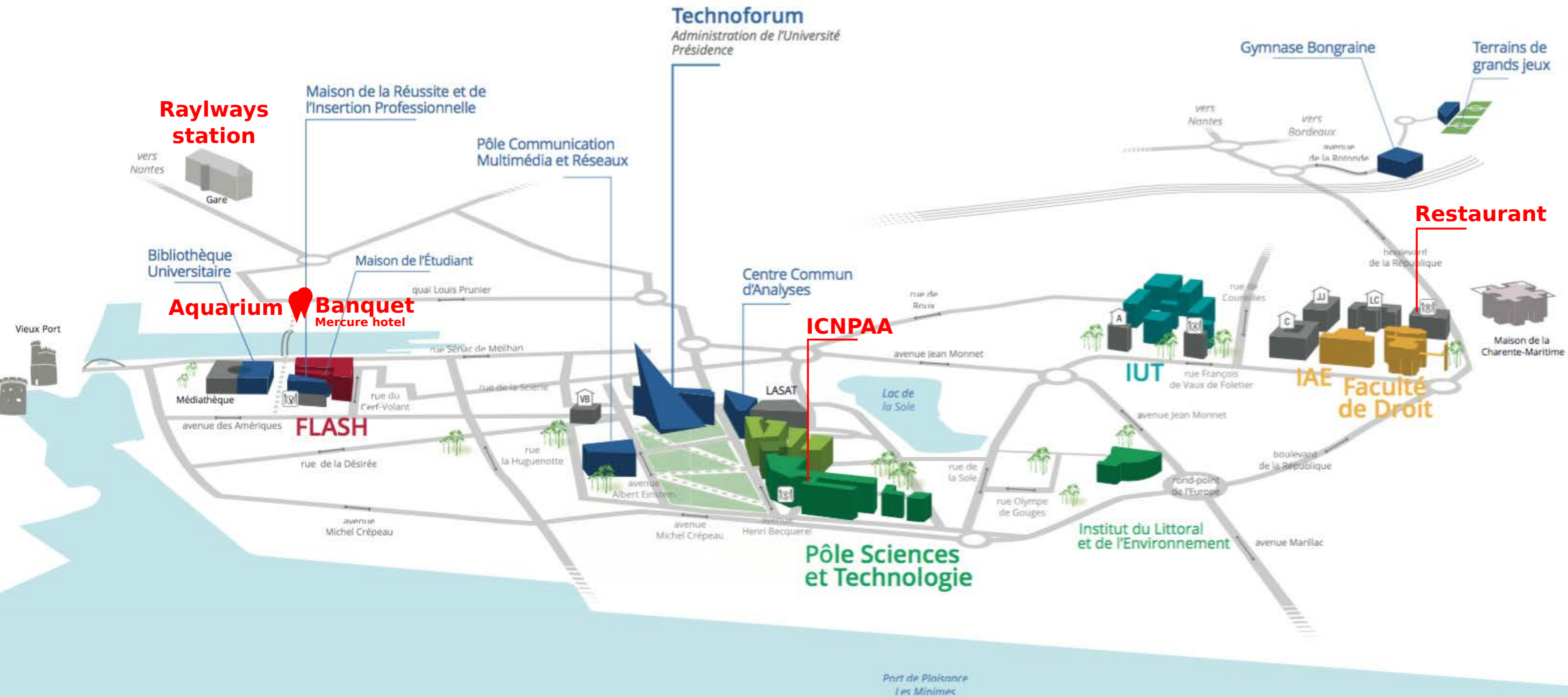




World Congress: 11th International Conference on
Mathematical Problems in Engineering, Aerospace and Sciences

La Rochelle, France, July 5 - July 8, 2016



- Hébergements**
- VB Résidence Ville en Bois
 - A Cité Antinéa
 - LC Résidence Le Carrelet
 - JJ Résidence Jean Jouzel
 - C Résidence Coureilles

- Restauration**
- R RU République
 - A RU Antinéa
 - S Cafétéria des Sciences
 - V RU Vespucci

- UFR Lettres, Langues, Arts et Sciences Humaines
- UFR Sciences Fondamentales et Sciences pour l'Ingénieur
- UFR Droit, Science Politique et Gestion
- Institut Universitaire de Technologie

Welcome Message from the Conference General Chair

As the general chair of the conference, I am delighted to welcome you all to the ICNPAA 2016 World Congress - 11th International Conference on Mathematical Problems in Engineering, Aerospace and Sciences.

La Rochelle is on the western coast of France, in the Charente-Maritime department. La Rochelle is certainly among the most attractive port towns of France, and is a very pleasant place to visit and to pass a few days, because there is a great deal to see and do in La Rochelle. There are several 'regions' including: the harbour, with the old town and historical centre, is the centre of activity and interest within the town and contains many of the most important monuments; the three towers and the ramparts; the section around the old market ;the large, modern port section a couple of kilometres south at Port des Minimes. The focus of the town is the old harbour, a lovely part of the town and very picturesque with its two monumental towers (St Nicolas Tower and the Tower of the Chain) either side of the port entrance, through which you can watch the boats enter. A third tower, the 'Tower of the Lantern' is connected to the Chain Tower by a section of the ramparts that originally defended the town. The old town, just behind the harbour, is extensive and also very well preserved and restored and dates mostly from the 17th and 18th centuries. The main shopping streets especially have many fine buildings, but you will also need to explore the side streets in this part of the town. The whole of the historic centre of La Rochelle has an impressive unified appearance, with arcaded streets, houses constructed in the local light stone, and light grey shutters. Boutiques now occupy the ground floor of many of the buildings.

The 10th ICNPAA Conference was held in Narvik, Norway in 2014, and shattered the attendance records of all the previous conferences. This year, in La Rochelle, France, despite the current worldwide economic constraints, and the security concerns around the world, we have an even larger number of attendees/delegates and there were many more that wanted to attend but could not due to lack of funding.

We have an outstanding program with several keynote addresses, general sessions, and special sessions on areas including: **Mini-Symposia:** New Methods and Applications in Aero elasticity and Structural Mechanics/Dynamics; Modelling, Simulation and Optimization in Engineering; Functional Analysis and Related Topics with Applications; Modern approximation methodologies for functions and arrays in science and engineering computations; Control of nonlinear systems under deterministic and stochastic loads; New Methods and Applications in Aeroelasticity and Structural Mechanics/Dynamics; Modelling, Simulation and Optimization in Engineering. **Tutorial sessions:** The Beauty of Simple Adaptive Control and Old and New results in Stability Analysis of Nonlinear Systems; Multivariate Function Decomposition and Data Analysis with a Basic Focus on HDMR and EMPR. **Special sessions:** Modern approximation methodologies for functions and arrays in science and engineering computations; Analysis of Fractional Differential, Integral and Difference equations with Applications; Nonlinear Problems of Guidance, Navigation and Control; Inverse Problems: Theory and Application to Science and Engineering; Control and Estimation: Theory and

Applications; Statistics and Modeling; Soliton Theory and Integrability in Mathematical Physics; The Beauty of Simple Adaptive Control and Old and New results in Stability Analysis of Nonlinear Systems; Inverse Problems: Theory and Application to Science and Engineering; Control of nonlinear systems under deterministic and stochastic loads; Integral Equations and Their Applications in Science and Technology; Mathematical Problems in Combustion and Fire Science; Applications on fractional operators to real world problems; Engineering Mathematics: wavelets, fractals, networks and matrices in computational electromagnetics, antennas, fluid dynamics and biomathematics; New Methods and Applications in Aeroelasticity and Structural Mechanics/Dynamics; Mathematical modeling, numerical algorithms and aerospace techniques; Delay Differential Equations Models in Life Sciences, Engineering and Economics; Nonlinear Engineering Problems with Singularities; Stochastic Processes and Fields in Engineering; Nonlinear analysis, optimal design and guidance of space systems with low thrust; Statistics and Modeling; Soliton Theory and Integrability in Mathematical Physics; Multivariate Function Decomposition and Data Analysis with a Basic Focus on HDMR and EMPR; Clifford algebras, Clifford analysis and their applications; Recent Integral Transforms Advances (RITA); Wavelets Analysis, Fractional Advances and Applications(WAFAA); Aspects Integres dans les Mathematiques de Abbas Bahri- a Loving Eulogy II. (AIMABLE II).

