POLITECNICO DI MILANO

PhD in FISICA / PHYSICS - 38th cycle

THEMATIC Research Field: FEMTOSECOND AND ATTOSECOND XUV BEAMLINES FOR ADVANCED SPECTROSCOPY (I-PHOQS EXTREME PHOTONICS)

Monthly net income of PhDscholarship (max 36 months)
€ 1200.0 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 aim of this PhD project, in the framework of the Italian I-PHOQS infrastructure, is the development of XUV beamlines equipped with state-of-the-art user stations for femtosecond/attosecond experiments in gas and condensed phase. This will increase the current performances and widen the possible spectroscopic applications far beyond the current limits, thus increasing both the potentials and the user pool of the infrastructure.
Methods and techniques that will be developed and used to carry out the research	The scholar will develop: 1.a low-frequency/high-intensity attosecond beamline for attosecond transient absorption and reflection spectroscopy, 2.A high-repetition rate (100 kHz) femtosecond XUV beamline for gas phase experiments, with an advanced molecular source, and for condensed phase experiments. In this framework, various hot research topics will be addressed: from the investigation of electron transfer processes in organic and inorganic materials, to advanced applications of attosecond techniques to solid samples.
Educational objectives	The scholar will receive a multidisciplinary training in topics including laser physics, nonlinear optics, frequency metrology, and molecular spectroscopy. He/she will be exposed to steps required for the implementation of ultrafast spectroscopy in the extreme-ultraviolet spectral

	region based on attosecond and femtosecond radiation.
Job opportunities	The PhD Program aims at developing an experimental approach in problem solving and a high level of professional qualification, opening job opportunities such as i) research in universities and research centers; ii) research and development in laser companies, iii) manager for innovation and technology. Furthermore, due to the multidisciplinary training the scholar will have excellent job opportunities in high-tech industries. In addition, he/she will be well positioned for an academic career.
Composition of the research group	1 Full Professors 1 Associated Professors 2 Assistant Professors 4 PhD Students
Name of the research directors	Mauro Nisoli; Rocìo Borrego-Varillas

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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	600.0 €
By number of months	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information

Educational activities

Educational activities (purchase of study books and material, funding for participation to courses, summer schools, workshops and conferences): financial aid per PhD student per 3 years: max 4.892,40 euros per student.

Teaching assistantship:
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.

Computer availability: individual use

Desk availability: shared use