

College of Arts and Sciences  
**Department of Mathematics**  
University of South Carolina

# Math Colloquium

*Graph Searching Games and Probabilistic Methods*

Anthony Bonato, Ryerson University

Host: Lincoln Lu



**Thursday**

April

**5th**

4:30 PM

LeConte 412

The intersection of graph searching and probabilistic methods is a new topic within graph theory, with applications to graph searching problems such as the game of Cops and Robbers and its many variants, Firefighting, graph burning, and acquaintance time. Graph searching games may be played on random structures such as binomial random graphs, random regular graphs or random geometric graphs. Probabilistic methods may also be used to understand the properties of games played on deterministic structures. A third and new approach is where randomness figures into the rules of the game, such as in the game of Zombies and Survivors. We give a broad survey of graph searching and probabilistic methods, highlighting the themes and trends in this emerging area. The talk is based on my book (with the same title) co-authored with Pawel Pralat published by CRC Press.

**B**io: Anthony Bonato's research is in Graph Theory, with applications to the modelling of real-world, complex networks such as the web graph and on-line social networks. He has authored over 110 papers and three books with 70 co-authors. He has delivered over 30 invited addresses at international conferences in North America, Europe, China, and India. He twice won the Ryerson Faculty Research Award for excellence in research and an inaugural Outstanding Contribution to Graduate Education Award. He is the Chair of the Pure Mathematics Section of the NSERC Discovery Mathematics and Statistics Evaluation Group, Editor-in-Chief of the journal *Internet Mathematics*, and editor of the journal *Contributions to Discrete Mathematics*.



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