Директору Математичког института САНУ
Проф. др Зорану Марковићу
Научном већу Математичког института САНУ

Стручни извештај
о учешћу у научним скуповима у 2014 години

IX* The 13th Serbian Mathematical Congress in Vrnjačka Banja, Serbia, from May 22 — 25, 2014.
http://tesla.pmf.ni.ac.rs/people/smak/index.php

Саопштење у секцији Appled Mathematics:
Katica (Stevanovic) Hedrih, **Petrovic's Elements of mathematical phenomenology AND Phenomenological Mappings in Science**

* * *

X* 8th European Nonlinear Dynamics Conference (ENOC 2014) at the University of Technology in Vienna, Austria, **July 6 - 11, 2014**
http://enoc2014.conf.tuwien.ac.at/index.php/welcome

MS09-6: Nonlinear Dynamics of Structural and Machine Elements

Katica (Stevanovic) Hedrih, Andjelka N Hedrih, **(**2014), Petrović's theory of elements of mathematical phenomenology and phenomenological mapping applied to system nonlinear dynamics, MS09-6: Nonlinear Dynamics of Structural and Machine Elements**,** 8th European Nonlinear Dynamics Conference - ENOC 2014, July 6-11, 2014, Vienna, Austria, Electronic USB Proceedings,

GT-5: General Track

Katica R. (Stevanović) Hedrih, Julijana Ju Simonović, Ana Ivanović-Šašić, Ljiljana Kolar-Anić, Željko Čupić, Andjelka N. Hedrih, (2014), Elements of mathematical phenomenology and qualitative /mathematical analogies on the basis of generalized Lissajous curves, GT-5: General Track**,** 8th European Nonlinear Dynamics Conference - ENOC 2014, July 6-11, 2014, Vienna, Austria, Electronic USB Proceedings,

Session

MS09-6: Nonlinear Dynamics of Structural and Machine Elements VI

Time: **Thursday, 10/Jul/2014: 10:30am - 12:10pm**
Session Chair: **K Nakano**
Session Chair: **Katica R. (Stevanović) Hedrih**

Location: **HS5**
198 Places

Session

GT-5: General Track V

Time: **Friday, 11/Jul/2014: 10:30am - 12:10pm**
Session Chair: **Katica R. (Stevanović) Hedrih**
Session Chair: **Yuri V. Mikhlin**

Location: **HS6**
198 Places

---------- Original Message ----------
Subject: ENOC2014
From: "ENOC 2014" <enoc2014@tuwien.ac.at>
Date: Sat, July 5, 2014 9:09 pm
To: khedrih@sbb.rs
Cc: khedrih@sbb.rs

Dear Prof. Katica R. (StevanoviÄ‡) Hedrih,

we are pleased to inform you that you were selected as moderator / chair
of the following 2 session(s):

Session "Nonlinear Dynamics of Structural and Machine Elements VI"
==========
Time : Thursday, 10/Jul/2014: 10:30am - 12:10pm
Location: HS5
Session Chair: K Nakano; knakano@iis.u-tokyo.ac.jp
Session Chair: Katica R. (StevanoviÄ‡) Hedrih; khedrih@sbb.rs
http://osiris.tuwien.ac.at/enoc/sessions.php?form_session=7

Presentations

Enhancing vibrational energy harvesting using stochastic resonance within
a bi-stable mechanical system
Author(s): Nakano, Kimihiko; Cartmell, Matthew P; Rencheng, Zheng; Hu,
Honggang; Su, Dongxu
Presenting Author: Nakano, Kimihiko; knakano@iis.u-tokyo.ac.jp

PetroviÄ‹â€™s theory of elements of mathematical phenomenology and
phenomenological mapping applied to system nonlinear dynamics
Author(s): Hedrih, Katica {Stevanovic}; Hedrih, Andjelka N
Presenting Author: Hedrih, Andjelka N; handjelka@hm.co.rs

Modelling of parametric resonance oscillations by two coupled modes
Author(s): Krasnopolskaya, Tatiana; Spektor, Viacheslav; Prykhodko,
Dmytro; Gourjii, Alexandre

Presenting Author: Krasnopolskaya, Tatiana; t.krasnopolskaya@tue.nl

Nonlinear normal modes of vibrating mechanical systems and their applications
Author(s): Mikhlin, Yuri Vladimirovich; Avramov, Konstantin; Pierre, Christophe
Presenting Author: Mikhlin, Yuri Vladimirovich; Yuri_Mikhlin@mail.ru

Session "General Track V"

==========

Time : Friday, 11/Jul/2014: 10:30am - 12:10pm
Location: HS6
Session Chair: Katica R. (StevanoviÄ‡) Hedrih; khedrih@sbb.rs
Session Chair: Yuri V. Mikhlin; Yuri_Mikhlin@mail.ru
http://osiris.tuwien.ac.at/enoc/sessions.php?form_session=24

Presentations

Moving-load-induced vibration of a multibody beam composed of elastic and rigid beam segments
Author(s): Wu, Jia-Jang
Presenting Author: Wu, Jia-Jang; jjangwu@mail.nkmu.edu.tw

Elements of mathematical phenomenology and qualitative /mathematical analogies on the basis of generalized Lissajous curves
Author(s): Hedrih, Katica R. {StevanoviÄ‡}; Ju SimonoviÄ‡, Julijana; IvanoviÄ‡-Å aÅ¡iÄ‡, Ana; Kolar-AniÄ‡, Ljiljana; ÄŒupiÄ‡, Å½eljko; Hedrih, Andjelka N.
Presenting Author: Hedrih, Katica R. {StevanoviÄ‡}; khedrih@sbb.rs

Chaotic dynamics in an Earth pointing, magnetically controlled spacecraft
Author(s): Della Rossa, Fabio; Dercole, Fabio; Lovera, Marco
Presenting Author: Della Rossa, Fabio; fabio.dellarossa@polimi.it

Nonlinear vibration of nonlocal Kelvin-Voigt viscoelastic nanobeam embedded in elastic medium
Author(s): KarliÄ iÄ‡, Danilo Z.; CajiÄ‡, Milan S.; StamenkoviÄ‡, Marija
Presenting Author: KarliÄ iÄ‡, Danilo Z.; danilozmaj@gmail.com

Intermittencies in Bray-Liebhafsky reaction system
Author(s): Bubanja, Itana NuÅ¡a; AniÄ‡, Slobodan; MilenkoviÄ‡, Maja; ÄŒupiÄ‡, Å½eljko; Kolar-AniÄ‡, Ljiljana
Presenting Author: Bubanja, Itana NuÅ¡a; itana.bubanja@ffh.bg.ac.rs

Please contact the speakers in your session to inform them about the schedule of the session and their presentation times. Please remember to spare time for questions and for discussion on the session topic with the

attendees.

