



3RD SERBIAN–GREEK SYMPOSIUM



Recent Advances in Mechanics

Book of Abstracts

September 15 – 17, 2008
Novi Sad, Serbia



Organized by

- Serbian Academy of Sciences and Arts, Branch in Novi Sad
- Office of Theoretical and Applied Mechanics, Academy of Athens & Hellenic Society of Theoretical and Applied Mechanics

Chairmen & Editors

- Prof. T. M. Atanackovic, SASA & University of Novi Sad
- Prof. J. T. Katsikadelis, National Technical University of Athens & OTAM Academy of Athens

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- Academician Antonios Kounadis

Local Organizing Committee

- Prof. T. M. Atanacković
- Prof. D. T. Spasić
- Prof. S. Simić
- Dr. Sanja Konjik

Foreword

The 3rd Serbian–Greek Symposium is organized by the Serbian Academy of Sciences and Arts (SASA), Branch Novi Sad and the University of Novi Sad together with the Office of Theoretical and Applied Mechanics of the Academy of Athens and the Hellenic Society of Theoretical and Applied Mechanics (HSTAM). The Symposium will be held at SASA, in Novisad, Serbia, from September 15 until September 17, 2008.

The Serbian–Greek Symposium is organized every few years by one of the participating countries. These special meetings of delegates of the two countries, initiated by Profs Hajdin and Kounadis, date back to more than 10 years.

In 2007 the organization of the series of Symposia was placed in the hands of Profs J. T. Katsikadelis and T. M. Atanackovic, whereas the former team is still active in giving help, hints and advice.

In the series of Symposia 15 distinguished scientists (Academicians, University Professors and Researchers, young scientists with exceptional records) from each participating country, Serbia and Greece, come together and present their latest research work in the area of Applied Mechanics, under the broad meaning of the term. The presentations are always of the highest scientific level. All pervious symposia have been successful both in terms of exchanging scientific information and extending friendship and personal interaction among the participants.

The 3rd Serbian–Greek Symposium will also include distinguished scientists from Germany, Italy and Poland as observers, who expressed interest for cooperation of their countries.

The 3rd Serbian–Greek Symposium is supported financially by Serbian Academy of Sciences and Arts, SASA, Provincial Secretariat for Science and Technological Development, Engineering Chamber of Serbia and Faculty of Technical Sciences, University of Novi Sad. This support is gratefully acknowledged.

I am looking forward to welcoming you in Novi Sad for a successful meeting from the scientific, personal and recreational points of view.

Prof. T. M. Atanackovic, PhD,
Corresponding Member of SASA

Prof. J. T. Katsikadelis, PhD, Dr. Eng.
President of HSTAM

Novi Sad, August 2008

CONFERENCE PROGRAM

Sunday 14 September 2008

19.30 – 21.30 Get together – welcome reception at Hotel “Park”

Monday, 15 September 2008

09:00 – 09:30 OPENING CEREMONY (Serbian Academy of Sciences and Arts, Branch in Novi Sad)

MORNING SESSION

CHAIRMAN: *Božidar Vujanović*

09:30 – 10:00 A. A. Kounadis¹ and D. S. Sophianopoulos² (Athens¹, Volos², Greece) p. 11
The effect of infinitesimal damping on the asymptotic stability of conservative systems

10:00 – 10:30 V. Čović¹, M. Vesković² and A. Obradović¹ (Belgrade¹, Kraljevo², Serbia) p. 13
Lyapunov first method for nonholonomic systems with nonhomogeneous constraints

10:30 – 11:00 G. Rega¹ and R. Alaggio² (Roma¹, L’Aquila², Italy) p. 15
Bifurcation scenarios to complex dynamics in an experimental cable-mass sagged system

11:00 – 11:30 *Coffee break*

CHAIRMAN: *A. A. Kounadis*

11:30 – 12:00 N. Hajdin (Belgrade, Serbia) p. 17
Structural mechanics – Milankovich’s first scientific experience

12:00 – 12:30 A. A. Liolios¹, A.K. Boglou² and A. A. Liolios¹ (Xanthi¹, Kavala², Greece) p. 19
An optimal control approach to the seismic interaction problem of adjacent building

12:30 – 13:00 B. D. Vujanović and B. S. Bačlić (Novi Sad, Serbia) p. 21
The action conservation laws for the second and fourth order systems

13:00 – 14:30 *Lunch*

AFTERNOON SESSION

CHAIRMAN: *Jovo Jarić*

14:30 – 15:00 R. Kienzler (Bremen, Germany) p. 23
Aspects of configurational mechanics

15:00 – 15:30 D. M. Šumarac and Z.S. Petrašković (Belgrade, Serbia) p. 25
Low cycle fatigue of steel elements with the application in earthquake design

