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96. Sastanak IEEE u Novom Sadu / 96th IEEE Meeting in Novi Sad

Obaveštenje / Announcement

Dr. Igor Dotlić

Medical ICT Institute
National Institute for Information and Communication Technology
Yokosuka, JAPAN

u **utorak, 27. 04. 2010.** u Zbornici Fakulteta tehničkih nauka u Novom Sadu, sa početkom u **13:00 h**, održati

On **Tuesday, April 27, 2010**, in the Assembly Hall of the Faculty of Technical Sciences Novi Sad at **1:00 pm** will deliver

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

LOW COMPLEXITY CHIRP PULSED ULTRA-WIDEBAND SYSTEM WITH NEAR-OPTIMUM MULTIPATH PERFORMANCE

Abstract: In this work, the Impulse Radio Ultra-Wideband (IR-UWB) system is described that uses linear chirp UWB pulses as symbols. The novel method of (differentially) coherent detection of chirp pulses in multipath channels is introduced. The method divides detection in the receiver between its analog and digital part; in the analog part of the receiver, received signal is compressed in frequency by mixing with locally generated chirp pulse and low-pass filtering. This results in relatively low complexity digital back-end of the receiver that is able to capture a large portion of the multipath energy, regardless of duration of the transmitted waveform. The work includes derivation of analytical properties of the system, including derivation of loss parameters that quantify system multipath performance. Numerical results include discussion on the system multipath loss performance with varying chirp duration. As well, a comparison is made with error performance of sampling receivers featuring the same computational complexity. Analysis of the robustness of the system's performance to different chirp pulse implementation errors is also provided.

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