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EDITORIAL

FCAA RELATED NEWS, EVENTS AND BOOKS (FCAA–VOLUME 22–2–2019)

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Dear readers,

in the Editorial Notes we announce news for our journal, anniversaries, information on international meetings, events, new books, etc. related to the *FCAA* ("Fractional Calculus and Applied Analysis") areas. All these Notes are published online with free open access.

1. Reports on Some FC Related Meetings in 2019

Workshop "Nonlocal and Fractional Operators" (12-13 April 2019, Sapienza University of Rome, Italy) Website: https://sites.google.com/view/lfo12-13aprile2019/home

The workshop was in honour of Prof. Renato Spigler (Dept. Mathematics and Physics, Roma Tre University) in the occasion of his retirement and to celebrate his scientific contributions in the field of numerical analysis and fractional calculus.

pp. 237–241 , DOI: 10.1515/fca-2019-0015 DE GRUYTER

Some few details on Prof. Spigler's contributions and publications can be see at, for example:

https://scholar.google.it/citations?user=2gqeIzUAAAAJ&hl=it , and
http://ricerca.mat.uniroma3.it/users/spigler/paperen.pdf .

The purpose of the meeting was to create new bridges, bringing together collaborators and researchers, in theoretical and applied mathematics, who are interested in fractional calculus, topics of probability, mathematical physics and numerical analysis.

There were more than 20 presentations by invited speakers and contributors and at poster session, the full program and abstracts available at:

https://sites.google.com/view/lfo12-13aprile2019/programme ,
https://sites.google.com/view/lfo12-13aprile2019/poster-session .

On behalf of Scientific Committee and FCAA Board,

Francesco Mainardi, Dept. Physics and Astronomy, University of Bologna

2. Calendar of Coming FC Related Meetings

Events under COST Action CA15225 "Fractional"

COST (European Cooperation in Science and Technology) is supported by the EU Framework Programme Horizon 2020.

The COST Action CA15225 represents a networking framework of academia and researchers dealing with fractional-order approach, spanning from mathematical description to application of fractional calculus in modelling, control and function block design. See more details in previous FCAA Editorial Note, Vol. 21, No 2 (2018).

Now, this COST Action has been approved already for the 4th Grant Period.

General information on COST Action CA15225 program: "Fractional-order systems – analysis, synthesis and their importance for future design" and related activities, can be found at websites:

http://www.cost.eu/COST_Actions/ca/CA15225 ,
http://fractional-systems.eu/ .

The current (3rd) Grant Period is almost at its end but from May 1, 2019, and we are starting a new, already 4th one-year Grant Period. Join us within one or more networking events that will be organized and financed from the COST Action budget:

– **Training School: Computational Methods for Fractional-Order Problems**. The aim of this Training School (**July 22-26, 2019, Bari, Italy**) is to provide to young researchers the background for understanding the mathematics beyond fractional operators and devise accurate and reliable computational methods. In particular, the development of numerical software for the effective treatment of fractional-order systems will be one of the main assets of the training school with the possibility of organizing some laboratory tutorials.

The preliminary Trainees are: – Prof. Kai Diethelm (University of Applied Sciences Würzburg-Schweinfurt, Germany): Introduction to FDEs, numerical methods for FDEs; – Prof. Roberto Garrappa (University of Bari, Italy): Introduction to fractional calculus, efficient implementation of numerical methods for FDEs; – Prof. Guido Maione (Polytechnic University of Bari, Italy): Numerical methods in engineering and control theory; – Prof. Maria Luisa Morgado (University of Trás-os-Montes e Alto Douro, Vila Real, Portugal): Collocation methods for FDEs; – Prof. Marina Popolizio (Polytechnic University of Bari, Italy): Matrix methods for FDEs and partial FDEs; – Prof. Magda Stela Rebelo (Universidade Nova de Lisboa, Portugal): Matlab implementation of collocation methods; – Prof. Abner J. Salgado (University of Tennessee, Knoxville, TN, USA): Numerical methods for fractional Laplacian; – Prof. Yubin Yan (University of Chester, UK): Numerical methods for fractional partial differential equations.

