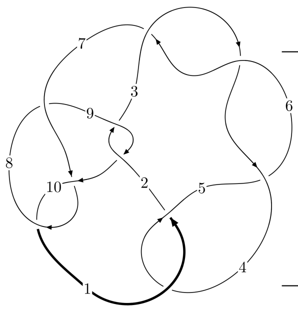
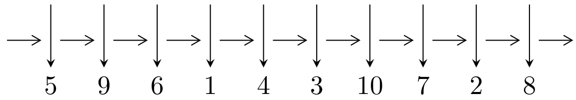
10_{55} $(K10a_9)$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -6.12530 \times 10^{24} u^{32} + 1.02963 \times 10^{25} u^{31} + \cdots + 2.34036 \times 10^{25} b + 4.69152 \times 10^{25},$$
$$- 1.57092 \times 10^{25} u^{32} + 3.30476 \times 10^{25} u^{31} + \cdots + 9.36144 \times 10^{25} a + 1.45111 \times 10^{26},\ u^{33} - u^{32} + \cdots + 12u -$$

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

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 36 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.

$$\boldsymbol{I_1^u = \langle -6.13\times10^{24}u^{32}+1.03\times10^{25}u^{31}+\cdots+2.34\times10^{25}b+4.69\times10^{25},\ -1.57\times10^{25}u^{32}+3.30\times10^{25}u^{31}+\cdots+9.36\times10^{25}a+1.45\times10^{26},\ u^{33}-u^{32}+\cdots+12u+8\rangle}$$

(i) Arc colorings

$$a_3 = \begin{pmatrix}1\\0\end{pmatrix}$$

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

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

$$a_7 = \begin{pmatrix}0.167808u^{32}-0.353018u^{31}+\cdots-2.39523u-1.55009\\0.261725u^{32}-0.439945u^{31}+\cdots+2.01891u-2.00462\end{pmatrix}$$

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

$$a_6 = \begin{pmatrix}0.429532u^{32}-0.792963u^{31}+\cdots-0.376322u-3.55471\\0.261725u^{32}-0.439945u^{31}+\cdots+2.01891u-2.00462\end{pmatrix}$$

$$a_4 = \begin{pmatrix}0.334706u^{32}-0.0742812u^{31}+\cdots+3.75000u+2.50288\\0.0757738u^{32}-0.0652588u^{31}+\cdots-4.16452u-1.47047\end{pmatrix}$$

$$a_5 = \begin{pmatrix}0.0320196u^{32}+0.277867u^{31}+\cdots+5.92497u+1.20624\\-0.211499u^{32}+0.571258u^{31}+\cdots+6.09759u+3.97229\end{pmatrix}$$

$$a_1 = \begin{pmatrix}-0.429532u^{32}+0.792963u^{31}+\cdots+0.376322u+3.55471\\-0.0675857u^{32}+0.312561u^{31}+\cdots+2.94382u+0.902830\end{pmatrix}$$

