1) PhD studentship in Optical Communications

Transceiver technology for future optical transmission systems

Applications are invited for a fully funded three year PhD studentship, with Ocarlo, in the field of optical communications. The studentship is open to UK students and EU students, and will cover all fees, attracting a tax fee stipend of £15,590 per annum during the course of the PhD.
Historically optical communication systems have operated at the very limits of high speed electronics, albeit using relatively simple receiver technology compared to wireless systems. However as systems move to 100 Gbit/s and beyond, a radically new approach is required to overcome the transmission limits imposed by imperfections in the installed fibre plant. One solution which has been proposed is the digital coherent receiver, combining phase and polarisation diverse coherent detection with embedded system based digital signal processing. The ultimate aim of the project will not only be to optimise the design of current transceivers, but also to identify key technologies for future optical transmission systems.
The project will include a mix of theoretical and experimental work, and will be based within UCL's Optical Networks Group (ONG), whose state of the art experimental facilities allow for the investigation of wavelength division multiplexed terabit capacity transmission over transpacific distances (including a 32 wavelength recirculating loop testbed with two 40Gbit/s bit error rate test sets and a 50GSa/s real-time oscilloscope).
Candidates with a first class or 2.1 honours degree (or equivalent), in Engineering, Mathematics or Physics are encouraged to apply. Applications should be made using the UCL postgraduate study application form which may be accessed via the UCL web site.

http://www.ucl.ac.uk/prospective-students/graduate-study/application-admission/

Candidates should indicate on the application form under 'Programme of Study' that they are applying for this studentship. The studentship is available for immediate start, however the start date may be deferred to any point up to November 2011.

Informal inquires regarding the studentship, including further details of the project can be made to Dr Seb Savory (s.savory@ee.ucl.ac.uk, tel:+44 20 7679 3995).

2) EPSRC PhD studentship in Optical Communications

Coherent optical signals for extremely high-capacity networks

Applications are invited for a fully funded three year PhD studentship, in the field of optical communications. The studentship is open to both UK and EU students and will cover all fees and will attract a tax fee stipend of £15,590 per annum during the course of the PhD.

High-speed fibre-optic cables link cities, countries and continents across the globe, underpinning the Internet and the fixed and mobile phone networks that enable and enrich our lives today. Historically, increasing the overall data rate transmitted on a single optical fibre has dramatically reduced the cost of data transmission, and this is one factor that has enabled high data rate connections to be available at reasonable cost to end users. To move beyond this - towards 1 Tb/s (1,000 Gb/s) per wavelength - will require new techniques. In this PhD will investigate one approach to achieving this, where each wavelength channel will be divided into a number of sub-channels, and advanced modulation formats used to transmit data at a high rate in the narrow spectral band of each sub-channel.

The work will mainly be carried out experimentally, using the department's state of the art experimental facilities to investigate the key technical elements of the proposal in stages before combining them to show that the full scheme could deliver the anticipated increase in transmission capacity if fully implemented. Areas that will be examined include new ways of generating phase-locked sub-channels at the transmitter; methods for generating and synchronising the corresponding optical signals at the receiver; and modulation and de-modulation techniques giving high data rate transmission in a narrow spectral band. The experimental demonstration will be supported by computer simulations of the system, which will also allow new applications enabled by the approach - too advanced to be demonstrated experimentally at this stage - to be investigated.

Candidates with a first class or 2.1 honours degree (or equivalent), in Engineering, Mathematics or Physics are encouraged to apply. Applications should be made using the UCL postgraduate study application form which may be accessed via the UCL web site.

http://www.ucl.ac.uk/prospective-students/graduate-study/application-admission/

Candidates should indicate on the application form under 'Programme of Study' that they are applying for this studentship. The studentship will remain open until filled and is available for immediate start, however the start date may be deferred to any point up to November 2011.

Informal inquires regarding the studentship, including further details of the project can be made to Dr Seb Savory (s.savory@ee.ucl.ac.uk, tel:+44 20 7679 3995).