



PhD in INGEGNERIA AEROSPAZIALE / AEROSPACE ENGINEERING - 39th cycle

**PNRR 117 Research Field: SCALABILITY OF LOCAL AND GLOBAL INSTABILITY AND
DAMAGE TOLERANCE OF HONEYCOMB SANDWICH COMPOSITE STRUCTURES**

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	Sandwich structures are widely used in aeronautical applications because of their advantages in terms of low weight and combined strength and stiffness properties. The following objectives of the research are identified: - Achieve a faster preliminary design of sandwich composite structures. - Reduce the need for high-fidelity models of full-scaled components: common practice within the industry is to recur to detailed Finite Element models which need high effort in modelling and validation. This need can be partially reduced by modelling small-scaled structures. - Reduce the costs needed for manufacturing and execution of physical tests on full-scaled components, once the developed structural scalability methodology will be validated.
Methods and techniques that will be developed and used to carry out the research	The research project proposes to develop simulation methods for structural scalability of a class of honeycomb sandwich panels, with particular focus on local and global instability and damage tolerance, and their sensitivity to design parameters.
Educational objectives	To develop numerical solutions for the prediction of large-scale composite panels, relevant to preliminary structural design in order to reduce testing and simulation efforts.
Job opportunities	The acquired knowledge can be applied in different sectors where lightweight structures play a significant role.



Composition of the research group	1 Full Professors 0 Associated Professors 1 Assistant Professors 5 PhD Students
Name of the research directors	Prof. Chiara Bisagni

Contacts
Prof. Chiara Bisagni Dipartimento di Scienze e Tecnologie Aerospaziali - Politecnico di Milano - via La Masa 34, 20156 Milano - Italy tel. +390223998344 email: chiara.bisagni@polimi.it web site: www.aero.polimi.it

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

National Operational Program for Research and Innovation	
Company where the candidate will attend the stage (name and brief description)	Leonardo S.p.A.
By number of months at the company	6
Institution or company where the candidate will spend the period abroad (name and brief description)	University of Bristol (UK)
By number of months abroad	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.