



PhD in INGEGNERIA DELL'INFORMAZIONE / INFORMATION TECHNOLOGY - 39th cycle

Research Area n. 2 - Electronics

**THEMATIC Research Field: DEVELOPMENT OF SDD-BASED DETECTION MODULES FOR
BETA SPECTROSCOPY**

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

Motivation and objectives of the research in this field	The motivation of the research is in fundamental science, in particular nuclear physics for the study of beta decays of nuclei. The goal is to realize a detection system based on high-resolution silicon drift detectors (SDD) and related readout electronics featuring low-noise integrated CMOS preamplifiers to perform spectroscopy of electrons emitted in nuclear reactions and shed light on nuclear transitions.
Methods and techniques that will be developed and used to carry out the research	A broad range of engineering methods will be developed in the research activity: electronic design of the multichannel readout chains for the SDD detectors, acquisition system for spectroscopy etc.. Simulations, PCB design, assembly, test and validation, measurements, support to setup realization and measurements in vacuum and data analysis will be carried out.
Educational objectives	The education objectives are multiple: (1) acquire deep expertise in advanced electronics and the application of detectors to physics, (2) learn to manage a work package in a scientific project (a national PRIN in this case), interact with scientific partners, disseminate results and manage a small team of master students.
Job opportunities	PhD candidates with expertise in electronics (analog



	frontend and digital backend), sensors and detectors are highly requested by companies developing electronic systems and instrumentation, in multiple application areas spanning from industry, to medical, to robotics and vehicles.
Composition of the research group	1 Full Professors 1 Associated Professors 1 Assistant Professors 10 PhD Students
Name of the research directors	Prof. Marco Carminati

Contacts	
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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>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.</p> <p>TEACHING ASSISTANTSHIP: availability of funding in recognition of supporting teaching activities by the PhD student.</p> <p>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>