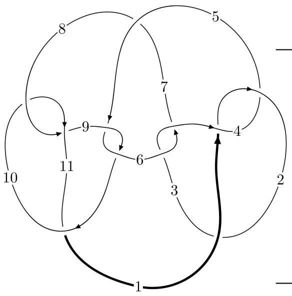
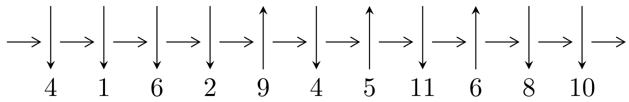
$11n_{22}$ ($K11n_{22}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 1.10514 \times 10^{39} u^{35} + 3.11173 \times 10^{39} u^{34} + \cdots + 2.41739 \times 10^{40} b + 4.96908 \times 10^{40},$$
$$9.97702 \times 10^{39} u^{35} + 3.04436 \times 10^{39} u^{34} + \cdots + 4.83478 \times 10^{40} a + 6.03959 \times 10^{39},\ u^{36} + 2u^{35} + \cdots - 4u + 8$$

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

$$I_1^v = \langle a,\ -v^2 + b - 3v + 1,\ v^3 + 2v^2 - 3v + 1\rangle$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 45 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.
$\boldsymbol{I_1^u = \langle 1.11\times10^{39}u^{35} + 3.11\times10^{39}u^{34} + \cdots + 2.42\times10^{40}b + 4.97\times10^{40},\ 9.98\times10^{39}u^{35} + 3.04\times10^{39}u^{34} + \cdots + 4.83\times10^{40}a + 6.04\times10^{39},\ u^{36} + 2u^{35} + \cdots - 4u + 8\rangle}$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -0.206359u^{35} - 0.0629680u^{34} + \cdots + 2.74530u - 0.124920 \\ -0.0457161u^{35} - 0.128723u^{34} + \cdots + 2.35374u - 2.05556 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0.427443u^{35} + 0.372711u^{34} + \cdots + 0.384288u + 4.31112 \\ 0.198044u^{35} + 0.422790u^{34} + \cdots - 10.2169u + 3.38570 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0.0303222u^{35} + 0.0626215u^{34} + \cdots - 2.77119u - 0.192221 \\ -0.188410u^{35} - 0.280513u^{34} + \cdots + 8.45275u - 2.80684 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 0.0303222u^{35} + 0.0626215u^{34} + \cdots - 2.77119u - 0.192221 \\ 0.119317u^{35} + 0.288516u^{34} + \cdots - 8.21808u + 2.82265 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 1.17216u^{35} + 1.26150u^{34} + \cdots - 15.1808u + 11.5542 \\ -0.361331u^{35} - 0.145692u^{34} + \cdots - 1.85662u - 1.41937 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0.0556923u^{35} + 0.131200u^{34} + \cdots - 4.42903u + 0.594050 \\ 0.223465u^{35} + 0.365609u^{34} + \cdots - 9.74431u + 3.75163 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -0.158088u^{35} - 0.217892u^{34} + \cdots + 5.68156u - 2.99906 \\ -0.188410u^{35} - 0.280513u^{34} + \cdots + 8.45275u - 2.80684 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -0.158088u^{35} - 0.217892u^{34} + \cdots + 5.68156u - 2.99906 \\ -0.188410u^{35} - 0.280513u^{34} + \cdots + 8.45275u - 2.80684 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 0.408352u^{35} + 0.642649u^{34} + \cdots - 18.9306u - 3.95860$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{36} - 8u^{35} + \cdots - 6u + 1$
