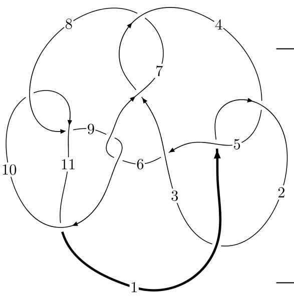
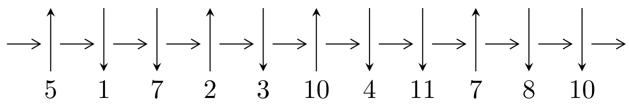
$11n_5$ ($K11n_5$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 2.93438 \times 10^{39} u^{39} + 3.89993 \times 10^{39} u^{38} + \cdots + 9.67095 \times 10^{39} b - 1.11354 \times 10^{40},$$
$$- 5.08844 \times 10^{39} u^{39} + 9.58525 \times 10^{38} u^{38} + \cdots + 9.67095 \times 10^{39} a - 1.38422 \times 10^{40},\ u^{40} + 2u^{39} + \cdots - u -$$
$$I_2^u = \langle b - 1,\ u^4 - 2u^3 - u^2 + a + 3u + 1,\ u^5 - u^4 - 2u^3 + u^2 + u + 1 \rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 45 representations.

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[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.

$\boldsymbol{I_1^u = \langle 2.93\times10^{39}u^{39}+3.90\times10^{39}u^{38}+\cdots+9.67\times10^{39}b-1.11\times10^{40},\ -5.09\times10^{39}u^{39}+9.59\times10^{38}u^{38}+\cdots+9.67\times10^{39}a-1.38\times10^{40},\ u^{40}+2u^{39}+\cdots-u-1\rangle}$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

