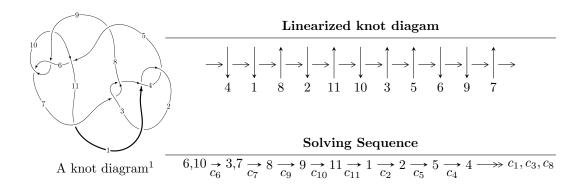
## $11a_{35} (K11a_{35})$



# Ideals for irreducible components of $X_{par}$

$$I_1^u = \langle 2u^{65} - u^{64} + \dots - u^2 + b, \ u^{64} + u^{63} + \dots + a + 1, \ u^{66} - 2u^{65} + \dots - u + 1 \rangle$$

$$I_2^u = \langle -u^3 + b + u + 1, \ -u^4 - u^3 + u^2 + a + u, \ u^6 + u^5 - u^4 - 2u^3 + u + 1 \rangle$$

\* 2 irreducible components of  $\dim_{\mathbb{C}} = 0$ , with total 72 representations.

<sup>&</sup>lt;sup>1</sup>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).

<sup>&</sup>lt;sup>2</sup> All coefficients of polynomials are rational numbers. But the coefficients are sometimes approximated in decimal forms when there is not enough margin.

$$I_1^u = \langle 2u^{65} - u^{64} + \dots - u^2 + b, \ u^{64} + u^{63} + \dots + a + 1, \ u^{66} - 2u^{65} + \dots - u + 1 \rangle$$

(i) Arc colorings

$$a_{6} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_{3} = \begin{pmatrix} -u^{64} - u^{63} + \dots - u^{2} - 1 \\ -2u^{65} + u^{64} + \dots - 8u^{4} + u^{2} \end{pmatrix}$$

$$a_{7} = \begin{pmatrix} 1 \\ u^{2} \end{pmatrix}$$

$$a_{8} = \begin{pmatrix} -u^{11} + 2u^{9} - 2u^{7} + u^{3} \\ -u^{11} + 3u^{9} - 4u^{7} + 3u^{5} - u^{3} + u \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} -u^{3} \\ -u^{3} + u \end{pmatrix}$$

$$a_{1} = \begin{pmatrix} u^{5} - 2u^{3} + u \\ u^{7} - u^{5} + u \end{pmatrix}$$

$$a_{2} = \begin{pmatrix} -u^{63} + u^{62} + \dots - u - 1 \\ -u^{65} + u^{64} + \dots + u^{3} + u^{2} \end{pmatrix}$$

$$a_{5} = \begin{pmatrix} u^{6} - u^{4} + 1 \\ u^{6} - 2u^{4} + u^{2} \end{pmatrix}$$

$$a_{4} = \begin{pmatrix} u^{64} - u^{63} + \dots - u^{2} - u \\ u^{64} - u^{63} + \dots + u^{2} + u \end{pmatrix}$$

$$a_{4} = \begin{pmatrix} u^{64} - u^{63} + \dots - u^{2} - u \\ u^{64} - u^{63} + \dots + u^{2} + u \end{pmatrix}$$

- (ii) Obstruction class = -1
- (iii) Cusp Shapes =  $4u^{65} 6u^{64} + \cdots 4u 6$

#### (iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
$c_1, c_4$	$u^{66} - 7u^{65} + \dots - 8u + 1$
$c_2$	$u^{66} + 29u^{65} + \dots + 8u + 1$
$c_{3}, c_{7}$	$u^{66} + u^{65} + \dots + 192u + 64$
<i>C</i> 5	$u^{66} + 6u^{65} + \dots + 5u + 1$
$c_{6}, c_{9}$	$u^{66} + 2u^{65} + \dots + u + 1$
$c_8,c_{11}$	$u^{66} - 2u^{65} + \dots - 49u + 49$
$c_{10}$	$u^{66} + 30u^{65} + \dots - u + 1$

### (v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
$c_1, c_4$	$y^{66} - 29y^{65} + \dots - 8y + 1$
$c_2$	$y^{66} + 23y^{65} + \dots + 40y + 1$
$c_3, c_7$	$y^{66} - 39y^{65} + \dots - 81920y + 4096$
<i>C</i> <sub>5</sub>	$y^{66} + 2y^{65} + \dots + 57y + 1$
$c_{6}, c_{9}$	$y^{66} - 30y^{65} + \dots + y + 1$
$c_8, c_{11}$	$y^{66} - 54y^{65} + \dots + 34349y + 2401$
$c_{10}$	$y^{66} + 14y^{65} + \dots - 15y + 1$

