

The SUMO Speaker Series for Undergraduates
Thursday, May 9th
4:15-5:05, room 380C
(Food Provided)

The Prime-generating Sequence that Couldn't
 Professor Tom Church



ABSTRACT:

Define a sequence of integers by $a_0 = 3$, $a_1 = 0$, $a_2 = 2$, and then recursively by $a_{n+3} = a_n + a_{n+1}$:

3	0	2	3	2	5	5	7	10	12	17
	22	29	39	51	68	90	119	158	209	277

Calculate out a few terms, or a few thousand, and you'll notice a curious pattern: the n -th term a_n is divisible by n exactly when n is prime! This pattern can't go on forever, but the first counter-example is $n = 271,441$, for which a_n has over thirty thousand digits. I'll give three explanations for the success and eventual failure of this prime-generating sequence: one using graph theory, one using number theory, and one using a tiny necklace-inspecting robot.

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