$$a_{11} = \begin{pmatrix} 0.526157u^{39} - 0.0991139u^{38} + \cdots + 1.57286u + 1.43132 \\ -0.303422u^{39} - 0.403263u^{38} + \cdots + 0.625271u + 1.15143 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.222735u^{39} - 0.502377u^{38} + \cdots + 2.19813u + 2.58275 \\ -0.303422u^{39} - 0.403263u^{38} + \cdots + 0.625271u + 1.15143 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.290241u^{39} + 0.200008u^{38} + \cdots - 1.21785u - 0.612287 \\ -0.120227u^{39} - 0.159505u^{38} + \cdots + 0.237926u + 0.0802655 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.578068u^{39} - 1.17622u^{38} + \cdots + 2.15345u + 1.24641 \\ -0.0185294u^{39} - 0.0980063u^{38} + \cdots + 1.25512u - 0.0172308 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0.410467u^{39} + 0.359513u^{38} + \cdots - 1.45577u - 0.692552 \\ -0.101647u^{39} - 0.257991u^{38} + \cdots - 0.186972u + 0.381156 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 0.218303u^{39} + 0.00140845u^{38} + \cdots - 1.36554u - 0.312079 \\ -0.337234u^{39} - 0.662090u^{38} + \cdots + 0.0692011u + 0.735406 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.278749u^{39} - 0.364781u^{38} + \cdots + 2.29798u + 2.37917 \\ -0.264706u^{39} - 0.351837u^{38} + \cdots + 0.543689u + 1.12586 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.278749u^{39} - 0.364781u^{38} + \cdots + 2.29798u + 2.37917 \\ -0.264706u^{39} - 0.351837u^{38} + \cdots + 0.543689u + 1.12586 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 0.625380u^{39} - 2.23284u^{38} + \cdots + 22.1362u - 1.81055$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{40} + 2u^{39} + \cdots + 5u + 1$
c_2	$u^{40} + 18u^{39} + \cdots - u + 1$
c_3, c_7	$u^{40} + 2u^{39} + \cdots - u - 1$
c_5	$u^{40} - 2u^{39} + \cdots + 61u + 17$
c_6, c_9	$u^{40} + 5u^{39} + \cdots + 64u + 32$
c_8, c_{10}	$u^{40} - 6u^{39} + \cdots - 5u - 1$
c_{11}	$u^{40} + 14u^{39} + \cdots + 23u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{40} + 18y^{39} + \cdots - y + 1$
c_2	$y^{40} + 10y^{39} + \cdots - 101y + 1$
c_3, c_7	$y^{40} - 10y^{39} + \cdots - y + 1$
c_5	$y^{40} + 2y^{39} + \cdots + 223y + 289$
c_6, c_9	$y^{40} - 33y^{39} + \cdots - 8704y + 1024$
c_8, c_{10}	$y^{40} - 14y^{39} + \cdots - 23y + 1$
c_{11}	$y^{40} + 30y^{39} + \cdots + 89y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.752901 + 0.442189I$		
$a = -0.604966 + 0.350008I$	$-1.98806 - 6.13047I$	$-7.04352 + 9.47962I$
$b = 0.829023 + 0.938697I$		
$u = 0.752901 - 0.442189I$		
$a = -0.604966 - 0.350008I$	$-1.98806 + 6.13047I$	$-7.04352 - 9.47962I$
$b = 0.829023 - 0.938697I$		
$u = -0.655458 + 0.476008I$		
$a = -0.318936 - 0.554304I$	$-0.42554 + 1.82346I$	$-2.95478 - 4.65601I$
$b = 0.613689 - 0.710479I$		
$u = -0.655458 - 0.476008I$		
$a = -0.318936 + 0.554304I$	$-0.42554 - 1.82346I$	$-2.95478 + 4.65601I$
$b = 0.613689 + 0.710479I$		
$u = -0.810417 + 0.872688I$		
$a = 0.140090 + 0.325947I$	$4.57008 + 7.07850I$	$-2.02910 - 5.97329I$
$b = -0.551174 - 1.182170I$		
$u = -0.810417 - 0.872688I$		
$a = 0.140090 - 0.325947I$	$4.57008 - 7.07850I$	$-2.02910 + 5.97329I$
$b = -0.551174 + 1.182170I$		
$u = -0.643082 + 1.012100I$		
$a = 0.398027 + 0.191743I$	$0.145121 + 0.763133I$	$-4.51767 - 0.23788I$
$b = -0.617281 - 0.666490I$		
$u = -0.643082 - 1.012100I$		
$a = 0.398027 - 0.191743I$	$0.145121 - 0.763133I$	$-4.51767 + 0.23788I$
$b = -0.617281 + 0.666490I$		
$u = 0.799783 + 0.916888I$		
$a = 0.215570 - 0.335982I$	$6.09690 - 1.71389I$	$0.373315 + 0.701321I$
$b = -0.650453 + 1.082920I$		
$u = 0.799783 - 0.916888I$		
$a = 0.215570 + 0.335982I$	$6.09690 + 1.71389I$	$0.373315 - 0.701321I$
$b = -0.650453 - 1.082920I$		

