



Departmental Colloquium

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February 18th, 2026, Knott Hall B03 3:00 PM,

Zoom link : <https://loyola.zoom.us/j/81031149427>

Meeting ID: Meeting ID: 810 3114 9427

Passcode: mathstat

Cogent Computing for the Collatz Conjecture



Abstract

In this talk, I will discuss my research and computational results on a fun, interesting, and addictive math problem known as the Collatz Conjecture, one of the great unsolved problems in mathematics, which was proposed in 1937 by Lothar Collatz, is simple to state but is difficult to prove. The conjecture states that for every natural number (positive integer) X , a sequence of numbers starting with X may be generated that employs just two arithmetic operations to guarantee that the sequence will always end with the number 1. The arithmetic operations are: (1) an even number will be divided by 2 and (2) an odd number will be multiplied by 3 and the result added to 1. Due to the simplicity of this conjecture, there has been a lot of work done over the years, but no definitive proof has been given yet. I will consider the equivalent "reverse Collatz conjecture," which has garnered much less attention by researchers. This equivalent version states that beginning with the number 1, then repeatedly applying the inverse of the arithmetic operations (1) and (2), all natural numbers will eventually be generated. i.e., instead of all natural numbers converging to 1; the number 1 generates the entire set of natural numbers. I will provide some new results in my talk, inspired by computationally intense R programming, to support the veracity of this conjecture.

This talk is geared towards students .

Refreshments will be served.

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