All details on this Workshop are now available at:
https://fractional-systems.eu/ts-2019/.

– **MC meeting / Annual Workshop on Fractional-order Approach.** The MC meeting (**Sept. 19, 2019, Ghent, Belgium**) is open just for the MC Members, their MC Substitutes and MC Observers. However, even as non-member, you may attend the Working Group meeting (Sept. 19, 2019) being followed by the Annual Workshop (Sept. 20,2019) and present your activities dealing fractional-order area that follows the Objectives, Tasks, and expected Deliverables of the COST Action to the community. (see the Memorandum of Understanding,
https://e-services.cost.eu/files/domain_files/CA/Action_CA15225/mou/CA15225-e.pdf).

– **Workshop: Fractional Order Control from Practical Point of View.** The workshop, taking place in **November 5, 2019, Delft, Netherlands**, promotes the utilization of fractional order control. Frequency domain analysis is a key for industry to understand and design controllers. In this event, the frequency domain analysis tools to design fractional order controllers will be presented and discussed by the invited

speakers (three/four), who also give some practical examples, which advantageously implemented fractional order control successfully. The target groups are participant of WG3, WG4 and professionals interested in application of fractional calculus. The goal is not to only show the advantage to industry but also train our members to disseminate the message toward their industrial network.

Next to the above mentioned events, you may use the other networking tools such as STSMs and ICT Conference Grants, if being eligible.

For more information, please visit our webpage fractional-systems.eu, where you may find further information about the individual networking events and possibilities of your participation and support.

Jaroslav Koton, CA 15225 Programm Chair,
Brno University of Technology, Czech Republic

3. New Books

Thomas Michelitsch, Alejandro Pérez Riascos, Bernard Collet, Franck Nicolleau, ***Fractional Dynamics on Networks and Lattices***. ISTE, London and J. Wiley, Haboken NJ; April 2019, 330 pp., ISBN: 978-1-786-30158-1.

Details: http://iste.co.uk/book.php?id=1464

Description: This book analyzes stochastic processes on networks and regular structures such as lattices by employing the Markovian random walk approach.

Part 1 is devoted to the study of local and non-local random walks. It shows how non-local random walk strategies can be defined by functions of the Laplacian matrix that maintain the stochasticity of the transition probabilities. A major result is that only two types of functions are admissible: type (i) functions generate asymptotically local walks with the emergence of Brownian motion, whereas type (ii) functions generate asymptotically scale-free non-local "fractional" walks with the emergence of Lévy flights.

In Part 2, fractional dynamics and Lévy flight behavior are analyzed thoroughly, and a generalization of Pólya's classical recurrence theorem is developed for fractional walks. The authors analyze primary fractional walk characteristics such as the mean occupation time, the mean first passage time, the fractal scaling of the set of distinct nodes visited, etc. The results show the improved search capacities of fractional dynamics on networks.

Contents:

Yingjie Liang, Wen Chen, Wei Cai, ***Hausdorff Calculus: Applications to Fractal Systems***. De Gruyter Ser. Fractional Calculus in Applied Sciences and Engineering, Book #6, De Gruyter; March 2019, 138 pp. + viii, ISBN: 978-3-11-060852-6; Hardcover ISBN 978-3-11-060692-8; eBook: ISBN 978-3-11-060705-5.

Details: https://www.degruyter.com/view/product/506187

Description: This book introduces the fundamental concepts, methods, and applications of Hausdorff calculus, with a focus on its applications in fractal systems. Topics such as the Hausdorff diffusion equation, Hausdorff radial basis function, Hausdorff derivative nonlinear systems, PDE modeling, statistics on fractals, etc. are discussed in detail. It is an essential reference for researchers in mathematics, physics, geomechanics, and mechanics.

– Presents the theory and applications of Hausdorff calculus.

– Covers applications in dynamics, statistics, mechanics, and computation.

– Of interest to mathematicians and physicists as well as to engineers.

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