
a = 1.028140 + 0.103856I	-7.71312 + 1.78537I	-0.85266 - 4.65753I
b = 0.744044 + 0.822426I		
u = 0.806093 + 0.733762I		
a = -0.048706 + 0.852350I	-0.34629 + 2.42589I	-3.38432 - 3.33398I
b = -0.516099 + 0.675037I		
u = 0.806093 - 0.733762I		
a = -0.048706 - 0.852350I	-0.34629 - 2.42589I	-3.38432 + 3.33398I
b = -0.516099 - 0.675037I		
u = -0.798281 + 0.311266I		
a = -0.571033 - 0.836849I	-12.33120 + 1.02478I	-6.59141 + 2.03554I
b = -0.50701 + 2.28619I		
u = -0.798281 - 0.311266I		
a = -0.571033 + 0.836849I	-12.33120 - 1.02478I	-6.59141 - 2.03554I
b = -0.50701 - 2.28619I		
u = 0.811379 + 0.055840I		
a = -0.54698 + 1.54986I	-0.52878 + 4.48782I	-5.13520 - 5.73220I
b = -0.429316 + 0.085080I		
u = 0.811379 - 0.055840I		
a = -0.54698 - 1.54986I	-0.52878 - 4.48782I	-5.13520 + 5.73220I
b = -0.429316 - 0.085080I		
u = -0.461701 + 0.612571I		
a = 0.658166 - 0.583233I	0.081645 + 1.028670I	0.74020 - 3.82977I
b = -0.093739 + 0.146770I		
u = -0.461701 - 0.612571I		
a = 0.658166 + 0.583233I	0.081645 - 1.028670I	0.74020 + 3.82977I
b = -0.093739 - 0.146770I		

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
u = -0.520817 + 0.403957I		
a = -0.656947 + 0.628673I	0.07174 + 2.09017I	-0.84653 - 3.88061I
b = -0.343599 + 0.875931I		
u = -0.520817 - 0.403957I		
a = -0.656947 - 0.628673I	0.07174 - 2.09017I	-0.84653 + 3.88061I
b = -0.343599 - 0.875931I		
u = 0.541626 + 0.352089I		
a = -1.57063 + 0.32219I	-3.54901 - 0.96370I	-7.30947 + 1.19731I
b = -0.995588 + 0.334486I		
u = 0.541626 - 0.352089I		
a = -1.57063 - 0.32219I	-3.54901 + 0.96370I	-7.30947 - 1.19731I
b = -0.995588 - 0.334486I		
u = 1.367540 + 0.181430I		
a = -0.883343 - 0.451036I	-5.14586 - 3.44515I	-3.74377 + 8.43324I
b = -1.89904 - 0.40011I		
u = 1.367540 - 0.181430I		
a = -0.883343 + 0.451036I	-5.14586 + 3.44515I	-3.74377 - 8.43324I
b = -1.89904 + 0.40011I		
u = -0.263257 + 0.516809I		
a = 0.905386 - 0.059376I	0.112234 + 1.091570I	1.51179 - 6.02970I
b = 0.061869 + 0.214108I		
u = -0.263257 - 0.516809I		
a = 0.905386 + 0.059376I	0.112234 - 1.091570I	1.51179 + 6.02970I
b = 0.061869 - 0.214108I		
u = -1.46377		
a = -0.611776	-3.79571	-0.350320
b = -1.74803		
u = -1.55168 + 0.23953I		
a = 0.606082 - 0.442133I	-10.65780 + 3.51663I	-5.96026 + 0.I
b = 2.42916 + 0.21011I		