15:30 – 16:00 R. Bogacz (Warszawa, Poland) p. 27
Modeling and simulation of sets of plates and beams subjected to traveling loads

16:00 – 16:30 *Coffee break*

CHAIRMAN: *J. T. Katsikadelis*

16:30 – 17:00 J. P. Jarić (Belgrade, Serbia) p. 29
The state of pure shear in E_3

17:00 – 17:30 G. Karlis, S.V. Tsinopoulos, D.E. Beskos, D. Polyzos (Patras, Greece) p. 31
Gradient elastic BEM solutions for 2D and 3D fracture mechanics problems

- 17:30 – 18:00 M. Mićunović (Kragujevac, Serbia) p. 33
Two dimensional plastic waves in quasi rate independent viscoplastic materials
- 20:00 – Conference Diner at (to be announced)

Tuesday, 16 September 2008

MORNING SESSION

CHAIRMAN: *Teodor Atanacković*

- 09:00 – 09:30 P. Spanos (Houston, USA) p. 35
To be announced
- 09:30 – 10:00 J. T. Katsikadelis (Athens, Greece) p. 37
Numerical solution of fractional differential equations – Application to physical systems
- 10:00 – 10:30 T. M. Atanacković, Lj. Oparnica and S. Pilipović (Novi Sad, Serbia) p. 39
Semilinear ordinary differential equation coupled with distributed order fractional differential equation
- 10:30 – 11:00 V. D. Djordjević (Belgrade, Serbia) p. 41
Modeling of the slip boundary condition in micro-flows via fractional derivative
- 11:00 – 11:30 *Coffee break*

CHAIRMAN: *G. Karlis*

- 11:30 – 12:00 J. Schröder, D. Balzani (Essen, Germany) p. 43
Modeling of finite elasto-plasticity in DP-steels by discrete multiscale simulations
- 12:00 – 12:30 S. Simić¹ and T. Ruggeri² (Novi Sad, Serbia¹, Bologna, Italy²) p. 45
Hyperbolic multi-temperature model of gaseous mixtures – continuous shock structure and limiting behavior
- 12:30 – 13:00 J. T. Katsikadelis and N. G. Babouskos (Athens, Greece) p. 47
The nonlinear fractional oscillations of viscoelastic plates and their postbuckling response
- 13:00 – 14:30 *Lunch*

AFTERNOON SESSION

CHAIRMAN: *Vladan Djordjević*

- 14:30 – 15:00 Vladimir Stevanović (Belgrade, Serbia) p. 49
Computational multi fluid dynamics of vapour-liquid two-phase flows in energy equipment
- 15:00 – 15:30 E. E. Gdoutos (Xanthi, Greece) p. 51
Nonlinearities in the stress and deformation behavior of composite sandwich beams
- 15:30 – 16:00 Nikola Hajdin, Nenad Marković (Belgrade, Serbia) p. 53
Stiffened plate girders under the action of patch loading
- 16:00 – 16:30 *Coffee break*

CHAIRMAN: *E. E. Gdoutos*

- 16:30 – 17:00 K. V. Spiliopoulos and T. N. Patsios (Athens, Greece) p. 55
An efficient mathematical programming approach to the elastoplastic analysis of framed structures
- 17:00 – 17:30 T. M. Atanacković, S. Konjik, S. Pilipović and S. Simić (Novi Sad, Serbia) p. 57
About variational problems with fractional derivatives
- 17:30 – 18:00 Vladimir Dragović, Borislav Gajić, Bozidar Jovanović (Belgrade, Serbia) p. 59
Overview of algebraic and geometric aspects of Hess-Appel'rot rigid body dynamics

Wednesday, 17 September 2008

MORNING SESSION

CHAIRMAN: *Milan Mićunović*

- 09:00 – 09:30 D. Spasić, V. Glavardanov (Novi Sad, Serbia) p. 61
Bimodal optimization of rotating rod with shear and extensibility
- 09:30 – 10:00 A. Tylikowski (Warszawa, Poland) p. 63
Stability of rotating shafts in a weak formulation
- 10:00 – 10:30 Ratko Pavlović (Niš, Serbia) p. 65
Influence of transverse shear on stochastic instability of the symmetric cross-ply laminated plates
- 10:30 – 11:00 T. M. Atanacković¹, S. Pilipović¹ and D. Zorica² (Novi Sad¹, Subotica², Serbia) p. 67
Time distributed order wave equation.
- 11:00 – 11:30 *Coffee break*
- 12:30 – 14:00 *Lunch*
- 14:30 – *Excursion to Sremski Karlovci*