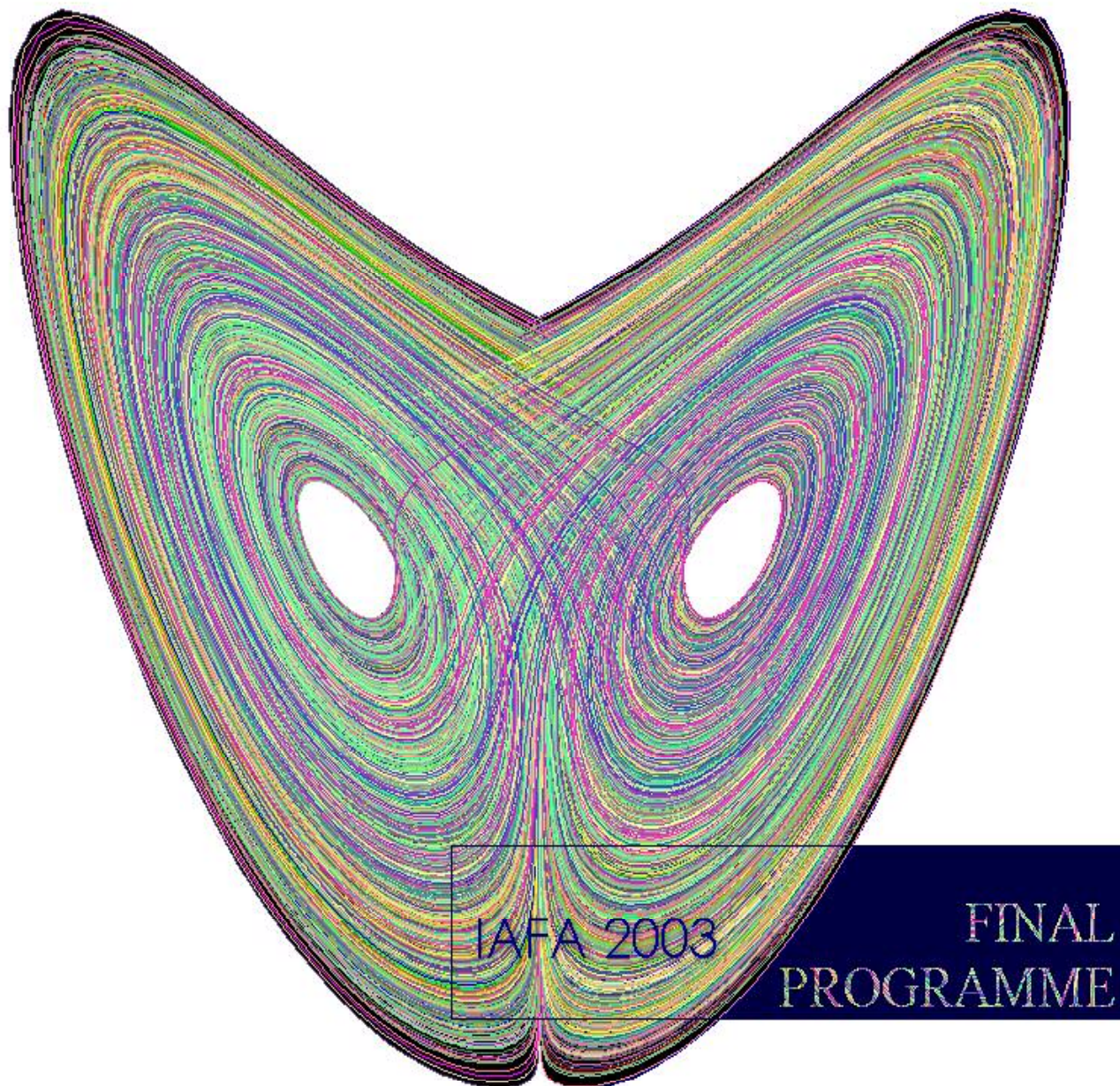


The First South-East European Symposium on **Interdisciplinary Approaches in Fractal Analysis**

May 7 – 10, 2003
Bucharest, ROMANIA



Organized by

POLITEHNICA University of Bucharest
Faculty of Automation and Computers

In cooperation with

Fundeni Clinical Institute

Under the auspices of the **Alexander von Humboldt Foundation**

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- Clinical Institute Fundeni: Oana Dimonu, Bogdan Ivanov, Oana Stanciulea, Cezar Stroescu, Stefan Tudor

