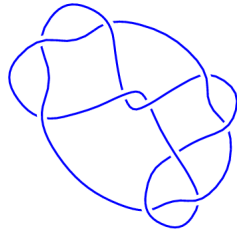
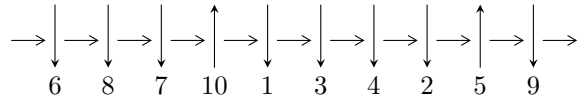


10₂₅ (K10a₆₁)

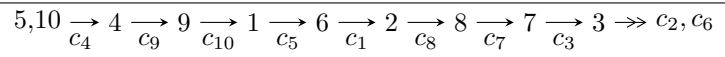


1

Arc Sequences



Solving Sequence



Representation Ideals

$$I = I_1^u$$

$$I_1^u = \langle u^{32} + u^{31} + \dots - 2u - 1 \rangle$$

There are 1 irreducible components with 32 representations.

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

$$\text{I. } \Gamma_1^u = \langle u^{32} + u^{31} + \dots - 2u - 1 \rangle$$

(i) Arc colorings

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

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

$$a_4 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

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

$$a_1 = \begin{pmatrix} -u^3 \\ u^3 + u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -u^6 - u^4 + 1 \\ u^6 + 2u^4 + u^2 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u^9 + 2u^7 + u^5 - 2u^3 - u \\ -u^9 - 3u^7 - 3u^5 + u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u^{17} - 4u^{15} - 7u^{13} - 4u^{11} + 3u^9 + 6u^7 + 2u^5 - u \\ u^{17} + 5u^{15} + 11u^{13} + 12u^{11} + 5u^9 - 2u^7 - 2u^5 + u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u^{19} + 4u^{17} + 8u^{15} + 8u^{13} + 5u^{11} + 2u^9 + 2u^7 + u^3 \\ u^{21} + 5u^{19} + 13u^{17} + 20u^{15} + 20u^{13} + 11u^{11} + u^9 - 4u^7 - u^5 + u^3 + u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} u^{25} + 6u^{23} + \dots - 2u^3 - u \\ -u^{25} - 7u^{23} + \dots - 5u^5 + u \end{pmatrix}$$

(ii) Obstruction class = -1

(iii) Cusp Shapes

$$= 4u^{30} + 4u^{29} + 32u^{28} + 32u^{27} + 124u^{26} + 128u^{25} + 292u^{24} + 316u^{23} + 448u^{22} + 516u^{21} + 440u^{20} + 540u^{19} + 232u^{18} + 292u^{17} - 20u^{16} - 64u^{15} - 140u^{14} - 232u^{13} - 108u^{12} - 144u^{11} - 24u^{10} + 16u^9 + 28u^8 + 64u^7 + 24u^6 + 28u^5 + 8u^4 - 12u^3 - 8u^2 - 12u - 14$$

(iv) Complex Volumes and Cusp Shapes

Solution to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.792800 - 0.172177I$	$-3.13584 - 7.01747I$	$-7.66223 + 4.88322I$
$u = -0.792800 + 0.172177I$	$-3.13584 + 7.01747I$	$-7.66223 - 4.88322I$
$u = -0.649942 - 0.248644I$	$-1.32933 + 0.52783I$	$-5.59448 - 0.64788I$
$u = -0.649942 + 0.248644I$	$-1.32933 - 0.52783I$	$-5.59448 + 0.64788I$
$u = -0.605013$	-1.22821	-8.26166
$u = -0.561289 - 0.769750I$	$4.01456 + 2.24194I$	$-0.65690 - 3.79727I$
$u = -0.561289 + 0.769750I$	$4.01456 - 2.24194I$	$-0.65690 + 3.79727I$
$u = -0.521034 - 1.182057I$	$-6.10646 + 11.87578I$	$-10.77954 - 7.99531I$
$u = -0.521034 + 1.182057I$	$-6.10646 - 11.87578I$	$-10.77954 + 7.99531I$
$u = -0.492704 - 1.133861I$	$-3.89830 + 3.89503I$	$-9.35061 - 2.90091I$
$u = -0.492704 + 1.133861I$	$-3.89830 - 3.89503I$	$-9.35061 + 2.90091I$
$u = -0.433982 - 1.139381I$	$-4.28206 + 3.88889I$	$-10.89128 - 4.90467I$
$u = -0.433982 + 1.139381I$	$-4.28206 - 3.88889I$	$-10.89128 + 4.90467I$
$u = -0.357265 - 1.197706I$	$-7.25067 - 3.23058I$	$-12.64791 + 1.85611I$
$u = -0.357265 + 1.197706I$	$-7.25067 + 3.23058I$	$-12.64791 - 1.85611I$
$u = -0.180753 - 1.016976I$	$-5.00599 + 2.81562I$	$-13.51638 - 3.82546I$
$u = -0.180753 + 1.016976I$	$-5.00599 - 2.81562I$	$-13.51638 + 3.82546I$
$u = 0.192477 - 0.755088I$	$-0.501058 - 1.034985I$	$-7.18759 + 6.41402I$
$u = 0.192477 + 0.755088I$	$-0.501058 + 1.034985I$	$-7.18759 - 6.41402I$
$u = 0.362087 - 1.159287I$	$-2.34434 - 0.39737I$	$-7.83598 - 0.58140I$
$u = 0.362087 + 1.159287I$	$-2.34434 + 0.39737I$	$-7.83598 + 0.58140I$
$u = 0.450235 - 1.200345I$	$-10.82667 - 4.39858I$	$-14.8085 + 3.5355I$
$u = 0.450235 + 1.200345I$	$-10.82667 + 4.39858I$	$-14.8085 - 3.5355I$
$u = 0.514933 - 1.164397I$	$-1.27472 - 7.88151I$	$-6.19556 + 6.68910I$
$u = 0.514933 + 1.164397I$	$-1.27472 + 7.88151I$	$-6.19556 - 6.68910I$
$u = 0.565288 - 0.826638I$	$-0.06115 - 6.17510I$	$-5.73067 + 6.90538I$
$u = 0.565288 + 0.826638I$	$-0.06115 + 6.17510I$	$-5.73067 - 6.90538I$
$u = 0.570562 - 0.700867I$	$0.29651 + 1.65231I$	$-4.59303 - 0.15309I$
$u = 0.570562 + 0.700867I$	$0.29651 - 1.65231I$	$-4.59303 + 0.15309I$
$u = 0.747372 - 0.188735I$	$1.56622 + 3.15266I$	$-2.67728 - 3.41480I$

Solution to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.747372 + 0.188735I$	$1.56622 - 3.15266I$	$-2.67728 + 3.41480I$
$u = 0.778647$	-7.31963	-11.4825

II. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1, c_5	$(u^{32} + u^{31} + \dots - 14u - 5)$
c_2, c_8	$(u^{32} + 3u^{31} + \dots - 4u^4 + 1)$
c_3, c_6, c_7	$(u^{32} + u^{31} + \dots - 2u - 1)$
c_4, c_9	$(u^{32} + u^{31} + \dots - 2u - 1)$
c_{10}	$(u^{32} + 17u^{31} + \dots - 8u^2 + 1)$

III. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_5	$(y^{32} - 23y^{31} + \dots - 296y + 25)$
c_2, c_8	$(y^{32} + 17y^{31} + \dots - 8y^2 + 1)$
c_3, c_6, c_7	$(y^{32} - 27y^{31} + \dots + 16y^2 + 1)$
c_4, c_9	$(y^{32} + 17y^{31} + \dots - 8y^2 + 1)$
c_{10}	$(y^{32} - 3y^{31} + \dots - 16y + 1)$