I would like to thank the **international advisory committee** and the **international organizing committee**, the **international awards committee**, the **local advisory and local organizing committee**, the sponsors *AIAA: American Institute of Aeronautics and Astronautics; IFNA: International Federation of Nonlinear Analysts; IFIP: International Federation of Information Processing; AIP: American Institute of Physics; ULR: University of La Rochelle; AFM: Association Française de Mécanique; ALPC: Aquitaine-Limousin-Poitou-Charente region; CMD: Charente-Maritime department; LaSIE: Laboratoire des Sciences de l'Ingénieur pour l'Environnement* for their assistance and support in the preparation of the conference. I also wish to express my special thanks to all who have helped in planning, organizing and chairing the sessions to make this conference a very successful event.

Finally, I would especially like to thank the local organizers Dina Razafindralandy (University of La Rochelle, France), Svetlin Georgiev (Sorbonne University, France), the conference coordinator Eva Kaslik (West University of Timisoara, Romania), the co-coordinators Iren Siva and Dianthe Siva and the administrative chair Jose Ruiz for their tireless efforts to make this a successful conference. Special thanks go also to the local advisory team and organizing team of the conference for their diligent contributions to make this event a successful one.

I hope that you all enjoy the conference and the natural beauty of the city, have an exciting scholarly cooperation, collaboration, interaction, and have a pleasant stay in La Rochelle, France.

Seenith Sivasundaram
ICNPAA General Chair

Honoring the memory of Professor Dr. A.V. Balakrishnan



Professor Dr. A.V. Balakrishnan

Professor A.V. Balakrishnan was born on December 4, 1922 in Palgat, India. He earned his M. S. Degree in Electrical Engineering and his Ph.D. in Mathematics from the University of Southern California in 1950 and 1954, respectively. From cinema to aerodynamics, he never imagined he would wind up in aerodynamics. Bal grew up in Chennai (Madras), India. He earned his B.Sc. and an M.A. from the University of Madras in the early 1940s and won a scholarship competition from the Indian government to study in the United States and learn to produce documentaries. He mentioned in his own words: "The problem was that the job they had waiting for me at the Indian Institute of Science just didn't measure up to the opportunities I knew I would have with a Ph.D. in the U.S. So I stayed." After earning his Ph.D. in 1954, he went to the East Coast and worked in radar at The Radio Corporation of America (RCA) for two years. He also mentioned, "That was a hotbed of activity at the time, but I didn't want to stay in Camden because it was known only for Campbells soup, he laughed. Instead, I joined the wagon going west, like so many other engineers did."

Professor Balakrishnan's contributions to applied mathematics, control theory and aerodynamics spanned several diverse areas: From his revolutionary and highly influential Ph.D. dissertation on fractional powers of operators, written under mathematical giant Ralph S. Phillips in 1954 at the USC; to his contributions in both deterministic and stochastic control and communication; to his ingenious Springer-Verlag book on Applied Functional Analysis of 1976 and the second edition of 1981, written with a focus on stability theory, optimal control theory and stochastic optimization for systems defined by operator semigroups, one of his favorite topics; all the way to the last phase of his research activities in continuum aero-elasticity. Starting in 1961,

Professor A.V. Balakrishnan's academic activities evolved mostly at the University of California Los Angeles (UCLA) as Professor of Engineering since 1962 and as Professor of Mathematics since 1965. During 1969-1975 and 1980-1983 he was Chairman of the Department of Systems Science in the School of Engineering, and from 1986 until he passed away he was Director of the NASA-UCLA Flight Systems Research Center.

Of gentle and well-disposed personality, ready to help junior faculty and students, he had a very unique maverick approach to science and life in general, while keeping a strong sense of independence of mind, spirit and action. Indeed, during the severe stages of the cold war, he was able to maintain scientific contacts with the former Soviet Union by inviting Soviet mathematicians such as Leon S. Pontryagin and others to visit UCLA. With Leon S. Pontryagin, Jacques-Louis Lions and Gurii I. Marchuk, he funded the Springer-Verlag journal Applied Mathematics and Optimization and gave birth to IFIP's TC7 Committee on Modeling and Optimization which was spearheaded simultaneously in Rome (Jacques-Louis Lions and A.V. Balakrishnan) and Moscow (Gurii I. Marchuk and Leon S. Pontryagin) in 1963.

Professor Balakrishnan was chairman of the IEEE's Information Theory Group and during 1970- 1980 he chaired the Technical Committee on System Modeling and Optimization as U.S. Delegate, and the International Federation on Information Processing (IFIP). From 1980 until 1995 he was Chair of the Working Group 7.1 on System Modeling and Optimization at IFIP. From 1984 until he passed away he was Chairman of the IEEE Subcommittee on Large Space Structures and from 1987 he was President of the ComCon Conference Board. Professor A.V. Balakrishnan had the ability of mastering difficult engineering problems in a rigorous mathematical way and of producing effective engineering solutions. A number of his textbooks have become standard references in their field and his Department at UCLA became a leading example of school to which talented young students and researchers looked for advice and inspiration. During over sixty years of academic activities, Professor A.V. Balakrishnan lectured as invited professor at many universities and prestigious international conferences. He supervised the work of numerous Ph.D. students and post-doctoral fellows. His research contributions have been published in over two hundred scientific papers, and in over twenty one books published by prestigious publishing houses. Professor A.V. Balakrishnan made important contributions in the areas of Communication Theory, Stochastic Differential Equations, Kalman Filtering Theory, State Space Theory of Systems, Random Processes Theory in Engineering, Laser Propagation in Atmospheric Turbulence, Functional Analysis, Semigroups of Operators Theory, and other areas.

Professor A.V. Balakrishnan also lent his expertise to industry and the government, including to Optimization Software, Inc.; NADC US Navy; and to the NASA Dryden Flight Research Center. He held patents on the modes of interconnected lattice trusses using continuum models and laser beam log amplitude temporal scintillation spectrum due to crosswind. The work of Professor A.V. Balakrishnan has been a source of inspiration for generations of engineers and applied mathematicians. In more than sixty years of an outstanding scientific career, he made seminal contributions to the analysis and design of control systems. His contributions span from the theory of optimal control (where in the 60s, he developed a celebrated method the epsilon technique for the computation of optimal controls for distributed parameter systems), to filtering and identification theory, to a number of very difficult engineering applications which include the

control of aircraft under wing turbulence, the control of flexible structure in space and aero-elastic modelling of aircraft wings.

The editorial activities of Prof. A.V. Balakrishnan were impressive as well. He was the founding editor of three important journals: Journal of Computer and System Science (1968 at Academic Press), Journal of Applied Mathematics and Optimization (1968 at Springer-Verlag), Selecta Mathematica Sovietica (1981 at Birkhauser) and he was the editor of the following three book series: Applications of Mathematics (Springer-Verlag since 1974), Lecture Notes In Information and Control (Springer-Verlag 1976-1986), and Translations Series in Mathematics and Engineering (Optimisation Software, Inc. Publications since 1983). He served as the coeditor-in-chief of the journal Mathematics in Engineering Science and Aerospace from its very beginning.

Professor A.V. Balakrishnan's professional contributions were appreciated by the international mathematical and electrical engineering communities. He was elected an IEEE Life Fellow for contributions to communication theory. He was honored with the Silver Core Award of IFIP (1977); the Certificate of Recognition of NASA (1978) for flight-test data reduction; the Guillemin Prize (1980) in recognition of the major impact that his original contribution have had in setting the research direction of communications and control; the Group Achievement Award of NASA Langley Flight Research Center (1986) for spacecraft control laboratory experiment; the Honorary Superior Accomplishment Award of NASA Langley Research Center (1992), the Public Service Medal (1996) in recognition of exceptional continuous theoretical and administrative contributions in establishing the UCLA-NASA Flight Systems Research Center to create increased research interactions between the university community and NASA; the Richard E. Bellman Control Heritage Award (2001), an American Automatic Control Council Award, given for distinguished career contributions to the theory or application of automatic control. The award is the highest recognition of professional achievement for US Control Systems engineers and scientists; and the Distinguished Alumni Award in Academia (2004) – Viterbi School of Engineering at University of Southern California.

The impact of Professor Balakrishnan's professional contributions were and still are discernible at many universities. People who prepared for their Ph.D. in control theory in 1970-1975 took full advantage of his results obtained in this area. There are also today young colleagues who have already or will defend their Ph.D. theses, using Professor Balakrishnan's books as a primary source of inspiration. Professor Balakrishnan received the title Doctor Honoris Causa from the West University of Timisoara, Romania in June 2004.

