

# UNIVERSITY OF TEXAS AT DALLAS - DEPARTMENT OF PHYSICS

## PHYSICS COLLOQUIUM

<http://www.utdallas.edu/physics/lectures/info/>

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Wednesday, April 12, 2006; 4:00-5:00 PM  
Kusch Auditorium, FN 2.102

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### **Part I. Physics and Risk Management: What do we have in common?**

**Professor Alain Bensoussan**

*School of Management, University of Texas at Dallas*

The objective is to have a general discussion on probabilistic concepts and models as they have been introduced in Physics, and compare with the probabilistic models appearing in Risk Management. What are the differences? What can be learned from each other? Is a cooperation possible?

### **Part II. A new model for nonlinear elasto-plastic oscillators subject to random vibrations**

Modeling hysteresis effects in elasto-plastic structures subject to vibrations is a long standing topic, which has attracted a large interest in mechanics and applied mathematics. We introduce a new approach, based on the theory of stochastic variational inequalities, which seems to be the right tool to model this phenomenon. We develop an ergodic theory for the corresponding stochastic processes, which is important to compute fatigue behavior.

**About the speaker:** Alain Bensoussan is the Director of the International Center for Decision and Risk Analysis at UTD. His research interests include Applied Mathematics, Control Theory, Risk Management, Inventory Control, and Finance. Among other professional positions he held are President of Centre National d'Etudes Spatiales and Chairman of European Space Agency Council, Professor at the Ecole Normale Supérieure and Ecole Polytechnique, Chairman of the Mathematics Department of the University Paris Dauphine. Alain Bensoussan is a Member of the French Academies of Sciences and Technology and of the International Academy of Astronautics. He is a Member of the Editorial Boards of several international Journals.