

AVVISO DI SEMINARI

Venerdì 19 settembre, ore 11:30

Natural Ocean Engineering Laboratory (NOEL), lungomare Falcomatà
Località Rada delle Mura Greche, Reggio Calabria

EFFICIENT MONTE CARLO SIMULATIONS FOR NONLINEAR DYNAMIC SYSTEM RESPONSES

&

EMERGING SIGNAL PROCESSING AND RESPONSE DETERMINATION TECHNIQUES IN STOCHASTIC STRUCTURAL DYNAMICS

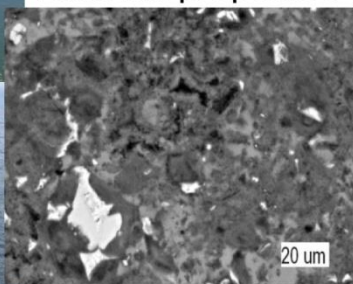
Prof. Pol D. Spanos

Lewis B. Ryon chair Rice University

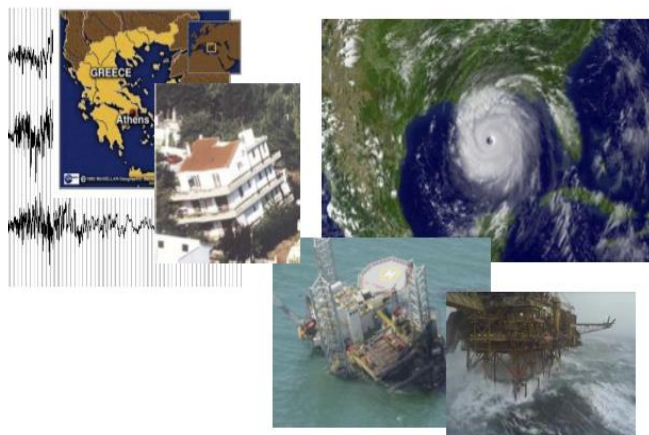
(Engineering Structural System)



Heterogeneous / random
material properties



(earthquake, wind, ocean
waves, blast excitations, etc)



In collaborazione con:

DICEAM, Università Mediterranea di Reggio Calabria, DICAM, Università degli studi di Palermo

I seminari sono organizzati nell'ambito delle attività del progetto
Marie Curie "LARGE MULTIPURPOSE PLATFORMS FOR
EXPLOITING RENEWABLE ENERGY IN OPEN SEAS", PLENOSE,
finanziato nell'ambito della action FP7-PEOPLE-2013-IRSES



Capofila: Università Mediterranea di Reggio Calabria – partners: University of Liverpool (UK); Instituto Superior Tecnico, Lisbon, (Portugal); Rice University, Houston (Texas, USA); Columbia University, New York (USA); Indian Institute of Technology of Madras (India) - Coordinatore scientifico del progetto: prof. F. Arena

POL SPANOS

Lewis B. Ryon Professor of Mechanical Engineering and of Civil Engineering

Research Summary

Digital Signal Processing; Dynamical Systems: Parameters Identification and Response Determination; Performance/Safety Assessment for Statics and Dynamics Problems in: Aerospace, Biomedical, Forensic, Marine, Petroleum, Seismic, and Structural Engineering.

Brief Bio

Professor Spanos' research efforts focus on the dynamics and vibrations of structural and mechanical systems under a variety of loads. Systems exhibiting nonlinear behavior and/or exposed to hazard/risk inducing conditions receive particular attention. His group is also interested in fatigue and fracture issues of modern composite materials, and in signal processing algorithms for dynamic effects in biomedical applications.

Professor Spanos develops primarily analytic and numerical methods that often require advanced scientific computation packages and supercomputers. The mathematical models used involve deterministic and stochastic differential/difference equations that are often incorporated in finite element and other numerical codes, and in many design procedures. Also, Monte Carlo random simulation approaches are developed/used along with advanced techniques for signal processing and safety assessment involving digital filters and wavelets/chirplets transforms.

Solution techniques developed by Professor Spanos are applied to diverse themes such as vehicle and robot dynamics; estimation of seismic spectra; flow-induced vibrations of offshore rigs, marine risers, and pipelines; certification of payloads in space shuttle/station missions; directional oil well drilling; vibration and aseismic protection of structures and equipment; wind loads simulation; and signal processing for electrocardiograms, electroencephalograms, and bone mechanics.

Professor Spanos received an National Science Foundation (NSF) Presidential Young Investigator Award for research in earthquake engineering. He is also a Pi Tau Sigma and a Larson medalist from the American Society of Mechanical Engineers (ASME) for outstanding achievement in mechanical engineering within ten and twenty years from college graduation, a Huber Prize recipient for outstanding research from the American Society of Civil Engineers (ASCE), an A. M. Freudenthal Medalist from ASCE for lifetime contributions to probabilistic mechanics and reliability analysis, and a Newmark Medalist from ASCE for his contributions to the theory and applications of dynamics and vibrations. He has received the Research Award for Senior Scientists from the Humboldt Foundation in Germany for his contributions to Engineering Mechanics; and the Stochastic Dynamics Research Prize from the International Association for Structural Safety and Reliability (IASSAR). Twice he has received the G. R. Brown Award for Superior Teaching at Rice University. He has served as an ASME Distinguished Lecturer for the period 1997-2003 with worldwide lecturing engagements. He is the 2003 Theodore Von Karman medalist from ASCE for lifetime contributions to engineering mechanics. He has published more than 300 technical papers and has authored/edited 18 books and conference volumes. He serves on the editorial boards of many journals and he is the Editor-in-Chief of the International Journal of Non-Linear Mechanics (launched in 1965) and the Managing Co-Editor of the Journal of Probabilistic Engineering Mechanics (launched in 1985). He has supervised the theses of 32 M.S. students and the dissertations of 31 Ph.D. students. His work has been funded by NSF, NASA, DOE, and by numerous other industrial projects and governmental programs. He has offered, worldwide, many professional short courses. He has consulted extensively as a Technical Advisor. He has also served widely as an Expert Witness and as a Special Federal Court Master for intellectual property, product liability, and system performance/safety litigation. He is a Registered Professional Engineer in Texas; and a Licensed Engineer, both in Civil Engineering and in Mechanical Engineering, in Greece.

He is a Fellow of the American Academy of Mechanics (AAM), the American Society of Civil Engineers, the American Society of Mechanical Engineers, and the Alexander von Humboldt Association of America. He is a member (by invitation) of the Earthquake Engineering Research Institute, the International Association for Structural Safety and Reliability, the American Society of Engineering Education, and the American Association for the Advancement of Science. He is a corresponding member of the National Academy of Greece (Academy of Athens); and a member (academe) of the National Academy of Engineering (USA). He has served, both, as the chair of the ASCE Engineering Mechanics Division and as the chair of the ASME Applied Mechanics Division. He has held guest professor positions in numerous prestigious institutions, worldwide. Further, he has served in leadership/mentorship positions for a plethora of diversity enhancing initiatives and organizations.