We have assigned presentation slots of 20 minutes for each speaker, which should ideally consist of 15 minutes talk and 5 minutes discussion. A few presentations are "plenary talks" with 40 minutes presentation time.

In order to make the switching between sessions easy, we kindly ask you to keep the order of presentations and not to fill up withdrawn sessions.

If for some reason you cannot act as chair in a session, please inform us as soon as possible.
Thank you again for your collaboration to the success of the congress.

Horst Ecker, Alois Steindl, and Stefan Jakubek
Your organizers of ENOC2014.
--
ENOC 2014 - 8th European Nonlinear Dynamics Conference

Subject:	ENOC2014: Session chair for General Track
From:	"ENOC 2014" <enoc2014@tuwien.ac.at>
Date:	Mon, June 16, 2014 11:02 pm
To:	khedrih@sbb.rs
Cc:	khedrih@eunet.rs
Priority:	Normal
Options:	View Full Header | View Printable Version | Download this as a file

Dear Prof. Katica R. (Stevanović) Hedrih,

we would like to ask you to chair a session for the General Track at the conference.
We have already assigned you tentatively as chair of a session. The preliminary program schedule can be viewed at http://osiris.tuwien.ac.at/enoc/sessions.php.

If you are not able to chair the session(s), please let us know as soon as possible.

Your contribution to the successful accomplishment of the conference is highly appreciated!

With kind regards
Alois Steindl and Horst Ecker

Subject: ENOC2014: Session chairfor MS-09
From: "ENOC 2014" <enoc2014@tuwien.ac.at>
Date: Mon, June 16, 2014 10:49 pm
To: khedrih@sbb.rs
Cc: khedrih@eunet.rs
Priority: Normal
Options: View Full Header | View Printable Version | Download this as a file

Dear Prof. Katica R. (Stevanović) Hedrih,

since Profs. Mikhlin and Cartmell nominated you as possible chair for the sessions
of MS-09 on "Nonlinear Dynamics of Structural and Machine Elements", we have preliminarly assigned you as session chair and ask you kindly, to take responsibility for these sessions. The preliminary program schedule can be viewed at
http://osiris.tuwien.ac.at/enoc/sessions.php.

If you are not able to chair the session(s), please let us know as soon as possible!

With kind regards
Alois Steindl and Horst Ecker

--
ENOC 2014 - 8th European Nonlinear Dynamics Conference

8th European Nonlinear Dynamics Conference

ENOC 2014

July 6-11, 2014, Vienna, Austria

Session Overview

Session

MS09-6: Nonlinear Dynamics of Structural and Machine Elements VI

Time: **Thursday, 10/Jul/2014: 10:30am - 12:10pm**
Session Chair: **K Nakano**
Session Chair: **Katica R. (Stevanović) Hedrih**

Location: **HS5**
198 Places

Presentations

Enhancing vibrational energy harvesting using stochastic resonance within a bi-stable mechanical system

Kimihiko Nakano[1], Matthew P Cartmell[2], Zheng Rencheng[1], Honggang Hu[1], Dongxu Su[1]
[1]The University of Tokyo, Japan; [2]University of Sheffield

Stochastic resonance is a physical phenomenon where large vibrations can occur when a weak sinusoidal modulating force is applied to a noise-excited bi-stable system, for a specific Kramers rate. It has been shown that such systems can effectively enhance the level of harvestable energy from ambient random vibration. In this paper it is shown by experiments that stochastic resonance can be initiated in a practical test system and that the power generated by a piezoelectric actuator can be measured. It is shown that in this specific test system the harvester actuator can generate power of 1.2 W while the system itself consumes 0.6 W in order to produce the periodic force to generate the necessary stochastic resonance, thus leading to a harvestable power of 0.6 W.

Petrović's theory of elements of mathematical phenomenology and phenomenological mapping applied to system nonlinear dynamics

Katica {Stevanovic} Hedrih[1], Andjelka N Hedrih[2]
[1]Mathematical Institute SANU, Belgrade, Faculty of Mechanical Engineering University of Nis, Nis, Serbia; [2]State University of Novi Pazar, Serbia

Using Mihailo Petrović's theory of mathematical phenomenology elements, phenomenological mapping in non-linear dynamics, linear and non-linear vibrations, signals, main and parametric resonance and dynamical absorptions, resonant jumps, trigger of coupled singularities, trigger of one side singularities, in global and local models of system dynamics – abstractions of different real system local and global dynamics are identified and presented.

Our results showed that Petrović's theory of elements of mathematical phenomenology is suitable for integration of knowledge in different areas of non-linear dynamics and useful for reductions of models of non-linear dynamics containing complexity of non-linear phenomena – regular, chaotic and stochastic regimes to explain non-linear dynamics of different physical, chemical or biological natures as well as social dynamics properties.

Results are also applicable to different systems with multiple deformable bodies with eleven degrees of freedom: chains, beams, plates, twisted chains, pendulums, and electrical chains and for biological oscillators.

Modelling of parametric resonance oscillations by two coupled modes

Tatiana Krasnopolskaya[1], Viacheslav Spektor[1], Dmytro Prykhodko[2], Alexandre Gourjii[3]
[1]National Academy of Science of Ukraine, Ukraine; [2]Taras Shevchenko National University of Kyiv; [3]National Technical university of Ukraine "KPI"

Two new mathematical models of parametric oscillations of two different continuous systems are worked out. The first system corresponds to a cantilever bar vibrations with low bending rigidity and the second system to cross-waves at fluid free-surface in a volume between two cylinders of finite length. In the cases of internal resonances parametric oscillations of continuous systems are approximated by two eigenmodes with different eigenfrequencies. On the basis of analysis of the largest Lyapunov exponents for a complex system three types of steady-state regimes are found: periodic, quasi-periodic and chaotic regimes. Phase portraits and power spectra are constructed and studied. The existence of chaotic attractors was established for the dynamical system presenting cross-waves and forced waves interaction at fluid free-surface in a volume between two cylinders of finite length. For averaged symmetric systems describing two parametric eigenmodes of a flexible cantilever bar with very low bending rigidity no chaotic regimes were found. Quasi-periodic and periodic regimes are typical for this dynamical system which has a symmetry with respect to unknown variables.

Nonlinear normal modes of vibrating mechanical systems and their applications

Yuri Vladimirovich Mikhlin[1], Konstantin Avramov[2], Christophe Pierre[3]
[1]National Technical University "Kharkov Polytechnic Institute", Ukraine; [2]National Academy of Sciences of Ukraine; [3]University of Illinois at Urbana-Champaign

Nonlinear normal modes (NNMs) are periodic motions of specific type, which can be observed in different nonlinear mechanical systems. In the normal vibration mode a finite degree-of-freedom system vibrates like a single-degree-of-freedom conservative one. Significance of NNMs for mechanical engineering is determined by important properties of these motions.

