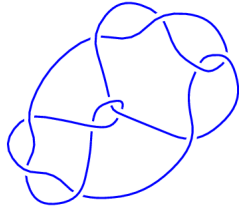
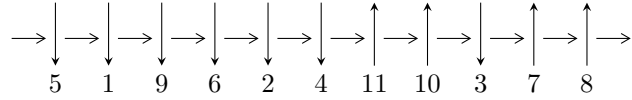


11a₁₅₃ (K11a₁₅₃)

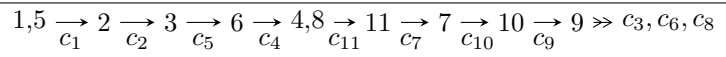


1

Arc Sequences



Solving Sequence



Representation Ideals

$$I = \bigcap_{i=1}^2 I_i^u$$

$$I_1^u = \langle u^3 + u^2 - 1, a - u, b - 1 \rangle$$

$$I_2^u = \langle u^{47} + 2u^{46} + \dots - 2u^2 + 1, u^{44} + u^{43} + \dots + u^2 + a, u^{46} + u^{45} + \dots - u^2 + b \rangle$$

There are 2 irreducible components with 50 representations.

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

$$\mathbf{I. } I_1^u = \langle u^3 + u^2 - 1, a - u, b - 1 \rangle$$

(i) Arc colorings

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

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

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

$$a_3 = \begin{pmatrix} -u^2 + 1 \\ u^2 \end{pmatrix}$$

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

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

$$a_8 = \begin{pmatrix} u \\ 1 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} u + 1 \\ 1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u \\ 1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u \\ 1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u \\ 1 \end{pmatrix}$$

(ii) Obstruction class = 1

(iii) Cusp Shapes =unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.877439 - 0.744862I$ $a = -0.877439 - 0.744862I$ $b = 1.00000$	$4.66906 - 2.82812I$	$-0.69240 + 3.35914I$
$u = -0.877439 + 0.744862I$ $a = -0.877439 + 0.744862I$ $b = 1.00000$	$4.66906 + 2.82812I$	$-0.69240 - 3.35914I$
$u = 0.754878$ $a = 0.754878$ $b = 1.00000$	0.531480	-1.61520

II.

$$I_2^u = \langle u^{47} + 2u^{46} + \dots - 2u^2 + 1, u^{44} + u^{43} + \dots + u^2 + a, u^{46} + u^{45} + \dots - u^2 + b \rangle$$

(i) Arc colorings

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

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

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

$$a_3 = \begin{pmatrix} -u^2 + 1 \\ u^2 \end{pmatrix}$$

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

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

$$a_8 = \begin{pmatrix} -u^{44} - u^{43} + \dots - 5u^3 - u^2 \\ -u^{46} - u^{45} + \dots - 9u^4 + u^2 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} u^{46} + u^{45} + \dots + u + 1 \\ -u^{46} - u^{45} + \dots + u^2 - u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^5 - u \\ -u^7 + u^5 - 2u^3 + u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 2u^{46} + 2u^{45} + \dots + u + 1 \\ -u^{46} - u^{45} + \dots + u^2 - u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u^{43} + 6u^{41} + \dots + 4u^5 - 5u^3 \\ -u^{45} - u^{44} + \dots - 5u^5 - 5u^4 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u^{43} + 6u^{41} + \dots + 4u^5 - 5u^3 \\ -u^{45} - u^{44} + \dots - 5u^5 - 5u^4 \end{pmatrix}$$

(ii) Obstruction class = -1

(iii) Cusp Shapes = unknown

(iv) Complex Volumes and Cusp Shapes

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.011375 - 0.139586I$ $a = -0.904755 - 0.088090I$ $b = -1.314220 - 0.231706I$	$1.25225 + 2.83779I$	$-2.68977 - 2.39473I$
$u = -1.011375 + 0.139586I$ $a = -0.904755 + 0.088090I$ $b = -1.314220 + 0.231706I$	$1.25225 - 2.83779I$	$-2.68977 + 2.39473I$
$u = -0.989025 - 0.818280I$ $a = 1.95451 + 1.95853I$ $b = -1.43384 + 0.34275I$	$10.3470 - 13.4113I$	$2.92754 + 8.12644I$
$u = -0.989025 + 0.818280I$ $a = 1.95451 - 1.95853I$ $b = -1.43384 - 0.34275I$	$10.3470 + 13.4113I$	$2.92754 - 8.12644I$
$u = -0.967508 - 0.809416I$ $a = -1.165340 - 0.333592I$ $b = 0.283925 - 0.853070I$	$4.86878 - 9.09918I$	$-0.29211 + 7.51593I$
$u = -0.967508 + 0.809416I$ $a = -1.165340 + 0.333592I$ $b = 0.283925 + 0.853070I$	$4.86878 + 9.09918I$	$-0.29211 - 7.51593I$
$u = -0.935935 - 0.814528I$ $a = -0.389006 - 0.615995I$ $b = 0.922055 + 0.551668I$	$6.82306 - 4.16721I$	$3.15551 + 3.14334I$
$u = -0.935935 + 0.814528I$ $a = -0.389006 + 0.615995I$ $b = 0.922055 - 0.551668I$	$6.82306 + 4.16721I$	$3.15551 - 3.14334I$
$u = -0.929490 - 0.212978I$ $a = 0.89768 + 1.14392I$ $b = 0.036684 + 0.629696I$	$-2.99267 - 0.24824I$	$-9.15885 + 0.73721I$
$u = -0.929490 + 0.212978I$ $a = 0.89768 - 1.14392I$ $b = 0.036684 - 0.629696I$	$-2.99267 + 0.24824I$	$-9.15885 - 0.73721I$

