MATEMATIČKI INSTITUT SANU , ODELJENJE ZA MEHANIKU
Mathematical Institute SANU, Belgrade, Department for Mechanics
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Program of Mechanics Colloquium – JUNE 2011

Sreda (Wednesday), 1 junt (June 2) 2011 u 18 sati (18h) **Lecture No. 1157**

Dr. Vladan Čelebonović, Laboratory for multidisciplinary research Institutiveof Physics, Belgrade

The theory of behavior of materials under high pressure

Abstract: The aim of this lecture is to discuss the basic ideas of the theory of behavior of materials under high pressure proposed by Pavle Savic and Radivoje Kasanin, members of the Serbian Academy of Sciences and Arts. The results obtained on the basis of their theory in astrophysics, geophysics but also condensed matter physics will be discussed. Finally, some open problems will be pointed out.

Sreda (Wednesday), 8 jun (June 8) 2011 u 18 sati (18h) **Lecture No. 1158**

Full Prof. Dr. José Manoel Balthazar, UNESP-UnivEstadualPaulista,Rio Claro, SP, Braz

Lecture Title: On nonlinear ands Chaotic Dynamic interactions between Oscillators

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 Hamiton-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. 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 in Aeronautic Engineering, Brazil,ITA, São José dos Campos, SP, Brazil.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.
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.
In the period 1994-1995 he has been Visiting Professor of the Engineering Science Department(ESM), Virginia Tech., Blacksburg and in 2010, Visiting Professor of Departments of Mechanical Science and Engineering (MechSE),he Linear and Nonlinear Dynamics and Vibrations Laboratory (LNDVL) at the University of Illinois, Champsaign-Urbana,Il,USA.
His current fields of research interest are Nonlinear Dynamics, Chaos, Control and their applications in Engineering Science.

Предавања ће се одржавати средом са почетком у 18.00 часова, у сали 301 F на трећем спрату зграде Математичког института САНУ, Кнез Михаилова 36/III, (зграда преко пута главне зграде САНУ).

Позив научницима и истраживачима да пријаве сцоја предавања
Пријава потенцијалног предавача треба да садржи апстракт предавања до једне странице на српско језику ћирилицом и превод на енглески језик, као и ЦВ обима до две странице. Пријаву послати на адресу управника одељења за механику у виду Word DOC на адресу: khedrih@eunet.rs

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Announcement and Invitation

Start of each lecture is at each Wednesday at 18,00 h in room 301 F at Mathematical Institute SANU, street Knez Mihailova 36/III.

All scientists and researchers in area of Mechanics are invited to contribute to the Program of Mechanics Colloquium of Mathematical Institute of Serbian Academy of Sciences and Arts. One page Abstract of proposed Lecture with short CV is necessary to submit in world doc to Head of Department of Mechanics (address: **khedrih@eunet.rs**), one month before first day in the next moth.

Катица (Стевановић) Хедрих

Katica R. (Stevanovic) Hedrih
Head of Department of Mechanics