

# Joint Distinguished Lecture 2006

Department of Computer Science

Department of Mathematics

## Random Graphs and Internet Graphs

**Fan Chung Graham**

University of California at San Diego

Monday, 27 March 2006

4:10 – 5:00 pm

001 Carver Hall

We will discuss some recent developments on random graphs with given expected degree distributions. Such random graphs can be used to model various very large graphs arising in Internet and telecommunications. In turn, these "massive graphs" shed insights and lead to new directions for random graph theory. For example, it can be shown that the sizes of connected components depend primarily on the average degree and the second – order average degree under certain mild conditions. Furthermore, the spectra of the adjacency matrices of some random power law graphs obey the power law while the spectra of the Laplacian follow the semi – circle law. We will mention a number of related results and problems that are suggested by various applications of massive graphs.

After completing her PhD, Fan Chung Graham joined the technical staff of AT & T Bell Laboratories. From 1983 to 1991, she headed the Mathematics, Information Services and Operations Research Division at Bellcore becoming a Bellcore Fellow in 1991. In 1993, she was the Class of 1965 Professor of Mathematics at the University of Pennsylvania. Since 1998, she has been a Professor of Mathematics and Professor of Computer Science and Engineering at the University of California, San Diego and holds the Akamai Chair in Internet Mathematics. She is also a fellow of the American Academy of Arts and Sciences.

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