



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

Research Area n. 2 - Electronics

**PARTENARIATO PNRR Research Field: COMPOUND SEMICONDUCTOR AND SILICON-BASED IONIZING RADIATION DETECTORS AND RELATED INSTRUMENTATION FOR FUNDAMENTAL AND APPLIED SCIENCES AND FOR INDUSTRIAL APPLICATIONS**

**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

<p><b>Motivation and objectives of the research in this field</b></p>	<p>Compound semiconductors (CS), such as SiC, CdTe, CdZnTe, GaN, GaAs, have physical properties suitable for ionizing radiation detectors able to operate at room or high temperatures, in harsh environments or having a high absorption efficiency at photon energy up to hundreds of keV. Many scientific and industrial applications will take benefit by advanced instrumentation equipped with CS and/or advanced Si detectors, such as for X and Gamma ray spectroscopic imagers. The main objective of the proposed research is the design, simulation and experimental characterization of novel CS and advanced Si detectors and related electronics for the application in scientific and industrial instrumentation.</p>
<p><b>Methods and techniques that will be developed and used to carry out the research</b></p>	<p>The research activity will include all the phases related to the study and development of different advanced X-gamma detectors and spectroscopic modules: from the conception to the design, simulation, fabrication and full experimental characterization in laboratory and industrial contexts.</p>
<p><b>Educational objectives</b></p>	<p>The PhD student will acquire skills in the design, simulation, layout and experimental tests of radiation detectors and related readout electronics. Professional</p>



	simulators and laboratory instrumentation will be used. Collaboration in team with other PhD students and with external national and international research groups will complete the training.
<b>Job opportunities</b>	At the end of the PhD, the student will be ready to consider job opportunities both in companies requiring researchers or engineers skilled in electronic instrumentation or in research institutions.
<b>Composition of the research group</b>	1 Full Professors 0 Associated Professors 1 Assistant Professors 2 PhD Students
<b>Name of the research directors</b>	Giuseppe Bertuccio

<b>Contacts</b>	
Giuseppe.Bertuccio@polimi.it Tel. +39 02 2399.7346 <a href="https://www.deib.polimi.it/eng/people/details/91650">https://www.deib.polimi.it/eng/people/details/91650</a> <a href="https://sdiclab.deib.polimi.it/">https://sdiclab.deib.polimi.it/</a>	

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

<b>Scholarship Increase for a period abroad</b>	
<b>Amount monthly</b>	625.0 €
<b>By number of months</b>	6

<b>Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information</b>
<p>This Research Project is supported by the PNRR ecosystem MUSA within spoke 3 PoliMI “Technology for photonics and for the detection of ionizing radiation for application in fundamental sciences, life sciences and industrial instrumentation”. The activities will regard the study and development of the technologies for the detection of ionizing radiation for scientific and industrial applications as in MUSA ecosystem spoke 3 program.</p> <p>The main Laboratory in which the research activity will be carried out is the “Semiconductor Devices and Integrated Circuit Labs” located Politecnico di Milano, Como Campus, Via Anzani 42, 22100 Como.</p>



LIST OF UNIVERSITIES, COMPANIES, AGENCIES AND/OR NATIONAL OR INTERNATIONAL INSTITUTIONS THAT ARE COOPERATING IN THE RESEARCH: Universities of Palermo, Pavia, Udine; National Institute of Nuclear Physics (INFN); National Institute of Astrophysics (INAF); Italian Space Agency; European Space Agency; Elettra Synchrotron Trieste; XNEXT S.p.A.

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 per student

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