

# SEMINAR

## DYNAMICAL MODELS FOR THERMOPOWER

*Professor Giulio Casati*

*Center Complex Systems- Insubria University*

*Tuesday, January 10, 2012*

*11:00am in BRK 1001*



**Bio:** Giulio Casati is Professor of Theoretical Physics, University of Insubria-Como and Director of the “Centre for Nonlinear and Complex Systems.” He has worked on classical and quantum chaos, nonlinear dynamics and complex systems, transport phenomena, quantum computing, statistical physics, and theoretical physics. He has published over 250 papers in scientific international journals. He is a member of the Academia Europaea; co-ordinator of the UE Networks on “Quantum Transport on an Atomic Scale” “Effects of decoherence and imperfections for quantum information processing,” Associate Editor of the Journal “Random Operators and Stochastic Equations” and Associate Editor of the International Journal “Chaos, Solitons and Fractals.” He received Enrico Fermi Prize in 2008 and the International prize for Physics for 2010- Accademia Nazionale dei Lincei.

**Abstract:** Dynamical nonlinear systems provide a new approach to the old problem of increasing the efficiency of thermoelectric machines. Here we discuss stylized models of classical dynamics, including non interacting complex molecules in an ergodic billiard, a disordered hardpoint gas and systems with broken time-reversal symmetry where the Curzon-Ahlborn limit for efficiency at maximum power can be overcome. The main focus will be on the physical mechanisms, unveiled by these dynamical models, which lead to high thermoelectric efficiency approaching the Carnot limit.