

Department of Electrical and Computer Engineering

Title: «5G Communication Systems- A Stochastic Geometry Approach»

Mr. Christodoulos Skouroumounis
KIOS, University of Cyprus

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Room XOD 02 – 013, New Campus - University of Cyprus

Abstract:

Motivated by the effects of buildings/obstacles on the performance of high frequency cellular networks, the purpose of this presentation is the study and the integration of efficient physical layer technique on mmWave wireless communication model in order to overcome the degradation effects of blockages and ensure. We study the base station (BS) cooperation scheme along with directional beamforming in heterogeneous cellular networks with blockages. Our main focus is a joint transmission scenario, where an ideal backhaul network allows a set of randomly located sectorized transmit antennas belonging to different network tiers, to cooperate and jointly transmit data to the receiver. By using concepts from random shape theory, we model the spatial randomness as well as the main characteristics of the blockages, i.e., size, orientation. The coverage probability performance of the system is analyzed by using stochastic geometry tools. Finally, we study the deployment of a successive interference cancellation (SIC) scheme on the multi-tier heterogeneous network, accounting for its computational complexity and relevant network related parameters. The network performance is analysed by the consecutive events of cancelling interferers and we finally derive the success probability to cancel the η -th strongest signal and to decode the signal of interest after η cancellations.

Biography:

Christodoulos A. Skouroumounis was born in Larnaca, Cyprus. He received his Dipl. Eng. degree from the Department of Electrical & Computer Engineering at the National Technical University of Athens, Greece, in 2014. He is currently a Ph.D. student in the Department of Electrical and Computer Engineer at University of Cyprus. He is also a researcher at the KIOS Research Center for Intelligent Systems and Networks working on Mobile and Wireless Communications Physical layers development and implementation. His research interests include mmWave communication networks, cooperation and beamforming schemes, power control models and successive interference cancellation algorithms.