### (vi) Complex Volumes and Cusp Shapes

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
u = -0.838382 + 0.570498I		
a = -1.59137 + 0.96841I	2.86632 + 4.91582I	3.89105 - 6.54024I
b = -0.89229 + 1.65118I		
u = -0.838382 - 0.570498I		
a = -1.59137 - 0.96841I	2.86632 - 4.91582I	3.89105 + 6.54024I
b = -0.89229 - 1.65118I		
u = 1.033280 + 0.092662I		
a = 0.186149 - 0.978915I	-1.69775 + 2.04297I	-4.04234 - 3.06094I
b = 0.1030790 - 0.0082510I		
u = 1.033280 - 0.092662I		
a = 0.186149 + 0.978915I	-1.69775 - 2.04297I	-4.04234 + 3.06094I
b = 0.1030790 + 0.0082510I		
u = 0.982840 + 0.372620I		
a = 0.374917 + 0.408622I	-1.69198 - 1.38184I	0
b = -0.326106 + 0.086039I		
u = 0.982840 - 0.372620I		
a =  0.374917 - 0.408622I	-1.69198 + 1.38184I	0
b = -0.326106 - 0.086039I		
u = -0.933351 + 0.146746I		
a = -1.76404 - 0.58789I	-2.87483 + 0.09947I	-1.36414 + 2.00887I
b = -2.40628 + 0.14225I		
u = -0.933351 - 0.146746I		
a = -1.76404 + 0.58789I	-2.87483 - 0.09947I	-1.36414 - 2.00887I
b = -2.40628 - 0.14225I		
u = -0.742441 + 0.572901I		
a = 1.41865 - 0.89922I	3.13736 - 0.33428I	4.85916 - 0.25871I
b = 0.73516 - 1.51912I		
u = -0.742441 - 0.572901I		
a = 1.41865 + 0.89922I	3.13736 + 0.33428I	4.85916 + 0.25871I
b = 0.73516 + 1.51912I		

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
u = 0.548886 + 0.758609I		
a = 2.42346 + 0.19818I	7.33465 - 7.05782I	4.34818 + 5.54118I
b = 0.51274 + 1.38998I		
u = 0.548886 - 0.758609I		
a = 2.42346 - 0.19818I	7.33465 + 7.05782I	4.34818 - 5.54118I
b = 0.51274 - 1.38998I		
u = 0.521388 + 0.768999I		
a = -2.49233 - 0.13326I	9.01786 - 1.00374I	6.50365 + 0.74875I
b = -0.48790 - 1.63707I		
u = 0.521388 - 0.768999I		
a = -2.49233 + 0.13326I	9.01786 + 1.00374I	6.50365 - 0.74875I
b = -0.48790 + 1.63707I		
u = 0.449304 + 0.792107I		
a = -2.35386 + 0.17418I	8.61616 + 4.06846I	6.02832 - 1.29392I
b = -0.48979 - 2.15203I		
u = 0.449304 - 0.792107I		
a = -2.35386 - 0.17418I	8.61616 - 4.06846I	6.02832 + 1.29392I
b = -0.48979 + 2.15203I		
u = 0.426139 + 0.798466I		
a = 2.20027 - 0.25612I	6.65145 + 10.08610I	3.42420 - 5.72376I
b = 0.48809 + 2.24847I		
u = 0.426139 - 0.798466I		
a = 2.20027 + 0.25612I	6.65145 - 10.08610I	3.42420 + 5.72376I
b = 0.48809 - 2.24847I		
u = -1.101690 + 0.070988I		
a = 0.241428 + 0.643348I	3.30286 - 2.13568I	0
b = 1.68689 + 0.38049I		
u = -1.101690 - 0.070988I		
a = 0.241428 - 0.643348I	3.30286 + 2.13568I	0
b = 1.68689 - 0.38049I		

