Hamilton Institute

The Role of Kemeny's Constant in Properties of Markov Chains

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Abstract:

In a finite *m*-state irreducible Markov chain with stationary probabilities $\{\pi_j\}$ and mean first passage times m_{ij} (mean recurrence time when $i = j$) it was first shown, by Kemeny and Snell, that $\sum_{j=1}^{m} \pi_j m_{ij}$ is a constant, *K*, not depending on *i.* This constant has since become known as Kemeny's constant. We consider a variety of techniques for finding expressions for *K*, derive some bounds for *K*, and explore various applications and interpretations of these results. Interpretations include the expected number of links that a surfer on the World Wide Web located on a random page needs to follow before reaching a desired location, as well as the expected time to mixing in a Markov chain. Various applications have been considered including some perturbation results, mixing on directed graphs and its relation to the Kirchhoff index of regular graphs.

Venue: Seminar Room, Hamilton Institute, Rye Hall, NUI Maynooth

Time: 2.00pm - 3.00pm

Travel directions are available at www.hamilton.ie

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