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 Đurđevac, 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
**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*

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**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

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**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 Dragoš Cvetković, Mathematical Institute of the Serbian Academy of Science and Arts
Spectral recognition of graphs
15:00 – 15:30 Break

Session chair: Dragoš 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 graphs
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