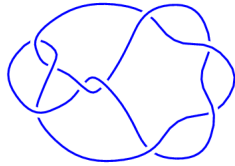
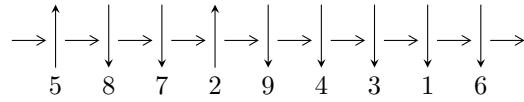


9₁₂ (K9a₂₂)

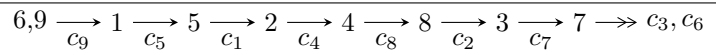


1

Arc Sequences



Solving Sequence



Representation Ideals

$$I = I_1^u$$

$$I_1^u = \langle u^{17} - u^{16} - 4u^{15} + 5u^{14} + 7u^{13} - 11u^{12} - 4u^{11} + 12u^{10} - 3u^9 - 5u^8 + 6u^7 - 2u^6 - 2u^5 + 2u^4 + u - 1 \rangle$$

There are 1 irreducible components with 17 representations.

¹The knot diagram image is adapter from “C. Livingston and A. H. Moore, KnotInfo: Table of Knot Invariants, <http://www.indiana.edu/~knotinfo>”

$$\text{I. } I_1^u = \langle u^{17} - u^{16} - 4u^{15} + 5u^{14} + 7u^{13} - 11u^{12} - 4u^{11} + 12u^{10} - 3u^9 - 5u^8 + 6u^7 - 2u^6 - 2u^5 + 2u^4 + u - 1 \rangle$$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_1 = \begin{pmatrix} -u \\ u \end{pmatrix}$$

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

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

$$a_4 = \begin{pmatrix} u^6 - u^4 + 1 \\ -u^8 + 2u^6 - 2u^4 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} u^3 \\ -u^3 + u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -u^{11} + 2u^9 - 2u^7 - u^3 \\ u^{11} - 3u^9 + 4u^7 - u^5 - u^3 + u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^{14} + 3u^{12} - 4u^{10} + u^8 + 2u^6 - 2u^4 + 1 \\ u^{16} - 4u^{14} + 8u^{12} - 8u^{10} + 4u^8 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^{14} + 3u^{12} - 4u^{10} + u^8 + 2u^6 - 2u^4 + 1 \\ u^{16} - 4u^{14} + 8u^{12} - 8u^{10} + 4u^8 \end{pmatrix}$$

(ii) Obstruction class = -1

(iii) Cusp Shapes

$$= -4u^{16} + 20u^{14} - 4u^{13} - 44u^{12} + 16u^{11} + 44u^{10} - 28u^9 - 8u^8 + 20u^7 - 24u^6 + 16u^4 - 8u^3 - 10$$

(iv) Complex Volumes and Cusp Shapes

Solution to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.172060 - 0.309872I$	$1.86779 + 0.50801I$	$-5.57451 + 0.23246I$
$u = -1.172060 + 0.309872I$	$1.86779 - 0.50801I$	$-5.57451 - 0.23246I$
$u = -1.156823 - 0.481476I$	$-3.64564 - 6.09306I$	$-7.29297 + 6.87425I$
$u = -1.156823 + 0.481476I$	$-3.64564 + 6.09306I$	$-7.29297 - 6.87425I$
$u = -0.758174 - 0.422247I$	$1.12328 - 1.83062I$	$-0.40697 + 5.22267I$
$u = -0.758174 + 0.422247I$	$1.12328 + 1.83062I$	$-0.40697 - 5.22267I$
$u = -0.112463 - 0.679715I$	$-0.69802 + 1.70542I$	$-4.10923 - 4.02096I$
$u = -0.112463 + 0.679715I$	$-0.69802 - 1.70542I$	$-4.10923 + 4.02096I$
$u = 0.231761 - 0.782357I$	$6.15100 - 3.91820I$	$-0.40216 + 2.39256I$
$u = 0.231761 + 0.782357I$	$6.15100 + 3.91820I$	$-0.40216 - 2.39256I$
$u = 0.756727$	-1.00476	-10.8691
$u = 0.774885 - 0.615952I$	$8.77101 + 2.39923I$	$0.86600 - 3.27109I$
$u = 0.774885 + 0.615952I$	$8.77101 - 2.39923I$	$0.86600 + 3.27109I$
$u = 1.151921 - 0.412149I$	$-4.14236 + 2.05778I$	$-9.01930 - 0.37816I$
$u = 1.151921 + 0.412149I$	$-4.14236 - 2.05778I$	$-9.01930 + 0.37816I$
$u = 1.162589 - 0.537552I$	$3.41234 + 8.83664I$	$-3.62632 - 5.87120I$
$u = 1.162589 + 0.537552I$	$3.41234 - 8.83664I$	$-3.62632 + 5.87120I$

II. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1, c_4	$(u^{17} + 3u^{16} + \dots + 9u + 3)$
c_2, c_3, c_6 c_7	$(u^{17} + u^{16} + \dots + u - 1)$
c_5, c_9	$(u^{17} + u^{16} + \dots + u + 1)$
c_8	$(u^{17} + 9u^{16} + \dots + u + 1)$

III. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_4	$(y^{17} + 11y^{16} + \dots + 57y - 9)$
c_2, c_3, c_6 c_7	$(y^{17} + 19y^{16} + \dots + y - 1)$
c_5, c_9	$(y^{17} - 9y^{16} + \dots + y - 1)$
c_8	$(y^{17} - y^{16} + \dots + 9y - 1)$