The SUMO Speaker Series for Undergraduates

Thursday, January 29th
4:15-5:05, room 380C
(Food Provided)
The prime-generating sequence that couldn't

Professor Tom Church

Abstract:

Define the "Skiponacci sequence" by $a_0 = 3$, $a_1 = 2$, and $a_2 = 2$, and a_n via the recursion relation

$$a_{n+3} = a_n + a_{n+1}$$

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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