The Science, Engineering and Aerospace community mourns an icon, a colleague, and a friend. Bal is survived by his unwaveringly supportive and beloved wife Sophia (Sonya) Balakrishnan, and five children from his first marriage.

This conference is officially dedicated to Prof. Dr. A.V. Balakrishnan for his exemplary contributions to scientific endeavor and this conference series from the very beginning.

Anthony N. Michel, Stefan Balint, Seenith Sivasundaram

MONDAY - JULY 4

09.00-17.00	Pre-conference TUTORIAL WORKSHOPS	
	Room C01	Room C02
	The Beauty of Simple Adaptive Control and Old and New results in Stability Analysis of Nonlinear Systems	Multivariate Function Decomposition and Data Analysis with a Basic Focus on HDMR and EMPR
	Instructors: Itzhak Barkana, Haim Weiss, Ilan Rusnak	Instructors: Professor Metin Demiralp, Professor N. Abdölbaki Baykara, Süha Tuna, Zeynep Gündođar, Ayla Okan, Derya Bodur

17.00-20.00 **REGISTRATION – La Rochelle University, Orbigny building,**

20.00-21.00 **WELCOME RECEPTION – La Rochelle University, Pascal building 000**

TUESDAY – July 5

9.00-9.30	OPENING CEREMONY - A400						
9.30-10.30	PLENARY TALK: Prof. Naira HOVAKYMIAN						
10.30-11.00	coffee break						
Parallel sessions							
Room:	A300	A400	C21	C01	C02	C24	C27
Session:	M2	M5	M4	S12	S11	Gen	
11.00-11.25	Engineering Mathematics: wavelets...	Guidance, Navigation and Control	Modern approximation methodologies	Simple and Robust Adaptive Control	Engineering Problems with Singularities	General Session	
11.25-11.50							
11.50-12.15							
12.15-14.00	lunch break						
Keynote talks							
Room:	A300				A400		
14.00-14.50	KEYNOTE: Prof. Stefan BALINT				KEYNOTE: Prof. Francesco DELL'ISOLA,		
14.50-15.40	KEYNOTE: Prof. Sergei SILVESTROV				KEYNOTE: Prof. Marc GARBEY		
Parallel sessions							
Room:	A300	A400	C21	C01	C02	C24	C27
Session:	M2	M5	M4	S12	S11	S10	
15.50-16.15	Engineering Mathematics: wavelets...	Guidance, Navigation and Control	Modern approximation methodologies	Simple and Robust Adaptive Control	Engineering Problems with Singularities	Guidance of Space systems with low thrust	
16.15-16.40							
16.40-17.05							
17.05-17.30	coffee break						
Parallel sessions							
Room:	A300	A400	C21	C01	C02	C24	C27
Session:	M2	M5	M4	S12	S11	S10	S2
17.30-17.55	Engineering Mathematics: wavelets, fractals ...	Guidance, Navigation and Control	Modern approximation methodologies	Simple and Robust Adaptive Control	Engineering Problems with Singularities	Guidance of Space systems with low thrust	Clifford Algebras Clifford Analysis and Applications
17.55-18.20							
18.20-18.45							
18.45-19.10							

WEDNESDAY - JULY 6

Keynote talks							
Room:	A300			A400			
8.30-9.20	KEYNOTE: Prof. Milan STEHLIK			KEYNOTE: Prof. A.S. VATSALA			
9.20-10.10	KEYNOTE: Prof. Metin DEMIRALP			KEYNOTE: Dr. Itzhak BARKANA			
10.10-10.40	coffee break						
Parallel sessions							
Room:	A300	A400	C21	C01	C02	C24	C27
Session:	M2	M5	M4	S1	S15	S6	S11
10.40-11.05	Engineering Mathematics: wavelets, fractals...	Guidance, Navigation and Control	Modern approximation methodologies	Analysis of Fractional Equations with Applications	Stochastic Processes and Fields in Engineering	Integral Equations and Applications	Engineering Problems with Singularities
11.05-11.30							
11.30-11.55							
11.55-12.20							
12.20-14.00	lunch break						
Parallel sessions							
Room:	A300	A400	C21	C01	C02	C24	C27
Session:	M2	M5	M4	S1	S14	S6	S3
14.00-14.25	Engineering Mathematics: wavelets, fractals, networks and matrices...	Guidance, Navigation and Control	Modern approximation methodologies	Analysis of Fractional Equations with Applications	Statistics and Modelling	Integral Equations and Applications	Control and Estimation Theory and Applications
14.25-14.50							
14.50-15.15							
15.15-15.40							
15.40-16.05							
16.30-18.00	AQUARIUM visit						
20.00-	BANQUET - Restaurant Océanides/Hotel Mercure						

THURSDAY – July 7

Keynote talks							
Room:	A300			A400			
8.40-9.30	KEYNOTE: Prof. Ruggero Maria SANTILLI			KEYNOTE: Prof. Harry HILTON			
9.30-10.20	KEYNOTE: Prof. Jan AWREJCEWICZ			KEYNOTE: Prof. Gangaram S. LADDE			
Parallel sessions							
Room:	A300	A400	C21	C01	C02	C24	C27
Session:	M3	M6	M1	M5	S16	S18	S9
10.30-10.55	Modelling, Algorithms and Aerospace Techniques	Mathematical Methods and Modelling in Engineering	Functional Analysis and Related Topics with Applications	Guidance, Navigation and Control	Modelling and Simulation in Engineering	Recent Integral Transform Advances (RITA)	New Era in Mathematics
10.55-11.20							
11.20-11.45							
11.45-12.10							
12.10-14.00	lunch break						
Keynote talks							
Room:	A300			A400			
14.00-14.50	KEYNOTE: Dr. Jiro NAKAMICHI			KEYNOTE: Prof. Rudolf HILFER			
Parallel sessions							
Room:	A300	A400	C21	C01	C02	C24	C27
Session:	M3	M6	M1	S5	S13	S8	S9
15.00-15.25	Modelling, Algorithms and Aerospace Techniques	Mathematical Methods and Modelling in Engineering	Functional Analysis and Related Topics with Applications	Delay Differential Equation Models in Life Sciences	Soliton Theory and Integrability in Mathematical Physics	Mathematical Problems in Combustion and Fire Science	New Era in Mathematics
15.25-15.50							
15.50-16.15							
16.15-16.40							
16.40-17.00	coffee break						
Parallel sessions							
Room:	A300	A400	C21	C01	C02	C24	C27
Session:	M3	S4	M1	S5	S13	S8	S9
17.00-17.25	Modelling, Algorithms and Aerospace Techniques	Control of Nonlinear Systems	Functional Analysis and Related Topics with Applications	Delay Differential Equation Models in Life Sciences	Soliton Theory and Integrability in Mathematical Physics	Mathematical Problems in Combustion and Fire Science	New Era in Mathematics
17.25-17.50							
17.50-18.15							
18.15-18.40							

FRIDAY – July 8

	Keynote talks						
Room:	A400						
8.30-9.20	KEYNOTE: Dr. Takeshi TSUCHIYA						
9.20-10.10	KEYNOTE: Dr. Toshiya NAKAMURA						
10.10-10.40	coffee break						
	Parallel sessions						
Room:	A300	A400	C21	C01	C02	C24	C27
Session:	M3	M6	S2	S7	S17	S4	S9
10.40-11.05	Modelling, Algorithms and Aerospace Techniques	Mathematical Methods and Modelling in Engineering	Clifford Algebras Clifford Analysis and Applications	Inverse Problems: Theory and Applications	Aeroelasticity and Structural Mechanics/ Dynamics	Control of Nonlinear Systems	New Era in Mathematics
11.05-11.30							
11.30-11.55							
11.55-12.20							
12.20-14.00	lunch break						
	Parallel sessions						
Room:	A300	A400	C21	C01	C02	C24	C27
Session:	M3	M6	S2	S7	S19	S4	
14.00-14.25	Modelling, Algorithms and Aerospace Techniques	Mathematical Methods and Modelling in Engineering	Clifford Algebras Clifford Analysis and Applications	Inverse Problems: Theory and Applications	Wavelets Analysis, Fractional Advances and Applications	Control of Nonlinear Systems	
14.25-14.50							
14.50-15.15							
15.15-15.40							
15.40-16.05							
16.00-	CLOSING CEREMONY						
	END OF CONFERENCE						

TUESDAY – July 5

9.00-9.30	OPENING CEREMONY - Room A400
9.30-10.30	PLENARY TALK: Prof. Naira HOVAKYMIAN - Cooperative Control of UAVs

10.30-11.00	coffee break
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11.00-12.15	Parallel sessions
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Room A300	M2: Engineering Mathematics: wavelets, fractals, networks and matrices in computational electromagnetics, antennas, fluid dynamics and biomathematics <i>Chair: Sergei Silvestrov</i>
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11.00-11.25	Dmitrii Silvestrov	Asymptotic Expansions for Stationary Distributions of Perturbed Semi-Markov Processes
11.25-11.50	Betuel Canhanga	Numerical methods and asymptotic expansions for multi-parameter stochastic differential equations modeling
11.50-12.15	Karl Lundengård	Construction of moment-matching multinomial lattices using Vandermonde matrices and Gröbner bases.

