



PhD in INGEGNERIA AEROSPAZIALE / AEROSPACE ENGINEERING - 39th cycle

THEMATIC Research Field: DYNAMICS AND EVOLUTION OF RUBBLE-PILE ASTEROIDS

Monthly net income of PhDscholarship (max 36 months)

€ 1600.0

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 research positions are issued in the context of the ERC project TRACES (Transitions in Rubble-pile Asteroid Chaotic Environment and granular Structures). The objective of TRACES is to characterize the response of granular media to mechanical solicitations in the deep-space environment (e.g., low/high-speed impacts, tidal forces). Applications are foreseen in the context of both planetary sciences, to investigate the origin and evolution of "rubble-pile" asteroids, and space engineering, to investigate the interaction between the rocky surface material and a moving lander/rover.</p>
<p>Methods and techniques that will be developed and used to carry out the research</p>	<p>The research activities are aimed at the study of granular mechanics in low-gravity and vacuum environments. The research foresees the use of data coming from DART (NASA) and Hera (ESA) space missions. The position will cover activities in the context of: (a) computational work: usage and further development of the DEM code GRAINS to simulate both gravitational N-body and contact/collision interactions between irregular particles; (b) experimental work: design, test and execution of experiments on ground and in micro-gravity environment (drop tower and parabolic flights).</p>
<p>Educational objectives</p>	<p>The successful candidate will work within an interdisciplinary research team. The project foresees interactions with international collaborators, including the scientific teams of DART (NASA) and Hera (ESA) space</p>



	missions. The TRACES team is part of a larger team composed of more than 25 researchers, active in a broad range of topics related to space exploration.
Job opportunities	Opportunities include research and academic jobs in the field of space engineering and planetary science, as well as positions in the space industry related to the development of simulation tools, devices for planetary surface interaction, and data analysis.
Composition of the research group	1 Full Professors 1 Associated Professors 2 Assistant Professors 20 PhD Students
Name of the research directors	Prof. Fabio Ferrari

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	800.0 €
By number of months	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information	
The PhD candidate will receive a desk, possibly through a hot-desking procedure, and a personal computer, if needed. Apart from the compulsory ones, the PhD candidate will have the opportunity to follow additional courses and receive economic support to attend summer schools and participate in conferences. There will be the possibility of paid teaching assistantship.	