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
u = -0.494791 + 0.742001I		
a = 0.141507 - 0.914994I	3.55117 + 1.02644I	3.26543 - 2.61936I
b = -0.553428 - 0.923968I		
u = -0.494791 - 0.742001I		
a = 0.141507 + 0.914994I	3.55117 - 1.02644I	3.26543 + 2.61936I
b = -0.553428 + 0.923968I		
u = -0.450858 + 0.762088I		
a = 0.129006 + 0.877411I	3.30665 - 3.77744I	2.64079 + 3.14160I
b = 0.821517 + 0.695767I		
u = -0.450858 - 0.762088I		
a = 0.129006 - 0.877411I	3.30665 + 3.77744I	2.64079 - 3.14160I
b = 0.821517 - 0.695767I		
u = -1.044040 + 0.415972I		
a = 1.15918 - 2.16322I	-4.43668 + 2.24930I	0
b = -0.17820 - 2.43166I		
u = -1.044040 - 0.415972I		
a = 1.15918 + 2.16322I	-4.43668 - 2.24930I	0
b = -0.17820 + 2.43166I		
u = 1.089680 + 0.276870I		
a = 0.758755 - 0.342040I	-2.52561 - 2.07395I	0
b = 0.185758 + 0.260377I		
u = 1.089680 - 0.276870I		
a = 0.758755 + 0.342040I	-2.52561 + 2.07395I	0
b = 0.185758 - 0.260377I		
u = 0.810413 + 0.329181I		
a = 0.369859 + 0.669286I	-1.21777 - 1.53610I	-1.19079 + 4.33474I
b = -0.177061 - 0.174366I		
u = 0.810413 - 0.329181I		
a = 0.369859 - 0.669286I	-1.21777 + 1.53610I	-1.19079 - 4.33474I
b = -0.177061 + 0.174366I		

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
u = 0.465311 + 0.740633I		
a = 2.81892 - 0.14269I	1.86956 + 1.30967I	3.95870 - 0.74968I
b = 0.15580 + 2.05972I		
u = 0.465311 - 0.740633I		
a = 2.81892 + 0.14269I	1.86956 - 1.30967I	3.95870 + 0.74968I
b = 0.15580 - 2.05972I		
u = -1.121160 + 0.108789I		
a = -0.098711 - 1.028630I	1.42265 - 7.90790I	0
b = -1.64518 - 0.65204I		
u = -1.121160 - 0.108789I		
a = -0.098711 + 1.028630I	1.42265 + 7.90790I	0
b = -1.64518 + 0.65204I		
u = 1.057400 + 0.449933I		
a = -0.603625 - 0.892474I	-4.18666 - 4.48001I	0
b = 0.834057 - 0.646276I		
u = 1.057400 - 0.449933I		
a = -0.603625 + 0.892474I	-4.18666 + 4.48001I	0
b = 0.834057 + 0.646276I		
u = 1.108820 + 0.356169I		
a = -1.058710 - 0.172368I	-3.31662 + 1.71384I	0
b = -0.049081 - 0.608014I		
u = 1.108820 - 0.356169I		
a = -1.058710 + 0.172368I	-3.31662 - 1.71384I	0
b = -0.049081 + 0.608014I		
u = -1.059680 + 0.504654I		
a = -0.61218 + 1.30860I	-0.63612 + 4.98818I	0
b = 0.134064 + 1.396220I		
u = -1.059680 - 0.504654I		
a = -0.61218 - 1.30860I	-0.63612 - 4.98818I	0
b = 0.134064 - 1.396220I		

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
u = 1.032540 + 0.629706I		
a = -1.02242 - 1.17537I	5.89418 + 1.80044I	0
b = -0.51019 - 2.65763I		
u = 1.032540 - 0.629706I		
a = -1.02242 + 1.17537I	5.89418 - 1.80044I	0
b = -0.51019 + 2.65763I		
u = -1.114920 + 0.476437I		
a = 0.19529 - 1.93571I	-2.51518 + 9.28456I	0
b = -0.80083 - 1.66249I		
u = -1.114920 - 0.476437I		
a = 0.19529 + 1.93571I	-2.51518 - 9.28456I	0
b = -0.80083 + 1.66249I		
u = -1.059930 + 0.604349I		
a = -1.346760 - 0.025560I	1.87224 + 4.09931I	0
b = -1.163210 + 0.605646I		
u = -1.059930 - 0.604349I		
a = -1.346760 + 0.025560I	1.87224 - 4.09931I	0
b = -1.163210 - 0.605646I		
u = -1.094230 + 0.542575I		
a = 0.187399 + 1.008530I	-0.78414 + 5.20993I	0
b = 0.634544 + 0.749712I		
u = -1.094230 - 0.542575I		
a = 0.187399 - 1.008530I	-0.78414 - 5.20993I	0
b = 0.634544 - 0.749712I		
u = 1.052280 + 0.627132I		
a = 1.32954 + 1.37112I	7.43584 - 4.27253I	0
b = 0.54238 + 3.01297I		
u = 1.052280 - 0.627132I		
a = 1.32954 - 1.37112I	7.43584 + 4.27253I	0
b = 0.54238 - 3.01297I		