$$a_8 = \begin{pmatrix}0.309620u^{32}-0.669262u^{31}+\cdots-2.20116u-2.87870\\0.249910u^{32}-0.483907u^{31}+\cdots+0.866167u-2.07146\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{6063542365041533148918584 9}{46807175136350804609973980}u^{32}+\frac{10812440534585670279163991 9}{46807175136350804609973980}u^{31}+\cdots+\frac{48300791164219014543344293 9}{23403587568175402304986990}u+\frac{98098888352311967905148621}{117017937840877011524934 95}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{33} + 2u^{32} + \cdots + 3u + 1$
c_2, c_9	$u^{33} - u^{32} + \cdots + 12u + 8$
c_3, c_5, c_6	$u^{33} + 8u^{32} + \cdots + 11u + 1$
c_7, c_{10}	$u^{33} - 4u^{32} + \cdots - 16u^2 + 1$
c_8	$u^{33} + 14u^{32} + \cdots + 32u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{33} - 8y^{32} + \cdots + 11y - 1$
c_2, c_9	$y^{33} + 21y^{32} + \cdots - 304y - 64$
c_3, c_5, c_6	$y^{33} + 36y^{32} + \cdots - 29y - 1$
c_7, c_{10}	$y^{33} - 14y^{32} + \cdots + 32y - 1$
c_8	$y^{33} + 14y^{32} + \cdots + 340y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.287842 + 0.978115I$ $a = 0.995506 - 0.250345I$ $b = -0.990032 + 0.166252I$	$-1.68836 - 2.02472I$	$-12.19123 + 3.15987I$
$u = 0.287842 - 0.978115I$ $a = 0.995506 + 0.250345I$ $b = -0.990032 - 0.166252I$	$-1.68836 + 2.02472I$	$-12.19123 - 3.15987I$
$u = -0.258728 + 1.015690I$ $a = 0.614647 + 0.062246I$ $b = -0.555531 + 0.902494I$	$1.90081 + 2.94788I$	$-6.37142 - 4.00779I$
$u = -0.258728 - 1.015690I$ $a = 0.614647 - 0.062246I$ $b = -0.555531 - 0.902494I$	$1.90081 - 2.94788I$	$-6.37142 + 4.00779I$
$u = 0.044652 + 1.064410I$ $a = 0.01862 - 1.72371I$ $b = -0.12788 - 1.49913I$	$3.40289 - 3.09457I$	$-6.42907 + 2.76186I$
$u = 0.044652 - 1.064410I$ $a = 0.01862 + 1.72371I$ $b = -0.12788 + 1.49913I$	$3.40289 + 3.09457I$	$-6.42907 - 2.76186I$
$u = 0.818675 + 0.392192I$ $a = 0.407864 - 1.122020I$ $b = -0.568824 + 0.589839I$	$-2.18443 + 2.93057I$	$-13.2700 - 5.9877I$
$u = 0.818675 - 0.392192I$ $a = 0.407864 + 1.122020I$ $b = -0.568824 - 0.589839I$	$-2.18443 - 2.93057I$	$-13.2700 + 5.9877I$
$u = -1.163260 + 0.173959I$ $a = -0.077899 - 0.940641I$ $b = -0.05060 + 1.49956I$	$5.10374 + 0.60080I$	$-6.85884 + 0.13509I$
$u = -1.163260 - 0.173959I$ $a = -0.077899 + 0.940641I$ $b = -0.05060 - 1.49956I$	$5.10374 - 0.60080I$	$-6.85884 - 0.13509I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.004841 + 1.181600I$ $a = -0.834891 - 0.002237I$ $b = 0.261591 + 0.605055I$	$3.34637 + 1.37148I$	$-3.58776 - 2.92200I$
$u = 0.004841 - 1.181600I$ $a = -0.834891 + 0.002237I$ $b = 0.261591 - 0.605055I$	$3.34637 - 1.37148I$	$-3.58776 + 2.92200I$
$u = 1.169540 + 0.246902I$ $a = 0.090452 - 0.991567I$ $b = -0.17482 + 1.55316I$	$4.94269 + 5.66526I$	$-7.31949 - 5.14166I$
$u = 1.169540 - 0.246902I$ $a = 0.090452 + 0.991567I$ $b = -0.17482 - 1.55316I$	$4.94269 - 5.66526I$	$-7.31949 + 5.14166I$
$u = -0.360189 + 1.214590I$ $a = -1.071120 - 0.076444I$ $b = 0.414527 - 0.386927I$	$2.58252 + 3.89244I$	$-4.89744 - 3.42674I$
$u = -0.360189 - 1.214590I$ $a = -1.071120 + 0.076444I$ $b = 0.414527 + 0.386927I$	$2.58252 - 3.89244I$	$-4.89744 + 3.42674I$
$u = 0.513708 + 1.159100I$ $a = 1.164090 - 0.112067I$ $b = -0.819767 - 0.833430I$	$0.26767 - 7.94172I$	$-10.29455 + 8.51301I$
$u = 0.513708 - 1.159100I$ $a = 1.164090 + 0.112067I$ $b = -0.819767 + 0.833430I$	$0.26767 + 7.94172I$	$-10.29455 - 8.51301I$
$u = 0.354082 + 0.631353I$ $a = 0.44471 - 1.78764I$ $b = -0.534495 - 0.382584I$	$-2.82990 - 0.89439I$	$-12.3753 + 7.1209I$
$u = 0.354082 - 0.631353I$ $a = 0.44471 + 1.78764I$ $b = -0.534495 + 0.382584I$	$-2.82990 + 0.89439I$	$-12.3753 - 7.1209I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.659340+0.056414I$ $a=-0.636628-0.442458I$ $b=-0.073834+0.218596I$	$-0.946260-0.088153I$	$-9.34082-0.77609I$
$u=-0.659340-0.056414I$ $a=-0.636628+0.442458I$ $b=-0.073834-0.218596I$	$-0.946260+0.088153I$	$-9.34082+0.77609I$
$u=\quad 0.000493+0.636688I$ $a=\quad 0.198636-0.514130I$ $b=-0.289339+1.220180I$	$2.22875+2.67528I$	$-2.73278-2.26366I$
$u=\quad 0.000493-0.636688I$ $a=\quad 0.198636+0.514130I$ $b=-0.289339-1.220180I$	$2.22875-2.67528I$	$-2.73278+2.26366I$
$u=-0.40839+1.41713I$ $a=\quad 0.780933+0.268916I$ $b=-0.19663+1.64569I$	$10.43260+6.00927I$	$-4.11461-3.31809I$
$u=-0.40839-1.41713I$ $a=\quad 0.780933-0.268916I$ $b=-0.19663-1.64569I$	$10.43260-6.00927I$	$-4.11461+3.31809I$
$u=\quad 0.34967+1.43738I$ $a=-0.805445+0.250021I$ $b=\quad 0.04143+1.56263I$	$10.72190+0.46043I$	$-3.63720-1.59605I$
$u=\quad 0.34967-1.43738I$ $a=-0.805445-0.250021I$ $b=\quad 0.04143-1.56263I$	$10.72190-0.46043I$	$-3.63720+1.59605I$
$u=\quad 0.64547+1.35144I$ $a=\quad 1.222060-0.008698I$ $b=-0.27678-1.65105I$	$8.4689-12.1855I$	$-6.56707+7.63472I$
$u=\quad 0.64547-1.35144I$ $a=\quad 1.222060+0.008698I$ $b=-0.27678+1.65105I$	$8.4689+12.1855I$	$-6.56707-7.63472I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.60403+1.37429I$ $a=-1.203410+0.000498I$ $b=\quad 0.11865-1.50838I$	$8.95423+5.75725I$	$-5.65390-2.88970I$
$u=-0.60403-1.37429I$ $a=-1.203410-0.000498I$ $b=\quad 0.11865+1.50838I$	$8.95423-5.75725I$	$-5.65390+2.88970I$
$u=-0.470095$ $a=-0.116243$ $b=-0.355337$	-0.842528	-11.7170