c_2	$u^{36} + 8u^{35} + \cdots + 22u + 1$
c_3, c_6	$u^{36} - 2u^{35} + \cdots - 384u^2 - 64$
c_5, c_9	$u^{36} - 2u^{35} + \cdots + 4u + 8$
c_7	$u^{36} + 3u^{35} + \cdots - u - 1$
c_8, c_{10}	$u^{36} - 5u^{35} + \cdots + 18u - 1$
c_{11}	$u^{36} + 15u^{35} + \cdots + 218u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{36} - 8y^{35} + \cdots - 22y + 1$
c_2	$y^{36} + 48y^{35} + \cdots - 22y + 1$
c_3, c_6	$y^{36} + 42y^{35} + \cdots + 49152y + 4096$
c_5, c_9	$y^{36} - 24y^{35} + \cdots - 1488y + 64$
c_7	$y^{36} - 45y^{35} + \cdots - 5y + 1$
c_8, c_{10}	$y^{36} - 15y^{35} + \cdots - 218y + 1$
c_{11}	$y^{36} + 17y^{35} + \cdots - 43646y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.876781 + 0.467791I$ $a = 0.771077 - 0.499574I$ $b = 0.458159 + 0.388133I$	$1.44120 - 1.68807I$	$1.23787 + 2.98942I$
$u = -0.876781 - 0.467791I$ $a = 0.771077 + 0.499574I$ $b = 0.458159 - 0.388133I$	$1.44120 + 1.68807I$	$1.23787 - 2.98942I$
$u = 0.562796 + 0.711448I$ $a = 0.798144 + 0.463491I$ $b = 0.364530 + 0.110500I$	$-2.24151 - 1.11055I$	$-4.16932 + 0.85691I$
$u = 0.562796 - 0.711448I$ $a = 0.798144 - 0.463491I$ $b = 0.364530 - 0.110500I$	$-2.24151 + 1.11055I$	$-4.16932 - 0.85691I$
$u = -1.149490 + 0.105847I$ $a = -0.69354 - 2.02575I$ $b = 0.973276 + 0.948498I$	$3.87982 - 3.49544I$	$-3.17810 + 2.67745I$
$u = -1.149490 - 0.105847I$ $a = -0.69354 + 2.02575I$ $b = 0.973276 - 0.948498I$	$3.87982 + 3.49544I$	$-3.17810 - 2.67745I$
$u = 1.151290 + 0.136717I$ $a = -0.050534 + 0.984743I$ $b = -1.156680 - 0.402174I$	$0.196716 + 1.191220I$	$-3.75367 - 2.76129I$
$u = 1.151290 - 0.136717I$ $a = -0.050534 - 0.984743I$ $b = -1.156680 + 0.402174I$	$0.196716 - 1.191220I$	$-3.75367 + 2.76129I$
$u = 1.012080 + 0.596945I$ $a = 0.812755 + 0.396273I$ $b = 0.666828 - 0.220770I$	$-0.90609 + 6.15586I$	$-1.06826 - 8.23147I$
$u = 1.012080 - 0.596945I$ $a = 0.812755 - 0.396273I$ $b = 0.666828 + 0.220770I$	$-0.90609 - 6.15586I$	$-1.06826 + 8.23147I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.132013 + 0.796085I$ $a = 0.530905 + 0.123801I$ $b = -0.363392 - 0.400261I$	$-1.17315 - 1.43837I$	$-4.87286 + 4.95965I$
$u = 0.132013 - 0.796085I$ $a = 0.530905 - 0.123801I$ $b = -0.363392 + 0.400261I$	$-1.17315 + 1.43837I$	$-4.87286 - 4.95965I$
$u = -1.188780 + 0.305866I$ $a = -0.477194 + 1.088200I$ $b = -1.293690 - 0.259633I$	$-0.19217 - 3.89522I$	$-3.75583 + 3.33691I$
$u = -1.188780 - 0.305866I$ $a = -0.477194 - 1.088200I$ $b = -1.293690 + 0.259633I$	$-0.19217 + 3.89522I$	$-3.75583 - 3.33691I$