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
u = -1.55168 - 0.23953I		
a = 0.606082 + 0.442133I	-10.65780 - 3.51663I	-5.96026 + 0.I
b = 2.42916 - 0.21011I		
u = 1.56741 + 0.23862I		
a = 0.584803 - 0.034792I	-7.35813 - 4.59771I	0
b = 1.91823 + 0.02308I		
u = 1.56741 - 0.23862I		
a = 0.584803 + 0.034792I	-7.35813 + 4.59771I	0
b = 1.91823 - 0.02308I		
u = -0.95012 + 1.51122I		
a = -0.549793 - 0.409182I	-14.0224 + 4.9505I	0
b = -0.633085 + 0.187322I		
u = -0.95012 - 1.51122I		
a = -0.549793 + 0.409182I	-14.0224 - 4.9505I	0
b = -0.633085 - 0.187322I		
u = 1.79395 + 0.15288I		
a = 0.565816 - 0.803329I	17.5407 - 3.2542I	0
b = 1.74296 - 0.32540I		
u = 1.79395 - 0.15288I		
a = 0.565816 + 0.803329I	17.5407 + 3.2542I	0
b = 1.74296 + 0.32540I		
u = -1.79808 + 0.17463I		
a = -0.774547 + 0.627665I	-17.5402 + 4.7342I	0
b = -2.05265 + 0.43342I		
u = -1.79808 - 0.17463I		
a = -0.774547 - 0.627665I	-17.5402 - 4.7342I	0
b = -2.05265 - 0.43342I		
u = 1.81040 + 0.47252I		
a = 0.816894 + 0.399455I	16.7809 - 12.3351I	0
b = 2.24901 + 0.45557I		

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
u = 1.81040 - 0.47252I		
a = 0.816894 - 0.399455I	16.7809 + 12.3351I	0
b = 2.24901 - 0.45557I		
u = -2.00385 + 0.04235I		
a = 0.612520 - 0.356931I	-11.89190 + 2.84171I	0
b = 1.69886 - 0.37474I		
u = -2.00385 - 0.04235I		
a = 0.612520 + 0.356931I	-11.89190 - 2.84171I	0
b = 1.69886 + 0.37474I		

II.
$$I_2^u = \langle -3u^{17} + 4u^{16} + \dots + 5b + 14, -19u^{17} + 2u^{16} + \dots + 5a + 57, u^{18} - 9u^{16} + \dots - 2u + 1 \rangle$$

(i) Arc colorings

$$a_{4} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{9} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_{1} = \begin{pmatrix} \frac{19}{5}u^{17} - \frac{2}{5}u^{16} + \dots - \frac{62}{5}u - \frac{57}{5} \\ \frac{1}{5}u^{17} - \frac{4}{5}u^{16} + \dots - \frac{9}{5}u - \frac{14}{5} \end{pmatrix}$$

$$a_{5} = \begin{pmatrix} 1 \\ u^{2} \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} \frac{9}{5}u^{17} - \frac{2}{5}u^{16} + \dots - \frac{12}{5}u - \frac{47}{5} \\ -\frac{9}{5}u^{17} - \frac{18}{5}u^{16} + \dots - \frac{8}{5}u + \frac{2}{5} \end{pmatrix}$$

$$a_{6} = \begin{pmatrix} -5.40000u^{17} - 3.80000u^{16} + \dots + 4.20000u + 11.2000 \\ -2.60000u^{17} - 3.20000u^{16} + \dots - 2.20000u + 3.80000 \end{pmatrix}$$

$$a_{8} = \begin{pmatrix} u \\ u \end{pmatrix}$$

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

$$a_{2} = \begin{pmatrix} 2u^{17} - 3u^{16} + \dots - 13u - 6 \\ -\frac{4}{5}u^{17} - \frac{28}{5}u^{16} + \dots - \frac{35}{5}u - \frac{3}{5} \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} \frac{12}{5}u^{17} - \frac{16}{5}u^{16} + \dots - \frac{76}{5}u - \frac{41}{5} \\ -u^{17} - 5u^{16} + \dots - 6u^{2} - 6u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} \frac{2}{5}u^{17} - \frac{16}{5}u^{16} + \dots - \frac{26}{5}u - \frac{31}{5} \\ -3.20000u^{17} - 6.40000u^{16} + \dots - 4.40000u + 3.60000 \end{pmatrix}$$

$$a_{7} = \begin{pmatrix} -6.60000u^{17} - 6.20000u^{16} + \dots + 7.80000u + 15.8000 \\ -3.40000u^{17} - 5.80000u^{16} + \dots - 3.80000u + 7.20000 \end{pmatrix}$$

