

PhD In Information Technology

Research Area n. 2 Title: Electronics

Research Field: “Low-Noise Low-Power Mixed-Signals Integrated Circuits For High Resolution X-Ray Semiconductor Detectors”

Scholarships and Financial support	
Monthly net income of PhD scholarship (max 36 months)	€. 1.200 (In case of a change of the welfare rates during the three-year period, the amount could be slightly modified)
Number of scholarships	1
Beginning of PhD	1/5/2017
Deadline for application	13/03/2017
Context of the research activity	
Motivations and objectives of the research in this field	Semiconductor Radiation Detectors (SRD) are commonly used in science and have applications in medicine, material analysis and security. The continuous increase in complexity and performance of new SRD requires advanced Application Specific Integrated Circuits (ASIC) for signal readout and processing. The objectives of this research activity is the study, design and experimental characterization of new low-noise and low-power CMOS ASIC for SRD devoted to Synchrotron X-ray and Space Telescopes for Astrophysics.
Methods and techniques that will be developed and used to carry out the research	The research activity will include all the phases related to the development of a research-grade CMOS mixed-signal ASIC: from its conception to design, simulation, fabrication (external foundry) till its full experimental characterization. The ASIC will be employed in specific applications in collaboration with national Institute of Nuclear Physics, Elettra-Sincrotrone Trieste and the National Institute for Astrophysics.

Educational objectives	The PhD student will acquire skills in the design, simulation, layout and experimental tests of ASICs including analog and digital sections. Professional simulators and laboratory instrumentation will be used. Collaboration in team with other PhD students and with external research groups will complete the training.
Job opportunities	At the end of the PhD the student will be ready to consider job opportunities both in academic or research institutions as in companies requiring researchers or engineers skilled in mixed-signal CMOS integrated circuit design and/or in instrumentation for scientific experiments.
Composition of the research group	1 Associate Professor 1 Post-Doc 3 PhD students
Names of the research directors	Prof. Giuseppe Bertuccio
E-mail address, phone number and web-page	Giuseppe.Bertuccio@polimi.it Tel. +39 031.332.7346 http://www.deib.polimi.it/eng/people
List of 5 Universities, Companies, Agencies and/or National or International Institutions that are cooperating in the research	1. National Institute of Nuclear Physics (INFN) 2. University of Udine 2. Elettra-Sincrotrone Trieste SCpA 2. Fondazione Bruno Kessler FBK, Trento 3. National Institute of Astrophysics (INAF)
Additional support	
<u>Educational activities</u> (purchase of study books and material, funding for participation to courses, summer schools, workshops and conferences): financial aid per PhD student per year	2nd year: 1.370 euro per student 3rd year: 1.370 euro per student
<u>Teaching assistantship</u> : availability of funding in recognition of support to 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.
<u>Computer availability</u> :	1 st year: <i>individual use</i> 2 nd year: <i>individual use</i> 3 rd year: <i>individual use</i>
<u>Desk availability</u> :	1 st year: <i>individual use</i> 2 nd year: <i>individual use</i> 3 rd year: <i>individual use</i>