



УНИВЕРЗИТЕТ  
У НОВОМ САДУ



ФАКУЛТЕТ  
ТЕХНИЧКИХ НАУКА

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ИНТЕГРИСАНИ  
СИСТЕМ  
МЕНАџМЕНТА  
СЕРТИФИКОВАН ОД:



164. Sastanak IEEE u Novom Sadu /164<sup>th</sup> IEEE Meeting  
in Novi Sad  
**Obaveštenje / Announcement**

**Dr. Branislav Đokić**

**National Research Council of Canada  
Ottawa (Ontario), Canada**



ће у **четвртак, 14. 06. 2018.** у Свечаној сали  
Факултета техничких наука у Новом Саду, са  
почетком у **12:00h**, одржати

On **Thursday, June 14, 2018**, in the **Ceremonial  
Hall** of the Faculty of Technical Sciences Novi Sad  
at **12:00 am** will deliver

## P R E D A V A N J E L E C T U R E

### ELECTRICAL POWER METROLOGY AND THE ROLE OF NATIONAL MEASUREMENT INSTITUTES

**Abstract:** Metrology in various forms is necessary for the operation of the electric power grid. Measurements of electrical and non-electrical quantities are necessary for the power system control, protection, and safe and reliable operation. Electrical power metrology entails measurement of power and energy for billing purposes, which is called revenue metering. Electricity meters, or watt-hour meters, are the most widespread electrical measurement devices. They are used for industrial, commercial and residential customers. Electrical metrology is an important enabling factor for equitable electricity trade inside and across national borders. The role and calibrations of instrument transformers for metering and protection applications will be discussed. A brief reference to a current comparator principle and its use in precision electrical power metrology will be given. The introduction of distributed and renewable energy resources and their impact on the electric power system often referred to as Smart Grid, will be highlighted. Smart metering, power quality measurements, synchrophasor measurements, measurements in digital substations, and calibration methods for measurement devices with digital outputs and inputs will be addressed. With the significant role of power electronics in new Smart Grid developments, and the increased penetration of electric vehicles (EV) and the EV infrastructure in the power grid emphasizes the necessity for wide frequency band measurements of distorted waveforms. The digital measurements of voltage, current, phase, frequency, power and energy are continually improving. This is in turn pushing the boundaries of the high accuracy measurements needed for calibrations. New instrumentation requires new calibration methods. The role of National Measurements Institutes in providing the highest accuracy calibrations, measurement standards and traceability to SI units is essential and will be discussed.

*Katedra za električna merenja i*



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