

Conference on Applications of Graph Spectra in Computer Science

July 16-20, 2012

Programme

MONDAY 16 July

Session chair: Dragan Stevanović

8:55 – 9:00 Welcome address

9:00 – 10:00 **Daniel Spielman**, Yale University

Spectral sparsification of graphs and approximations of matrices

10:00 – 11:00 **Ulrike von Luxburg**, University of Hamburg

Resistance distance in many flavors

11:00 – 11:30 Coffee break

Session chair: Daniel Spielman

11:30 – 11:55 Nataša Đurđević, Freie Universität Berlin

Analyzing complex, modular networks using random-walk-based approaches

11:55 – 12:20 Dragan Stevanović, University of Niš, Serbia and University of Primorska, Slovenia

Community detection as an instance of weighted MAX-CUT problem

12:20 – 14:00 Lunch break

Session chair: Ulrike von Luxburg

14:00 – 15:00 **Nathan Linial**, Hebrew University of Jerusalem

High-dimensional combinatorics and why it is relevant

15:00 – 15:30 Break

Session chair: Nathan Linial

15:30 – 15:55 He Sun, Max Planck Institute for Informatics

Tight bounds for randomized load balancing on arbitrary network topologies

15:55 – 16:20 Francisco Pedroche, Universitat Politècnica de València

Detecting connected components in undirected graphs by using the Reverse Cuthill-McKee algorithm applied to the Laplacian matrix

TUESDAY 17 July

Session chair: Francesc Comellas

9:00 – 10:00 **Fan Chung**, University of California, San Diego

Semigroup spectral theory and graph coloring games

10:00 – 11:00 **Piet Van Mieghem**, Delft University of Technology

Spectral graph theory for dynamic processes on networks

11:00 – 11:30 Coffee break / Group picture

Session chair: Fan Chung

11:30 – 11:55 Robert Elsässer, University of Paderborn

Speeding up random walks with neighborhood exploration

11:55 – 12:20 Ali Pourmiri, Max Planck Institute for Informatics

Cutoff Phenomena for random walks on Kneser graphs

12:20 – 12:50 **Open Problems Session**

12:50 – 14:30 Lunch break

Session chair: Piet Van Mieghem

14:30 – 15:30 **Jürgen Jost**, Max Planck Institute for Mathematics in the Sciences
(the talk will be delivered by Prof. Jost's coauthor Frank Bauer)
The largest eigenvalue of the normalized graph Laplacian

15:30 – 16:00 Break

Session chair: Cristina Dalfó

16:00 – 16:25 Afonso S. Bandeira, Princeton University

A Cheeger inequality for the graph connection Laplacian

16:25 – 16:50 Reza Samavat, Chemnitz University of Technology

Asymptotic behaviour of eigenvalue counting function of Laplacian on a model of small world graph

16:50 – 17:15 Laura Patuzzi, Universidade Federal do Rio de Janeiro

Index of trees of diameter 4

17:15 – 17:45 Marianna Bolla, Alfred Renyi Institute of Mathematics

Spectral clustering and biclustering

WEDNESDAY 18 July

Session chair: Robert Elsässer

9:00 – 10:00 **Anirban Banerjee**, Indian Institute of Science Education and Research
Normalized Laplacian spectrum, structure and evolution of graphs

10:05 – 10:30 Josef Leydold, WU Vienna

Dirichlet eigenvectors go Go

10:30 – 11:00 Coffee break

Session chair: Anirban Banerjee

11:00 – 11:25 Dajie Liu, Delft University of Technology

Graph spectra based method for measuring the network randomness

11:25 – 11:50 Nair Abreu, Universidade Federal do Rio de Janeiro

Measures of irregularity of graphs

11:50 – 12:15 Claudia Justel, Instituto Militar de Engenharia, Rio de Janeiro

Augmenting the value of algebraic connectivity in graphs

12:15 – 12:40 Franklin H.J. Kenter, University of California, San Diego

Discrepancy inequalities for directed graphs

12:40 – 14:00 Lunch break

17:00 – 19:00 Excursion / Guided tour through Barcelona's Barri Gotic

20:00 Conference dinner

THURSDAY 19 July

Session chair: Margarida Mitjana

9:00 – 10:00 **Edwin Hancock**, University of York

Applications of the Ihara Zeta function

10:00 – 11:00 **Ernesto Estrada**, University of Strathclyde

Communicability distance in graphs

11:00 – 11:30 Coffee break

Session chair: Edwin Hancock

11:30 – 11:55 Shiping Liu, Max Planck Institute for Mathematics in the Sciences

Harmonic functions on infinite semiplanar graphs

11:55 – 12:20 Frank Bauer, Max Planck Institute for Mathematics in the Sciences
The dual Cheeger constant and the (essential) spectrum of infinite graphs

12:20 – 14:00 Lunch break

Session chair: Ernesto Estrada

14:00 – 15:00 **Dragoř Cvetković**, Mathematical Institute of the Serbian Academy of Science and Arts
Spectral recognition of graphs

15:00 – 15:30 Break

Session chair: Dragoř Cvetković

15:30 – 15:55 Aida Abiad, Tilburg University
Cospectral graphs and regular orthogonal matrices of level 2

15:55 – 16:20 Marc Cámara, Tilburg University
Spectral characterizations of some almost complete graphss

16:20 – 16:55 Charalambos Evripidou, University of Cyprus
On the spectrum of Cartan and adjacency matrices of affine Lie algebras

FRIDAY 20 July

Session chair: Josep Fàbrega

9:00 – 10:00 **Miquel Àngel Fiol Mora**, BarcelonaTech
The spectral excess theorem for bipartite distance-regular or distance-biregular graphs

10:05 – 10:30 Sebastian Cioaba, University of Delaware
Eigenvalues and toughness of some regular graphs

10:30 – 11:00 Coffee break

Session chair: Miquel Àngel Fiol Mora

10:00 – 11:25 Hanjo Täubig, Technische Universität München
Inequalities for the number of walks, the spectral radius and the energy of graphs

11:25 – 11:50 Pantelis Damianou, University of Cyprus
A beautiful sine formula

11:50 – 12:15 Ayse Dilek Maden, Selcuk University
The relations between average eccentricity and some other graph invariants

12:20 – 14:00 Lunch break and departure