

Научном већу Математичког института САНУ

Обавештење о посети иностраних научника
**Одељењу за механику Математичког института САНУ и
пројекту OI174001 (2011-2014)** из механике.

Цењене колеге, механичари и математичари,

Дозволите да вас обавестим да ће:

1* од 7 до 9 јуна 2011. гостовати у **Одељењу за механику** Математичког института САНУ истакнути бразилски професор **Jose Manoel Balthazar** са УНеСПИ (Државног универзитета Сао Паоло) и дугогодишњи уредник часописа **Mathematical Problems in Engineering** и да ће **8 јуна са почетком у 18,00 часова**, као што је најављено, почетком овог семестра на WEB сајту Семинара механике, одржати предавање под називом:

**On Nonlinear Dynamic Interactions
Between Regular and Irregular Oscillators and Their Possible Controls**

У прилогу је апстракт предавања и основни биографски подаци о истакнутом професору.

Позивамо вас да својим присуством предавању увеличате овај изузетно значајан сусрет са истакнутим научником, који је учинио част нашем пројекту и постао члан истраживачког тима, прихваћеног на нашем пројекту **OI174001 (2011-2014)** од стране Министарства науке Републике Србије.

2* од 2 до 4 јула 2011. гостовати у **Одељењу за механику** Математичког института САНУ истакнути амерички научник и професор **Subhash C. Sinha**, Alumni Professor and Director, Nonlinear Systems Research Laboratory, Editor ASME Journal of Computational and Nonlinear Dynamics, Department of Mechanical Engineering, Auburn University.

Професор **Subhash C. Sinha** је учинио част нашем пројекту и постао члан истраживачког тима, прихваћеног на нашем пројекту **OI174001 (2011-2014)** од стране Министарства науке Републике Србије.

Предавање професора **Subhash C. Sinha** ће бити накнадно најављено, а основни биографски подаци су у приложеном фајлу.

С поштовањем,

Проф. др Катица Р. (Стевановић) Хедрих,
руководилац пројекта 174001 (2011-2014) из механике и
управник Одељења за механику Математичког института САНУ

MATEMATIČKI INSTITUT SANU , ODELJENJE ZA MEHANIKU
Mathematical Institute SANU, Belgrade, Department for Mechanics

8 јуна са почетком у 18,00 часова

Lecture Title:

On Nonlinear Dynamic Interactions
Between Regular and Irregular Oscillators and Their Possible Controls

Speaker: Full Prof. Dr. José Manoel Balthazar

UNESP-Univ Estadual Paulista, Rio Claro, SP, Brazil

Abstract

We will investigate some aspects of the bifurcations of parameters and the nonlinear dynamic interactions of special vibrating systems coupled to a nonlinear essentially oscillator for vibration attenuation, according to different mathematical models motive by recent results.

We will take into account that the study of a vibrating system with (non ideal) external excitation influenced by the response of the system has been considered as a major challenge in theoretical and practical engineering research.

The governing equations of motion will be solved both analytical and numerically. This will permit us to examine not only small and steady state oscillations, but also large -amplitude oscillations in transient states. Some experimental results will be presented.

An active control analytical strategy was also suggested for a class of global problems where chaotic behavior is controlled.

The linear feedback control problem for nonlinear systems has been formulated under the viewpoint of optimal control theory. Asymptotic stability of the closed-loop nonlinear system is guaranteed by means of a Lyapunov function, which can clearly be seen to be the solution of the Hamilton-Jacobi-Bellman equation thus guaranteeing both stability and optimality. The formulated theorem expresses explicitly the form of minimized functional and gives the sufficient conditions that allow the use of linear feedback control for the nonlinear system.

About the Speaker

Full Professor Balthazar and Fellow 1A of CNPq-Brazilian Council for Mechanical Engineering Research Development.

He received a Doctor in Science degree (Livre Docente) from UNESP-University Estadual Paulista, Rio Claro, SP, Brazil, and a PhD in Mechanical Engineering, from the School of Engineering, University of Sao Paulo, Sao Carlos (EEUSP-Sao Carlos), SP, and Master Degree in Aeronautic Engineering, Brazil, ITA, São José dos Campos, SP, Brazil.

He is elected member of the Brazilian Society of Mechanical Sciences and Engineering (ABCM), Brazil Council, President of the Nonlinear Phenomena in Engineering Committee (ABCM), Brazil, and Chairman of the Brazilian Conference on Dynamics, Control and their Applications, since 2001 and President of the Committee of Dynamics and Control Applications. Brazilian Society of Applied Math and Computation

He is also member of Academy of Mechanics, USA and Academy of Sciences, Nonlinear, Nonlinear Dynamics Commission -Branch of Lublin, Poland and Member of Commission of Nonlinear oscillations, IFTOM.

He is the Editor-in-Chief of Mathematical Problems to Engineering (MPE), and he is member of the Editorial Board of the Journal of Vibration and Control.

In the period 1994-1995 he has been Visiting Professor of the Engineering Science Department (ESM), Virginia Tech., and Blacksburg

In 2010, he was Visiting Professor of Departments of [Mechanical Science and Engineering \(MechSE\)](#), he Linear and Nonlinear Dynamics and Vibrations Laboratory (LNDVL) at the [University of Illinois](#), Champaign-Urbana, IL, USA.

His current fields of research interest are Nonlinear Dynamics, Chaos, Control and their applications in Engineering Science.