

Special PHYSICAL MATHEMATICS SEMINAR

WEAK ERGODICITY BREAKING: FROM BLINKING QUANTUM DOTS TO WEAKLY CHAOTIC DETERMINISTIC DYNAMICS

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ABSTRACT:

Anomalous dynamics in systems where the average waiting time in a micro-state of the system is infinite exhibits ergodicity breaking. A special type of ergodicity breaking coined by Bouchaud weak ergodicity breaking, was suggested in the context of glassy dynamics. We investigate a theory of weak ergodicity breaking which is related to Lamperti's limit theorem on occupation time statistics. We show that the statistical theory describes several systems and models where the standard ergodic Boltzmann--Gibbs statistical theory fails: (i) blinking quantum dots which exhibits longed tailed power law intermittency of on and off times, (ii) continuous time random walks and trap models and (iii) weakly chaotic one dimensional maps with an infinite invariant measures. Time permitting I will discuss the relation between fractional Riemann-Liouville calculus and weak ergodicity breaking.

WEDNESDAY, SEPTEMBER 6, 2006

1:00 PM

Building 2, Room 105

*Refreshments at 2:00 PM in Room 2-349
(Applied Mathematics Common Room)*



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