



Department of Electrical and Computer Engineering

Title: « *Next-generation Wireless Communication Systems- A Stochastic Geometry Approach* »

Mr. Christodoulos Skouroumounis
KIOS Research and Innovation Center of Excellence

Wednesday, 22th March 2017, 17:00 – 18:00
Room E116, Old Campus - University of Cyprus

Abstract: Compared with the fourth generation cellular systems, the fifth generation (5G) wireless communication systems are anticipated to provide spectral and energy efficiency growth by a factor of at least 10, and the area throughput growth by a factor of at least 25. To achieve these goals, the interest of the research community has shifted towards the study of advanced technologies such as full-duplex (FD) radio and heterogeneous networks (HetNets) techniques. FD radio can potentially provide a higher spectral efficiency provided the self-interference at a terminal can be substantially mitigated and the multi-user interference, in the case of a large-scale scenario, is restricted. Furthermore, the network densification has been investigated as a potential solution for increasing the spectral efficiency, while the ultra-dense deployment of small cells in multi-tier heterogeneous networks, provides a fundamental way to meet the capacity demands of future 5G wireless networks. Stochastic geometry provides a natural way of defining and computing macroscopic properties of such networks, by treating them as a snapshot of a stationary random model in the whole Euclidean plane or space and analysing them in a probabilistic way. In this presentation we discuss on the deployment of FD radios and HetNets in the context of 5G cellular networks. By using stochastic geometry tools, we derived analytical expressions for the coverage probability. Our results reveal that FD radio and HetNets can significantly boost the network performance.

Biography: Christodoulos Skouroumounis hold a degree in Electrical and Computer Engineering (2014) from the National Technical University of Athens. He is currently a Ph.D student at the University of Cyprus, ECE Department, under the supervision of Dr. Ioannis Krikidis and a Researcher at KIOS Research and Innovation Center of Excellence. His research interests lie in the area of wireless communications and signal processing for communications.