$u = -0.114291 + 1.235990I$ $a = 0.468464 - 0.379839I$ $b = 0.919988 + 1.004770I$	$5.76584 - 0.88624I$	$-3.08966 - 0.19737I$
$u = -0.114291 - 1.235990I$ $a = 0.468464 + 0.379839I$ $b = 0.919988 - 1.004770I$	$5.76584 + 0.88624I$	$-3.08966 + 0.19737I$
$u = -0.299008 + 1.238570I$ $a = 0.478366 + 0.338536I$ $b = 1.040320 - 0.944822I$	$5.37775 + 6.26456I$	$-3.90154 - 4.74503I$
$u = -0.299008 - 1.238570I$ $a = 0.478366 - 0.338536I$ $b = 1.040320 + 0.944822I$	$5.37775 - 6.26456I$	$-3.90154 + 4.74503I$
$u = -1.282480 + 0.078351I$ $a = 0.406471 + 1.116480I$ $b = -0.272152 - 0.810511I$	$3.60869 - 0.40430I$	$-0.180320 + 0.512361I$
$u = -1.282480 - 0.078351I$ $a = 0.406471 - 1.116480I$ $b = -0.272152 + 0.810511I$	$3.60869 + 0.40430I$	$-0.180320 - 0.512361I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.300550 + 0.426752I$ $a = 0.110638 - 1.292420I$ $b = -0.510437 + 0.832243I$	$2.60051 + 6.07581I$	$-2.58564 - 6.03076I$
$u = 1.300550 - 0.426752I$ $a = 0.110638 + 1.292420I$ $b = -0.510437 - 0.832243I$	$2.60051 - 6.07581I$	$-2.58564 + 6.03076I$
$u = -0.607835 + 0.068419I$ $a = 0.588549 + 0.355335I$ $b = 0.895986 - 0.665316I$	$1.96162 + 2.57896I$	$2.96196 - 0.32171I$
$u = -0.607835 - 0.068419I$ $a = 0.588549 - 0.355335I$ $b = 0.895986 + 0.665316I$	$1.96162 - 2.57896I$	$2.96196 + 0.32171I$
$u = -0.203337 + 0.520719I$ $a = -4.57730 + 1.89887I$ $b = -1.060050 + 0.082275I$	$-3.21515 + 0.53565I$	$-7.7422 + 12.1700I$
$u = -0.203337 - 0.520719I$ $a = -4.57730 - 1.89887I$ $b = -1.060050 - 0.082275I$	$-3.21515 - 0.53565I$	$-7.7422 - 12.1700I$
$u = 0.529202$ $a = 4.14663$ $b = -0.467103$	-2.39731	2.58440
$u = 1.45234 + 0.47903I$ $a = 0.18492 + 1.55929I$ $b = 1.12508 - 0.97464I$	$10.93880 + 6.87915I$	$0. - 3.18853I$
$u = 1.45234 - 0.47903I$ $a = 0.18492 - 1.55929I$ $b = 1.12508 + 0.97464I$	$10.93880 - 6.87915I$	$0. + 3.18853I$
$u = -1.36361 + 0.70201I$ $a = 0.52721 - 1.55915I$ $b = 1.17133 + 0.91175I$	$8.7659 - 13.1890I$	$-5.00000 + 7.32457I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.36361 - 0.70201I$ $a = 0.52721 + 1.55915I$ $b = 1.17133 - 0.91175I$	$8.7659 + 13.1890I$	$-5.00000 - 7.32457I$
$u = 1.51813 + 0.32802I$ $a = -0.632543 - 0.937060I$ $b = 0.89682 + 1.12852I$	$11.70850 - 0.74205I$	0
$u = 1.51813 - 0.32802I$ $a = -0.632543 + 0.937060I$ $b = 0.89682 - 1.12852I$	$11.70850 + 0.74205I$	0
$u = -1.43939 + 0.60179I$ $a = -0.705793 + 0.628179I$ $b = 0.790568 - 1.152680I$	$10.03080 - 5.72886I$	$-5.00000 + 3.03607I$
$u = -1.43939 - 0.60179I$ $a = -0.705793 - 0.628179I$ $b = 0.790568 + 1.152680I$	$10.03080 + 5.72886I$	$-5.00000 - 3.03607I$
$u = 0.262401$ $a = 1.77219$ $b = -0.825866$	-1.19842	-8.63080

