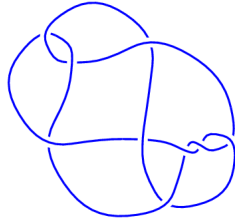
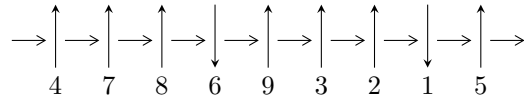


9₂₁ (K9a₂₁)

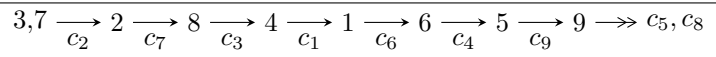


1

Arc Sequences



Solving Sequence



Representation Ideals

$$I = I_1^u$$

$$I_1^u = \langle u^{21} + u^{20} + \dots - u - 1 \rangle$$

There are 1 irreducible components with 21 representations.

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

$$\mathbf{I. } I_1^u = \langle u^{21} + u^{20} + \dots - u - 1 \rangle$$

(i) Arc colorings

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

$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

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

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

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

$$a_1 = \begin{pmatrix} u^8 + 3u^6 + u^4 - 2u^2 + 1 \\ u^{10} + 4u^8 + 5u^6 + 2u^4 + u^2 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -u \\ u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u^8 + 3u^6 + u^4 - 2u^2 + 1 \\ -u^8 - 4u^6 - 4u^4 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u^{15} + 6u^{13} + 12u^{11} + 6u^9 - 6u^7 - 2u^5 + 4u^3 \\ u^{17} + 7u^{15} + 19u^{13} + 24u^{11} + 13u^9 + 2u^7 + u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u^{15} + 6u^{13} + 12u^{11} + 6u^9 - 6u^7 - 2u^5 + 4u^3 \\ u^{17} + 7u^{15} + 19u^{13} + 24u^{11} + 13u^9 + 2u^7 + u \end{pmatrix}$$

(ii) Obstruction class = -1

$$\mathbf{(iii) Cusp Shapes} = 4u^{19} + 4u^{18} + 36u^{17} + 32u^{16} + 132u^{15} + 100u^{14} + 244u^{13} + 140u^{12} + 216u^{11} + 52u^{10} + 40u^9 - 68u^8 - 56u^7 - 52u^6 + 12u^4 + 36u^3 + 12u^2 + 8u + 2$$

(iv) Complex Volumes and Cusp Shapes

Solution to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.721828 - 0.253446I$	$2.90434 + 6.51836I$	$7.49661 - 6.69162I$
$u = -0.721828 + 0.253446I$	$2.90434 - 6.51836I$	$7.49661 + 6.69162I$
$u = -0.520195 - 0.340511I$	$-2.02154 + 1.59690I$	$0.86726 - 4.73829I$
$u = -0.520195 + 0.340511I$	$-2.02154 - 1.59690I$	$0.86726 + 4.73829I$
$u = -0.28719 - 1.40273I$	$-2.37086 + 10.18327I$	$2.74618 - 7.21296I$
$u = -0.28719 + 1.40273I$	$-2.37086 - 10.18327I$	$2.74618 + 7.21296I$
$u = -0.268883 - 0.739769I$	$1.15989 - 2.73152I$	$4.80842 + 2.00184I$
$u = -0.268883 + 0.739769I$	$1.15989 + 2.73152I$	$4.80842 - 2.00184I$
$u = -0.20569 - 1.41170I$	$-7.58755 + 4.29720I$	$-2.75143 - 3.93304I$
$u = -0.20569 + 1.41170I$	$-7.58755 - 4.29720I$	$-2.75143 + 3.93304I$
$u = -0.085311 - 1.403889I$	$-5.14411 - 1.80763I$	$-0.25907 + 2.73625I$
$u = -0.085311 + 1.403889I$	$-5.14411 + 1.80763I$	$-0.25907 - 2.73625I$
$u = 0.161237 - 1.327481I$	$-3.39772 - 2.26276I$	$4.12423 + 3.11409I$
$u = 0.161237 + 1.327481I$	$-3.39772 + 2.26276I$	$4.12423 - 3.11409I$
$u = 0.199184 - 0.953331I$	$1.36988 - 2.68588I$	$5.85070 + 3.67518I$
$u = 0.199184 + 0.953331I$	$1.36988 + 2.68588I$	$5.85070 - 3.67518I$
$u = 0.280467 - 1.374361I$	$-1.32092 - 4.48385I$	$4.56586 + 2.47352I$
$u = 0.280467 + 1.374361I$	$-1.32092 + 4.48385I$	$4.56586 - 2.47352I$
$u = 0.478663$	0.823807	12.2154
$u = 0.708881 - 0.196468I$	$3.65968 - 0.90110I$	$9.44354 + 1.25880I$
$u = 0.708881 + 0.196468I$	$3.65968 + 0.90110I$	$9.44354 - 1.25880I$

II. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1	$(u^{21} + 5u^{20} + \dots - 11u - 3)$
c_2, c_6, c_7	$(u^{21} + u^{20} + \dots - u - 1)$
c_3	$(u^{21} + u^{20} + \dots - 3u + 1)$
c_4, c_8	$(u^{21} + 7u^{20} + \dots + 3u - 1)$
c_5, c_9	$(u^{21} + u^{20} + \dots + u + 1)$

III. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1	$(y^{21} + 3y^{20} + \dots - 41y - 9)$
c_2, c_6, c_7	$(y^{21} + 19y^{20} + \dots + 3y - 1)$
c_3	$(y^{21} - y^{20} + \dots + 3y - 1)$
c_4, c_8	$(y^{21} + 15y^{20} + \dots + 27y - 1)$
c_5, c_9	$(y^{21} + 7y^{20} + \dots + 3y - 1)$