



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

## Research Area n. 2 - Electronics

### THEMATIC Research Field: DEVELOPMENT OF INNOVATIVE LOW-NOISE ASICS FOR SPECTROSCOPY AND IMAGING APPLICATIONS OF 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

<b>Motivation and objectives of the research in this field</b>	Radiation detectors are widely employed in the fields of fundamental physics as well in applied physics, as in medical imaging and industrial applications. Very often they need an electronics readout based on integrated circuits (ASICs), especially when the number of channels is relevant in the application (from few tens to few hundreds and beyond). This requires the design of appropriate ASICs in modern scaled technologies characterized by low-noise and low-power features.
<b>Methods and techniques that will be developed and used to carry out the research</b>	The research will be based on an analysis of specifications from the application and the type of detector, simulations with Cadence, design and test of prototypes.
<b>Educational objectives</b>	Specific courses about the design of integrated circuits will be required as well as schools and courses offered by conferences.
<b>Job opportunities</b>	PhD candidates involved in this research are usually highly required in microelectronics companies.
<b>Composition of the research group</b>	1 Full Professors 1 Associated Professors 1 Assistant Professors 10 PhD Students



<b>Name of the research directors</b>	Carlo Fiorini
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<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>The student will carry out his activity in a dynamic and stimulating team composed by several PhD students and Master students coming from different degrees (Electronics, Biomedical, Physics,...) and acting in different topics of the research, from detector physics, to electronics, to machine learning, to applications in space, physics and medical imaging.</p> <p>LIST OF UNIVERSITIES, COMPANIES, AGENCIES AND/OR NATIONAL OR INTERNATIONAL INSTITUTIONS THAT ARE COOPERATING IN THE RESEARCH: Politecnico di Milano; INFN; ASI (Italian Space Agency); CNR; INAF</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 5.707,13 Euro</p> <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.</p> <p>COMPUTER AVAILABILITY: individual use</p> <p>DESK AVAILABILITY: individual use</p>