Kauderer was the first, who developed quantitative methods for the NNMs analysis in two-DOF conservative nonlinear systems. Rosenberg considered n-DOF conservative systems and deduced the first definition of NNM. The NNMs based on determination of modal lines in configuration space, can be called the Kauderer-Rosenberg nonlinear normal modes. Shaw and Pierre developed an alternative concept of NNMs for nonlinear dissipative finite-DOF systems. Their researches are based on the computation of invariant manifolds of motion in phase space. This second type of the NNMs is called the Shaw-Pierre nonlinear normal modes.

Generalization of the NNMs concepts to forced, self-exited and parametric vibrations is possible; a generalization of the NNMs to continuous systems is made.

NNMs have been used to solve applied problems of mechanical and aerospace engineering. The Kauderer- Rosenberg NNMs are applied for analysis of large amplitude dynamics of finite-DOF nonlinear mechanical systems, such as systems with nonlinear absorbers; cylindrical shells with geometrical nonlinearity; cylindrical shells interacting with a fluid; shallow arches snap-through motions et al.

The Shaw-Pierre NNMs are applied to analyze dynamics of pre-twisted beam with geometrical nonlinearity; beam parametric vibrations; nonlinear vibrations of shallow shells with complex base; nonlinear vibrations of the vehicle suspension; nonlinear dynamics of the one-disk rotor in two bearings.

8th European Nonlinear Dynamics Conference

ENOC 2014

July 6-11, 2014, Vienna, Austria

Session Overview

Session

GT-5: General Track V

Time: **Friday, 11/Jul/2014: 10:30am - 12:10pm**
Session Chair: **Katica R. (Stevanović) Hedrih**
Session Chair: **Yuri V. Mikhlin**

Location: **HS6**
198 Places

Presentations

Moving-load-induced vibration of a multibody beam composed of elastic and rigid beam segments

Jia-Jang Wu
National Kaohsiung Marine Universiy, Taiwan, Republic of China

Elements of mathematical phenomenology and qualitative /mathematical analogies on the basis of generalized Lissajous curves

Katica R. {Stevanović} Hedrih[1,2], Julijana Ju Simonović[2], Ana Ivanović-Šašić[3], Ljiljana Kolar-Anić[3,4], Željko Čupić[3], Andjelka N. Hedrih[5]
[1]Mathematical Institute SANU Belgrade, Serbia, Serbia; [2]Mechanical faculty University of Nis; [3]Institute of Chemistry, Technology and Metallurgy, University of Belgrade; [4]University of Belgrade, Faculty of Physical Chemistry; [5]Department for Bio-Medical Science, State University of Novi Pazar

□haotic dynamics in an Earth pointing, magnetically controlled spacecraft

Fabio Della Rossa, Fabio Dercole, Marco Lovera
Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico di Milano, Italy

Nonlinear vibration of nonlocal Kelvin-Voigt viscoelastic nanobeam embedded in elastic medium

Danilo □. Karličić, Milan S. □ajić, Marija Stamenković
Mathematical Institute of the SASA, Serbia

Intermittencies in Bray-Liebhafsky reaction system

Itana Nuša Bubanja[1], Slobodan Anić[1,2], Maja Milenković[1], Željko Čupić[2], Ljiljana Kolar-Anić[1,2]
[1]Faculty of Physical Chemistry, University of Belgrade, Belgrade, Serbia; [2]Institute of Chemistry, Technology and Metallurgy, University of Belgrade, Department of Catalysis and Chemical Engineering, Belgrade, Serbia

Spisak radova prihvacenih za ENOC 2014

ID: 326 **Plenary session**
Title: **Elements of mathematical phenomenology and qualitative /mathematical analogies on the basis of generalized Lissajous curves**
Katica (Stevanović) Hedrih, Juliajna Simonović, Ana Ivanvić-Šesić, Ljiljana Kolar Anić, Zeljko Cupić and Andjelka N Hedrih
Presenting Author: Katica (Stevanović) Hedrih

ID: 325 MS-09 Nonlinear Dynamics of Structural and Machine Elements
Title: **Petrović's theory of elements of mathematical phenomenology and phenomenological mapping applied to system nonlinear dynamics**
Authors: Katica (Stevanović) Hedrih and Andjelka N Hedrih, Presenting Author: Andjelka N Hedrih

ID: 237 MS-13 Nonlinear Dynamics in Biological Systems
Title: **Synchronization in oscillatory model of embryo's ZP molecules in context of polyspermy block**
Author(s) : Simonović Julijana; Hedrih, Andjelka , Presenting Author : Simonović Julijana

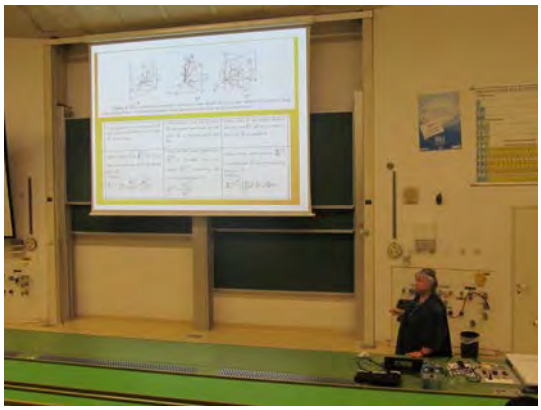
Contribution ID: 438 Type: MS-09 Nonlinear Dynamics of Structural and Machine Elements
Title: **Rigid Body Coupled Rotation around Axes without Intersection**
Author(s): Veljović, Ljiljana , Presenting Author : Veljović, Ljiljana

Contribution ID: 223 Type : GT General Track Contribution
Title : **Nonlinear vibration of nonlocal Kelvin-Voigt viscoelastic nanobeam embedded in elastic medium**
Author(s): Karličić, Danilo Z.; Cajić, Milan S.; Stamenković, Marija, Presenting Author: Karličić Danilo

Contribution ID: 271 Type: MS-06 Fractional Derivatives
Title: **"Nonlocal axial vibration of a fractional order viscoelastic nanorod"**
Authors: Milan S. Cajić, Danilo Z. Karličić and Mihailo P. Lazarević , Presenting Author: Milan S. Cajić,

ID: 199
Title: The complex motion of Cable-suspended parallel robot under the influence of the disturbance
Author(s): Kevac :jubomlp and Mprjana Filipović
Presenting Author: Kevac Ljubinko

ID: 386 Poster
Title: **Three parametric testing of singularity and position of non-linear dynamics relative equilibrium of heavy material particle on eccentrically rotating rough circle line, with constant angular velocity**
Authors: Marija Mikić and Marija Stamenković

