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