



The Math/Stats Colloquium  
Department of Mathematics and Statistics  
San José State University



# Jordan Schettler

## SJSU

### *The Riemann Zeta Function and Non-Standard Analysis*

OCTOBER 11, 2017, MH320

**Abstract:** The Riemann zeta function  $\zeta(s)$ , central to the study of prime numbers, is defined for  $s > 1$  as the sum of  $1/n^s$  as  $n$  runs over all positive integers. Riemann extended  $\zeta(s)$  via analytic continuation to all complex numbers  $s$  not equal to 1, so one can assign values to the sum at places where it diverges. We will view these divergent series as infinite numbers using non-standard analysis, an alternative to calculus which replaces the notion of a limit with that of an infinitesimal. One advantage of doing this is that the Kummer congruences (a deep property) can be seen as the finite shadow of a more obvious relation among infinite numbers.

*Background:* One course in analysis. Some number theory and complex analysis helpful but not required.

**About the speaker:** Jordan Schettler received his PhD from the University of Arizona and is currently an Assistant Professor at San Jose State University. His research interests include number theory and connections of mathematics to music, art, and social justice.

SNACKS IN MH331B AT 2:30 PM

TALK STARTS AT 3:00 PM

For more information, see our full schedule at:

<http://www.math.sjsu.edu/~hsu/colloq/>