



Department of Decision Sciences

Statistics Seminar

Local large deviations and the strong renewal theorem

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Abstract

We present two different, but related results for random walks with heavy tails (more precisely: in the domain of attraction of a stable law with infinite mean). The first result is a local large deviation upper bound, which improves on the classical local central limit theorem. The second result is the derivation of necessary and sufficient conditions for the so-called strong renewal theorem, which is the analogue of Blackwell's renewal theorem in the case of infinite mean. This solves a long standing problem, which dates back to a classical paper by Garsia and Lamperti (Comment. Math. Helv. 1962).

Based on joint work with Ron Doney.