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
u = 1.074260 + 0.597515I		
a = -2.18165 - 1.45852I	0.06491 - 6.40733I	0
b = -0.87622 - 3.83823I		
u = 1.074260 - 0.597515I		
a = -2.18165 + 1.45852I	0.06491 + 6.40733I	0
b = -0.87622 + 3.83823I		
u = -1.085410 + 0.603226I		
a = 1.310790 + 0.412851I	1.42413 + 8.94825I	0
b = 1.302250 - 0.252580I		
u = -1.085410 - 0.603226I		
a =  1.310790 - 0.412851I	1.42413 - 8.94825I	0
b = 1.302250 + 0.252580I		
u = 1.094700 + 0.615040I		
a = 1.87043 + 1.93402I	6.69261 - 9.35838I	0
b = 0.29058 + 3.67030I		
u = 1.094700 - 0.615040I		
a = 1.87043 - 1.93402I	6.69261 + 9.35838I	0
b = 0.29058 - 3.67030I		
u = 1.106110 + 0.610118I		
a = -1.94258 - 2.07623I	4.6256 - 15.3717I	0
b = -0.16079 - 3.73355I		
u = 1.106110 - 0.610118I		
a = -1.94258 + 2.07623I	4.6256 + 15.3717I	0
b = -0.16079 + 3.73355I		
u = -0.294679 + 0.644303I		
a = 0.679463 + 0.410200I	1.40693 - 0.59491I	4.38934 - 0.28224I
b = 0.806022 - 0.412649I		
u = -0.294679 - 0.644303I		
a = 0.679463 - 0.410200I	1.40693 + 0.59491I	4.38934 + 0.28224I
b = 0.806022 + 0.412649I		

Solutions to $I_1^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
u = -0.384847 + 0.590354I		
a = 0.692961 + 0.117771I	1.34836 - 0.65111I	6.35993 + 0.81332I
b = 0.536027 - 0.459837I		
u = -0.384847 - 0.590354I		
a = 0.692961 - 0.117771I	1.34836 + 0.65111I	6.35993 - 0.81332I
b = 0.536027 + 0.459837I		
u = -0.145120 + 0.656018I		
a = -0.707893 - 0.533230I	0.19546 - 5.03591I	0.49496 + 5.85341I
b = -0.892706 + 0.792235I		
u = -0.145120 - 0.656018I		
a = -0.707893 + 0.533230I	0.19546 + 5.03591I	0.49496 - 5.85341I
b = -0.892706 - 0.792235I		
u = 0.112160 + 0.424483I		
a = -0.71183 - 1.25349I	-1.87076 + 0.85798I	-4.38899 - 0.56558I
b = -0.159712 + 0.755486I		
u = 0.112160 - 0.424483I		
a = -0.71183 + 1.25349I	-1.87076 - 0.85798I	-4.38899 + 0.56558I
b = -0.159712 - 0.755486I		

II.  $I_2^u = \langle -u^3 + b + u + 1, -u^4 - u^3 + u^2 + a + u, u^6 + u^5 - u^4 - 2u^3 + u + 1 \rangle$ 

(i) Arc colorings

After colorings
$$a_{6} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

$$a_{7} = \begin{pmatrix} 1 \\ u^{2} \end{pmatrix}$$

$$a_{8} = \begin{pmatrix} 1 \\ u^{2} \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} -u^{3} \\ -u^{3} + u \end{pmatrix}$$

$$a_{1} = \begin{pmatrix} u^{5} - 2u^{3} + u \\ u^{5} + u^{4} - 2u^{3} - u^{2} + u + 1 \end{pmatrix}$$

$$a_{2} = \begin{pmatrix} u^{5} + u^{4} - u^{3} - u^{2} \\ u^{5} + u^{4} - u^{3} - u^{2} \end{pmatrix}$$

$$a_{5} = \begin{pmatrix} -u^{5} + 2u^{3} - u \\ -u^{5} - u^{4} + 2u^{3} + u^{2} - u - 1 \end{pmatrix}$$

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

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

- (ii) Obstruction class = 1
- (iii) Cusp Shapes =  $4u^4 3u^2 3u 3$

#### (iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
$c_1$	$(u-1)^6$
$c_{2}, c_{4}$	$(u+1)^6$
$c_3, c_7$	$u^6$
$c_5,c_{10}$	$u^6 + 3u^5 + 5u^4 + 4u^3 + 2u^2 + u + 1$
$c_6, c_8, c_{11}$	$u^6 + u^5 - u^4 - 2u^3 + u + 1$
<i>c</i> <sub>9</sub>	$u^6 - u^5 - u^4 + 2u^3 - u + 1$