Wednesday, May 7

10.00 – 19.00	Authors registration at the reception desk – PARC Hotel
19.00 – 21.00	Welcome Cocktail

Thursday, May 8

Time	Hall A
09.00 – 10.30	Opening of IAFA 2003
10.30 – 12.30	Plenary Session
12.45 – 14.00	Lunch
14.00 – 16.15	<u>Section I</u> Dynamical Systems and Structural Complexity Chair: V. Brinzanescu and P.Flondor
16.15 – 16.30	Coffee break
16.30 – 19.15	<u>Section II</u> Image Processing and Pattern Recognition Chair: Fl. Ionescu and D. Stefanoiu
*19.30	Social Program – Guided Bucharest Sightseeing (bus – 30 persons)

Friday, May 9

Time	Hall A	Hall B
08.30 – 10.30	<u>Section III</u> Fractals in Biocellular Structures Chair: P. Cristea and D. Giurcaneanu	<u>Section IV</u> Fractal and Chaos in the Dynamics of Signals Chair: O. Stanasila and A. Popivanov
10.30 – 10.45	Coffee break	
10.45 – 12.45	<u>Section V</u> Fractals in Chemical Applications Chair: St. Gheorghiu and K. Malek	<u>Section VI</u> Fractals and Chaos in nonlinear Systems and Computing Chair: P. Planinsic and R. Ursianu
12.45 – 14.00	Lunch	
14.00 – 17.00	<u>Section VII</u> Fractals in Medical Imaging Chair: H. P. Fischer and V. Herlea	<u>Section VIII</u> Fractals in Large Systems Chair: M. Rusu and M. Agapie
17.00 – 17.15	Coffee Break	
17.30 – 19.30	Round table Trends in fractal analysis applications/ How to teach about fractals? Moderator: R. Dobrescu	
20.30	Conference Dinner	

09.00 – 10.30 Opening of IAFA 2003

Invited speakers: Ioan Dumitrache, Rector of UPB
Ministry of Education and Research Representative
Florin Filip, Romanian Academy Representative
Svetlana Rau, IEEE Section 8 Representative
Hans-Juergen Biersack, Humboldt Foundation Representative

10.30 – 12.30 Plenary Session

1. **Peter Pfeifer (SUA)** – New insights into fractal respiratory physiology
2. **Catalin Vasilescu (Romania)** - In Memoriam: Prof. Dr. Constantin Tasca
3. **Hans-Guenther Beger (Germany)** - Dissemination pattern of pancreatic cancer - chaos and order

14.00 – 16.15 Section I – Dynamical Systems and Structural Complexity

Section Chair: Vasile Brinzanescu and Paul Flondor

1. **F. Munteanu** – A fractal approach in structural complexity analysis
2. **R. Dogaru, Ioana Dogaru, M. Glesner** - Exploiting Structural Complexity in Nonlinear Representation of Boolean Functions for Compact and Fast Data Streams Analysis
3. **Virginia Ecaterina Oltean** – Discrete-Event And Continuous-Time Optimization Problems For Hybrid System - A Comparative Approach Through Examples
4. **E. Guerin, E. Tosan, A. Baskurt** – Fractal approximation and compression using projected IFS
5. **Silvia Bontas** – A Mathematical Model Of Increasing The Reliability Of Systems
6. **P. Flondor** – Dynamics and approximate reasoning
7. **D. Iordache, Viorica Iordache** - On The Compatibility Of The Multifractal And Similitude Descriptions Of The Fracture Parameters Relative To The Existing Experimental Data For Concrete Specimens
8. **Adelina Georgescu** - Static and dynamic bifurcation diagrams

16.15 – 16.30 Coffee Break

16.30 – 19.15 Section II – Image Processing and Pattern Recognition

Section Chair: Florin Ionescu and Dan Ștefănoiu

1. **N. Ponomarenko, K. Egiazarian, V. Lukin** - Acceleration of fractal image compression by correlation trees
2. **C. D. Giurcaneanu, I. Tabus, C. Stanciu** - Lossless audio compression with optimal codes for Laplacian distribution
3. **D. Ștefănoiu, Fl. Ionescu** - A Time-Frequency-Scale Approach To Fractal Data Denoising And Compression
4. **P.P. Delsanto, D. Iordache, St. Pusca** - Study Of The Correlations Between Different Effective Fractal Dimensions Used For Fracture Parameters Descriptions
5. **F. Pop** –Fractal Image Compression
6. **B. Barliga, Andrea Hategan, Al. Caragea** – A Fractal Approach On Estimating The Performance Of Predictors Used In Lossless Image Compression
7. **Daniela Crisan** – Using local connected fractal dimension in frontier matching
8. **R. Dobrescu, Fl. Ionescu** - Fractal Dimension Based Technique For Database Image Retrieval