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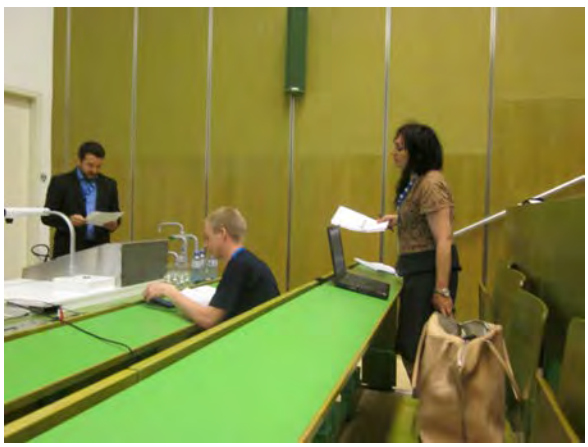









ENOC 2014 — 8th European Nonlinear Dynamics Conference
July 6 – 11, 2014, Vienna, Austria
TU WIEN — TECHNISCHE UNIVERSITÄT WIEN — Vienna University of Technology

EUROPEAN MECHANICS SOCIETY

ENOC 2014 — 8th European Nonlinear Dynamics Conference
July 6 – 11, 2014, Vienna, Austria
TU WIEN — TECHNISCHE UNIVERSITÄT WIEN — Vienna University of Technology

Spisak radova prihvacenih za ENOC 2014

ID: 326 **Plenary session**
Title: **Elements of mathematical phenomenology and qualitative /mathematical analogies on the basis of generalized Lissajous curves**
Katica (Stevanović) Hedrih, Juliajna Simonović, Ana Ivanvić-Šesić, Ljiljana Kolar Anić, Željko Cupić and Andjelka N Hedrih
Presenting Author: Katica (Stevanović) Hedrih

ID: 325 MS-09 Nonlinear Dynamics of Structural and Machine Elements
Title: **Petrović's theory of elements of mathematical phenomenology and**
phenomenological mapping applied to system nonlinear dynamics
Authors: Katica (Stevanović) Hedrih and Andjelka N Hedrih
Presenting Author: Andjelka N Hedrih

Spisak radova prihvacenih za ENOC 2014

Contribution ID: 271 Type: MS-06 Fractional Derivatives
Title: **"Nonlocal axial vibration of a fractional order viscoelastic nanorod"**
Authors: Milan S. Cajić, Danilo Z. Karličić and Mihailo P. Lazarević
Presenting Author: Milan S. Cajić,

ID: 199
Title: **The complex motion of Cable-suspended parallel robot under the influence of the disturbance**
Author(s): Kevac :jubomlp and Mprjana Filipović
Presenting Author: Kevac Ljubinko

ID: 386 Poster
Title: **Three parametric testing of singularity and position of non-linear dynamics relative equilibrium of heavy material particle on eccentrically rotating rough circle line, with constant angular velocity**
Authors: Marija Mikić and Marija Stamenković

XI*

PHYSICAL CHEMISTRY 2014

12th International Conference on Fundamental and Applied Aspects of Physical Chemistry

BELGRADE
22-26 September 2014

Physical Chemistry 2014, Belgrade, September 22-26, 2014

Invited Sectional Lecture:

Katica R. (Stevanović) Hedrih **, METHOD OF NONLINEAR DYNAMICS: PHENOMENOLOGICAL APPROXIMATE MAPINGS**

ABSTRACT: Phenomenological approximate mapping as an universal method of nonlinear dynamics is presented. The basic idea given by Mihailo Petrović and elaborated in his two books entitled: *Elements of mathematical phenomenology and Phenomenological mappings* is applied here on one physicochemical reaction system and a mechanical system. In particular, in both nonlinear systems the local dynamic nonlinear phenomena around stationary states are analyzed by the phenomenological approximate mappings. A general table with phenomenological linear and nonlinear approximate mappings around singular states is presented.
KEYWORDS: Nonlinear dynamics, phenomenological approximate mappings, stationary states, trigger of coupled singularities, linear approximation, nonlinear approximation, analogy.

DRUŠTVO
FIZIKOHEMIČARA
SRBIJE

1989

SOCIETY OF
PHYSICAL CHEMYSTS
OF SERBIA

26.03.2014.

Dear Dr Hedrih,

The Society of Physical Chemists of Serbia (http://www.socphyschemserb.org/en/) organizes the 12th International Conference on Fundamental and Applied Aspects of Physical Chemistry "Physical Chemistry 2014", which will be held in Belgrade, September 22-26, 2014. (http://www.socphyschemserb.org/en/events/pc2014/) We will be very honored if you could participate by giving a Section lecture. The choice of the title of the lecture is on you.

If you accept our invitation, please let us know.

Sincerely yours,

Željko Čupić

S. Anić

Dr Željko Čupić
Chairman
of Conference Scientific Committee

Dr Slobodan Anić
President
of the Society of Physical Chemists of Serbia

11000 Beograd, Serbia, Studentski trg 12-16,
tel./fax: +381 11 333 6 839, e-mail: dfh@socphyschemserb.org
www.socphyschemserb.org

XII* DANS14 Days of Analysis in Novi Sad July 03 - 07, 2014, Novi Sad

In the honor of Professor **Bogoljub Stankovic** on the occasion of his **90th birthday**

Mathematical Institute SANU

DANS14 Days of Analysis in Novi Sad
July 03 - 07, 2014, Novi Sad
In the honor of Professor Bogoljub Stankovic on the occasion of his 90th birthday

Petrović's Elements of mathematical phenomenology and phenomenological approximate mappings

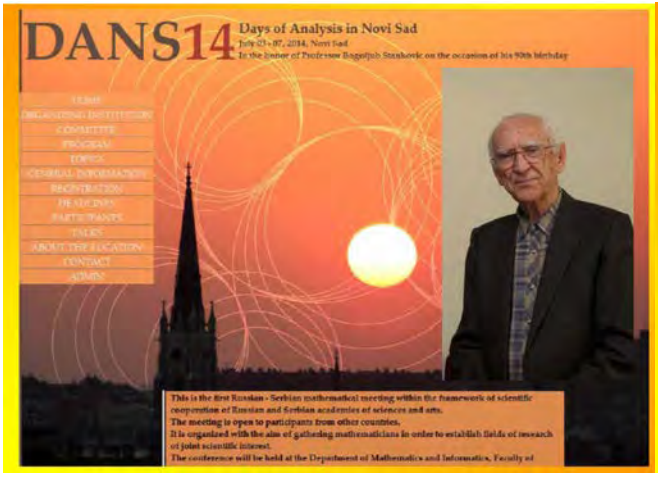
In honor of Professor Bogoljub Stanković on the occasion of his 90th birthday

