



PLENARY LECTURE - INTRODUCTION

APPLICATION OF MECHANICS IN ENGINEERING SCIENCES AND PRACTICE - THE STATE OF THE ART AND PERSPECTIVE

Academician Nikola Hajdin¹

¹ President of Serbian Academy of Science and Arts
Knez Mihajlova 35, 11000 Belgrade, Serbia
e-mail: hajdin@EUnet.yu

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The long historic development of mechanics at the same time implied its change both with regards to its contents and volume, although even today some scientific groups consider mechanics a classical discipline, which has stopped developing long ago. We all know that it is not the truth. Already at the beginning of last century many scientists became aware of the increased volume of mechanics and of a whole series of new fields that enrich this science with new meaning. In his article "A Look at the Development of Mechanics", printed in the Serbian Literary Gazette Milankovic says: "One of the characteristics of modern mechanics is that it is hard to precisely draw and mark its borders. It is becoming increasingly difficult to restrict its field that has been spreading from the beginning, covering other sciences. Borders between individual parts of physics are gradually disappearing so that these parts, which were considered independent until recent, are increasingly merging into one complex whole."

I will try to present some of my views on the state and future of mechanics in the engineering sciences and applications in a brief presentation.

In view of my professional orientation I shall restrict myself to the consideration of solid mechanics since I do not consider myself competent enough to discuss the share of the fluid mechanics in this problem area.

The development of modern engineering and technology made possible a whole series of new and unexpected applications of the mechanics expanding its scope to limits that couldn't be dreamed of couple of decades ago.

Theoretical analysis, practical experiments and applications are most important when considering the role of mechanics in engineering disciplines.

From the point of engineering needs a set of mechanics branches is often characterized by their continuous and uninterrupted mutual permeation and blending. Without theoretical bases the experiment itself can rarely contribute to perceptions of more general nature. On the other hand, experiment and experimental mechanics in general are a reliable tool for controlling and verifying theoretical achievements, as well as for establishing theoretical models with greater credibility compared to reality. Thanks to the progress of other branches of science contemporary means of testing, especially of measuring complex processes, produce results of high precision. *Inter alia*, such results enable us to form credible theoretical models.