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.917330 - 0.873542I$ $a = 2.38114 + 0.90989I$ $b = -1.52362 + 0.01088I$	$15.4002 - 3.2295I$	$6.21908 + 2.49723I$
$u = -0.917330 + 0.873542I$ $a = 2.38114 - 0.90989I$ $b = -1.52362 - 0.01088I$	$15.4002 + 3.2295I$	$6.21908 - 2.49723I$
$u = -0.896160 - 0.336643I$ $a = -0.76370 - 2.67089I$ $b = 1.247488 - 0.237372I$	$0.73808 - 3.39872I$	$-3.20420 + 5.17325I$
$u = -0.896160 + 0.336643I$ $a = -0.76370 + 2.67089I$ $b = 1.247488 + 0.237372I$	$0.73808 + 3.39872I$	$-3.20420 - 5.17325I$
$u = -0.863506 - 0.840738I$ $a = -1.157820 - 0.463502I$ $b = 0.878675 - 0.561748I$	$7.05051 - 2.00460I$	$3.77294 + 2.26192I$
$u = -0.863506 + 0.840738I$ $a = -1.157820 + 0.463502I$ $b = 0.878675 + 0.561748I$	$7.05051 + 2.00460I$	$3.77294 - 2.26192I$
$u = -0.827943 - 0.860184I$ $a = -0.198500 - 0.173641I$ $b = 0.308545 + 0.834915I$	$5.30471 + 2.88795I$	$0.68944 - 2.66752I$
$u = -0.827943 + 0.860184I$ $a = -0.198500 + 0.173641I$ $b = 0.308545 - 0.834915I$	$5.30471 - 2.88795I$	$0.68944 + 2.66752I$
$u = -0.815670 - 0.889580I$ $a = 1.88389 - 0.19322I$ $b = -1.44040 - 0.32864I$	$10.89334 + 7.08520I$	$3.93867 - 3.32748I$
$u = -0.815670 + 0.889580I$ $a = 1.88389 + 0.19322I$ $b = -1.44040 + 0.32864I$	$10.89334 - 7.08520I$	$3.93867 + 3.32748I$

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.682080$ $a = 0.712985$ $b = -0.128498$	-0.926103	-11.4571
$u = -0.295011 - 0.434696I$ $a = -2.94527 + 0.38448I$ $b = 1.223320 + 0.093893I$	$2.53395 + 0.36100I$	$2.22031 + 1.00355I$
$u = -0.295011 + 0.434696I$ $a = -2.94527 - 0.38448I$ $b = 1.223320 - 0.093893I$	$2.53395 - 0.36100I$	$2.22031 - 1.00355I$
$u = 0.160803 - 0.538431I$ $a = 0.0021683 - 0.0612432I$ $b = 0.237551 - 0.626286I$	$0.05463 - 1.88803I$	$0.05102 + 3.76347I$
$u = 0.160803 + 0.538431I$ $a = 0.0021683 + 0.0612432I$ $b = 0.237551 + 0.626286I$	$0.05463 + 1.88803I$	$0.05102 - 3.76347I$
$u = 0.194123 - 0.690391I$ $a = 1.78934 + 0.32566I$ $b = -1.387022 + 0.254292I$	$5.21653 - 5.13195I$	$4.47363 + 3.77222I$
$u = 0.194123 + 0.690391I$ $a = 1.78934 - 0.32566I$ $b = -1.387022 - 0.254292I$	$5.21653 + 5.13195I$	$4.47363 - 3.77222I$
$u = 0.525813 - 0.373412I$ $a = -0.207030 + 0.780513I$ $b = 0.535452 + 0.352204I$	$1.13890 + 1.31315I$	$3.11319 - 5.85317I$
$u = 0.525813 + 0.373412I$ $a = -0.207030 - 0.780513I$ $b = 0.535452 - 0.352204I$	$1.13890 - 1.31315I$	$3.11319 + 5.85317I$
$u = 0.586342 - 0.704775I$ $a = 1.73417 - 0.63241I$ $b = -1.379809 - 0.124210I$	$6.94014 + 2.76747I$	$5.54266 - 3.60808I$