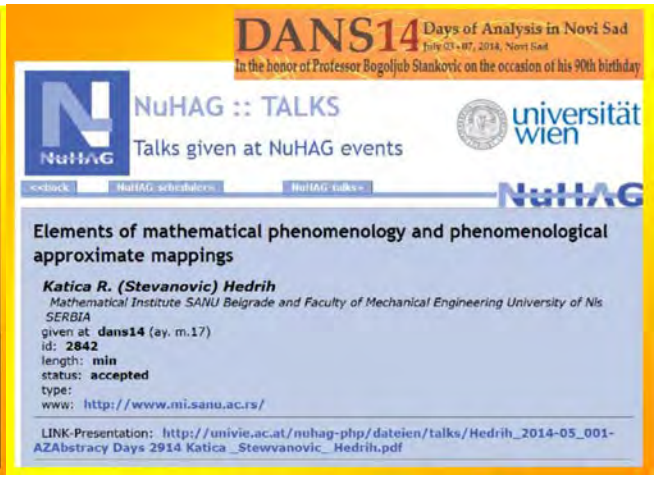
Катица Р. (Стевановић) Хедрих

Одељење за механику Математичког института САНУ у Београду
и Машински факултет Универзитета у Нишу
Прив. адреса: 18000- Ниш, Србија, ул. Војводе Танкосића 3
e-mail: khedrih@eunet.rs

Mathematical Institute SANU

	Thursday 3rd July	Friday 4th July	Saturday 5th July		Sunday 6th July	Monday 7th July
9 – 9:40	Registration	A. Ivic	M. Kunzinger		D. Djordjevic	M. Mateljevic
9:50 – 10:30	Opening/ S. Pilipovic	G. Milovanovic	G. Hoermann		V. Dragovic	D. Stoeva
Coffee break						
11 - 11:40	L. Rodino	T. Atanackovic	R. Stainbauer		B. Dragovic	N. Antonic
11:50 – 12:30	Ceremony in honor of Prof. Stankovic	S. Coriasco	J. Toft		P. Ivanshin	V. Kapustin
Lunch break						Closing ceremony
14:30 – 15:10	M. Obberguggenberger	Daniel Abreu	14:30-14:50	C. Saemann	Excursion with dinner	
			14:55-15:15	S. Simic		
15:15– 15:35	P. Mozolyako	D. Mitrovic	15:20-15:40	B. Prangoski		
Coffee break						
16:00 – 16:20	K. Hedrih	Milan Merkle	Poster session			
16:25 – 16:45	Lj. Gajic	Monica Merkle				
16:50 – 17:10	H. Pejic	J. Manojlovic				
17:15 – 17:35	D. Selesi	V. Manojlovic				





DANS14 Days of Analysis in Novi Sad
July 03 - 07, 2014, Novi Sad
In the honor of Professor Bogoljub Stankovic on the occasion of his 90th birthday

ABSTRACT:

1* Using discrete continuum method, fractional order signals analysis in hybrid system dynamics [3] is presented. For a class of fractional order system dynamics with finite number of degrees of freedom, independent eigen main fractional order modes are determined with corresponding eigen main coordinate of the system. A number of theorems are defined and proofed. It is shown that applications of qualitative, structural and mathematical analogies in analysis of fractional order signals appear in analogous mechanical, electrical and biological fractional order chains is very power, suitable an useful tools of mathematical phenomenology [1] to reduce research models to corresponding minimum, and, in same time, develop power of analysis use phenomenological mappings between local and global phenomena and properties. In a number of Tables, series of analogous signals with kinetic parameters of hybrid system dynamics are presented.
2* Phenomenological approximate mappings on nonlinear signal analysis in local area around of stationary points or states are presented with corresponding kinetic parameters in a number of Tables. For obtain approximate differential equations and approximate solutions in local area around singular points, linear and non-liner approximations are used. Method of local analysis based on phenomenological approximate mappings between local linear as well as nonlinear phenomena is power to obtain information of all nonlinear phenomena in the nonlinear dynamics of the system for completing elements for global analysis of the system nonlinear dynamics and stability and using different analogies, obtained result applied for analysis nonlinear dynamics in other physically disparate systems. These results are based on the previously punished Author's References in area of nonlinear dynamics [4,5].

Keywords: mathematical phenomenology; phenomenological approximate mappings; fractional orfer; nonlinear; signals; analogies; theorem.

References

1. Petrović, M., Elementi matematičke fenomenologije (Elements of mathematical phenomenology), Srpska kraljevska akademija, Beograd, 1911. str. 789.
http://elibrary.matf.bg.ac.rs/handle/123456789/476?locale-attribute=sr
2. Katica R Stevanović Hedrih and Andjelka N Hedrih, (2014), Phenomenological mapping and dynamical absorptions in chain systems with multiple degrees of freedom, Journal of Vibration and Control 1077546314525984, first published on March 19, 2014 as doi:10.1177/1077546314525984
3. Hedrih (Stevanović K., (2008), Dynamics of coupled systems, Nonlinear Analysis: Hybrid Systems, Volume 2, Issue 2, June 2008, Pages 310-334.
4. Hedrih (Stevanović) K., (2010), Discontinuity of kinetic parameter properties in nonlinear dynamics of mechanical systems, Keynote Invited Lecture, 9º Congresso Temático de Dinâmica, Controle e Aplicaçõesm, June 07-11, 2010. UneSP, Sao Paolo (Serra negra), Brazil, Proceedings of the 9th Brazilian Conference on Dynamics Control and their Applications, Serra Negra, 2010, pp. 8-40. SP - ISSN 2178-3667
5. Hedrih (Stevanović) K., (2012), Energy and Nonlinear Dynamics of Hybrid Systems, Chapter in Book: Edited by A. Luo, Dynamical Systems and Methods, 2012, Part 1, 29-83, DOI: 10.1007/978-1-4614-0454-5_2 .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XIII* **9th SEEDI Conference, Belgrade, 15-16th May 2014, Digitalizacija naucne I kulturne bastine Srbije**

120.000 examples of university books in publishing house „Naučna knjiga“:

Author Prof. Dr. Ing. Dipl. Math. Danilo P. RAŠKOVIĆ (1910-1985)

Hedrih (Stevanović) R. Katica

Mathematical Institute SANU Belgrade,

and Faculty of Mechanical Engineering University of Niš, Serbia

9th SEEDI Conference

Belgrade, 15 - 16th May, 2014

Abstract This distinguished scientific figure of exquisite creative energy and inspired enthusiasm, a scholar deeply attached to the Yugoslav and Serbian scientific and cultural heritage and an exquisite pedagogist of high ethic principles is in the living memory of many generations of students whom he taught how to learn and love mechanics, as a basic scientific branch of mechanical engineering either directly, through his lectures, or through his various and numerous textbooks and collections of problems which circulate in more than 140,000 copies. His disciples and colleagues are glad that he had the ability to transmit to them his great enthusiasm permeated with his sincere devotion for mechanics and his exquisite scientific sagacness.

