

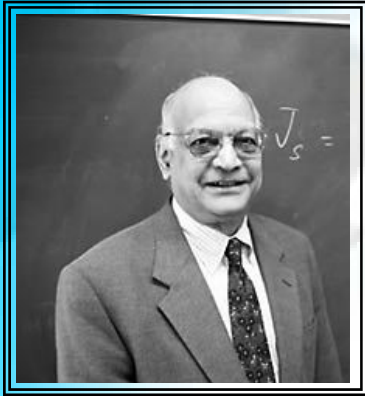
Physics Colloquium

Michigan Technological University

Thursday, September 25, 2008

4:00 - 5:00 pm

Room 139, Fisher Hall



Entropy and Time

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Abstract: The emergence of a direction of time in statistical mechanics from an underlying motion-reversal-invariant dynamics will be discussed in a tutorial way. The 'dog-flea' model of P. and T. Ehrenfest, generalized to finite temperature, will be used to illustrate the main points. The manner in which time-reversal symmetry is preserved and the role of initial conditions will be emphasized. The transformation of the principle of no decrease of entropy for an isolated system to the principle of no increase of free energy for a system at fixed temperature will be demonstrated in a simple way.

References: V. A. and A. Clerk, Am. J. Phys 67, 1068 (1999); V. A., "Reasoning about Luck: Probability and its Uses in Physics" (Cambridge University Press, 1996).

Bio: Vinay Ambegaokar received a B.S. and an M.S. in Mechanical Engineering from MIT in 1956. [He spent the summer of 1952 working as a construction laborer in Duluth, learning a whole new vocabulary in the process.] His Ph.D. (1960) is from Carnegie Tech, with Walter Kohn. He has been at Cornell since 1962, retiring in 2007 as Goldwin Smith Professor of Physics, Emeritus. He has worked on various aspects of condensed matter and low temperature physics including superconductivity and liquid He 3. One of his papers is a joint work with Miguel Levy: "Dissipative Effects in the Longitudinal Magnetic Oscillations of Superfluid Liquid He 3-A," Physical Review B 13, 1967 (1976).

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