Eng Grad Soc

IDCOM Lunchtime Seminar

Tuesday 15 September 2015, 1.00pm

AGB Seminar Room

AGB Building, King's Buildings, EH9 3JL

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Institute for Digital Communications (IDCOM)

Indoor Optical Wireless Power Transfer to Small Cells at Nighttime

Abstract: The technology of small cells (SCs) is widely accepted as one of the most promising solutions to the exponential increase in data demand of heterogeneous mobile networks. Alternative sources of power supply to outdoor SCs could significantly reduce their deployment cost. The concept of energy harvesting (EH) from natural sources, such as sun and wind, has the main disadvantage of the variability of weather conditions. Therefore, the principle of wireless power transfer (WPT) based on artificial electromagnetic (EM) sources has been proposed as a complementary and more reliable solution. In this talk, the focus of study will be the application of WPT in the visible light (VL) region of the EM spectrum. In particular, a set of experimental studies will be presented by the use of white light-emitting diodes (WLEDs), red laser diodes (LDs) and different types of solar cells. Also, as a first step, the concept of optical WPT (OWPT) is investigated in an indoor environment in the absence of ambient light and this is the worst-case scenario for power provision to SCs. Finally, a performance comparison in terms of energy efficiency of the VL links and a state-of-the-art inductive power transfer system operating in the radio frequency (RF) area of the EM spectrum will be presented.

Biography: John Fakidis was born in Thessaloniki, Greece, in 1987. In July 2011, he received the Diploma degree (5 years) in Electrical and Computer Engineering from the Aristotle University of Thessaloniki, Greece, with specialization in Telecommunications. Since October 2012, he has been working towards the Ph.D. degree in the Li-Fi R&D Centre, IDCoM, University of Edinburgh, UK. His research interests include the technologies of visible light communications (VLC), free space optical (FSO) communication systems and optical wireless power transfer (OWPT).

Pizza from 12.30pm – 2nd floor foyer