Prof. Dr. Ing. Dipl. Math. Danilo P. RAŠKOVIĆ lectured mechanics, strainght of materials and oscillation theory at the faculties of mechanical engineering in Belgrade, Niš, Kragujevac, Novi Sad and Mostar, as well as in the Faculty of Science in Belgrade, Faculty of Philosophy in Novi Sad, Faculty of Electronics in Niš and at the Military-Technical College in Belgrade.

Professor RAŠKOVIĆ wrote a considerable number of university textbooks which ran through numerous editions. Some of them still hold records as for the number of editions and copies printed within the group they belong to. In addition, he wrote a series of textbooks in the field of mechanics for secondary technical schools, as well as a number of chapters in professional technical handbooks, mimeographed course materials and textbooks for post-secondary schools of mechanical engineering. He also wrote several textbooks for postgraduate studies.

We are of the opinion that this occasion should be used to say a few things about professor Rašković's four-year-long co-operation with the publishing house "Naučna knjiga" concerning the publication of his university textbooks, collections of problems and various other handbooks. Follows the review of university textbooks and handbooks written by professor Danilo Rašković and published by "Naučna knjiga" in total 120.000 examples:

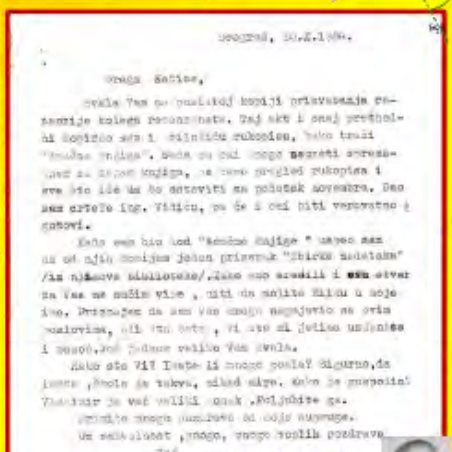
* **MECHANICS I (STATICS)** - a 16,000-copy printing of first three editions; II edition 1949, III edition 1950; subsequent editions 1960 (a 3,000-copy); 1962, 1964, 1965, 1968, 1971, 1973, 1978 (a 3,000-4,000-copy)
* **MECHANICS II (KINEMATICS)** - first two editions in a 13,000-copy printing. Editions: 1947, 1950, 1958.
* **MECHANICS III (DYNAMICS)** - first two editions in 10,000 copies. Editions: 1947, 1956, 1962, 1973.
* **STRAINGHT OF MATERIALS** - editions: 1956, 1961, 1962, 1965, 1967, 1971, 1973, 1977, 1980, 1984 - approximately 25,000 copies.
* **OSCILLATION THEORY** - editions: 1957, 1965 - 6,000 copies.
* **TABLES OF STRAINGHT OF MATERIALS** - (ran through 13 editions) approximately 40,000 copies.
* **ESSENTIAL MATRIX CALCULUS** -1971 edition, 1,500 copies.
* **ELASTICITY THEORY** - 1985 edition, 2,000 copies.

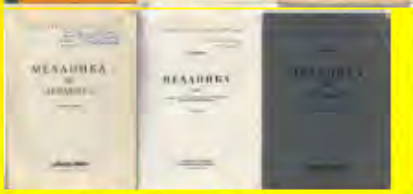
andother.

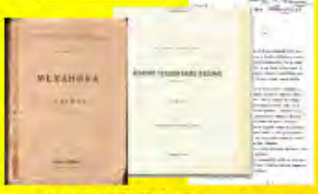
Some of his university textbooks were published by other publishing houses such as "Zavod za izdavanje udžbenika", "Gradjevinska knjiga", "Tehnička knjiga".

Among the publications for postgraduate studies the following should be mentioned: **ANALYTICAL MECHANICS** and TENSOR CALCULUS, both edited by the Faculty of Mechanical Engineering in Kragujevac.

All contents of these pubications are material resources existing as scientific heritage in area of mechanics in Serbia and corresponding presentation in digital form is of great scientific interest and oppan possibilities to disseminate those fundamental books in area on theoretical and applied mechanics to new ganerations of students, researchers and engineers.







ACKNOWLEDGEMENTS

Sciences of Republic Serbia trough Mathematical Institute SANU Belgrade Grants ON144003 "Theoretical and Applied Mechanics of Rigid and Solid Body. Mechanics of Materials" and OI 174001 "Dynamics of hybrid systems with complex structures. Mechanics of materials"

xv* 1st International Symposium on Machines, Mechanics and Mechatronics - Current Trends, **July 1-2, 2014.** http://smmm2014.mas.bg.ac.rs/

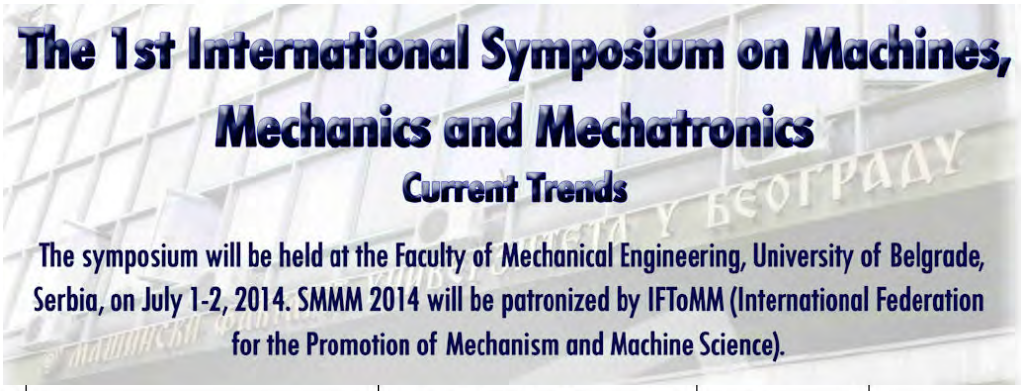
http://www.iftomm.org/index.php?option=com_content&view=article&id=31:conferences&catid=13&Itemid=141

SMMM2014 se organizuje prvi put u organizaciji MaÅ¡inskog fakulteta u Beogradu uz pokroviteljstvo IFToMM-a:

TENTATIVE SCHEDULE OF ACTIVITIES AND PRESENTATIONS

1ST INTERNATIONAL SYMPOSIUM ON MACHINES, MECHANICS AND MECHATRONICS - CURRENT TRENDS

Serbia, University of Belgrade, Faculty of Mechanical Engineering on July 1-2. 2014.