### (v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
$c_1, c_2, c_4$	$(y-1)^6$
$c_3, c_7$	$y^6$
$c_5,c_{10}$	$y^6 + y^5 + 5y^4 + 6y^2 + 3y + 1$
$c_6, c_8, c_9$ $c_{11}$	$y^6 - 3y^5 + 5y^4 - 4y^3 + 2y^2 - y + 1$

### (vi) Complex Volumes and Cusp Shapes

Solutions to $I_2^u$	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
u = 1.002190 + 0.295542I		
a = -0.685196 + 1.063260I	-3.53554 - 0.92430I	-6.79748 + 1.68215I
b = -1.258210 + 0.569162I		
u = 1.002190 - 0.295542I		
a = -0.685196 - 1.063260I	-3.53554 + 0.92430I	-6.79748 - 1.68215I
b = -1.258210 - 0.569162I		
u = -0.428243 + 0.664531I		
a = 0.917982 + 0.270708I	0.245672 - 0.924305I	-1.96974 + 0.88960I
b = -0.082955 - 0.592379I		
u = -0.428243 - 0.664531I		
a = 0.917982 - 0.270708I	0.245672 + 0.924305I	-1.96974 - 0.88960I
b = -0.082955 + 0.592379I		
u = -1.073950 + 0.558752I		
a = -0.732786 + 0.381252I	-1.64493 + 5.69302I	-5.23279 - 6.15196I
b = -0.158836 + 1.200140I		
u = -1.073950 - 0.558752I		
a = -0.732786 - 0.381252I	-1.64493 - 5.69302I	-5.23279 + 6.15196I
b = -0.158836 - 1.200140I		

III. u-Polynomials

Crossings	u-Polynomials at each crossing
$c_1$	$((u-1)^6)(u^{66}-7u^{65}+\cdots-8u+1)$
$c_2$	$((u+1)^6)(u^{66}+29u^{65}+\cdots+8u+1)$
$c_{3}, c_{7}$	$u^6(u^{66} + u^{65} + \dots + 192u + 64)$
$C_4$	$((u+1)^6)(u^{66}-7u^{65}+\cdots-8u+1)$
<i>C</i> <sub>5</sub>	$(u^6 + 3u^5 + 5u^4 + 4u^3 + 2u^2 + u + 1)(u^{66} + 6u^{65} + \dots + 5u + 1)$
$c_6$	$(u^6 + u^5 - u^4 - 2u^3 + u + 1)(u^{66} + 2u^{65} + \dots + u + 1)$
$c_8,c_{11}$	$(u^6 + u^5 - u^4 - 2u^3 + u + 1)(u^{66} - 2u^{65} + \dots - 49u + 49)$
<i>c</i> <sub>9</sub>	$ (u^6 - u^5 - u^4 + 2u^3 - u + 1)(u^{66} + 2u^{65} + \dots + u + 1) $
$c_{10}$	$(u^6 + 3u^5 + 5u^4 + 4u^3 + 2u^2 + u + 1)(u^{66} + 30u^{65} + \dots - u + 1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
$c_1, c_4$	$((y-1)^6)(y^{66} - 29y^{65} + \dots - 8y + 1)$
$c_2$	$((y-1)^6)(y^{66} + 23y^{65} + \dots + 40y + 1)$
$c_3, c_7$	$y^6(y^{66} - 39y^{65} + \dots - 81920y + 4096)$
<i>C</i> 5	$(y^6 + y^5 + 5y^4 + 6y^2 + 3y + 1)(y^{66} + 2y^{65} + \dots + 57y + 1)$
$c_6, c_9$	$(y^6 - 3y^5 + 5y^4 - 4y^3 + 2y^2 - y + 1)(y^{66} - 30y^{65} + \dots + y + 1)$
$c_{8}, c_{11}$	$(y^6 - 3y^5 + 5y^4 - 4y^3 + 2y^2 - y + 1)$ $\cdot (y^{66} - 54y^{65} + \dots + 34349y + 2401)$
$c_{10}$	$(y^6 + y^5 + 5y^4 + 6y^2 + 3y + 1)(y^{66} + 14y^{65} + \dots - 15y + 1)$