



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

Research Area n. 2 - Electronics

**THEMATIC Research Field: DEVELOPMENT OF ELECTRONIC INSTRUMENTATION FOR  
SMART 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><b>Motivation and objectives of the research in this field</b></p>	<p>Radiation detectors are being revolutionized by the application of artificial intelligence algorithms to the processing of acquired signals in order to extract the energy and timing information of individual events corresponding to single X-ray or gamma photons. The goal of the research is to develop full and smart multi-channel instruments leveraging this novel approach.</p>
<p><b>Methods and techniques that will be developed and used to carry out the research</b></p>	<p>Complete detection modules and instruments, based on solid-state radiation detectors and multichannel integrated readout electronics will be designed and realized within the research activity. The main focus will be on the development of full acquisition chains and novel signal processing solutions, based on machine learning processing in real time (within embedded digital platforms) the samples of the input signals, for both imaging and spectroscopic applications.</p>
<p><b>Educational objectives</b></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>



<b>Job opportunities</b>	There is a growing demand in industry and academia for PhD candidates with robust expertise in instrumentation, electronics, sensors and detectors, signal acquisition and signal processing, especially by means of embedded machine learning.
<b>Composition of the research group</b>	1 Full Professors 1 Associated Professors 2 Assistant Professors 15 PhD Students
<b>Name of the research directors</b>	Prof. Carlo Ettore Fiorini

<b>Contacts</b>	
Prof. Carlo Ettore Fiorini carlo.fiorini@polimi.it	

<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>	700.0 €
<b>By number of months</b>	6

<b>Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information</b>
<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>



DESK AVAILABILITY:

1st year: Yes

2nd year: Yes

3rd year: Yes