Room A400	M5: Nonlinear Problems of Guidance, Navigation and Control <i>Chair: Yevgeny Somov</i>
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11.00-11.25	Yevgeny Somov	Guidance and adaptive-robust attitude & orbit control of a small information satellite
11.25-11.50	Oleg Bogdanov	Application of GNSS-INS simulator for testing algorithms of the airborne vector gravimetry problem.
11.50-12.15	Andrey Shevchenko	Methods for Predicting Unsteady Takeoff and Landing Trajectories of the Aircraft

Room C21	M4: Modern approximation methodologies for functions and arrays in science and engineering computations <i>Chair: Metin Demiralp</i>
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11.00-11.25	Nasir Abdülbaki Baykara	Multivariate Numerical Integration via Fluctuationlessness Theorem: Case Study
11.25-11.50	Berfin Kalay	A Space Pruning Approach to the Determination of Spectral Entities for a Quantum System Described by a Singular Potential
11.50-12.15	Derya Bodur	Certain Implementative Applications of Separate Node Ascending Derivatives Expansion (SNADE)

Room C01	S12: Simple and Robust Adaptive Control <i>Chair: Itzhak Barkana</i>
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11.00-11.25	Devika K. B.	On the Synthesis of Nonlinear Sliding Mode Controller for the Autopilot Design of Free Flight System
11.25-11.50	Ilan Rusnak	Implementation of SAC in Target Tracking Loop
11.50-12.15	Oleg Borisov	Simple Adaptive Control for Quadcopters with Saturated Actuators

Room C02	S11: Nonlinear Engineering Problems with Singularities <i>Chair: Marat Dosaev</i>
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11.00-11.25	Maria Kulikovskaya	Comparison of energy costs for different control laws of a vibratory robot
11.25-11.50	Oleg Cherkasov	Range Maximization and Brachistochrone Problem with Dry Friction, Viscous Drag and Accelerating Force
11.50-12.15	Yury Selyutskiy	On auto-oscillations of a plate in flow

Room C24	General Session <i>Chair: Seenith Sivasundaram</i>
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11.00-11.50	Ryspek Usubamatov	Mathematical Models for Principles of Gyroscope Theory
11.50-12.15	Christopher Jesudason	Second Law considerations for Fourier Heat Conduction in relation to intermolecular potentials

12.15-14.00	lunch break
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14.00-15.40	Keynote talks
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Room A300	<i>Chair: Prof. Metin Demiralp</i>	
14.00-14.50	Prof. Stefan BALINT	Space-Time Evolution of the Perturbations of a Spatially Developing Constant Gas Flow

14.50-15.40	Prof. Sergei SILVESTROV	Engineering Mathematics for big data networks and computational electromagnetics
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Room A400 Chair: Prof. Dina Razafindralandy

14.00-14.50	Prof. Francesco DELL'ISOLA	Pantographic lattice based metamaterials: Modelling, prototype experiments and possible engineering applications
14.50-15.40	Prof. Marc GARBEY	Vascular Repair & Vascular Adaptation: Challenges and Opportunities

15.50-17.05 **Parallel sessions**

Room A300 **M2: Engineering Mathematics: wavelets, fractals, networks and matrices in computational electromagnetics, antennas, fluid dynamics and biomathematics.**

Chair: Emanuel Guargilia

15.50-16.15	Jonas Österberg	Power series expansion of functions involving generalized Vandermonde matrices
16.15-16.40	Karl Lundengård	Multi-Peaked Analytically Extended Function Representing Electrostatic Discharge (ESD) Currents
16.40-17.05	Sergei Silvestrov	Calculating PageRank in a changing network

Room A400 **M5: Nonlinear Problems of Guidance, Navigation and Control**

Chair: Yevgeny Somov

15.50-16.15	Sergey Somov	Attitude guidance and control of the GLONASS navigation satellites at passage of singular orbit sites
16.15-16.40	Alexander Kochetkov	Tracking problem for electromechanical system under influence of unknown unmatched perturbation
16.40-17.05	Svetlana Krasnova	Block Design of Tracking Systems under Unmatched Disturbances via Sigmoidal Feedbacks

Room C21 **M4: Modern approximation methodologies for functions and arrays in science and engineering computations**

Chair: Metin Demiralp

15.50-16.15	Ercan Gürvit	Recovery of Missing Data via Wavelets Followed by High-Dimensional Modeling
16.15-16.40	Süha Tuna	A Numerical Comparison between Bivariate Enhanced Multivariate Products Representation and Smoothing Bicubic Spline Method
16.40-17.05	Evrin Korkmaz Özay	Face Recognition using Tridiagonal Matrix Enhanced Multivariate Products Representation (TMEPR)

Room C01 **S12: Simple and Robust Adaptive Control**

Chair: Itzhak Barkana

15.50-16.15	Stanislav Tomashevich	Passification based simple adaptive control of quadrotor attitude: algorithms and testbed results
16.15-16.40	Anton Putov	Adaptive control of an unmanned aerial vehicle
16.40-17.05	Alexander Popov	A Direct Implicit Reference Model Adaptive Control for SIMO Linear Time Invariant Systems with Super-Twisting-Like Terms

Room C02 **S11: Nonlinear Engineering Problems with Singularities**

Chair: Oleg Cherkasov

15.50-16.15	Marat Dosaev	Stability domains for vane with viscose filling
16.15-16.40	Roger Khayat	Treatment of flow singularity for exiting liquid jet from a hydrophobic channel
16.40-17.05	Malika Yaici	Helicopter Flight Control by Dynamic Compensator

Room C24 **S10: Nonlinear analysis, optimal design and guidance of space systems with low thrust**

Chair: Olga Starinova

15.50-16.15	Andrey Shornikov	Boundary problem solution of an optimal control transfer between circular orbits for an electric propulsion spacecraft in an irregular gravitational field of an asteroid
16.15-16.40	Irina Gorbunova	An approach for the control method's determination for an interplanetary mission with solar sail
16.40-17.05	Vadim Salmin	Optimization methods of near-Earth and interplanetary flights with low thrust

17.05-17.30 **coffee break**

17.30-19.10	Parallel sessions	
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Room A300	M2: Engineering Mathematics: wavelets, fractals, networks and matrices in computational electromagnetics, antennas, fluid dynamics and biomathematics.	
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Chair: Sergei Silvestrov

17.30-17.55	Xiaomin Qi	Data Classifications with Support Vector Machines and Generalized Support Vector Machine
17.55-18.20	Yeliz Karaca	Test Application for Support Vector Machines: The Estimation of Adults' Cognitive Skills through Certain Kernel Types based on WAIS-R
18.20-18.45	Holger Weishaupt	Identification and functional characterization of a glioma specific retroviral integration landscape

Room A400	M5: Nonlinear Problems of Guidance, Navigation and Control	
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Chair: Yevgeny Somov

17.30-17.55	Aleksander Shulepov	Arrangement of spacecraft onboard equipment with minimizing the influence of external factors
17.55-18.20	Igor Davydov	Liquid oscillations in the tanks' level sensors of aerospace objects

Room C21	M4: Modern approximation methodologies for functions and arrays in science and engineering computations	
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Chair: Metin Demiralp

17.30-17.55	Cosar Gozukirmizi	Classical Symmetric Fourth Degree Potential Systems In Probabilistic Evolution Theoretical Perspective: Most Facilitative Conicalization and Squarification of Telescope Matrices
17.55-18.20	Elif Tataroglu	An Implementative Application of Probabilistic Evolution Theory : A Case Study for Two Particles Celestial Mechanical System
18.20-18.45	Melike Ebru Kırkın	More Practicalization of Probabilistic Evolution Theory: Case Studies for the Squarification of Telescope Matrices