II. $\boldsymbol{I_1^v = \langle a,\ -v^2 + b - 2v - 1,\ v^3 + 2v^2 + v + 1\rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0 \\ v^2 + 2v + 1 \end{pmatrix}$$

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

$$a_6 = \begin{pmatrix} v^2 + 2v + 1 \\ v^2 + 2v + 1 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} v^2 + v \\ v^2 + v - 1 \end{pmatrix}$$

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

$$a_1 = \begin{pmatrix} 0 \\ -v^2 - 2v - 1 \end{pmatrix}$$

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 2v^2 + 5v - 11$

(iv) u-Polynomials at the component

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

(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_9	y^3
c_3, c_5, c_6	$y^3 + 3y^2 + 2y - 1$
c_7, c_8, c_{10}	$(y-1)^3$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = -0.122561 + 0.744862I$ $a = 0$ $b = 0.215080 + 1.307140I$	$1.37919 - 2.82812I$	$-12.69240 + 3.35914I$
$v = -0.122561 - 0.744862I$ $a = 0$ $b = 0.215080 - 1.307140I$	$1.37919 + 2.82812I$	$-12.69240 - 3.35914I$
$v = -1.75488$ $a = 0$ $b = 0.569840$	-2.75839	-13.6150

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^3+u^2-1)(u^{33}+2u^{32}+\cdots+3u+1)$
c_2, c_9	$u^3(u^{33}-u^{32}+\cdots+12u+8)$
c_3	$(u^3-u^2+2u-1)(u^{33}+8u^{32}+\cdots+11u+1)$
c_4	$(u^3-u^2+1)(u^{33}+2u^{32}+\cdots+3u+1)$
c_5, c_6	$(u^3+u^2+2u+1)(u^{33}+8u^{32}+\cdots+11u+1)$
c_7	$((u-1)^3)(u^{33}-4u^{32}+\cdots-16u^2+1)$
c_8	$((u+1)^3)(u^{33}+14u^{32}+\cdots+32u+1)$
c_{10}	$((u+1)^3)(u^{33}-4u^{32}+\cdots-16u^2+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4	$(y^3 - y^2 + 2y - 1)(y^{33} - 8y^{32} + \cdots + 11y - 1)$
c_2, c_9	$y^3(y^{33} + 21y^{32} + \cdots - 304y - 64)$
c_3, c_5, c_6	$(y^3 + 3y^2 + 2y - 1)(y^{33} + 36y^{32} + \cdots - 29y - 1)$
c_7, c_{10}	$((y-1)^3)(y^{33} - 14y^{32} + \cdots + 32y - 1)$
c_8	$((y-1)^3)(y^{33} + 14y^{32} + \cdots + 340y - 1)$