



УНИВЕРЗИТЕТ
У НОВОМ САДУ



ФАКУЛТЕТ
ТЕХНИЧКИХ НАУКА

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ИНТЕГРИСАНИ
СИСТЕМ
МЕНАџМЕНТА
СЕРТИФИКОВАН ОД:



176. Sastanak IEEE u Novom Sadu / 176th IEEE Meeting
in Novi Sad
Obaveštenje / Announcement

Prof. Dr. Petar Grbović
IEEE PELS Distinguished lecturer
University of Innsbruck, Austria



u **sredu, 23. 10. 2019.** u Svečanoj sali
Fakulteta tehničkih nauka u Novom
Sadu, sa početkom u **11:00 h**, održaće

On **Wednesday, October 23, 2019**, in the
Ceremony Hall of the Faculty of
Technical Sciences Novi Sad at **11:00 am**
will deliver

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

MULTI-CELL & MULTI-LEVEL POWER CONVERTERS - A way to go beyond the limits of Si

Višestruki i višenovoini energetska pretvarači – Način da se prevaziđu limiti Si

Abstract: Power electronics and power converters, particularly power semiconductors are progressing on daily bases. Designers of new generation of power converters are facing very strong demands to reduce the converter cost, size, weight and losses. To achieve these challenging objectives, new power semiconductors as well passive devices are a Must. However, each new generation of power semiconductor introduces new challenges and issues. Some of them make almost impossible to fully utilize full advantages of new power semiconductor devices. Two of the challenges are high di/dt and dv/dt, which in combination with parasitic inductance and capacitance of the power semiconductor and converter create issues of over-voltage, radiated and conducted EMI emission, stress of the load isolation, etc., etc. The above mentioned issues (di/dt and dv/dt) will make impossible to fully utilize all the benefits of future Wide Band Gap devices such as SiC and GaN. New devices packaging is a must. New system approach is a MUST! It is necessary to involve new topologies, such as multi-level, multi-cell and multi-level/cell converters. Interleaved multi-cell (parallel) power converters will be discussed firstly. The advantages of such a concept, will be theoretical analyzed and practical examples given. Then, high current applications will be discussed with particular focus on di/dt and related over-voltage reduction. Interleaved multi-level (series) power converters will be discussed. The advantage such of such a concept, such as the filter inductance and devices voltage stress reduction will be theoretical analyzed and practical examples given. Then, medium/high voltage applications will be discussed with particular focus on dv/dt issue. Several case studies and design examples will be given as concluding part of the seminar. This seminar is aimed at power electronics engineers, professionals and graduate students who want to improve their knowledge and understanding of multi-level/cell power converters and their capabilities to push the limits of Si as well as WBG devices.



IEEE – Serbia & Montenegro Section

15 Years
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Joint Chapter Power Electronics, Industrial Electronics & Industry Applications Societies, NOVI SAD <http://www.ieee.uns.ac.rs>