19.30 Social Program – Guided Bucharest Sightseeing (bus – 30 persons)

HALL A

08.30 – 10.30 Section III – Fractals in Biocellular Structures

Section Chair: Paul Cristea and Doru Giurcaneanu

1. **C. D. Giurcaneanu, I. Tabus, I. Shmulevici, Wei Zhang** - Clustering Genes And Samples From Glioma Microarray Data
2. **P. Cristea** - An Efficient Algorithm for Measuring Fractal Dimension of Complex Sequences
3. **G. Crosta, Chiara Urani, Laura Fumarola** – Morphological Classification Of Cytoskeletal Structures
4. **P. Cristea, G. Al. Popescu** - Fractal Dimension of Human Chromosome
5. **Rodica Tuduce, M. Sultan, C. Rangu, P. Cristea** - Hutchinson Metric in Fractal DNA Analysis
6. **Lavinia Slabu, C. Corduneanu, L. Lerescu, I. Grosu** - Identifying The Coding Regions In DNA Sequences Using The DFA Method

HALL B

08.30 – 10.30 Section IV – Fractals and Chaos in the Dynamics of Signals

Section Chair: Octavian Stanasila and David Popivanov

1. **Roxana Leahu, D.E. Creanga** - Complex dynamics in electrocardiogram
2. **D. Popivanov, A. Janyan, E. Andonova, V. Stomonyakov** - Self-similarity and chaotic dynamics of biosignals during movement imagery
3. **D. Grecu, Anca Visinescu** - Modulational Instability of quasi-monochromatic Waves propagating in Dispersive and Weakly Nonlinear Media
4. **M. Rusu, R. Baican** – Fractal Antennae
5. **C. Balan** – Material instability and chaotic behavior of viscoelastic flows with multiple steady state solutions
6. **Ioana Ene, Cornelia Motoc, M. Rusu** - Fractal models for 2D and 3D electric discharge

10.30 – 10.45 Coffee break

HALL A

10.45 – 12.45 Section V – Fractals in Chemical Applications

Section Chair: Stefan Gheorghiu and Kourosh Malek

1. **Gianina Dobrescu, Maria Crisan, Maria Zaharescu, N. I. Ionescu, M. Rusu** - TEM Micrographs Fractal Analysis
2. **Gianina Dobrescu, Daniela Berger, Florica Papa, Fangli Iudit, M. Rusu** - Fractal Dimensions Of Lanthanum Cobaltites Samples By Adsorption Isotherm Method
3. **L. Skatkov, P. Cheremskoy, E. Sobol, O. Sobol, S. Malyhin, A. Panikarsky, V. Gomofov** - Fractal Structure In Porous Composite And Condensed Systems
4. **K. Malek, M-O. Coppens** - Knudsen Diffusion In A Rough Fractal Pore
5. **St. Gheorghiu, M-O. Coppens** - Are Fractal-Like Pore Networks Optimal?
6. **D.V. Voronine, E.O. Danilov, M.A.J. Rodgers** - Fractal Analysis of Crystallization Patterns and Ultrafast Excited State Dynamics of Mesoscopic Porphyrin Aggregates

HALL B

10.45 – 12.45 Section VI – Fractals and Chaos in nonlinear Systems and Computing

Section Chair: Peter Planinsic and Radu Urseanu

1. **R. G. Crespo, Ana Isabel Cardoso, P. Kokol** - Complexity-Based Metrics For The Evaluation of The Program Organization
2. **G. Klajnsek, D. Podgorelec, B. Zalic** - Efficient Visualization Of 4D Fractal Structures
3. **Ana Isabel Cardoso, R. Crespo, P. Kokol** - The α Metric Values For Random and Fully Organized Programs
4. **P. Kokol, E. Feuer, M. Lenic, V. Podgorelec, Ana Isabel Cardoso, R. G. Crespo** - Reverse Bifurcations In Software Development
5. **P. Planinsic, Aljana Petek** - Analysis Of Electrochemical Noise Signals Using Fractal Function Wavelets
6. **R. Urseanu, Adina Sandu** – Fractal sets characteristics applied to the diagnosis of malignant tumours

