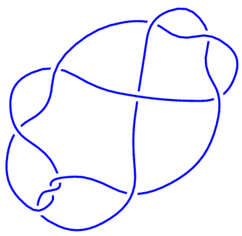
10_{22} $(K10a_{112})$



[1]

Arc Sequences

$$\rightarrow \overset{\uparrow}{6} \rightarrow \overset{\downarrow}{9} \rightarrow \overset{\downarrow}{8} \rightarrow \overset{\downarrow}{7} \rightarrow \overset{\uparrow}{1} \rightarrow \overset{\uparrow}{10} \rightarrow \overset{\downarrow}{3} \rightarrow \overset{\downarrow}{4} \rightarrow \overset{\downarrow}{2} \rightarrow \overset{\uparrow}{5} \rightarrow$$

Solving Sequence

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

Representation Ideals

$$I = I_1^u$$

$$I_1^u = \langle u^{24} - u^{23} + \cdots + 2u^2 + 1 \rangle$$

There are 1 irreducible components with 24 representations.

[1]The knot diagram image is adapter from "C. Livingston and A. H. Moore, KnotInfo: Table of Knot Invariants, http://www.indiana.edu/ knotinfo"

I. $I^u_1 = \langle u^{24} - u^{23} + \cdots + 2u^2 + 1 \rangle$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -u^2 + 1 \\ u^2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} u^3 - 2u \\ -u^3 + u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} u^6 - 3u^4 + 2u^2 + 1 \\ -u^6 + 2u^4 - u^2 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u^9 - 4u^7 + 5u^5 - 3u \\ -u^9 + 3u^7 - 3u^5 + u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u^{15} + 6u^{13} - 14u^{11} + 14u^9 - 2u^7 - 6u^5 + 4u^3 - 2u \\ -u^{17} + 7u^{15} - 19u^{13} + 22u^{11} - 3u^9 - 14u^7 + 6u^5 + 2u^3 + u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -u^{19} + 8u^{17} - 26u^{15} + 40u^{13} - 19u^{11} - 24u^9 + 30u^7 - 9u^3 \\ u^{19} - 7u^{17} + 20u^{15} - 27u^{13} + 11u^{11} + 13u^9 - 14u^7 + 3u^3 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= -4u^{21} + 32u^{19} + 4u^{18} - 108u^{17} - 28u^{16} + 180u^{15} + 80u^{14} - 104u^{13} - 104u^{12} - 120u^{11} + 24u^{10} + 216u^9 + 88u^8 - 56u^7 - 76u^6 - 80u^5 - 12u^4 + 36u^3 + 24u^2 + 8u + 2$

(iv) Complex Volumes and Cusp Shapes

Solution to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.293385-0.128068I$	$-4.64383-2.66216I$	$-8.07524+4.83074I$
$u=-1.293385+0.128068I$	$-4.64383+2.66216I$	$-8.07524-4.83074I$
$u=-1.291331-0.388939I$	$1.81113-6.59660I$	$-1.74384+6.15928I$
$u=-1.291331+0.388939I$	$1.81113+6.59660I$	$-1.74384-6.15928I$
$u=-1.234197-0.427679I$	$8.55472+0.67393I$	$2.54072+0.18139I$
$u=-1.234197+0.427679I$	$8.55472-0.67393I$	$2.54072-0.18139I$
$u=-0.832524$	3.20914	1.52537
$u=-0.691969$	3.21354	0.806221
$u=-0.240904-0.566295I$	$4.81497-3.00632I$	$4.21158+5.20782I$
$u=-0.240904+0.566295I$	$4.81497+3.00632I$	$4.21158-5.20782I$
$u=-0.047552-0.882738I$	$12.21816-5.35992I$	$5.68286+3.17670I$
$u=-0.047552+0.882738I$	$12.21816+5.35992I$	$5.68286-3.17670I$
$u=\ 0.023946-0.850260I$	$5.90820+2.14805I$	$2.49248-3.24690I$
$u=\ 0.023946+0.850260I$	$5.90820-2.14805I$	$2.49248+3.24690I$
$u=\ 0.208545-0.356460I$	$-0.079333+0.910145I$	$-1.70410-7.59691I$
$u=\ 0.208545+0.356460I$	$-0.079333-0.910145I$	$-1.70410+7.59691I$
$u=\ 1.20293$	-2.53343	-1.89057
$u=\ 1.252441-0.391136I$	$2.10558+2.30642I$	$-0.925091-0.098908I$
$u=\ 1.252441+0.391136I$	$2.10558-2.30642I$	$-0.925091+0.098908I$
$u=\ 1.30821$	-2.22926	-4.75395
$u=\ 1.311949-0.407404I$	$7.97363+9.98187I$	$1.73153-5.91019I$
$u=\ 1.311949+0.407404I$	$7.97363-9.98187I$	$1.73153+5.91019I$
$u=\ 1.317162-0.196052I$	$-0.01480+5.67994I$	$-2.05445-5.89837I$
$u=\ 1.317162+0.196052I$	$-0.01480-5.67994I$	$-2.05445+5.89837I$

II. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1, c_5, c_{10}	$(u^{24}+u^{23}+\cdots+2u^2+1)$
c_2, c_4, c_9	$(u^{24}+3u^{23}+\cdots+8u+1)$
c_3, c_7, c_8	$(u^{24}+u^{23}+\cdots+2u^2+1)$
c_6	$(u^{24}+3u^{23}+\cdots-20u-7)$

III. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_5, c_{10}	$(y^{24} - 23y^{23} + \cdots + 4y + 1)$
c_2, c_4, c_9	$(y^{24} + 25y^{23} + \cdots - 20y + 1)$
c_3, c_7, c_8	$(y^{24} - 19y^{23} + \cdots + 4y + 1)$
c_6	$(y^{24} - 11y^{23} + \cdots - 904y + 49)$