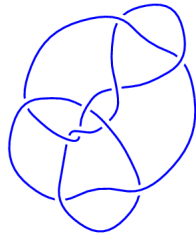
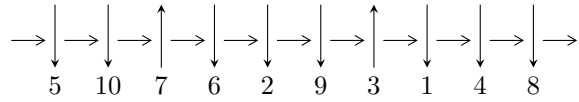


10₉₂ (K10a₄₆)

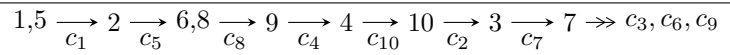


1

Arc Sequences



Solving Sequence



Representation Ideals

$$I = I_1^u$$

$$I_1^u = \langle u^{44} + 3u^{43} + \dots + 4u + 1, 6.14745 \times 10^{22}u^{43} + 1.68640 \times 10^{23}u^{42} + \dots + 4.10626 \times 10^{23}b + 5.65855 \times 10^{23} - 1.07830 \times 10^{23}u^{43} - 7.28908 \times 10^{23}u^{42} + \dots + 4.10626 \times 10^{23}a - 8.55134 \times 10^{23} \rangle$$

There are 1 irreducible components with 44 representations.

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

$$\mathbf{I. } I_1^u = \langle u^{44} + 3u^{43} + \dots + 4u + 1, 6.15 \times 10^{22}u^{43} + 1.69 \times 10^{23}u^{42} + \dots + 4.11 \times 10^{23}b + 5.66 \times 10^{23}, -1.08 \times 10^{23}u^{43} - 7.29 \times 10^{23}u^{42} + \dots + 4.11 \times 10^{23}a - 8.55 \times 10^{23} \rangle$$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

$$a_6 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.262600u^{43} + 1.77511u^{42} + \dots + 2.77682u + 2.08251 \\ -0.149709u^{43} - 0.410691u^{42} + \dots - 1.54325u - 1.37803 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.412309u^{43} + 2.18580u^{42} + \dots + 4.32007u + 3.46054 \\ -0.149709u^{43} - 0.410691u^{42} + \dots - 1.54325u - 1.37803 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} u^3 \\ u^5 - u^3 + u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.313341u^{43} + 1.90111u^{42} + \dots + 3.81262u + 3.26735 \\ -0.334825u^{43} - 0.772241u^{42} + \dots - 1.55972u - 1.27556 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 1.07273u^{43} + 1.65129u^{42} + \dots + 0.120109u - 0.207377 \\ -0.415470u^{43} - 0.355187u^{42} + \dots - 2.46813u + 0.118486 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0.942379u^{43} + 5.64956u^{42} + \dots - 4.55203u + 0.322394 \\ -0.801791u^{43} - 2.31053u^{42} + \dots - 2.19230u - 1.54713 \end{pmatrix}$$

(ii) Obstruction class = -1

$$\mathbf{(iii) Cusp Shapes} = -\frac{299808041105979204994396}{136875388103549877144643}u^{43} - \frac{848702959623216598779576}{136875388103549877144643}u^{42} + \dots - \frac{27052211834725271707812}{19553626871935696734949}u - \frac{1351235298619022041529338}{136875388103549877144643}$$

(iv) Complex Volumes and Cusp Shapes

Solution to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.38103$ $a = 1.82513$ $b = 1.18122$	-5.51547	-19.3219
$u = -1.23100 - 0.72005I$ $a = 1.18995 - 0.81794I$ $b = 1.144637 + 0.060756I$	$-5.05123 - 2.61575I$	$-19.7028 + 6.2294I$
$u = -1.23100 + 0.72005I$ $a = 1.18995 + 0.81794I$ $b = 1.144637 - 0.060756I$	$-5.05123 + 2.61575I$	$-19.7028 - 6.2294I$
$u = -1.141177 - 0.657704I$ $a = 1.77431 - 1.29931I$ $b = 1.42524 + 0.56997I$	$-6.3237 - 14.8554I$	$-10.29546 + 8.59158I$
$u = -1.141177 + 0.657704I$ $a = 1.77431 + 1.29931I$ $b = 1.42524 - 0.56997I$	$-6.3237 + 14.8554I$	$-10.29546 - 8.59158I$
$u = -1.043402 - 0.593727I$ $a = -1.020578 - 0.191405I$ $b = -0.060111 - 1.315521I$	$-1.62830 - 8.40873I$	$-8.69535 + 8.26732I$
$u = -1.043402 + 0.593727I$ $a = -1.020578 + 0.191405I$ $b = -0.060111 + 1.315521I$	$-1.62830 + 8.40873I$	$-8.69535 - 8.26732I$
$u = -1.006039 - 0.358502I$ $a = -1.64888 + 1.39073I$ $b = -1.72272 + 0.34047I$	$-7.32531 - 1.01598I$	$-16.3773 + 1.5947I$
$u = -1.006039 + 0.358502I$ $a = -1.64888 - 1.39073I$ $b = -1.72272 - 0.34047I$	$-7.32531 + 1.01598I$	$-16.3773 - 1.5947I$
$u = -0.975696 - 0.495658I$ $a = -1.58974 + 1.81328I$ $b = -1.045755 - 0.398242I$	$-2.16678 - 3.71837I$	$-7.18001 + 4.79801I$

