UNIVERSITÄT SALZBURG

Der Fachbereich Computerwissenschaften und der Fachbereich Mathematik laden recht herzlich zu einem Gastvortrag ein:

Vortragender: Dr. Dragan Stevanović (Universität Nis, Serbien)

Titel: „On some theoretical and practical uses of the principal eigenvector of a graph's matrix"

Datum: 2. September 2013, 15:00 Uhr

Ort: Seminarraum (SE2 Math) des Fachbereichs Mathematik, Hellbrunnerstr. 34, 5020 Salzburg

Abtract:

The principal eigenvector of a graph's matrix contains useful information on the influence of individual vertices of a graph on the property measured by the graph matrix. We will present our three recent results which use the principal eigenvector in different ways. Firstly, we will show how the principal eigenvector of the adjacency operator can be constructed for special types of infinite graphs, which in turn provides an easy way for determining the limit of spectral radii for some convergent sequences of graphs and, in particular, resolves Hansen's conjecture. Secondly, the principal eigenvector provides a natural and superior heuristic for selecting the edge of a graph which mostly decreases its spectral radius of the adjacency matrix, thus determining the edge with largest influence on the spread of network infections of SIS-type. Thirdly, we will present how to notably improve the standard spectral approach for graph partitioning problems, which divides the vertices into two parts based on the signs of the principal eigenvector components, by spreading the partitioning process through several layers and illustrate the increase in the quality of obtained partitions on several examples.

Host: Univ.-Prof. Dr. Robert Elsässer