



PhD in INGEGNERIA DELL'INFORMAZIONE / INFORMATION TECHNOLOGY - 38th cycle

Research Area n. 2 - Electronics

**THEMATIC Research Field: MULTI-CHANNEL MODULAR ELECTRONIC PLATFORMS FOR
THE CONTROL OF DENSE INTEGRATED PHOTONIC CIRCUITS**

Monthly net income of PhDscholarship (max 36 months)

€ 1250.0

In case of a change of the welfare rates during the three-year period, the amount could be modified.

Context of the research activity

Motivation and objectives of the research in this field

The research aims at developing an innovative electronic platform to control integrated photonic chips. The platform will be modular, in order to interact with possibly different sensors and different actuators, and multichannel in order to control up to few hundred of those and allow to improve the state of art toward photonic chips with hundreds of optical devices, as required in optical computing or reconfigurable optics. The research will be partly connected to the EU funded project NEBULA (<http://nebula-h2020.eu/>)

Methods and techniques that will be developed and used to carry out the research

The design of the electronic platform will be supported by all professional software tools available in the laboratory (SPICE, ORCAD, CADENCE, etc.). The fabrication will be commissioned to an external company. The testing and the use of the electronic platform in the specific fields of optical communication will be performed in the photonic laboratories in-house or with partners around the world.

Educational objectives

The research will develop to very high degree the skills in the design of advanced electronic circuit and systems, and of their electronic characterization. The research will also introduce the candidate to the realm of integrated photonics and to the corresponding applicative fields.



Job opportunities	The research fits both the well established sector of the design of Electronic Systems and the growing sector of integrated photonic communication, both having a vast hiring capability. In addition, this research may lead to the birth of specific start-ups, as already done within the research group only few years ago with the new company PhotonPath (https://www.photon-path.com).
Composition of the research group	1 Full Professors 2 Associated Professors 1 Assistant Professors 6 PhD Students
Name of the research directors	Marco Sampietro

Contacts
marco.sampietro@polimi.it 02.23996188 https://sampietro.faculty.polimi.it/

Additional support - Financial aid per PhD student per year (gross amount)	
Housing - Foreign Students	--
Housing - Out-of-town residents (more than 80Km out of Milano)	--

Scholarship Increase for a period abroad	
Amount monthly	625.0 €
By number of months	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information
<p>LIST OF UNIVERSITIES, COMPANIES, AGENCIES AND/OR NATIONAL OR INTERNATIONAL INSTITUTIONS THAT ARE COOPERATING IN THE RESEARCH: Politecnico di Milano; Ginzton Laboratory, Stanford University (USA) – Prof. David Miller; Department of Materials Science & Engineering, MIT, Cambridge (USA) – Prof. Anuradha Murthy Agarwal; James Watt School of Engineering, University of Glasgow (UK) – Prof. Marc Sorel; Laboratoire Interdisciplinaire Carnot de Bourgogne, CNRS Dijon, France – Prof. Alexandre Bouhelier; PhotonPath srl – Ing. Emanuele Guglielmi</p> <p>EDUCATIONAL ACTIVITIES (purchase of study books and material, including computers, funding for participation in courses, summer schools, workshops and conferences): financial aid per PhD student 5.095,96 Euro</p>



TEACHING ASSISTANTSHIP: (availability of funding in recognition of supporting teaching activities by the PhD student)

There are various forms of financial aid for activities of support to the teaching practice. The PhD student is encouraged to take part in these activities, within the limits allowed by the regulations.

COMPUTER AVAILABILITY: individual use

DESK AVAILABILITY: individual use