16:00-16:30	**Coffee Break, Room 210, floor 2**	
16:30-18:45	**Session III, Room 211 – Special Session** Co-Chairs: Livija Cvetićanin, Katica Stevanović - Hedrih Moderator: Pol Spanos	
	Wei Li Lincong Chen Natasa Trisovic	FIRST-PASSAGE OF STOCHASTICALLY DYNAMICAL SYSTEM WITH FRACTIONAL DERIVATIVE AND POWER-FORM RESTORING FORCE
	Katica Stevanović Hedrih	ENERGY ANALYSIS OF DYNAMICS OF A MULTI-DEFORMABLE BODY SYSTEM WITH FRACTIONAL ORDER DISCRETE CONTINUUM LAYERS
	Livija Cvetićanin Ištvan Biro	MODELING OF IMPACT OF A TENNIS BALL WITH COURT: AN OVERVIEW

University of Belgrade, Faculty of Mechanical Engineering

Ministry of Education, Science and Technological Development of the Republic of Serbia

IFToMM

International Federation for the Promotion of Mechanism and Machine Science

XIV* The XVI INTERNATIONAL SCIENTIFIC-EXPERT CONFERENCE ON RAILWAY RAILCON '14, which will be held in Niš, Serbia on **October 09 – 10, 2014**.

INTERNATIONAL SCIENTIFIC-EXPERT CONFERENCE ON RAILWAYS

Katica R. (Stevanović) Hedrih, **Energy analysis of fractional order oscillations of a composition of the train by a chain model of fractional order properties**

XV* Matematika i primene, na Matematickom fakultetu Univerziteta u Beogradu **17. i 18. oktobra 2014,** http://alas.matf.bg.ac.rs/~konferencija/

Katica R. (Stevanović) Hedrih
APROKSIMATIVNO FENOMENOLOSKO PRESLIKAVANJE
(Approximate phenomenological Mappings)

XVI* Centennial jubilee of Russian Academician Yury N. Rabotnov (2014)

Katica R. (Stevanović) Hedrih, (2014), **Elements of mathematical phenomenology in dynamics of multi-body system with fractional order discrete continuum layers**, Dedicated to Centennial jubilee of Russian Academician Yury N. Rabotnov, Special issue of International Journal of Mechanics, (Paper submitted in January 2014), Journal indexed in SCOPUS (http://www.naun.org/cms.action?id=2828). (prihvaceno za stampu).

Andjelka N. Hedrih and Katica R. (Stevanović) Hedrih, (2014), **Analysis of energy state of discrete fractional order spherical net of mouse *zona pellucida* before and after fertilization**, Special issue of International Journal of Mechanics, Dedicated to Centennial jubilee of Russian Academician Yury N. Rabotnov, (Paper submitted in January 2014), Journal indexed in SCOPUS (http://www.naun.org/cms.action?id=2828). (prihvaceno za stampu).

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Matematicki institut SANU, **Odeljenje za mehaniku**

Sreda, 5. mart 2014. u 18 casova, sala 301f:
Katica (Stevanovic) Hedrih: **ELEMENTS OF MATHEMATICAL PHENOMENOLOGY IN DYNAMICS OF MULTI-BODY SYSTEM WITH FRACTIONAL ORDER DISCRETE CONTINUUM LAYERS**

Sreda 8.10.2014. 18 casova, sala 301f, (Plan)
Katica R. (Stevanovic) Hedrih, **Energy dissipation in dynamics of a class of the fractional order system**

Matematicki institut SANU **, Mathematical Colloquim**
Petak, 21.03.2014. u 14h, sala 301f, MI SANU
Vladimir Dragovic, Katica (Stevanovic) Hedrih, Dusan Zorica
NAUCNI REZULTATI NA PROJEKTIMA MATEMATICKOG INSTITUTA SANU U 2013 IZ OBLASTI MEHANIKA

Koncepcija sastanka: Rukovodioci projekata, u dogovoru sa Upravnikom odeljenja, ce prikazati u optim crtama, naucne rezultate koje su dobili istrazivaci na njihovim projektima a primljeni su za tampu ili su publikovani u 2013. godini.

Matematički institut SANU , **Seminar za istoriju i filozofiju matematike, mehanike i astronomije**

UTORAK, 4. mart 2014. u 12:15 sati
Katica (Stevanovic) Hedrih, **MIHAILO PETROVIC I NJEGOVI PROFESORI: POENKARE, APEL, PIKAR, PANLEVE I BUZINESK**

UTORAK, 22. april 2014. u 12:15 sati
*Katica (Stevanovic) Hedrih***, ANALOGIJE: kvalitativne, strukturne i matematicke; primeri fenomenolokog preslikavanja.**

С поштованјем,

Катица (Стевановић) Хедрих

У Београду и Нишу, 30 септембра 2014 године

Катица Р. (Стевановић) Хедрих
Руководилац пројекта ОІ174001

Прилози:

THE 13th INTERNATIONAL CONFERENCE OF TENSOR SOCIETY ON DIFFERENTIAL GEOMETRY AND ITS APPLICATIONS, AND INFORMATICS BESIDES.

The 86th Anniversary of Radu MIRON'S Birth.

Faculty of Math.
Al. I. Cuza Univ.
Iaşi, Romania

テンゾル学会
(***TENSOR SOCIETY***)

Inst. of Math.
"Octav Mayer"
Romanian Academy

To: Prof. dr.Katica R. (Stevanovic) Hedrih, Academician UHEAS
Mathematical Institute SANU Belgrade, Department for Mechanics
And Faculty of Mechanical Engineering,University of Nis, Serbia
Priv. address: 18000-Nis, ul Vojvode Tankosika 3/22, Serbia
E-mail: khedrih@eunet.rs, katicahedrih@gmail.com, khedrih@sbb.rs

Tsukuba, July 19, 2013

Dear Professor dr. Katica R. (Stevanovic) Hedrih,

On behalf of Tensor Society, we would like to invite you to "The 13th International Conference of Tensor Society on Differential Geometry and its Applications and Informatics Besides" with great pleasures. Furthermore, we suggest that you will give a plenary lecture (45~60 min.) entitled: "Generalized function of fractional order dissipation of system energy and extended Lagrange differential equation in matrix form (*Dedicated to 86th Anniversary of Radu Miron's Bi rth*)". It is very glad for us if you could inform your visiting and staying schedule and arrival date, its time at Iasi Station or airport at advance.

