3rd International Conference on Dynamics, Games and Science

DGS III 2014 - International Conference on Dynamics, Games and Science III

17 - 21 February 2014

University of Porto — Portugal

Keynote Speakers

Alberto Álvarez López, UNED, Spain
Alberto Pinto, University of Porto, Portugal
Athanasios Yannacopoulos, Athens University of Economics and Business, Greece
Bruno Oliveira, INESC TEC, Portugal
Carlos Braumann, University of Evora, Portugal
Charles Pugh, U.C. Berkeley, USA)
David Zilberman, University of California, USA
Diogo Pinheiro, Brooklyn College, USA
Elvio Accinelli, UASLP, Mexico
Filipe Martins, INESC TEC, Portugal
Flávio Ferreira, ESEIG, Polytechnic Institute of Porto, Portugal
Frank Riedel, Bielefeld University, Germany
Isabel Labouriau, University of Porto, Portugal
Jérôme Renault, Université de Toulouse, France
João Gama, University of Porto, Portugal
João Paulo Almeida, INESC TEC, Portugal
Jorge M. Pacheco, University of Minho
José Fernando Oliveira, University of Porto / INESC TEC, Portugal
José Martins, INESC TEC, Portugal
Marta Faias, NOVA University of Lisbon, Portugal
Mohammad Choubdar Soltan Ahmadi, University of Porto, Portugal
Nico Stollenwerk, University of Lisbon, Portugal
Onesimo Hernandez-Lerma, CINVESTAV-IPN, Mexico
Penelope Hernandez, University of Valencia, Spain
Rabah Amir, University of Arizona, USA
Renato Soeiro, University of Porto, Portugal
Robert MacKay, University of Warwick, UK
Rolf Jeltsch, ETH Zurizh, Switzerland
Sebastian van Strien, Imperial College London, UK
Tenreiro Machado, ISEP, Portugal

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Regular exceptional graphs and equitable partitions

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We propose a recursive technique to construct families of regular graphs, where graphs are extended by (k,t)- regular sets . The process of extending a graph is reduced to the construction of the incidence matrix of a combinatorial 1-design, and these extensions induce a partial order. We apply this new technique to construct all regular exceptional graphs, considering the fact that regular excepcional graphs admit an equitable partition which mantains the (k,t)-regular set introduced along a chain of graphs obtained recursivelly and several rules to reduce the production of isomorphic graphs. Based on this recursive construction we present an algorithm and the Hasse diagram of the poset.

Determination of $(0,2)$-regular sets in graphs and applications

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A (k,τ)- regular set in a graph is a subset of vertices inducing a k-regular subgraph and such that each vertex not in the set has exactly τ neighbours in it. We will present a new algorithm for the determination of $(0,2)$- regular sets as well as its application to the determination of maximum matchings in arbitrary graphs.

Anosov diffeomorphisms and Tilings

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Inspired in the works of Y. Jiang and A. Pinto and D. Sullivan, A. Pinto et al. introducedthe notion of golden tiling and proved the existence of a natural correspondence between golden tilings, smooth conjugacy classes of Anosov diffeomorphisms with invariant measure absolutely continuous with respect to Lebesgue measure and solenoid functions. Here we extend their result and introduce the notion of γ-tiling. Like the golden tilings, the γ-tilings record the infinitesimal geometric structure determined by the dynamics of an Anosov diffeomorphism G along the unstable leaf that is invariant under the action of G. The properties of γ-tilings are defined using a decomposition of natural numbers that we call γ-Fibonacci decomposition. The main contribution of this work consists in understanding the way how this γ-Fibonacci decomposition encodes the combinatorics determined by the Markov partition of G along the unstable leaf. Our goal is to exhibit a natural correspondence between γ-tilings, smooth conjugacy classes of Anosov diffeomorphisms with invariant measure absolutely continuous with respect to Lebesgue measure and solenoid functions.

Inexact Subspace Iteration to Accelerate the Solution of Linear Systems with Multiple Right-Hand Sides

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We analyze the convergence and propose some strategy to monitor an inexact subspace iteration type of algorithm called BlockCGSI. This algorithm is purely iterative and combines the block