



PhD in INGEGNERIA DELL'INFORMAZIONE / INFORMATION TECHNOLOGY - 40th cycle

Research Area n. 2 - Electronics

**THEMATIC Research Field: DEVELOPMENT OF NOVEL INTEGRATED ELECTRONICS FOR
RADIATION DETECTORS**

Monthly net income of PhDscholarship (max 36 months)

€ 1400.0

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

Context of the research activity

<p>Motivation and objectives of the research in this field</p>	<p>The complexity of instrumentation based on radiation detectors is growing as evident in physics and nuclear medicine, in particular in the case of emission tomography scanners. The goal of the work is to develop novel integrated front-end electronic circuits to address the challenges of the next generation of radiation detectors, for instance in terms of throughput.</p>
<p>Methods and techniques that will be developed and used to carry out the research</p>	<p>Multichannel integrated circuits to readout signals from solid-state pixelated X-ray and Gamma-Ray detectors will be studied, simulated, designed, layouted, characterized and validated in view of relevant application scenarios. Special focus will be in analog design, layout, micro-assembly solutions as well as experimental characterization and back-end processing.</p>
<p>Educational objectives</p>	<p>The educational objectives belong to different levels from (i) lead the research in radiation detectors to (ii) learn to work in team, mentor master thesis students, self-organize, lead a research project, interact with international research partners and disseminate technical results through publications and conferences.</p>
<p>Job opportunities</p>	<p>There is a growing demand in industry and academia for PhD candidates with a robust expertise in</p>



	microelectronics and detectors and their applications to instrumentation for medicine.
Composition of the research group	1 Full Professors 1 Associated Professors 2 Assistant Professors 15 PhD Students
Name of the research directors	Prof. Marco Carminati

Contacts	
Prof. Marco Carminati marco1.carminati@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	700.0 €
By number of months	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information
<p><u>EDUCATIONAL ACTIVITIES</u> (purchase of study books and material, including computers, funding for participation in courses, summer schools, workshops and conferences): financial aid per PhD student. 5.707,20 Euro</p> <p><u>TEACHING ASSISTANTSHIP</u>: 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.</p> <p><u>COMPUTER AVAILABILITY</u>: 1st year: Yes 2nd year: Yes 3rd year: Yes</p> <p><u>DESK AVAILABILITY</u>: 1st year: Yes</p>



2nd year: Yes

3rd year: Yes