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

(i) Arc colorings

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -u^5 + 2u^3 - u^2 - 2u \\ -1 \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} -u^5 + 2u^3 - u^2 - 2u + 1 \\ -1 \end{pmatrix}$$

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

$$a_1 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -u^5 + 2u^3 - u^2 - 2u + 1 \\ -1 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -u^4 + u^2 - 1 \\ u^5 - u^4 - 2u^3 + u^2 + u - 1 \end{pmatrix}$$

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

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= u^5 - 5u^4 - u^3 + 7u^2 - 4u - 12$

(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_6	u^6
c_5, c_{10}	$u^6 - u^5 - u^4 + 2u^3 - u + 1$
c_7	$u^6 - 3u^5 + 5u^4 - 4u^3 + 2u^2 - u + 1$
c_8, c_9	$u^6 + u^5 - u^4 - 2u^3 + u + 1$
c_{11}	$u^6 + 3u^5 + 5u^4 + 4u^3 + 2u^2 + u + 1$

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.002190 + 0.295542I$ $a = -0.230593 + 0.497010I$ $b = -1.00000$	$0.245672 - 0.924305I$	$-3.44826 + 0.47256I$
$u = -1.002190 - 0.295542I$ $a = -0.230593 - 0.497010I$ $b = -1.00000$	$0.245672 + 0.924305I$	$-3.44826 - 0.47256I$
$u = 0.428243 + 0.664531I$ $a = -1.66103 - 1.45708I$ $b = -1.00000$	$-3.53554 - 0.92430I$	$-13.66012 + 2.42665I$
$u = 0.428243 - 0.664531I$ $a = -1.66103 + 1.45708I$ $b = -1.00000$	$-3.53554 + 0.92430I$	$-13.66012 - 2.42665I$
$u = 1.073950 + 0.558752I$ $a = -0.608378 - 0.558752I$ $b = -1.00000$	$-1.64493 + 5.69302I$	$-8.89162 - 3.92918I$
$u = 1.073950 - 0.558752I$ $a = -0.608378 + 0.558752I$ $b = -1.00000$	$-1.64493 - 5.69302I$	$-8.89162 + 3.92918I$

III. $I_1^v = \langle a,\ -v^2 + b - 3v + 1,\ v^3 + 2v^2 - 3v + 1\rangle$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} v \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 0 \\ v^2 + 3v - 1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} v \\ 0 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ -2v^2 - 5v + 3 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -2v^2 - 5v + 4 \\ v^2 + 2v - 3 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} v^2 + 3v - 1 \\ -v^2 - 2v + 3 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -2v^2 - 5v + 4 \\ -2v^2 - 5v + 3 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} v^2 + 4v - 1 \\ -v^2 - 2v + 3 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -v^2 - 3v + 1 \\ v^2 + 2v - 3 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -v^2 - 3v + 1 \\ v^2 + 2v - 3 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 6v^2 + 19v - 21$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$v = 0.539798 + 0.182582I$ $a = 0$ $b = 0.877439 + 0.744862I$	$1.37919 - 2.82812I$	$-9.19557 + 4.65175I$
$v = 0.539798 - 0.182582I$ $a = 0$ $b = 0.877439 - 0.744862I$	$1.37919 + 2.82812I$	$-9.19557 - 4.65175I$
$v = -3.07960$ $a = 0$ $b = -0.754878$	-2.75839	-22.6090

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^6)(u^3+u^2-1)(u^{36}-8u^{35}+\cdots-6u+1)$
c_2	$((u+1)^6)(u^3+u^2+2u+1)(u^{36}+8u^{35}+\cdots+22u+1)$
c_3	$u^6(u^3-u^2+2u-1)(u^{36}-2u^{35}+\cdots-384u^2-64)$
c_4	$((u+1)^6)(u^3-u^2+1)(u^{36}-8u^{35}+\cdots-6u+1)$
c_5	$u^3(u^6-u^5+\cdots-u+1)(u^{36}-2u^{35}+\cdots+4u+8)$
c_6	$u^6(u^3+u^2+2u+1)(u^{36}-2u^{35}+\cdots-384u^2-64)$
c_7	$(u^3-3u^2+2u+1)(u^6-3u^5+5u^4-4u^3+2u^2-u+1)$ $\cdot(u^{36}+3u^{35}+\cdots-u-1)$
c_8	$((u-1)^3)(u^6+u^5+\cdots+u+1)(u^{36}-5u^{35}+\cdots+18u-1)$
c_9	$u^3(u^6+u^5+\cdots+u+1)(u^{36}-2u^{35}+\cdots+4u+8)$
c_{10}	$((u+1)^3)(u^6-u^5+\cdots-u+1)(u^{36}-5u^{35}+\cdots+18u-1)$
c_{11}	$(u+1)^3(u^6+3u^5+5u^4+4u^3+2u^2+u+1)$ $\cdot(u^{36}+15u^{35}+\cdots+218u+1)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4	$((y-1)^6)(y^3-y^2+2y-1)(y^{36}-8y^{35}+\cdots-22y+1)$
c_2	$((y-1)^6)(y^3+3y^2+2y-1)(y^{36}+48y^{35}+\cdots-22y+1)$
c_3, c_6	$y^6(y^3+3y^2+2y-1)(y^{36}+42y^{35}+\cdots+49152y+4096)$
c_5, c_9	$y^3(y^6-3y^5+\cdots-y+1)(y^{36}-24y^{35}+\cdots-1488y+64)$
c_7	$(y^3-5y^2+10y-1)(y^6+y^5+5y^4+6y^2+3y+1)$ $\cdot(y^{36}-45y^{35}+\cdots-5y+1)$
c_8, c_{10}	$(y-1)^3(y^6-3y^5+5y^4-4y^3+2y^2-y+1)$ $\cdot(y^{36}-15y^{35}+\cdots-218y+1)$
c_{11}	$((y-1)^3)(y^6+y^5+\cdots+3y+1)(y^{36}+17y^{35}+\cdots-43646y+1)$