Looking forward to waiting concerning the above matter at your earliest convenience,

Sincerely yours.
T. Kawaguchi

Professor, dr. Tomoaki KAWAGUCHI
President of Tensor Society
Sengen 1-13-33, Tsukuba
305-0047 Japan
Tel. 81-(0)29-851-5615, Fax 81-(0)29-856-6576 (Tsukuba)
Tel/Fax 81-(0)3-3947-3910 (Tokyo)
E-mail: tensor-ns@nifty.ne.jp and kawaguchi_tom@ybb.ne.jp

Tomoaki Kawaguchi

UNIVERSITATEA "ALEXANDRU IOAN CUZA" din IAŞI www.uaic.ro

Bulevardul Carol I nr.11 / 700506 - Iaşi, ROMANIA
Tel. : + 40 232 201010; fax + 40 232 201201;
e-mail rectorat@uaic.ro; http://www.uaic.ro

OFFICE OF THE VICE-RECTOR FOR INTERNATIONAL RELATIONS

To the attention of **Prof. dr. Katica R. (Stevanović) Hedrih**
Academician UHEAS – Ukrainian Higher Education Academy of Sciences
Mathematical Institute SANU Belgrade
Department for Mechanics and Faculty of Mechanical Engineering
University of Niš, Serbia, 11 000

INVITATION LETTER

It is our great pleasure to invite you to attend

THE 13th INTERNATIONAL CONFERENCE OF TENSOR SOCIETY ON DIFFERENTIAL GEOMETRY AND ITS APPLICATIONS, AND INFORMATICS BESIDES

that will be held from September 3rd (Tuesday) to September 7th (Saturday) 2013 at the Faculty of Mathematics of Alexandru Ioan Cuza University and the Mathematical Institute "O.Mayer" in Iaşi, Romania.

Given your contribution to the academic field, the Organizing Committee would be honored if you could participate and give a talk at this conference.

Please find details on the programme, lodging and travel information in the First and Second Announcements you have already received.

Hoping that your schedule will allow you to accept this invitation,

Sincerely yours,

On behalf of the Organizing Committee,

Prof. Dr. Henri Luchian
Vice-Rector for International Relations

TENSOR SOCIETY
c/o Kawaguchi Institute of Mathematical Sciences
Matsugaoka 2-7-15, Chigasaki, Japan 253-0025
Chigasaki Post Office: P. O. Box 22
Tel. 81-(0)29-851-5615, Fax 81-(0)29-856-6576
E-mail: tensor-ns@nifty.ne.jp tensorsociety@ybb.ne.jp

President: Tomoaki KAWAGUCHI, Prof., Dr. of Tech. Sci.

CERTIFICATE

September 15, 2013

To: Prof. dr Katica R. (Stevanović) Hedrih,

We acknowledge that you have been appointed a member throughout life of the Editorial Board in Tensor Society dated on January, 2013.

President of Tensor Society
Professor Dr. Tech. Sci. Tomoaki KAWAGUCHI
Tomoaki Kawaguchi

c/o Kawaguchi Institute of Mathematical Sciences
Chigasaki Post Office: P. O Box 22
Tel. 81-(0)29-851-5615, Fax 81-(0)29-856-6576
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テ ン ゾ ル 学 会

TENSOR

Edited by

Tomoaki KAWAGUCHI

With the cooperation of

NEW SERIES

Volume 74, Number 1

April 2013

PUBLISHED BY

THE TENSOR SOCIETY

CHIGASAKI, JAPAN

TENSOR

Edited by

Tomoaki KAWAGUCHI

With the cooperation of

S. AMARI	W.-G. BOSKOFF	K. (STEVANOVIČ) HEDRIH
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NEW SERIES

Volume 74, Number 1

April 2013

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THE TENSOR SOCIETY

CHIGASAKI, JAPAN

COLLEGIUM MAZOVIA INNOWACYJNA SZKOŁA WYŻSZA

BR. 07 M-1(17)/2013
L.Dz. 654/2013

Siedlce, July 02, 2013

Professor
Katica R. (Stevanovic) Hedrih
Department of Mechanics,
Mathematical Institute SANU
ul. Knez Mihailova36/III
11 000 Belgrade
Serbia
Tel./Fax: +381 18 4241663

Dear Prof. Dr. Katica Hedrih,

On behalf of the Organizing Committee of the 8th International Symposium on Classical and Celestial Mechanics (CCMECH'8) to be held in Siedlce, Poland from September 25 till 29, September 2013 we are glad to invite you to participate in the conference and to present your talk

"Fractional order differential equations of dynamics of two mass particles, constrained by a fractional order element",

Please note that the registration fee is 400 PLN. It covers organization expenses, conference materials and refreshment room at the Symposium. It can be paid on site upon arrival. Participants of the symposium CCMECH'8 will be accommodated at the hotel "Dwor Moscibrody" situated in the picturesque place near Siedlce (www.dwor.moscibrody.pl). Costs of accommodation and meal are covered by the participants of the symposium.

We kindly ask you to confirm your participation by September 10, 2013 via e-mail: alexander_prokopenya@sggw.pl and to let us know some details concerning your arrival and departure (number of train or flight, date and time).

We look forward to seeing you in Siedlce.

Best wishes,

DZIEKAN
Wydziału Nauk Technicznych
M. Symanowicz
Mirosław Symanowicz
dr Mirosław Symanowicz
Organizing Committee of CCMECH'8

COLLEGIUM MAZOVIA
INNOWACYJNA SZKOŁA WYŻSZA
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COLLEGIUM MAZOVIA Innowacyjna Szkoła Wyższa, ul. Sokołowska 161, 08-110 Siedlce, tel. 25 6333032, fax 25 6332051, www.mazovia.edu.pl, e-mail: info@mazovia.edu.pl
zarejestrowana w prowadzonym przez MNiSW rejestrze uczelni niepublicznych i związków uczelni niepublicznych pod pozycją 81, NIP 821 21 02 933, REGON 711643331

12th CONFERENCE

Dynamical Systems - Theory and Applications

December 2-5, 2013. Lodz, POLAND.

November 27, 2013

Professor Katica R. Stevanovic Hedrih
Mathematical Institute SANU Belgrade
and Faculty of Mechanical Engineering
University of Niš
SERBIA

Invitation for publication in the DSTA 2013 Special Issue

Dear Professor Hedrih,

Your papers: "Vector analysis of kinetic parameters of mass particle separation dynamics from space discrete system" (MAT144), author: Katica R. Stevanovic Hedrih; "Two mass particle fractional order plane system dynamics" (OTH145), author: Katica R. Stevanovic Hedrih, have been provisionally scheduled to be considered for publication in some Special Issues of the *International Journal of Dynamics and Control* (IJDC); journal of *Nonlinear Dynamics and Systems Theory* (NDST), respectively.

Using the details provided in your personal profile at www.dys-ta.com, please take into account the attached journal guidelines and send the full-text papers not later than **January 15, 2014** (final deadline).

In order to distinguish these papers from the versions already published in a Conference Book please slightly modify their title, extend, make a citation of the corresponding DSTA Book, or write in "Acknowledgements" that the papers have been presented during 12th Conference on Dynamical Systems - Theory and Applications.

On behalf of Organizing Committee of the DSTA 2013 I wish you fruitful discussions and a successful participation in the conference.

Yours sincerely,

Jan Awrejcewicz