Pi Mu Epsilon
& Gamecock Math Club

Sudoku Championship
Tuesday, November 17th, 2009

LeConte 412

- **6:30pm: A talk by USC Prof. Cooper:**

  ### How to Choose a Random Sudoku Board

  - **A *Sudoku board* is a 9 by 9 matrix, each cell of which is filled with a number from 1 to 9 so that:**
    - no number repeats in any row
    - no number repeats in any column
    - no number repeats in any of nine 3 by 3 blocks.
  - **How would one generate a uniformly random Sudoku board?**
    - One strategy is simply list out every possible board, and then choose one at random from the list. However, this requires an exorbitant amount of memory and generalizes poorly.
  - **We investigate another solution: MCMC, or Markov Chain Monte Carlo.**
    - While only approximate, this extremely useful selection algorithm can be made as close to uniform as desired and applies to a multitude of similar questions.
    - We discuss how to use MCMC to choose a random Sudoku board and what kinds of difficulties one might encounter in implementation.
  - **Open questions will be posed that could be research topics for students.**

- **7:30pm: 3rd Annual *Sudoku Championship***

  Prizes for the overall winners.

  Door prizes and snacks throughout.

  For more information visit: www.math.sc.edu/~pme