12.45 – 14.00 Lunch Break

HALL A

14.00 – 17.00 Section VII – Fractals and Chaos in Medical Imaging

Section Chair: Hans-Peter Fischer and Vlad Herlea

1. **H.P. Fischer** - Stereologic Analysis Of Complex Radial-Symmetric Histologic Structures - Exemplified on Malignant Liver Tumors
2. **T. Dreyer, Al. Doudkine, Ch. Popella** - Nuclear Shape and Nuclear Texture Analysis in Normal and Neoplastic Laryngeal Epithelium
3. **C. Vasilescu, V. Herlea, B. Ivanov, F. Talos, R. Dobrescu** - Differences between intestinal and diffuse type of gastric carcinoma: a fractal analysis
4. **T. Mattfeldt, H. A. Kestler** - Classification Of Pancreatic Tissue Texture on The Basis of Correlation Dimensions and Lyapunov Exponents Using Two Types of Artificial Neural Networks
5. **B. Ionescu, C. Vertan, I. Stefan** - Fractal And Second-Order Statistics For The Calcaneum Trabecular Structure Analysis
6. **V. Patrascu** - Medical Image Enhancement in The Context of Fuzzy Set Theory
7. **Rodica Dragomir, M. Olteanu, M. Tanase** - The Analysis of CT And MR Brain Images Using Box Counting–Type Methods
8. **Marcela Tudorie, D. E. Creanga** - Fractal Dimension in Metabolic Disease
9. **C. Sulea, A. Niculescu, V. P. Paun** - A Simple Estimation Method for Nuclear Medicine Imaging

HALL B

14.00 – 17.00 Section VIII – Fractals in Large Systems

Section Chair: Mircea Rusu and Mircea Agapie

1. **M. Agapie** – Fractal Traffic in High-Speed Data Networks
2. **M. Rusu, Al. Curutiu** - Models for Extragalactic Jets
3. **M.Rusu, V.S. Teodorescu** - Fractal structure of dinosaur eggshell pores
4. **Miruna Anastasoiaie, Cornelia Motoc, M. Rusu** - Fractal Structure of the Unipolar Magnetic Regions on Sun's Surface
5. **A. Jalobeanu** – Fractal 3D Modelling of asteroids using Wavelets on arbitrary meshes
6. **E. Bilal, V. Petre** – Fast Fractal-Based Algorithm For Image Singularities Extraction
7. **F. Talos** - Using Local Fractal Dimension in Multifractals Analysis
8. **Ioana Ene, Cornelia Motoc, M.Rusu** - Influence of Geographic Morphology on Electromagnetic Propagation. A Fractal Approach

17.00 – 17.15 Coffee Break

17.30 – 19.30 Round Table

Trends in fractal analysis applications / How to teach about fractals?

Moderator: Radu Dobrescu

20.30 Conference Dinner

Saturday, May 9

08.30 – 19.30

Social program: One day Guided Tour at Bran Castle. Departure and arrival in front of Parc Hotel.

BRAN CASTLE

Deep in the Carpathian Mountains, in the heart of Romania is Transylvania, where perched atop a rocky peak, there has been a fortress of some kind for nearly 1,000 years and the fortress that stands here today is now known as 'Dracula's Castle' (the actual Castle Dracula is in ruin on a secluded site near the Arges River). Situated at 30 Km from Brasov, between the Bucegi and Piatra Craiului Mountains, Bran Castle is an important national monument and landmark of the Romanian tourism, due not only to the beauty of the Castle and the landscape but also to the legend of Count Dracula. Bran Castle was originally a stronghold built by the Knights of the Teutonic Order in 1212. By the late 1200's the castle had been overtaken by the Saxons who had used the castle to protect Brasov, an important trade center. In 1370 the fortress was used against invading Turks.



Since the reign of Iancu of Hunedoara (1441-1456), the Fortress passed under the rule of the Voivode of Transylvania. It remained an important feudal fortress through out the middle ages, its role was the defence against invasion. On December 1st, 1920, the Brasov Town council donated the Bran Castle to Queen Marie of Great Romania, as a symbol of gratitude for her contribution to the achievement of the "Great Union" of 1 December 1918. Between 1920-1927, the Bran Castle was restored and transformed into a beautiful summer residence, surrounded with a park, fountains, a lake, walking alleys and halt terraces. After the expulsion of the royal family from the country in 1948, the Bran Castle became the property of the Romanian State, being abandoned and ravaged for a period. Since 1956 the Castle was opened as a museum of history and feudal art. Being in a serious degradation, a new restoration process of the Castle started in 1987. The repair, by and large was finished in 1993. The conclusive museistic organization will be done taking into account new criteria, result of the researchers from the last years.

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