Solution to I_1^μ	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.975696 + 0.495658I$ $a = -1.58974 - 1.81328I$ $b = -1.045755 + 0.398242I$	$-2.16678 + 3.71837I$	$-7.18001 - 4.79801I$
$u = -0.923394 - 0.545105I$ $a = 0.892868 + 0.453112I$ $b = -0.1085090 - 0.0372733I$	$-1.80992 - 2.06451I$	$-8.33506 + 2.58557I$
$u = -0.923394 + 0.545105I$ $a = 0.892868 - 0.453112I$ $b = -0.1085090 + 0.0372733I$	$-1.80992 + 2.06451I$	$-8.33506 - 2.58557I$
$u = -0.677683 - 0.298861I$ $a = 0.440425 - 0.337840I$ $b = -0.653219 + 0.324097I$	$-1.057922 - 0.069554I$	$-6.35507 - 0.09655I$
$u = -0.677683 + 0.298861I$ $a = 0.440425 + 0.337840I$ $b = -0.653219 - 0.324097I$	$-1.057922 + 0.069554I$	$-6.35507 + 0.09655I$
$u = -0.630444 - 1.006786I$ $a = 0.515707 - 0.251954I$ $b = 1.091767 + 0.179141I$	$-3.10073 - 4.10126I$	$-10.8949 + 11.0256I$
$u = -0.630444 + 1.006786I$ $a = 0.515707 + 0.251954I$ $b = 1.091767 - 0.179141I$	$-3.10073 + 4.10126I$	$-10.8949 - 11.0256I$
$u = -0.509147 - 0.682421I$ $a = 0.748061 - 0.578286I$ $b = 0.040117 + 1.082949I$	$-0.05957 + 3.45708I$	$-5.25205 - 3.26607I$
$u = -0.509147 + 0.682421I$ $a = 0.748061 + 0.578286I$ $b = 0.040117 - 1.082949I$	$-0.05957 - 3.45708I$	$-5.25205 + 3.26607I$
$u = -0.441228 - 0.915243I$ $a = 0.398119 + 0.217535I$ $b = 1.34117 - 0.51864I$	$-4.18962 + 9.08760I$	$-8.08222 - 5.03295I$

Solution to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.441228 + 0.915243I$ $a = 0.398119 - 0.217535I$ $b = 1.34117 + 0.51864I$	$-4.18962 - 9.08760I$	$-8.08222 + 5.03295I$
$u = -0.418735$ $a = 0.859759$ $b = -0.684180$	-1.08485	-8.34541
$u = -0.354494 - 0.530250I$ $a = 1.064655 + 0.138642I$ $b = 0.127335 - 0.413006I$	$-0.54354 - 1.79828I$	$-3.49440 + 3.19528I$
$u = -0.354494 + 0.530250I$ $a = 1.064655 - 0.138642I$ $b = 0.127335 + 0.413006I$	$-0.54354 + 1.79828I$	$-3.49440 - 3.19528I$
$u = 0.206659 - 0.446571I$ $a = 1.139284 + 0.241376I$ $b = -1.248776 - 0.511630I$	$-4.48946 - 1.55296I$	$-10.02584 + 1.50927I$
$u = 0.206659 + 0.446571I$ $a = 1.139284 - 0.241376I$ $b = -1.248776 + 0.511630I$	$-4.48946 + 1.55296I$	$-10.02584 - 1.50927I$
$u = 0.363757 - 0.931801I$ $a = 0.574314 - 0.152690I$ $b = 1.051764 + 0.377630I$	$0.93507 - 3.55591I$	$-4.27504 + 5.80144I$
$u = 0.363757 + 0.931801I$ $a = 0.574314 + 0.152690I$ $b = 1.051764 - 0.377630I$	$0.93507 + 3.55591I$	$-4.27504 - 5.80144I$
$u = 0.614573 - 0.715877I$ $a = 0.648178 + 0.462248I$ $b = 0.352533 - 0.684267I$	$3.04550 + 0.49268I$	$-0.12697 - 2.02865I$
$u = 0.614573 + 0.715877I$ $a = 0.648178 - 0.462248I$ $b = 0.352533 + 0.684267I$	$3.04550 - 0.49268I$	$-0.12697 + 2.02865I$

