

Analysis and Design of Innovative Network Structures

Workshop

Prof. Robert E. Skelton
Prof. Anthony D. Rosato
Prof. Souad Mbarek

PROGRAMMA

❖ Mercoledì, 18-05-2011, Aula F

- **12.30 – 14.30 Introduction to Tensegrity Structures**
Prof. Fernando Fraternali (Università di Salerno)
Lucia Senatore (Università di Salerno)

❖ Venerdì, 20-05-2011, Aula G

- **08.30 – 09.00 Presentation of the Workshop**
Prof. Luigi Ascione (Università di Salerno)
- **09.00 – 11.30 Tensegrity Fractals**
Prof. Robert Skelton (University of California, San Diego)
- **11.30-12.00 Coffee break**
- **12.00-13.00 Dynamics of granular structures**
Part I: Introduction and Basic Concepts of Flowing Granular Materials
Prof. Anthony Rosato (New Jersey Institute of Technology)
- **13.00-14.00 Innovative recycled materials**
Part I: Introduction
Prof. Souad Mbarek (University of Tunis)

❖ Lunedì, 23-05-2011, Aula E

- **08.30 – 09.00** **Network structures in Architecture**
Prof. Enrico Sicignano (Università di Salerno)
- **09.00 – 11.30** **Dynamics and Control of Tensegrity Structures**
Prof. Robert Skelton (University of California, San Diego)
- **11.30-12.00** **Coffee break**
- **12.00-13.00** **Dynamics of granular structures**
Part II: Fundamentals of Discrete Element Modeling
Prof. Anthony Rosato (New Jersey Institute of Technology)
- **13.00-14.00** **Innovative recycled materials**
Part II: Applications
Prof. Souad Mbarek (University of Tunis)

❖ Giovedì, 26-05-2011, Aula 112

- **15.00-16.00** **Dynamics of granular structures**
Part III: Rapid Granular Flow Applications
Prof. Anthony Rosato (New Jersey Institute of Technology)

Robert E. Skelton – Short BIO

- UCSD Daniel Alspach Professor of Dynamics and Control til 2009, now Professor Emeritus
- Norman Medal, American Society of Civil Engineers, 1999.
- External Independent Readiness Review Committee, 1997-1999: Second and Third Servicing Missions for the Hubble Space Telescope
- Fellow, Institute of Electrical and Electronic Engineers (IEEE), 1995.
- Fellow, American Institute of Aeronautics and Astronautics (AIAA), 1990.
- Alexander von Humboldt Senior U.S. Scientist Award, 1992
- Russell Severance Springer Chair, University of California Berkeley, 1991.
- Japan Society for the Promotion of Science Award, 1986.
- National Research Council's Aeronautics and Space Engineering Board 1983-88.
- Lockheed Missles and space company, Huntsville 1963-1965
- Sperry Rand, Huntsville 1965-1975

Relevant Experience:

- Designed built and sea tested the first station-keeping sonobuoy, which is the first system to generate energy from wave motion to drive the navigation and propulsion system.
- Designed, built and flight tested a deployable wing (sponsored by an aerospace company)
- Designed and analyzed for proof of concept a shape-controllable sonobuoy
- Designed control system for solar observatory- SKYLAB
- Designed control systems for Hubble space Telescope

Anthony D.Rosato – Short BIO

Professor Anthony Rosato received his PhD in Mechanical Engineering from Carnegie Mellon University in 1985. He has been at the New Jersey Institute of Technology since 1987 where he holds the rank of Professor of Mechanical Engineering. Dr. Rosato's research interests are in the broad field of particle technology, with a focus on computational modeling and experimental studies of granular flows related to the solids handling and processing industries. He is a Fellow of the ASME, a member of the American Academy of Mechanics, the ASCE Engineering Mechanics Institute, Sigma Xi, and Editor-in-chief of Mechanics Research Communications.

Prof. Rosato has worked extensively in the arena of flowing granular materials, a subset of the wider field of particle technology whose focus is on the industrial complex that deals with the characterization, production, modification, flow, handling and utilization of solids or powders, both dry and in slurries.

Prof. Rosato's research is focused on deterministic, nonequilibrium particle scale simulations as a means of revealing essential connections between observed physical (macroscopic) behavior and the micro-level physics, and to provide a robust and effective tool with which to make effective comparisons with experiments, develop and test hypotheses on probable causal mechanisms, and critically evaluate assumptions and predictions of theoretical models. In addition, his laboratory carries out physical experiments to validate and extend simulated finding. Recently, he has

initiated discussions to collaborate with the U. S. Naval Research Laboratory in analyzing granular microstructure using X-ray tomography experiments.

His original and seminal work on size segregation, now known as the Brazil Nuts Effect, has been the subject of continual interest among the engineering and science communities since it was first reported in 1987. It is matter of note that this work played a significant role in the creation and growth of the field of granular physics. His current interests are on densification, microstructure formation, and relaxation time dynamics in tapped systems, concurrently with development of dynamical systems approaches to model from first principles these phenomena.

Souad Mbarek – Short BIO

Mbarek Souad completed her engineering and Master degrees in materials science at the Engineering National School of Sfax, Tunisia. After completion of the scholarship (2003), she was registered both at the University of Jean Monnet Saint-Etienne France and at the Engineering National School of Sfax Tunisia to do a Ph.D joint direction thesis in chemistry and material science. Her research interests are in polymer blends with the aim of plastic recycling. She works currently as an assisting teacher in the University of Tunis. She has 6 scientific papers which have been published in international journals and 10 conferences.