





PHD STUDENTSHIPS IN THE FOLLOWING AREAS

-  Optical Frequency Comb Generation, Characterisation and Optimisation
-  FPGA based Flexible Optical Transmitter

Applications are invited for a fully funded four year PhD position, to work in the above mentioned research topics. The research project is funded by Science Foundation Ireland and involves collaboration with industrial and academic partners.

Background and Project Description

Communications networks have become a critical infrastructure that forms a key element of our social and economic fabric. With the advent of new services and applications, future networks will have to go beyond basic Internet connectivity and encompass diverse services including connected sensors and smart meters, devices, vehicles and homes. Today's telecommunication systems are static with pre-provisioned limits and involve an expensive time-consuming reconfiguration process. The state-of-the-art approach (wavelength division multiplexing), entailing multiple lasers emitting differing wavelengths (each modulated) multiplexed together (on a 50 GHz grid), cannot meet the growing demands. Hence, future networks need to be flexible and programmable, allowing for resources to be directed, where the demand exists, thus improving network efficiency. These elastic optical networks require transmitters that are programmable.

This research project will investigate a programmable and cost efficient optical frequency comb (OFC) source as a possible solution (transmitter) for next generation networks. Some of the key areas of focus will be on the investigation of novel laser structures for the generation of OFCs, parameter characterization and optimization of the different OFCs and realisation of a programmable OFC, verification of the programmable OFC in networks employing advanced modulation formats, and the implementation of the OFC as a sliceable bandwidth variable transmitter.

Requirements

Successful candidates must have completed a university degree (Diploma, Masters or equivalent) in Electrical/Electronic Engineering or Physics. The PhD student is expected to carry out theoretical investigation, system modelling, and practical implementation of the proposed research. Candidates with a strong background in telecommunications, photonics, electronics and signal processing are desirable. Experience in programming (Matlab and Labview) will be an added bonus. Candidates applying for position in area of FPGA based Flexible Optical Transmitter should possess a working knowledge of FPGA programming. Also required are proficiency in English language (<https://www.dcu.ie/registry/english.shtml>) and team skills. Willingness to collaborate with the broader research group and with colleagues in other disciplines is vital.

Funding Information

The four year full-time studentship provides full support for tuition fees, and an annual tax-free stipend at IUA rates (for 2016/17 ~ €17,000 p.a.).

RADIO AND OPTICAL COMMUNICATIONS LABORATORY

The research and experiment demonstration will be carried out at the Radio and Optical Communications Laboratory (ROCL). The ROCL in Dublin City University (DCU) was established in 1998. The main goal of the ROCL is to focus on the design, simulation and demonstration of new technologies for future broadband photonic communication systems

Applicants should submit a CV and a brief letter of interest to the main contact below. The closing date for applications is **14th April 2017**.

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Please use the relevant title (Optical Frequency Comb Generation, Characterisation and Optimisation OR FPGA based Flexible Optical Transmitter) in your email subject line for your application or for any queries related to the position.



Dublin City University is ranked in 46th in today's league table of the top young universities in the world (QS Top 50 Under 50). It is the only Irish university to feature in this table. Universities are scored on academic reputation, employer reputation, faculty-student ratio, research publications per academic staff, citations per paper, and the international nature of the university (measured in terms of staff and students).
