

Mathematics Department Colloquium

Organizer: John Strain

Thursday, 4:10–5:00pm, 60 Evans

Sep 21 **Prof. K. Soundararajan**, Stanford

Multiplicative functions

A multiplicative function $f : \mathbb{N} \rightarrow \mathbb{C}$ is a function satisfying $f(mn) = f(m)f(n)$. Many naturally occurring functions in number theory are multiplicative. Over the last several years, Andrew Granville and I have been studying various features of multiplicative functions. I will discuss some aspects of this work. For example, I will answer the question of how many numbers up to a given number x are quadratic residues (you are free to choose the prime p so as to minimize the answer). As another example, I will discuss character sums and a recent improvement of a classical inequality of Polya and Vinogradov.