UNIVERSITY OF SYDNEY

SCHOOL OF MATHEMATICS AND STATISTICS

Statistics Seminar

Friday, 23 September, 2.00pm

Carslaw 173

Markov and the Birth of Chain Dependence Theory.

Professor Eugene Seneta
University of Sydney

Abstract

Markov chains, introduced by the Russian mathematician A.A. Markov in 1906, have become widely known and generalized as probability models. Little known is the fact that Markov, of the St. Petersburg Mathematical 'School', was prompted to introduce his chains in response to the Moscow mathematician P. A. Nekrasov, with whom Markov was involved in in a series of fiery disputes. These involved not only mathematical issues, but also philosophical and religious concepts such as free will. The ideological colouration led to the political suppression of the mathematical achievements of the pre-revolutionary Moscow Mathematical 'School' through the Soviet era.

This talk will explore these issues from the focal point of the Weak Law of Large Numbers as empirical fact and mathematical theorem. A later part of the talk will deal with the somewhat neglected techniques of Markov's 1906 paper, especially his use of what is now known as the ergodicity coefficient, to express the contractive effect of a stochastic matrix applied to a column vector. This coefficient underlies his (and modern) ergodicity arguments for Markov chains, and his proof of the Weak Law.

Enquiries about the Statistics Seminar should be directed to
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