Solution to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.822616 - 0.487506I$ $a = 2.41823 + 5.79626I$ $b = -0.962457 + 0.015339I$	$-3.21593 + 2.04361I$	$-52.4053 + 14.7990I$
$u = 0.822616 + 0.487506I$ $a = 2.41823 - 5.79626I$ $b = -0.962457 - 0.015339I$	$-3.21593 - 2.04361I$	$-52.4053 - 14.7990I$
$u = 0.918123 - 0.411939I$ $a = -2.57013 - 0.48465I$ $b = -1.186547 - 0.092828I$	$-2.84407 + 1.62243I$	$-4.14582 - 4.55154I$
$u = 0.918123 + 0.411939I$ $a = -2.57013 + 0.48465I$ $b = -1.186547 + 0.092828I$	$-2.84407 - 1.62243I$	$-4.14582 + 4.55154I$
$u = 0.925118 - 0.134958I$ $a = 0.268380 - 0.914669I$ $b = -0.612800 - 0.910777I$	$-4.44447 - 2.34717I$	$-13.36025 + 3.31347I$
$u = 0.925118 + 0.134958I$ $a = 0.268380 + 0.914669I$ $b = -0.612800 + 0.910777I$	$-4.44447 + 2.34717I$	$-13.36025 - 3.31347I$
$u = 1.005355 - 0.620641I$ $a = -0.379272 + 0.130111I$ $b = 0.152753 + 0.830976I$	$1.86298 + 4.63552I$	$-2.63874 - 4.34296I$
$u = 1.005355 + 0.620641I$ $a = -0.379272 - 0.130111I$ $b = 0.152753 - 0.830976I$	$1.86298 - 4.63552I$	$-2.63874 + 4.34296I$
$u = 1.036355 - 0.480257I$ $a = -1.99121 - 1.16563I$ $b = -1.49224 + 0.83332I$	$-6.51425 + 5.38013I$	$-14.5306 - 6.8865I$
$u = 1.036355 + 0.480257I$ $a = -1.99121 + 1.16563I$ $b = -1.49224 - 0.83332I$	$-6.51425 - 5.38013I$	$-14.5306 + 6.8865I$

Solution to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.161633 - 0.643448I$	$-1.45853 + 9.28321I$	$-7.74682 - 7.80258I$
$a = 1.67963 + 1.04513I$		
$b = 1.220437 - 0.442442I$		
$u = 1.161633 + 0.643448I$	$-1.45853 - 9.28321I$	$-7.74682 + 7.80258I$
$a = 1.67963 - 1.04513I$		
$b = 1.220437 + 0.442442I$		
$u = 1.279391 - 0.043840I$	$-10.47243 - 6.33527I$	$-14.2462 + 4.4391I$
$a = 2.10525 + 0.31617I$		
$b = 1.39686 + 0.31540I$		
$u = 1.279391 + 0.043840I$	$-10.47243 + 6.33527I$	$-14.2462 - 4.4391I$
$a = 2.10525 - 0.31617I$		
$b = 1.39686 - 0.31540I$		

II. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1, c_5	$(u^{44} + 3u^{43} + \dots + 4u + 1)$
c_2	$(u^{44} + 11u^{43} + \dots + 2050u - 319)$
c_3, c_7	$(u^{44} + 3u^{43} + \dots + 4u + 1)$
c_4	$(u^{44} + 19u^{43} + \dots + 10u + 1)$
c_6	$(u^{44} + u^{43} + \dots - 28u + 7)$
c_8, c_{10}	$(u^{44} + u^{43} + \dots + 16u - 1)$
c_9	$(u^{44} + u^{43} + \dots + 10u - 1)$

III. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_5	$(y^{44} - 19y^{43} + \dots - 10y + 1)$
c_2	$(y^{44} - 107y^{43} + \dots - 1901234y + 101761)$
c_3, c_7	$(y^{44} + 33y^{43} + \dots - 10y + 1)$
c_4	$(y^{44} + 13y^{43} + \dots - 10y + 1)$
c_6	$(y^{44} + 77y^{43} + \dots - 1078y + 49)$
c_8, c_{10}	$(y^{44} - 31y^{43} + \dots - 122y + 1)$
c_9	$(y^{44} - 3y^{43} + \dots - 50y + 1)$