Room C01	S12: Simple and Robust Adaptive Control	
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Chair: Ilan Rusnak

17.30-17.55	Alexander Popov	Adaptive synchronization of robot-manipulators for tracking problem
17.55-18.20	Itzhak Barkana	The new Theorem of Stability and Gain Convergence in Simple Adaptive Control
18.20-18.45	G. Rohith	Quasi-Periodic Dynamics of a High Angle of Attack Aircraft
18.45-19.10	Hongkeun Kim	A Dynamic Controller Guaranteeing Almost Strict Positive Realness of the Interconnected System

Room C02	S11: Nonlinear Engineering Problems with Singularities	
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Chair: Yury Selyutskiy

17.30-17.55	Anastasia Lyubicheva	Modeling of indentation into inhomogeneous soft tissues
17.55-18.20	Vitaly Samsonov	Mechanical Systems with Singularities
18.20-18.45	Dmytro D. Leshchenko	Evolution of rotational motions of a rigid body similar to pseudoregular precession in the Lagrange case

Room C24	S10: Nonlinear analysis, optimal design and guidance of space systems with low thrust	
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Chair: Olga Starinova

17.30-17.55	Vadim Salmin	Approximate approach for optimization space flights with a small thrust on the basis of sufficient optimality conditions
17.55-18.20	Olga Starinova	Methods of Optimal Control Choice of Non-Keplerian Orbits
18.20-18.45	Sergey Somov	Pulse-width control of electro-reaction engines for a station-keeping of land-survey satellite on sun-synchronous orbit
18.45-19.10	Alexey Chetverikov	Control geostationary spacecraft in orbital plane using a low thrust engine

Room C27	S2: Clifford algebras, Clifford analysis and their applications	
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Chair: Joao Morais

17.30-17.55	Svetlin Georgiev	New Aspects on Moisil-Teodorescu System
17.55-18.20	Hennie De Schepper	Unraveling of equations in quaternionic and osp(4/2) monogenicity
18.20-18.45	Rim Jday	Uncertainty Principles For The Clifford-Fourier transform

WEDNESDAY – July 6

8.30-10.10 **Keynote talks**

Room A300 *Chair: Prof. Gangaram S. Ladde*

8.30-9.20	Prof. Milan STEHLIK	Extracting Fractal and extreme aspects from series of random dynamical systems
9.20-10.10	Prof. Metin DEMIRALP	Enhanced multivariance products representation (empr) from scratch to its most recent status

Room A400 *Chair: Prof. Luis Castro*

8.30-9.20	Prof. Aghalaya S. VATSALA	Riemann Liouville Dynamic Systems Versus Sequential Caputo dynamic Systems with Applications
9.20-10.10	Dr. Itzhak BARKANA	Can Stability Analysis be really simplified? (Revisiting Lyapunov, Barbalat, LaSalle and all that)

10.10-10.40 **coffee break**

10.40-12.20 **Parallel sessions**

Room A300 **M2: Engineering Mathematics: wavelets, fractals, networks and matrices in computational electromagnetics, antennas, fluid dynamics and biomathematics.**

Chair: Emanuel Guariglia

10.40-11.05	Emanuel Guariglia	Fractional derivative of the Zeta Functions and Functional Equations
11.05-11.30	Sergei Silvestrov	Iterated function systems, wavelets, fixed points, fractal attractors and commutative and non-commutative families of operators
11.30-11.55	Jawali Channabasappa Umavathi	Double diffusive convection in a Porous Medium Layer Saturated with an Oldroyd Nanofluid
11.55-12.20	Mahesha Narayana	Thermocapillary flow of a non-Newtonian nanoliquid film over an unsteady stretching sheet

Room A400 **M5: Nonlinear Problems of Guidance, Navigation and Control**

Chair: Yevgeny Somov

10.40-11.05	Sergey Ulyanov	A VLF-based technique for analysis and synthesis of nonlinear digital control systems and its applications
11.05-11.30	Gennady Oparin	Automation of Multi-Agent Control for Complex Dynamic Systems in Heterogeneous Computational Network
11.30-11.55	Nadezhda Nagul	On the problem of discrete-event systems properties preservation
11.55-12.20	Roman Khabibullin	Nonlinear Modeling and Study for Control of the Research Spacecraft with Solar Sail

Room C21 **M4: Modern approximation methodologies for functions and arrays in science and engineering computations**

Chair: Metin Demiralp

10.40-11.05	Nasır Abdülbaki Baykara	Overflow Removal from the Images of an Infinite Linear Combination Over a Basis Function Set Under the Quantum System Hamiltonian to Evaluate the System's Spectral Entities
11.05-11.30	Berfin Kalay	A Wavefunction Free Exponential Function Expectation Value Determination Based ODE Construction and Solution to Get Spectral Entities For the Systems Having Coulombic Attractions
11.30-11.55	Cosar Gozukirmizi	Squarification of Telescope Matrices in the Probabilistic Evolution Theoretical Approach to the Two Particle Classical Mechanics as an Illustrative Implementation
11.55-12.20	Süha Tuna	A Novel Compression Algorithm for Hyperspectral Images Using Enhanced Multivariance Products Representation

Room C01 **S1: Analysis of Fractional Differential, Integral and Difference equations with Applications**

Chair: Aghalaya S. Vatsala

10.40-11.05	Amit Setia	Haar based numerical solution of Fredholm-Volterra fractional integro-differential equation with nonlocal boundary conditions
11.05-11.30	Belmechri Firouz	Integral equation in functional spaces / Generalized Lebesgue space $\square^{(1)}(-)$
11.30-11.55	Abdon Atangana	New trends on Fractional operators and Applications
11.55-12.20	Cemil Tunc	On qualitative properties in nonlinear Volterra integro-differential equations with delay

Room C02 S15: Stochastic Processes and Fields in Engineering*Chair: Anatoliy Malyarenko*

10.40-11.05	Anatoliy Malyarenko	Spectral expansions of tensor-valued random fields (invited talk)
11.05-11.30	Nikolai Leonenko	Fractional Poisson Random Fields
11.30-11.55	Ying Ni	Approximation methods of European option pricing in multiscale stochastic volatility model
11.55-12.20	Dmitrii Silvestrov	Randomly Stopped Stochastic Processes
12.20-12.40	Anatoliy Malyarenko	Anatoliy Malyarenko and Martin Ostoja-Starzewski. Random fields related to the symmetry classes of second-order symmetric tensors

Room C24 S6: Integral Equations and Their Applications in Science and Technology*Chair: Jozef Banas*

10.40-11.30	Luis Castro	On the solvability of a class of convolution integral equations with symmetry
11.30-11.55	Rita Guerra	Fourier cosine and Fourier sine integral equations and their convolutions
11.55-12.20	Anabela Silva	Invertibility of Wiener-Hopf plus Hankel integral equations

Room C27 S11: Nonlinear Engineering Problems with Singularities*Chair: Marat Dosaev*

10.40-11.05	Anton Putov	Electromechanical imitator of antilock braking modes of wheels with pneumatic tire and its application for the runways friction coefficient measurement
11.05-11.30	Qingchun Yang	A Predication model for combustion modes of the scramjet-powered aerospace vehicle based on the nonlinear features of the isolator flow field
11.30-11.55	Mehmet Pakdemirli	Nonlinear Mathematical Models for Paths Maintaining Constant Normal Accelerations
11.55-12.20	Çiğdem A. Bektas	On a new space of defined by using Orlicz functions

12.20-14.00 **lunch break**14.00-16.05 **Parallel sessions****Room A300 M2: Engineering Mathematics: wavelets, fractals, networks and matrices in computational electromagnetics, antennas, fluid dynamics and biomathematics.***Chair: Sergei Silvestrov*

14.00-14.25	Prashant G. Metri	Lie group analysis for MHD boundary layer flow and heat transfer over stretching sheet with viscous dissipation and uniform heat source
14.25-14.50	Prashant G. Metri	Hypergeometric Steady Solution of Hydromagnetic Nano Liquid Film Flow over an Unsteady Stretching Sheet
14.50-15.15	Brice Montagné	Influence of nozzle shape, Reynolds number and nozzle-to-plate distance on flow characteristics, wall shear rate and mass transfer generated by submerged round impinging jets
15.15-15.40	Pierre Bragança	Passive control of supplied air jets for thermal comfort improvement in ventilated spaces

