



PhD in INGEGNERIA DELL'INFORMAZIONE / INFORMATION TECHNOLOGY - 37th cycle

Research Area n. 2 - Electronics

**THEMATIC Research Field: X-RAY DETECTION SYSTEMS FOR ADVANCED LIGHT
SOURCES**

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>Motivation and objectives of the research in this field</p>	<p>The unprecedented properties of advanced X-ray facilities (4th generation synchrotrons, Free Electron Lasers, FEL) call for new challenging developments in the field of semiconductor detectors and in the analysis of large-scale data sets in partnership with the leading European synchrotron facilities, companies and research institutions. This research is in the frame of the DSSC project, funded by the international facility European XFEL GmbH (Hamburg, D), that aims at development of novel X-ray detection systems.</p>
<p>Methods and techniques that will be developed and used to carry out the research</p>	<p>Characterization of novel detector structures and of low noise readout electronics. Calibration of ultra-fast x-ray imagers and analysis of large-scale data sets. Participation in the preparation/conduction of beam tests at European facilities.</p>
<p>Educational objectives</p>	<p>Characterization/Calibration/Interpretation of data from semiconductor detectors. Design and test of low noise circuits and detector setups. Communication skills and scientific reporting within international partnership.</p>
<p>Job opportunities</p>	<p>Dedicated positions at Italian and European X-ray facilities (in the electronics group and detectors group). Frequent contacts with companies in the field of X-ray</p>



	instrumentation and semiconductor detectors, also participating in the DSSC consortium.
Composition of the research group	1 Full Professors 1 Associated Professors 0 Assistant Professors 1 PhD Students
Name of the research directors	Prof. Andrea Castoldi

Contacts	
Prof. Andrea Castoldi email: andrea.castoldi@polimi.it Tel. +39 02 2399 6321	

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	566.36 €
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 per year 2nd year: euros per student (1534) 3rd year: euros per student (1534)</p> <p>TEACHING ASSISTANSHIP: 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): 1st year: Yes 2nd year: Yes 3rd year: Yes</p>



DESK AVAILABILITY (INDIVIDUAL USE):

1st year: Yes

2nd year: Yes

3rd year: Yes

List of Universities, Companies, Agencies and/or National or International Institutions that are cooperating in the research:

1. European XFEL GmbH

2. Heidelberg Univ.

3. Univ. Bergamo

4. DESY

5. PNSensor GmbH

Preferential skills:

- Scientific programming for numerical computational/data analysis
- CAD tools for design of printed circuit boards/
- Experience in setting up experimental apparatus for x-ray detectors characterization