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.586342 + 0.704775I$ $a = 1.73417 + 0.63241I$ $b = -1.379809 + 0.124210I$	$6.94014 - 2.76747I$	$5.54266 + 3.60808I$
$u = 0.842514 - 0.793044I$ $a = 0.509378 - 0.071294I$ $b = -0.223036 + 0.456903I$	$3.10025 + 1.81367I$	$-3.66686 - 2.05384I$
$u = 0.842514 + 0.793044I$ $a = 0.509378 + 0.071294I$ $b = -0.223036 - 0.456903I$	$3.10025 - 1.81367I$	$-3.66686 + 2.05384I$
$u = 0.844254 - 0.267575I$ $a = 0.774654 - 0.190291I$ $b = 1.025600 - 0.317258I$	$0.239586 + 1.107155I$	$-2.87652 - 5.48870I$
$u = 0.844254 + 0.267575I$ $a = 0.774654 + 0.190291I$ $b = 1.025600 + 0.317258I$	$0.239586 - 1.107155I$	$-2.87652 + 5.48870I$
$u = 0.847216 - 0.855752I$ $a = -2.51926 - 0.20915I$ $b = 1.377127 - 0.195088I$	$8.19027 - 0.67694I$	$2.91715 - 0.21769I$
$u = 0.847216 + 0.855752I$ $a = -2.51926 + 0.20915I$ $b = 1.377127 + 0.195088I$	$8.19027 + 0.67694I$	$2.91715 + 0.21769I$
$u = 0.930838 - 0.775441I$ $a = 1.126798 - 0.292922I$ $b = -0.201206 - 0.530773I$	$2.82936 + 4.09126I$	$-3.95731 - 3.33683I$
$u = 0.930838 + 0.775441I$ $a = 1.126798 + 0.292922I$ $b = -0.201206 + 0.530773I$	$2.82936 - 4.09126I$	$-3.95731 + 3.33683I$
$u = 0.946938 - 0.664626I$ $a = 0.669205 - 1.145130I$ $b = -1.295322 + 0.091448I$	$5.98354 + 2.31808I$	$4.28165 - 1.64217I$

Solution to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.946938 + 0.664626I$		
$a = 0.669205 + 1.145130I$	$5.98354 - 2.31808I$	$4.28165 + 1.64217I$
$b = -1.295322 - 0.091448I$		
$u = 0.951038 - 0.332468I$		
$a = -0.65133 + 1.26110I$	$-2.29859 + 5.08605I$	$-6.19055 - 7.78708I$
$b = 0.182701 + 0.756309I$		
$u = 0.951038 + 0.332468I$		
$a = -0.65133 - 1.26110I$	$-2.29859 - 5.08605I$	$-6.19055 + 7.78708I$
$b = 0.182701 - 0.756309I$		
$u = 0.953997 - 0.816453I$		
$a = -2.48989 + 1.98715I$	$7.85574 + 6.89913I$	$2.19262 - 4.81630I$
$b = 1.375330 + 0.219413I$		
$u = 0.953997 + 0.816453I$		
$a = -2.48989 - 1.98715I$	$7.85574 - 6.89913I$	$2.19262 + 4.81630I$
$b = 1.375330 - 0.219413I$		
$u = 1.006117 - 0.373819I$		
$a = 0.31250 - 2.18791I$	$2.62432 + 8.92326I$	$-1.23068 - 8.39839I$
$b = -1.371731 - 0.306143I$		
$u = 1.006117 + 0.373819I$		
$a = 0.31250 + 2.18791I$	$2.62432 - 8.92326I$	$-1.23068 + 8.39839I$
$b = -1.371731 + 0.306143I$		

III. u-Polynomials

Crossings	u-Polynomials at each crossings
c_1	$(u^3 + u^2 - 1)(u^{47} + 2u^{46} + \dots - 2u^2 + 1)$
c_2, c_6	$(u^3 + u^2 + 2u + 1)(u^{47} + 12u^{46} + \dots + 4u + 1)$
c_3, c_9	$u^3(u^{47} + u^{46} + \dots + 28u + 8)$
c_4	$(u^3 - u^2 + 2u - 1)(u^{47} + 12u^{46} + \dots + 4u + 1)$
c_5	$(u^3 - u^2 + 1)(u^{47} + 2u^{46} + \dots - 2u^2 + 1)$
c_7	$(u + 1)^3(u^{47} + 4u^{46} + \dots + 5u + 1)$
c_8	$u^3(u^{47} + 21u^{46} + \dots - 112u - 64)$
c_{10}	$(u - 1)^3(u^{47} + 4u^{46} + \dots + 5u + 1)$
c_{11}	$(u - 1)^3(u^{47} + 4u^{46} + \dots + 5u + 1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossings
c_1, c_5	$(y^3 - y^2 + 2y - 1)(y^{47} - 12y^{46} + \dots + 4y - 1)$
c_2, c_4, c_6	$(y^3 + 3y^2 + 2y - 1)(y^{47} + 48y^{46} + \dots - 20y - 1)$
c_3, c_9	$y^3(y^{47} + 21y^{46} + \dots - 112y - 64)$
c_7, c_{10}	$(y - 1)^3(y^{47} - 42y^{46} + \dots + 53y - 1)$
c_8	$y^3(y^{47} + 5y^{46} + \dots + 249088y - 4096)$
c_{11}	$(y - 1)^3(y^{47} - 42y^{46} + \dots + 53y - 1)$