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.711514 + 0.271124I$ $a = -1.148250 + 0.635421I$ $b = 1.174800 + 0.553857I$	$-3.56782 - 0.26795I$	$-11.60981 + 1.69985I$
$u = 0.711514 - 0.271124I$ $a = -1.148250 - 0.635421I$ $b = 1.174800 - 0.553857I$	$-3.56782 + 0.26795I$	$-11.60981 - 1.69985I$
$u = -0.753278 + 0.081360I$ $a = -1.63901 - 0.21826I$ $b = 1.50673 - 0.20107I$	$-4.40562 + 3.00647I$	$-12.14909 - 4.76014I$
$u = -0.753278 - 0.081360I$ $a = -1.63901 + 0.21826I$ $b = 1.50673 + 0.20107I$	$-4.40562 - 3.00647I$	$-12.14909 + 4.76014I$
$u = -1.028320 + 0.763633I$ $a = 1.61875 + 0.32346I$ $b = -0.801483 + 0.818338I$	$3.86288 - 0.92225I$	$-2.44177 - 0.36369I$
$u = -1.028320 - 0.763633I$ $a = 1.61875 - 0.32346I$ $b = -0.801483 - 0.818338I$	$3.86288 + 0.92225I$	$-2.44177 + 0.36369I$
$u = 0.797251 + 1.038720I$ $a = 0.390573 - 0.367350I$ $b = -0.878605 + 0.846502I$	$5.41673 + 1.52162I$	$-60.10 - 0.682803I$
$u = 0.797251 - 1.038720I$ $a = 0.390573 + 0.367350I$ $b = -0.878605 - 0.846502I$	$5.41673 - 1.52162I$	$-60.10 + 0.682803I$
$u = -0.422420 + 0.531130I$ $a = 0.580600 - 0.488478I$ $b = 0.175715 - 0.238829I$	$-0.196422 + 1.363410I$	$-2.16894 - 4.86353I$
$u = -0.422420 - 0.531130I$ $a = 0.580600 + 0.488478I$ $b = 0.175715 + 0.238829I$	$-0.196422 - 1.363410I$	$-2.16894 + 4.86353I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.054050 + 0.808417I$ $a = 1.58951 - 0.38241I$ $b = -0.921400 - 0.829719I$	$5.28266 - 4.71026I$	$0. + 5.00895I$
$u = 1.054050 - 0.808417I$ $a = 1.58951 + 0.38241I$ $b = -0.921400 + 0.829719I$	$5.28266 + 4.71026I$	$0. - 5.00895I$
$u = -1.35764$ $a = 1.36371$ $b = -0.670384$	-3.32615	1.98010
$u = -0.816149 + 1.085630I$ $a = 0.451733 + 0.389885I$ $b = -0.971878 - 0.771756I$	$3.33510 - 6.89323I$	$-3.00000 + 5.25790I$
$u = -0.816149 - 1.085630I$ $a = 0.451733 - 0.389885I$ $b = -0.971878 + 0.771756I$	$3.33510 + 6.89323I$	$-3.00000 - 5.25790I$
$u = -0.460095 + 0.445935I$ $a = 1.143080 - 0.772133I$ $b = 0.315005 + 0.068617I$	$-0.154276 + 1.379410I$	$-2.57505 - 4.68653I$
$u = -0.460095 - 0.445935I$ $a = 1.143080 + 0.772133I$ $b = 0.315005 - 0.068617I$	$-0.154276 - 1.379410I$	$-2.57505 + 4.68653I$
$u = 0.392808 + 0.498293I$ $a = 1.96044 + 1.55878I$ $b = 0.700490 - 0.229460I$	$-1.02172 + 2.83866I$	$-5.26921 + 0.34131I$
$u = 0.392808 - 0.498293I$ $a = 1.96044 - 1.55878I$ $b = 0.700490 + 0.229460I$	$-1.02172 - 2.83866I$	$-5.26921 - 0.34131I$
$u = 1.093020 + 0.888850I$ $a = 1.51810 - 0.48663I$ $b = -1.155200 - 0.809789I$	$4.47319 - 8.54344I$	$0. + 4.74667I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.093020 - 0.888850I$ $a = 1.51810 + 0.48663I$ $b = -1.155200 + 0.809789I$	$4.47319 + 8.54344I$	$0. - 4.74667I$
$u = 0.577742$ $a = -2.60696$ $b = 1.20395$	-2.39024	-2.93570
$u = -1.14394 + 0.85054I$ $a = 1.46853 + 0.41523I$ $b = -1.082180 + 0.668751I$	$-1.33633 + 6.06144I$	0
$u = -1.14394 - 0.85054I$ $a = 1.46853 - 0.41523I$ $b = -1.082180 - 0.668751I$	$-1.33633 - 6.06144I$	0
$u = -1.10053 + 0.91184I$ $a = 1.49517 + 0.51717I$ $b = -1.22599 + 0.79743I$	$2.4064 + 14.1156I$	$0. - 8.71801I$
$u = -1.10053 - 0.91184I$ $a = 1.49517 - 0.51717I$ $b = -1.22599 - 0.79743I$	$2.4064 - 14.1156I$	$0. + 8.71801I$
$u = 1.51868 + 0.20012I$ $a = 1.325660 - 0.048656I$ $b = -0.767634 - 0.087671I$	$-7.01606 - 4.59273I$	0
$u = 1.51868 - 0.20012I$ $a = 1.325660 + 0.048656I$ $b = -0.767634 + 0.087671I$	$-7.01606 + 4.59273I$	0
$u = 0.103618 + 0.421336I$ $a = 6.03694 + 2.30128I$ $b = 1.041040 - 0.055984I$	$-1.92691 - 1.82552I$	$15.7454 + 26.9436I$
$u = 0.103618 - 0.421336I$ $a = 6.03694 - 2.30128I$ $b = 1.041040 + 0.055984I$	$-1.92691 + 1.82552I$	$15.7454 - 26.9436I$

