
Joint Statistics Seminar

The Hong Kong University of Science and Technology

Weak Convergence of Gibbs Measures

by

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Date: June 1, 2009 (Monday)

Time: 11:00 a.m. - 12:00 noon

Venue: Room 3315 (Lift 17/18)

Abstract

Let (Ω, \mathcal{B}, Q) be a probability space and $H : \Omega \rightarrow \mathbb{R}^+$ be \mathcal{B} -measurable. For each $\epsilon > 0$, let

$$P_\epsilon(A) \equiv \frac{\int_A e^{-\frac{H(\omega)}{\epsilon}} dQ}{\int_\Omega e^{-\frac{H(\omega)}{\epsilon}} dQ}, \quad A \in \mathcal{B}(\mathbb{R}).$$

Then $P_\epsilon(\cdot)$ is called a Gibbs measure with Hamiltonian H and temperature ϵ . In this talk, we discuss the convergence of the measures P_ϵ as $\epsilon \downarrow 0$. If $\Omega = \mathbb{R}^n$ for some n and H is a nice function, Chii-Ruey Hwang has some nice results on the weak convergence of P_ϵ . We use his results to prove some central limit theorems for the case when the Hamiltonian has a finite number of "wells", i.e. local minima. Some connections to MCMC will be indicated.

Biography

KB Athreya is Professor of Mathematics and Statistics and a Distinguished Professor in the College of Liberal Arts and Sciences, Iowa State University, USA.. He is also a visiting professor at the Indian Institute of Science, Bangalore. He was educated at Loyola College, Chennai, India, the Indian Statistical Institute, Kolkata and Stanford University, USA from where he got his Ph.D. He is a Fellow of the Indian Academy of Sciences, and the Institute of Mathematical statistics, USA and a member of the International Statistical Institute. He has written two books : 1. Branching Processes with Peter Ney and 2. Measure Theory and Probability Theory with S. Lahiri both published by Springer. He has written over 150 research papers on probability, stochastic processes and mathematical statistics. He is on the editorial board of several journals on probability .

*All interested are welcome!
For details, please contact ISOM Department.*