Room A400 M5: Nonlinear Problems of Guidance, Navigation and Control*Chair: Yevgeny Somov*

14.00-14.25	Alexander Kozlov	An analytic approach to the relation between GPS attitude determination accuracy and antenna configuration geometry
14.25-14.50	Tatyana Somova	Attitude guidance and simulation with animation of a land-survey satellite motion
14.50-15.15	Alexander Kucherov	Estimation of Land Remote Sensing Satellites Productivity Based on the Simulation Technique
15.15-15.40	Andrey Shevchenko	Nonlinear Algorithm for Navigation of a Moving Object in Magnetic Field

Room C21 M4: Modern approximation methodologies for functions and arrays in science and engineering computations*Chair: Metin Demiralp*

14.00-14.25	Zeynep Gündoğar	Transformational Tridiagonal Folmat Enhanced Multivariate Products Representation (TTFEMPR) Possibilities in Multivariate Array Decomposition
14.25-14.50	Ayla Okan	A TMEMPR Based Approach for Transforming Arrowheaded Matrices to Tridiagonal Forms
14.50-15.15	Ayşegül Karcili	High Dimensional Model Representation (HDMR) with Clustering for Image Retrieval

Room C01 S1: Analysis of Fractional Differential, Integral and Difference equations with Applications*Chair: Abdon Atangana*

14.00-14.25	Sowmya Muniswamy	Generalized Monotone Method and Numerical Approach for Coupled Reaction Diffusion Systems
14.25-14.50	Amit Setia	Numerical method to solve cauchy type singular integral equation with error bounds
14.50-15.15	Berikbol Torebek	On a nonlinear fractional boundary value problem
15.15-15.40	Suares Clovis Oukouomi Noutchie	Global solvability of a class of fractional integro-differential equations with applications

Room C02 S14: Statistics and Modeling*Chair: Milan Stehlik*

14.00-14.25	Polychronis Economou	Control charts and differentiation of sampling schemes among Phase I and Phase II
14.25-14.50	Iliia Frenkel	Importance assessment of aging multi-state water cooling system by LZ-transform method
14.50-15.15	Orietta Nicolis	Spatio-temporal modelling for assessing air pollution in Santiago of Chile
15.15-15.40	Klaus Poetzberger	Estimating The Quantization Dimension of Distributions
15.40-16.05	Sabri Salima	Recognition of human activities from situation based model

Room C24 S6: Integral Equations and Their Applications in Science and Technology*Chair: Luis Castro*

14.00-14.25	Alberto Simões	Hyers-Ulam-Rassias stability for a class of Hammerstein integral equations
14.25-14.50	M.Manuela Rodrigues	Some new properties and applications of a fractional Fourier transform
14.50-15.15	Bakhyt Alipova	Shock Waves As Generalized Solutions Of Thermoelastodynamics Equations. On The Uniqueness Of Boundary Value Problems Solutions.
15.15-15.40	Ahu Ercan	Stability Problem for Singular Dirac Equation System on Finite Interval
15.40-16.05	Sinan Ercan	The dual spaces of new λ^m -sequence spaces and their matrix maps

Room C27 S3: Control and Estimation: Theory and Applications*Chair: Allen R. Stubberud and Stephen Stubberud*

14.00-14.25	Tuan Duong	Integration of Bio-Inspired, Control-Based Visual and Olfactory Data for the Detection of an Elusive Target
14.25-14.50	Endre Nagy	Model Predictive Control: a new approach
14.50-15.15	Stephen Stubberud	Submarine Harbor Navigation Using Image Data
15.15-15.40	Zoleikha Abdollahi Biron	Observer based fault diagnostics for networked control systems in presence of delay
15.40-16.05	Allen Stubberud	A Unified Kalman Filter

16.30-18.00	AQUARIUM visit
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20.00-	BANQUET - Restaurant Océanides/Hotel Mercure
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THURSDAY – July 7

9.30-10.20 **Keynote talks**

Room A300 *Chair: Dr. Svetlin Georgiev*

8.40-9.30	Prof. Ruggero Maria SANTILLI	Outline of the new era in mathematics and its applications
9.30-10.20	Prof. Jan AWREJCEWICZ	Novel non-linear phenomena exhibited by interacting structural members

Room A400 *Chair: Prof. Stefan Balint*

8.40-9.30	Prof. Harry HILTON	The influence of time dependent flight and maneuver velocities and elastic or viscoelastic flexibilities on aerodynamic and stability derivatives
9.30-10.20	Prof. Gangaram S. LADDE	Stochastic Partial Differential Equations: Modeling, Methods and Applications

10.30-12.10 **Parallel sessions**

Room A300 **M3: Mathematical modeling, numerical algorithms and aerospace techniques**

Chair: Alexandru Dumitrache

10.30-10.55	Robert Szabo	Lyapunov stability of a spatially developing constant 2D gas flow
10.55-11.20	Agneta Balint	Non Lyapunov stability of the constant spatially developing 1-D gas flow in presence of solutions having strictly positive exponential growth rate
11.20-11.45	Andreea Cernat	Numerical Analysis of NREL VI Wind Turbine Rotor Performance
11.45-12.10	Florin Frunzulica	Aerodynamics investigations of a disc-wing UAV

Room A400 **M6: Studies on Mathematical Methods and Models in Engineering, Sciences and Technology**

Chair: Frederic Muttin

10.30-10.55	Necdet Bildik	Modification of perturbation-iteration method to solve different types of nonlinear differential equations
10.55-11.20	Yusuf Pandir	A new version of the generalized F-expansion method and its applications
11.20-11.45	Simge Öztunç	Properties of Soft Homotopy in Digital Images
11.45-12.10	Duygu Dönmez Demir	Determining Critical Load in the Multispan Beams with the Nonlinear Model

Room C21 **M1: Functional Analysis and Related Topics with Applications**

Chair: Lars-Erik Persson and Maria Alessandra Ragusa

10.30-10.55	Peter Wall	Homogenization and thin film flow
10.55-11.20	Afonso Fernando Tsanzana	Homogenization of a mathematical model of thin film flow
11.20-11.45	Anders Holmbom	The concept of very weak multiscale convergence and some applications to homogenization of evolution problems
11.45-12.10	Evgeniya Burtseva	SIO in non-standard spaces

Room C01 **M5: Nonlinear Problems of Guidance, Navigation and Control**

Chair: Yevgeny Somov

10.30-10.55	Yevgeny Somov	Nonlinear research of an image motion stabilization system embedded in a space land-survey telescope
10.55-11.20	Maksim Fain	Time-Optimal Control of the Spacecraft Trajectories in the Earth-Moon System
11.20-11.45	Alexander Kucherov	Estimation of Land Remote Sensing Satellites Operational Efficiency
11.45-12.10	Igor Davydov	Nonlinear modeling of an aerospace object dynamics

Room C02 **S16: Modelling, Simulation and Optimization in Engineering**

Chair: Amer Farhan Rafique

10.30-10.55	Umair Najeeb Mughal	Atmospheric Icing Intensity on Slowly Rotating Hexagonal Prism and Cylinder with Fins
10.55-11.20	Andrey Nasedkin	Models and finite element approximations for interacting nanosized piezoelectric bodies and acoustic medium
11.20-11.45	Sergey Shevtsov	Optimization of Wall Thickness and Lay-Up for the Shell-Like Composite Structure Loaded by Non-Uniform Pressure Field
11.45-12.10	Amer Farhan Rafique	A Survey of Multidisciplinary Design and Optimization in UAVs

Room C24 **S18: Recent Integral Transforms Advances (RITA)**

Chair: Fethi Bin Muhammad Belgacem

10.30-10.55	Fethi Bin Muhammad Belgacem	Theoretical investigations of Sumudu transform
10.55-11.20	Bokhari Ahmed	Applications of the Sumudu Transform to Euler Numbers and Polynomials
11.20-11.45	Ahmad Alenezi	Sumudu Treatment of Kravtchuk Polynomials of Order 8
11.45-12.10	Bokhari Ahmed	Applications of the Sumudu Transform to Bernoulli Numbers and Polynomials