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

(i) Arc colorings

$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u \\ -u^3+u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -u^4+2u^3+u^2-3u-1 \\ 1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -u^4+2u^3+u^2-3u \\ 1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -u^3+2u \\ -u^3+u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -u^2+1 \\ u^4-2u^2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -u^4+2u^3+u^2-3u \\ 1 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -u^4+2u^3+u^2-3u \\ 1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

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

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^5 + 3y^4 + 4y^3 + y^2 - y - 1$
c_2	$y^5 - y^4 + 8y^3 - 3y^2 + 3y - 1$
c_3, c_5, c_7	$y^5 - 5y^4 + 8y^3 - 3y^2 - y - 1$
c_6, c_9	y^5
c_8, c_{10}, c_{11}	$(y-1)^5$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.21774$ $a = -1.67436$ $b = 1.00000$	-4.04602	-10.1350
$u = -0.309916 + 0.549911I$ $a = 0.29977 - 2.14694I$ $b = 1.00000$	$-1.97403 + 1.53058I$	$-3.52158 + 1.00973I$
$u = -0.309916 - 0.549911I$ $a = 0.29977 + 2.14694I$ $b = 1.00000$	$-1.97403 - 1.53058I$	$-3.52158 - 1.00973I$
$u = 1.41878 + 0.21917I$ $a = -1.46259 + 0.14641I$ $b = 1.00000$	$-7.51750 - 4.40083I$	$-14.4110 + 1.1901I$
$u = 1.41878 - 0.21917I$ $a = -1.46259 - 0.14641I$ $b = 1.00000$	$-7.51750 + 4.40083I$	$-14.4110 - 1.1901I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^5 - u^4 + 2u^3 - u^2 + u - 1)(u^{40} + 2u^{39} + \cdots + 5u + 1)$
c_2	$(u^5 + 3u^4 + 4u^3 + u^2 - u - 1)(u^{40} + 18u^{39} + \cdots - u + 1)$
c_3	$(u^5 + u^4 - 2u^3 - u^2 + u - 1)(u^{40} + 2u^{39} + \cdots - u - 1)$
c_4	$(u^5 + u^4 + 2u^3 + u^2 + u + 1)(u^{40} + 2u^{39} + \cdots + 5u + 1)$
c_5	$(u^5 - u^4 - 2u^3 + u^2 + u + 1)(u^{40} - 2u^{39} + \cdots + 61u + 17)$
c_6, c_9	$u^5(u^{40} + 5u^{39} + \cdots + 64u + 32)$
c_7	$(u^5 - u^4 - 2u^3 + u^2 + u + 1)(u^{40} + 2u^{39} + \cdots - u - 1)$
c_8	$((u - 1)^5)(u^{40} - 6u^{39} + \cdots - 5u - 1)$
c_{10}	$((u + 1)^5)(u^{40} - 6u^{39} + \cdots - 5u - 1)$
c_{11}	$((u + 1)^5)(u^{40} + 14u^{39} + \cdots + 23u + 1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4	$(y^5+3y^4+4y^3+y^2-y-1)(y^{40}+18y^{39}+\cdots-y+1)$
c_2	$(y^5-y^4+8y^3-3y^2+3y-1)(y^{40}+10y^{39}+\cdots-101y+1)$
c_3, c_7	$(y^5-5y^4+8y^3-3y^2-y-1)(y^{40}-10y^{39}+\cdots-y+1)$
c_5	$(y^5-5y^4+8y^3-3y^2-y-1)(y^{40}+2y^{39}+\cdots+223y+289)$
c_6, c_9	$y^5(y^{40}-33y^{39}+\cdots-8704y+1024)$
c_8, c_{10}	$((y-1)^5)(y^{40}-14y^{39}+\cdots-23y+1)$
c_{11}	$((y-1)^5)(y^{40}+30y^{39}+\cdots+89y+1)$