



The Math Colloquium  
Department of Mathematics  
San José State University



# K. Soundararajan

Stanford Univ.

*Carries, group theory, and additive  
combinatorics*

MARCH 6, 2013, MH320

**Abstract:** When numbers are added there are typically many “carries”. For example, in usual decimal arithmetic, when two digits are added there is a carry 45% of the time. If signed digits are chosen the proportion of carries may be reduced. Balanced ternary, where ternary digits  $-1$ ,  $0$  and  $1$  are used, is an example of such a digit system, and carries only occur with a frequency of  $2/9$  here. I will discuss what this carries problem means for a general group, and how the problem of finding good “digit systems” with few carries is related to ideas in additive combinatorics. This is joint work with Persi Diaconis and Fernando Shao.

*Background:* The talk should be accessible to students who have taken a first course in group theory.

**About the speaker:** K. Soundararajan received his Ph.D. from Princeton University in 1998, and since 2006 has been a Professor of Mathematics at Stanford. His research interests are in number theory, and especially in problems of an analytic or combinatorial flavor.

SNACKS IN MH331B AT 2:30 PM

TALK STARTS AT 3 PM

For more information, see our full schedule at:

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