

VCU Discrete Mathematics Seminar

Spoof odd perfect numbers

Prof Pace Nielsen
Brigham Young University

Wednesday, Oct. 13
4145 Harris Hall, and Zoom
1:00-1:50

Zoom @ <https://vcu.zoom.us/j/92975799914>
password=graphs2357



A number, N , is *perfect* when the sum of its positive divisors is exactly $2N$. The first few perfect numbers are 6, 28, 496, Euclid studied them in his *Elements* in 300 BC, giving a nice classification of certain even perfect numbers.

This led to two of the oldest questions in number theory, and mathematics generally: Are there infinitely many even perfect numbers, and are there any odd perfect numbers? Two millennia later, in 1638, Descartes discovered $3^2 \cdot 7^2 \cdot 11^2 \cdot 13^2 \cdot 22021^1$. This would be an odd perfect number, if we erroneously pretend that $22021 = 19^2 \cdot 61$ is prime. We will discuss this and other examples of "spoof" perfect numbers, as well as how they help in the study of actual perfect numbers.

For the DM seminar schedule, see:

<https://www.people.vcu.edu/~clarson/dms.html>