(ii) Obstruction class = 1

(iii) Cusp Shapes =
$$-2u^{17} + 5u^{16} + 27u^{15} - 34u^{14} - 125u^{13} + 95u^{12} + 270u^{11} - 122u^{10} - 239u^9 + 41u^8 - 99u^7 + 37u^6 + 384u^5 + 32u^4 - 257u^3 - 88u^2 + 25u + 15$$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{18} - 12u^{17} + \dots - 16u + 1$
c_2	$u^{18} - 2u^{17} + \dots - 2u + 1$
c_3, c_4	$u^{18} - 9u^{16} + \dots - 2u + 1$
c_5	$u^{18} + 7u^{16} + \dots + u + 1$
c_6	$u^{18} + 2u^{17} + \dots + 2u + 1$
	$u^{18} + 8u^{16} + \dots + 4u^2 + 1$
c ₈	$u^{18} - 9u^{16} + \dots + 2u + 1$
<i>c</i> ₉	$u^{18} - 6u^{17} + \dots - 2u + 1$
c_{10}	$u^{18} + 8u^{16} + \dots + 4u^2 + 1$
c_{11}	$u^{18} + 16u^{17} + \dots + 8u + 1$
c_{12}	$u^{18} + 11u^{16} + \dots - 2u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{18} - 20y^{16} + \dots - 24y + 1$
c_2, c_6	$y^{18} + 12y^{17} + \dots + 16y + 1$
c_3, c_4, c_8	$y^{18} - 18y^{17} + \dots - 20y + 1$
c_5	$y^{18} + 14y^{17} + \dots - 3y + 1$
c_7, c_{10}	$y^{18} + 16y^{17} + \dots + 8y + 1$
<i>c</i> ₉	$y^{18} + 2y^{17} + \dots - 10y + 1$
c_{11}	$y^{18} - 24y^{17} + \dots + 4y + 1$
c_{12}	$y^{18} + 22y^{17} + \dots + 14y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
u = 0.085759 + 1.011970I		
a = 0.071482 + 0.659946I	-1.08613 - 0.96816I	-6.34211 + 0.57071I
b = -0.330517 + 0.071724I		
u = 0.085759 - 1.011970I		
a = 0.071482 - 0.659946I	-1.08613 + 0.96816I	-6.34211 - 0.57071I
b = -0.330517 - 0.071724I		
u = -1.114560 + 0.293820I		
a = -0.931989 + 0.046707I	-8.46698 + 1.31286I	-9.83068 + 0.32018I
b = -1.33734 - 0.90053I		
u = -1.114560 - 0.293820I		
a = -0.931989 - 0.046707I	-8.46698 - 1.31286I	-9.83068 - 0.32018I
b = -1.33734 + 0.90053I		
u = 1.300570 + 0.029273I		
a = -0.536713 - 1.019510I	-2.94807 - 4.42128I	-4.69559 + 5.41775I
b = -1.28702 - 0.60196I		
u = 1.300570 - 0.029273I		
a = -0.536713 + 1.019510I	-2.94807 + 4.42128I	-4.69559 - 5.41775I
b = -1.28702 + 0.60196I		
u = -1.306820 + 0.073942I		
a = 0.030062 + 0.945777I	-3.48940 + 1.60644I	-4.34335 - 1.67805I
b = 0.663121 + 0.218291I		
u = -1.306820 - 0.073942I		
a = 0.030062 - 0.945777I	-3.48940 - 1.60644I	-4.34335 + 1.67805I
b = 0.663121 - 0.218291I		
u = 1.232400 + 0.491104I		
a = 0.340655 - 0.011913I	-12.53040 - 2.23082I	-8.19150 + 3.26212I
b = 1.05787 - 1.88552I		
u = 1.232400 - 0.491104I		
a = 0.340655 + 0.011913I	-12.53040 + 2.23082I	-8.19150 - 3.26212I
b = 1.05787 + 1.88552I		