Room C27 S9: New Era in Mathematics*Chair: Svetlin Georgiev*

10.30-10.55	Svetlin Georgiev	Some aspects of iso-differential calculus
10.55-11.20	Thomas Vougiouklis	1. Small Hypernumbers, 2. On the iso-hyper-representation theory, 3. Helix hopes in Lie-Santilli admissibility, 4. The LV-hyperstructures in Santilli's iso-theory
11.20-11.45	Ruggero Santilli	Exact and invariant representation of nuclear magnetic moments according to Isomathematics and Isomechanics
11.45-12.10	Anil A. Bhalekar	Exact and invariant representation of nuclear spins via isomathematics and isomechanics

12.10-14.00	lunch break	
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14.00-14.50 Keynote talks**Room A300 Chair: Prof. Harry H. Hilton**

14.00-14.50	Dr. Jiro NAKAMICHI	Some Considerations on Prandtl Lifting-Line Theory
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Room A400 Chair: Prof. Vladimir V. Kulish

14.00-14.50	Prof. Rudolf HILFER	Experimental implications of Bochner-Levy-Riesz diffusion
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15.00-16.40 Parallel sessions**Room A300 M3: Mathematical modeling, numerical algorithms and aerospace techniques***Chair: Florin Frunzulica*

15.00-15.25	Dina Razafindralandy	Considering factorial series as time integration method
15.25-15.50	Alexandru Dumitrache	Twin Flapping wings as an alternative method of harvesting energy from wind
15.50-16.15	Adriana Tanasie	Non Lyapunov stability of a constant spatially developing 2-D gas flow
16.15-16.40	Cosmin Katona	The effect of wind direction and building surroundings on a marina bay in the Black Sea

Room A400 M6: Studies on Mathematical Methods and Models in Engineering, Sciences and Technology*Chair: Necdet Bildik*

15.00-15.25	Ali Demir	The prediction of brick wall strengths with artificial neural networks model
15.25-15.50	Sinan Deniz	Applications of Optimal Perturbation Iteration Method for solving Nonlinear Differential Equations
15.50-16.15	Frédéric Muttin	Numerical modelling and experimentation of curtain containing floating oil pollution in harbor
16.15-16.40	Hassan Khawaja	Applicability Extent of 2-D Heat Equation for Numerical Analysis of Multiphysics Problems

Room C21 M1: Functional Analysis and Related Topics with Applications*Chair: Natasha Samko and Lars-Erik Persson*

15.00-15.25	Lars-Erik Persson	A convexity approach to consider and prove Hardy type inequalities with sharp constants
15.25-15.50	Staffan Lundberg	On a solution of some hyperbolic type equations
15.50-16.15	Natasha Samko	On Weighted Sub-linear Operators in Generalized Morrey Spaces and their applications
16.15-16.40	Yevgeniy Guseynov	Layer potentials on rough boundaries and fractals

Room C01 S5: Delay Differential Equations Models in Life Sciences, Engineering and Economics*Chair: Andrei Halanay*

15.00-15.25	Rodica Radulescu	Dynamics of complex-valued fractional-order neuronal networks
15.25-15.50	Mihaela Neamtu	The stability analysis of a hypothalamic pituitary adrenal axis model with inclusion of the glucocorticoid receptor and memory
15.50-16.15	Carmen-Anca Safta	Stability analysis for a delay differential equations model of a hydraulic turbine speed governor
16.15-16.40	Doina Candea	Parameter estimation and sensitivity analysis for a mathematical model with time delays of leukemia

Room C02 S13: Soliton Theory and Integrability in Mathematical Physics*Chair: Omer Ünsal*

15.00-15.25	Melike Kaplan	The Auto- Bäcklund transformations for the (2 + 1)-dimensional Boiti-Leon-Manna-Pempinelli equation
15.25-15.50	Burcu Ayhan	Multiple Scales Analysis and Travelling Wave Solutions for KdV Type Nonlinear Evolution Equations
15.50-16.15	Ömer Ünsal	Singular 1-solution of the nonlinear variable-coefficient diffusion–reaction and mKdV equations
16.15-16.40	Murat Koparan	A Novel Generalized Kudryashov Method for Exact Solutions of Nonlinear Evolution Equations

Room C24 S8: Mathematical Problems in Combustion and Fire Science*Chair: Vasily Novozhilov*

15.00-15.25	Jean-Louis Consalvi	Modelling Emission Turbulence-Radiation Interaction by using a Hybrid Flamelet/Stochastic Eulerian Field Method
15.25-15.50	Vladimir Kulish	Application of fractional calculus to modelling transient combustion of solid propellants
15.50-16.15	Vasily Novozhilov	Fire Suppression as a Thermal Implosion

Room C27 S9: New Era in Mathematics*Chair: Andrew Beckwith*

15.00-15.25	Jan Rak	Ultra-relativistic heavy ion collisions at the Large Hadron Collider era
15.25-15.50	Raul Falcon	The influence of Latin squares autotopisms on the rocket propellant problem and the radar detection experiment
15.50-16.15	Simone Beghella Bartoli	Apparent need of antimatter galaxies for the stability of the universe
16.15-16.40	Achilles Dramalidis	On the iso-hyper-representation theory

16.40-17.00 **coffee break**17.00-19.05 **Parallel sessions****Room A300 M3: Mathematical modeling, numerical algorithms and aerospace techniques***Chair: Alexandru Dumitrache*

17.00-17.25	Sergey Chernyakin	Modelling of delamination growth in laminated plates using cohesive zone model techniques
17.25-17.50	Andreea Cernat	Numerical Study of Aerodynamic Effects on Road Vehicles Lifting Surfaces
17.50-18.15	Andrei Kolyshkin	Stability of shallow flows: a weakly nonlinear approach

Room A400 S4: Control of nonlinear systems under deterministic and stochastic loads*Chair: Diego Colon*

17.00-17.25	William McEaney	Stationary Action and Hamilton-Jacobi Theory
17.25-17.50	Somasundar Kannan	Nonlinear Model Predictive Control for Cooperative Control of Space Robots
17.50-18.15	Atila Bueno	Mathematical modeling of a Bridge Crane
18.15-18.40	Clivaldo Oliveira	Damage propagation on a non-ideal vibrating system, with fractional spring and damping
18.40-19.05	Hassan Elfatih Hassan Mohamed	Computational Analysis of Unmanned Aerial Vehicle (UAV)

Room C21 M1: Functional Analysis and Related Topics with Applications*Chair: Natasha Samko and Maria Alessandra Ragusa*

17.00-17.25	Maria Alessandra Ragusa	Perturbation methods for nonlinear elliptic problems
17.25-17.50	Evgeniya Burtseva	Elliptic PDE, and SIO in non-standard spaces
17.50-18.15	Vladimir Rabinovich	On spectral properties and invertibility of some operators of Mathematical Physics
18.15-18.40	Katsuo Matsuoka	Several estimates for generalized fractional integrals on ${}^{\lambda}\mathcal{CMO}$ spaces
18.40-19.05	Andrea Scapellato	Regularity of solutions to linear elliptic equations in Generalized Morrey Spaces

Room C01 S5: Delay Differential Equations Models in Life Sciences, Engineering and Economics*Chair: Mihaela Neamtu*

17.00-17.25	Irina Badralexi	Stability and oscillations in a CML model
17.25-17.50	Oana Brandibur	Nonlinear dynamics in a fractional-order Morris-Lecar neuronal model
17.50-18.15	Aleksandr Shvets	Influence of Delay on Dynamical Behaviour of Nonideal Pendulum Systems

18.15-18.40	Rodica Radulescu	A comparison between the stability properties in a DDEs model for leukemia and the modified fractional counterpart
18.40-19.05	Olufemi Adeyinka Adesina	New results on the stability, boundedness and periodic solutions of some third-order delay nonlinear differential equations with multiple deviating arguments

Room C02 S13: Soliton Theory and Integrability in Mathematical Physics

Chair: Omer Unsal

17.00-17.25	Ömer Ünsal	The (G'/G)-expansion method for the nonlinear time fractional differential equations
17.25-17.50	Burcu Ayhan	A Family of Exact Travelling Wave Solutions of (2+1)-dimensional KdV4 Equation
17.50-18.15	Melike Kaplan	Conservation laws and exact solutions of Boussinesq-Burger equation
18.15-18.40	Ömer Ünsal	Soliton solutions and other solutions to a nonlinear fractional differential equations

Room C24 S8: Mathematical Problems in Combustion and Fire Science

Chair: Vasily Novozhilov

17.00-17.25	Vladimir Kulish	On the possibility to develop an advanced non-equilibrium model of depressurisation in two-phase fluids
17.25-17.50	Dominique Morvan	How simulating wildland fires: the multiphase approach ?
17.50-18.15	Vasily Novozhilov	Effects of Initial and Boundary Conditions on Thermal Explosion Development

