

# Workshop on Graphs Spectra and Combinatorics

by Paula Carvalho\*, Sofia Pinheiro\*\*, and Tatiana Tchemisova\*\*\*

WGSCO 2018, Workshop on Graph Spectra, Combinatorics and Optimization was organized by a group of docents of the Mathematics Department and members of the Research Unit CIDMA — Center for Research and Development in Mathematics and Applications of the University of Aveiro, Portugal, on occasion of the 65th birthday of Prof. Domingos M. Cardoso, prominent professor and researcher of the University of Aveiro.

The topics of Workshop reflected the diversity of the scientific interests of Prof. Domingos M. Cardoso and the main lines of research of the Group on Graph Theory, Optimization and Combinatorics, which is been coordinating by him during many years

within the Research Unit CIDMA of the Mathematics Department of the University of Aveiro: Algebraic Combinatorics, Algebraic Graph Theory, Algorithms and Computing Techniques, Combinatorial Optimization, Communications and Control Theory, Enumerative Combinatorics, Extremal Combinatorics, Graph Theory, Optimization in Graphs, Graph Spectra and applications, Linear Optimization, Networks, Nonlinear Optimization and others.

The organizational duties were distributed between an International Scientific Committee, the local Organizing Committee and three co-chairs: Paula Carvalho, Sofia Pinheiro, and Tatiana Tchemisova.

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The Scientific Program included 9 plenary talks: *Scale-free graphs* by Jerzy Szymański (University of Adam Mickiewicz, Poznan, Poland), *On the scheduling of periodic events* by Jorge Ortes Cerdeira (New University of Lisbon, Portugal), *On the various concepts of central vertex sets of a graph* by Nair Abreu (Federal University of Rio de Janeiro, Brazil), *Eigenvalue Multiplicity in Regular Graphs* by Peter Rowlinson (University of Stirling, Scotland, UK), *An Introduction to Combinatorial Matrix Theory* mod  $k$  by Richard A. Brualdi (University of Wisconsin, Madison, Wisconsin, USA), *Salem Graphs* by Slobodan Simić (Serbian Academy of Sciences and Arts, Belgrade, Serbia), *Prison Guards Dilemma: Optimal Inmate Assignment by Multiobjective Mixed Integer Linear Optimization* by Tamás Terlaky (Lehigh University, Bethlehem, Pennsylvania, USA), *From structure to algorithms: breaking the boundaries* by Vadim Lozin (University of Warwick, UK), and *Spectral characterizations of graphs* by Willem H. Haemers (University of Tilburg, Netherlands). Unfortunately, the talk of Prof. Slobodan Simić was cancelled by the health problems of the speaker. The workshop was attended by 115 registered participants coming from 27 countries.

During the Opening Session in the morning of January 25, the participants were welcomed by the Rector of the University of Aveiro, Prof. Manuel Assunção, by the Director of the Department of Mathematics, Prof. João Santos, by the Scientific Coordinator of the CIDMA Research Unit, Prof. Luís Castro, and by the co-chairs of the Workshop.

The scientific program of the Workshop was composed by 32 sessions with about 80 talks divided into 4 main streams: Graph Theory, Graph Spectra, Combinatorics, and Optimization. There was 8 Invited Talks and 4 Special Sessions, as follows: *Spectral Graph Theory and its Applications*, organized by Irene Sciriha, *Matrices and Applications I* organized by Enide Andrade and Rute Lemos, *Matrices and Applications II*, organized by Raquel Pinto and Diego Napp, and *Bruhat Order*, organized by Rosário Fernandes and Henrique Cruz.

Among the participants, there were about 20 young researchers and PhD Students. All submitted abstracts were refereed by the members of the International Scientific Committee and published in the Book of Abstracts.



The participants of the Workshop are invited to submit their papers to two Special Issues of international journals: Optimization by Francis & Taylor and DAM, Discrete and Applied Mathematics by Elsevier.

The success of the Workshop owes much to the support of different national and international organizations: Mathematics Department of the University of Aveiro, CIDMA — Center for Research and Development in Mathematics and Applications of the University of Aveiro, FCT — Portuguese Foundation for Science and Technology, APDIO — Portuguese Association of the Operations Research, FLAD — Luso-American Development Foundation, ILAS — International Linear Algebra Society, EURO Working Group on Continuous Optimization EUROPT.

The Organizing Committee from the Mathematics Department of the University of Aveiro has made the best to offer to the participants an interesting Social Program, get them acquainted with the University of Aveiro and the beautiful region of Portugal where it is situated.

The social program of the conference included a Welcome Reception on the first day of the Workshop and a guided visit to the Vista Alegre Porcelain Factory, Museum and Chapel, on the last day. These two events were included into program of the event and were free of charge for all participants. On occasion of 65<sup>th</sup> birthday of Professor Domingos M. Cardoso, a small festive ceremony was organized during the Conference Dinner in the Hotel Melia, Ria, of Aveiro. During the dinner, took place a short presentation of the life and work done until this moment of Prof. Domingos M. Cardoso, many nice friendly words were said, and participants had opportunity to listen some music, including Fado, try typical Portuguese gastronomy, and communicate in a friendly and informal atmosphere.

More information about the program of the Workshop, participants, Invited Speakers, Special and Contributes sessions, photo gallery and other, can be found on the conference webpage <http://wgsc02018.web.ua.pt/>