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**PREDAVANJE U OKVIRU DISTINGUISHED LECTURER PROGRAMA IEEE SP SOCIETY**

# Analyzing Data `Boxes': Multi-way linear algebra and its applications in signal processing and communications


Predavač

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Institut Mihajlo Pupin, ponedeljak, 30.06.2008, 12:00

## Abstract:


Matrix algebra plays an important role in modern signal processing. In many applications, the information-bearing signal lies in a subspace, while the parameters of interest correspond to a particular basis of this subspace. Whereas the signal subspace can often be reliably estimated from measured data, the particular basis of interest cannot be identified without additional problem-specific structure. This is due to rotational indeterminacy - non-uniqueness of low-rank matrix decomposition. The situation is very different for three-or higher-way arrays, i.e., data `boxes' indexed by three or more independent variables, for which low-rank decomposition is unique under certain conditions. There are numerous application areas where data of this kind arise (communications, array processing, speech/audio separation, video, spectroscopy, NMR), and strong potential for new applications. This talk will be a guided tour of theory and algorithms for analyzing data boxes, with emphasis on communications and array processing applications.


## About speaker:

Nikos Sidiropoulos (SM) received the Ph.D. degree in Electrical Engineering, University of Maryland (1992). He served as Assistant Professor, University of Virginia; Associate Professor, University of Minnesota; and Professor, Technical University of Crete, since 2002.

Prof. Sidiropoulos has published over 50 journal papers, 85 conference papers, five book chapters and one edited book. He has been a consultant to Globespan and General Dynamics, and has co-authored three patents. He received the U.S. NSF Young Faculty CAREER Award (1998) and two IEEE SPS Best Paper Awards (2001 and 2007).

Prof. Sidiropoulos' volunteer activities include Member, Vice-Chair and Chair, SPS Signal Processing for Communications Technical Committee (2000-present, 2005-06 and 2007-08, respectively); Member, SPS Sensor Array and Multichannel Technical Committee (2004-present); Associate Editor, IEEE Transactions on Signal Processing (2000-06) and IEEE Signal Processing Letters (2000-02); Technical Program Chair, IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP) (2005); Technical Program Co-Chair, IEEE Sensor Array and Multi-Channel Signal Processing Workshop (SAM) (2008); General Co-Chair, IEEE International Workshop on Computational Advances in Multi-Channel Sensor Array Processing (CAMSAP) (2007); and on the Program Committee of the IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2011 in Prague.

Branimir Reljin (SM), IEEE SCG CAS-SP Chair