Room C27 S9: New Era in Mathematics

Chair: Svetlin Georgiev

17.00-17.25	Simone Beghella Bartoli	Trajectories of antimatter asteroids in our Solar system
17.25-17.50	Achilles Dramalidis	Helix hopes in Lie-Santilli admissibility
17.50-18.15	Achilles Dramalidis	Small Hypernumbers

FRIDAY – July 8

8.30-10.10 **Keynote talks**

Room A400	<i>Chair: Prof. Yevgeny Somov</i>	
8.30-9.20	Dr. Takeshi TSUCHIYA	Research on Advanced Flight Control System Using UAV
9.20-10.10	Dr. Toshiya NAKAMURA	Operational Loads Identification for Aerospace Structures

10.10-10.40 **coffee break**

10.40-12.20 **Parallel sessions**

Room A300 **M3: Mathematical modeling, numerical algorithms and aerospace techniques**
Chair: Florin Frunzulica

10.40-11.05	Andrey Nasedkin	Modeling of nanostructured porous thermoelastic composites with surface effects
11.05-11.30	Sébastien Kolb	Nonlinear analysis and control of an aircraft in the neighbourhood of deep stall
11.30-11.55	Umair Najeeb Mughal	Using Potential Flow Theory and Conformal Mapping Technique to Measure Pressure Differential on Airfoil
11.55-12.20	Sergey Chernyakin	Finite element analysis of panels with surface cracks

Room A400 **M6: Studies on Mathematical Methods and Models in Engineering, Sciences and Technology**
Chair: Haci Mehmet Baskonus

10.40-11.05	Hasan Bulut	Application of the Modified Exponential Function Method to the Cahn-Allen Equation
11.05-11.30	Hassan Khawaja	Analytical Study of Sandwich Structures using Euler-Bernoulli Beam Equation
11.30-11.55	Olivier Millet	Solutions of Young-Laplace equation for capillary bridges and stability analysis
11.55-12.20	Haci Mehmet Baskonus	New Complex and Hyperbolic Function Solutions to the Generalized Double Combined Sinh-Cosh-Gordon Equation

Room C21 **S2: Clifford algebras, Clifford analysis and their applications**
Chair: Joao Morais

10.40-11.05	Isabel Cacao	Recurrence relations for hypercomplex orthogonal polynomials
11.05-11.30	Maria Irene Falcão	Computational aspects of quaternionic polynomials
11.30-11.55	Helmuth Malonek	Constructing multivariate polynomials in function theories over non-commutative algebras
11.55-12.20	Eckhard Hitzer	Double Conformal Space Time Algebra

Room C01 **S7: Inverse Problems: Theory and Application to Science and Engineering**
Chair: Davide La Torre

10.40-11.05	Herb Kunze	An inverse problem for a system of steady-state reaction-diffusion equations acting on a perforated domain
11.05-11.30	Marius Stoia-Djeska	Surface Pressure Sensitivities for the Measurement of the Mach Number and Angle of Attack of Supersonic Flows
11.30-11.55	Mourad Oulghelou	Adaptive model reduction approach in optimal control applied to solve Transfer Equations
11.55-12.20	Davide La Torre	IFSM Fractal Image Compression, Sparsity, and Total Variation Minimization: A Multiobjective Approach

Room C02 **S17: New Methods and Applications in Aeroelasticity and Structural Mechanics/Dynamics**
Chair: Toshiya Nakamura

10.40-11.05	Hitoshi Arizono	Simulation of Transonic Limit Cycle Oscillations using Nonlinear Aerodynamic Modeling
11.05-11.30	Takashi Atobe	Stabilizing effects on 2D channel flow due to longitudinal wall oscillation
11.30-11.55	Masato Tamayama	Reduced Order Modeling of Aeroelasticity Analysis for a Wing under Static Deformation Effect
11.55-12.20	Toshiya Nakamura	Dynamic Load Estimation for a Beam using Central-Difference Scheme and FEM

Room C24 **S4: Control of nonlinear systems under deterministic and stochastic loads**
Chair: J.M. Balthazar

10.40-11.05	Somasundar Kannan	Hierarchical Control of Aerial Manipulation Vehicle
11.05-11.30	Umair Najeeb Mughal	State of the Art Review of Semi-Active Control for Magnetorheological Dampers
11.30-11.55	Diego Colon	Polynomial Chaos and Lie Groups: Application in a Gyroscopic System with Uncertainties

Room C27	S9: New Era in Mathematics	
	<i>Chair: Svetlin Georgiev</i>	
10.40-11.05	Erik Trell	The Cube in Art and Mathematics
11.05-11.30	Andrew Beckwith	How Can One Look at if Gravitational Wave Generation Has Semi Classical Features, and What This Implies About Compression of Vacuum Wave States, and Coherence/de Coherence?
11.30-11.55	Stein E. Johansen	Mathematics of Space vs. Spaces of Hadronic Mathematics
12.20-14.00	lunch break	
14.00-16.05	Parallel sessions	
Room A300	M3: Mathematical modeling, numerical algorithms and aerospace techniques	
	<i>Chair: Alexandru Dumitrache</i>	
14.00-14.25	Mohamed Alahyane	Numerical study of a finite volume scheme for incompressible Navier-Stokes equations based on SIMPLE-family algorithms.
14.25-14.50	Sergey Chernyakin	Fatigue life prediction for expansion bellows
14.50-15.15	Irina Andrei	Analysis of control system responses for aircraft stability and efficient numerical techniques for real-time simulations
15.15-15.40	Irina Andrei	Performance analysis and dynamic modeling of a single-spool turbojet engine
Room A400	M6: Studies on Mathematical Methods and Models in Engineering, Sciences and Technology	
	<i>Chair: Hasan Bulut</i>	
14.00-14.25	Hasan Bulut	Dark Soliton Solutions of Klein-Gordon-Zakharov Equation in (1+2) Dimensions
14.25-14.50	Münevver Tuz	Extended (G'/G)-Expansion Method for non linear partial equations
14.50-15.15	Muharrem Tuncay Gencoglu	Numerical simulations to the nonlinear model of interpersonal Relationships with time fractional derivative
15.15-15.40	Arthur Cave	Nonlinear Stability and Optimization Techniques: Modeling, Analysis and Computational Methods
Room C21	S2: Clifford algebras, Clifford analysis and their applications	
	<i>Chair: Helmut Malonek</i>	
14.00-14.25	Fernando Miranda	Quaternionic polynomials with multiple zeros: a numerical point of view
14.25-14.50	Caterina Stoppato	Zeros and singularities of slice regular functions over alternative *-algebras
14.50-15.15	Joao Morais	Towards a quaternionic function theory linked with the Zernike spherical polynomials
Room C01	S7: Inverse Problems: Theory and Application to Science and Engineering	
	<i>Chair: Herb Kunze</i>	
14.00-14.25	Davide La Torre	Total Variation Minimization for Measure-valued Images
14.25-14.50	Carly Bobak	An inverse problem for a mathematical model of aquaponic agriculture.
14.50-15.15	Bryson Boreland	Signal processing with Circle Inversion Map Systems
15.15-15.40	Michael Yodzis	Collage-based Approaches for Elliptic Partial Differential Equations Inverse Problems
Room C02	S19: Wavelets Analysis, Fractional Advances and Applications	
	<i>Chair: Fethi Bin Muhammad Belgacem</i>	
14.00-14.25	Fethi Bin Muhammad Belgacem	Sumudu transform of Dumont bimodular Jacobi elliptic functions for arbitrary powers
14.25-14.50	Nabila Nagid	New approach for accelerating the non linear Schwarz iterations
14.50-15.15	Bokhari Ahmed	Numerical Solution of Linear Quadratic Optimal Control Problems using CAS Wavelet Operational Matrix of Derivative
Room C24	S4: Control of nonlinear systems under deterministic and stochastic loads	
	<i>Chair: Atila Bueno</i>	
14.00-14.25	Atila Bueno	Study of effects due to elimination and resources downgrade of sensors in control techniques applied to a two-wheeled inverted pendulum
14.25-14.50	Diego Colon	Automotive Computational Model under Stochastic Disturbances
16.00-	CLOSING CEREMONY	
END OF CONFERENCE		

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