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
u = 1.329640 + 0.238506I		
a = -1.026160 - 0.341518I	-5.47647 - 2.87572I	-10.17496 - 1.27830I
b = -2.02234 - 0.39359I		
u = 1.329640 - 0.238506I		
a = -1.026160 + 0.341518I	-5.47647 + 2.87572I	-10.17496 + 1.27830I
b = -2.02234 + 0.39359I		
u = -0.375312 + 0.293384I		
a = 1.52275 - 1.15299I	-0.093430 - 0.496699I	-2.79813 + 0.04829I
b = -0.663240 - 0.618071I		
u = -0.375312 - 0.293384I		
a = 1.52275 + 1.15299I	-0.093430 + 0.496699I	-2.79813 - 0.04829I
b = -0.663240 + 0.618071I		
u = -1.52906 + 0.23255I		
a = 0.647405 - 0.190244I	-7.41546 + 5.53534I	-5.08064 - 8.15204I
b = 2.05285 - 0.17653I		
u = -1.52906 - 0.23255I		
a = 0.647405 + 0.190244I	-7.41546 - 5.53534I	-5.08064 + 8.15204I
b = 2.05285 + 0.17653I		
u = 0.377398 + 0.043983I		
a = -1.11749 + 2.90937I	0.38303 + 4.11760I	1.95695 - 4.69583I
b = -0.133373 + 0.724783I		
u = 0.377398 - 0.043983I		
a = -1.11749 - 2.90937I	0.38303 - 4.11760I	1.95695 + 4.69583I
b = -0.133373 - 0.724783I		

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$ (u^{18} - 12u^{17} + \dots - 16u + 1)(u^{33} + 31u^{32} + \dots - 108u - 1) $
c_2	$(u^{18} - 2u^{17} + \dots - 2u + 1)(u^{33} - 3u^{32} + \dots + 10u + 1)$
c_3, c_4	$(u^{18} - 9u^{16} + \dots - 2u + 1)(u^{33} - u^{32} + \dots - 106u + 173)$
<i>C</i> 5	$(u^{18} + 7u^{16} + \dots + u + 1)(u^{33} + u^{32} + \dots + 72271u + 18731)$
c_6	$ (u^{18} + 2u^{17} + \dots + 2u + 1)(u^{33} - 3u^{32} + \dots + 10u + 1) $
C ₇	$(u^{18} + 8u^{16} + \dots + 4u^2 + 1)(u^{33} + u^{32} + \dots + 698u + 391)$
C ₈	$(u^{18} - 9u^{16} + \dots + 2u + 1)(u^{33} - u^{32} + \dots - 106u + 173)$
<i>c</i> ₉	$(u^{18} - 6u^{17} + \dots - 2u + 1)(u^{33} - 5u^{32} + \dots + 28u - 11)$
c_{10}	$(u^{18} + 8u^{16} + \dots + 4u^2 + 1)(u^{33} + u^{32} + \dots + 698u + 391)$
c_{11}	$(u^{18} + 16u^{17} + \dots + 8u + 1)(u^{33} + 55u^{32} + \dots - 781200u - 152881)$
c_{12}	$(u^{18} + 11u^{16} + \dots - 2u + 1)(u^{33} - u^{32} + \dots - 428u + 187)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$ (y^{18} - 20y^{16} + \dots - 24y + 1)(y^{33} - 45y^{32} + \dots - 3432y - 1) $
c_2, c_6	$(y^{18} + 12y^{17} + \dots + 16y + 1)(y^{33} + 31y^{32} + \dots - 108y - 1)$
c_3, c_4, c_8	$(y^{18} - 18y^{17} + \dots - 20y + 1)(y^{33} - 43y^{32} + \dots + 292880y - 29929)$
c_5	$(y^{18} + 14y^{17} + \dots - 3y + 1)$ $\cdot (y^{33} + 77y^{32} + \dots - 6878739425y - 350850361)$
c_7, c_{10}	$(y^{18} + 16y^{17} + \dots + 8y + 1)(y^{33} + 55y^{32} + \dots - 781200y - 152881)$
<i>c</i> 9	$(y^{18} + 2y^{17} + \dots - 10y + 1)(y^{33} - 7y^{32} + \dots - 778y - 121)$
c_{11}	$(y^{18} - 24y^{17} + \dots + 4y + 1)$ $\cdot (y^{33} - 149y^{32} + \dots - 105634649180y - 23372600161)$
c_{12}	$(y^{18} + 22y^{17} + \dots + 14y + 1)(y^{33} + 57y^{32} + \dots - 214378y - 34969)$