



Announcement

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On **Wednesday, June 24, 2015**, in Computing centre of the Faculty of Electrical Engineering, "Microsoft hall", first floor, Belgrade, at **13:00** will deliver

## L E C T U R E

### **A Sparse Sampling Approach to Dynamic Sub-Cycle Decomposition of Apparent Power in General Polyphase Networks**

**Abstract:** Modern electric energy systems are undergoing profound changes, driven by technology and policy developments. Power flows often serve as the organizing principle for resilient control in emerging entities, motivating the need for a deeper theoretical understanding of realistic operation, characterized by unbalance, harmonics and transients.

We start with a brief historical review, followed by an algebraic derivation of a phasor- (or cycle-) based power decomposition in the general case. Next, we provide a complementary, dual view derived from the viewpoint of geometric algebra. We are then in position to shed a new light on some well-known deficiencies of the so called instantaneous reactive power. Finally, we propose a new concept of sub-cycle power decomposition which combines the low computational requirement of instantaneous quantities with high performance of cycle-derived decompositions. We conclude by stressing the technology dependence of compensation ideas, allowing us to better appreciate the historical nature of the subject.

**Biography:** Aleksandar M. Stankovic obtained the Dipl. Ing. Degree from the University of Belgrade, Yugoslavia in 1982, the M.S. degree from the same institution in 1986, and the Ph.D. degree from Massachusetts Institute of Technology in 1993, all in electrical engineering. He serves as the A.H. Howell Professor at Tufts University; he was with Northeastern University, Boston 1993-2010. He is a Fellow of IEEE, and serves as an Associate Editor for IEEE Transactions on Power systems and for Annual Reviews in Control. He previously served Transactions on Smart Grid and on Control System Technology in the same capacity (1996-2014). He has held visiting positions at the United Technologies Research Center (sabbaticals in 2000 and 2007) and at L'Universite de Paris-Sud and Supelec (in 2004). He is a co-editor of book series on Power Electronics and Power Systems for Springer.