Professor Paolo Gaudenzi

Founding Faculty Fellow
Department of Mechanical and Aerospace Engineering
Università di Roma La Sapienza

See: http://dma.dma.uniroma1.it/users/ingaero/joomla/Documenti/CV/CV%20Gaudenzi.pdf

Biography:
Born in Rome, Italy, on 19.3.1961.
Full Professor of Costruzioni e Strutture Aerospaziali
Coordinator of the PhD course in Aerospace Technologies
Director of the Master in Satellites and orbital platforms
Università di Roma La Sapienza
Facoltà di Ingegneria Civile e Industriale
Dipartimento di Ingegneria Meccanica e Aerospaziale, Via Eudossiana 16, 00136 Roma, Italia

Paolo serves as a Professor of Aerospace Structures within the Department of Mechanical and Aerospace Engineering of the Università di Roma La Sapienza, where he coordinates the aerospace structures section. He is also the director of the Ph.D. course in Aerospace Technologies and of the professional Master course in Space Systems and services at La Sapienza.

Responsible of research projects funded by the Italian Ministry for Research, the National Research Council, the Italian Space Agency, the European Space Agency and private companies.
Expert in the evaluation of research projects for the Italian Ministry for Education, University and Reserch, the Italian Ministry for Industrial development, The European Research Council, the regions Lazio, Toscana, Veneto, Piemonte, Puglia. Chairman of the selection board for ENEA (National research body in the field of energy and power).
Advisor of ESA-ESRIN Vega Project team for the critical reviews of the Vega launcher Programme.

Promoter of the European Union/La Sapienza stage program EUROSPACESTAGES. La Sapienza representative for the PEGASUS Consortium among European aerospace universities. Member of the Council for International Relationships of La Sapienza.

Paolo is President of Smart Structures Solutions Srl, a spin-off company of the Università di Roma La Sapienza.

Career milestones:
Laurea in Civil Engineering cum laude, Università di Roma La Sapienza (1984).
Dottore di ricerca (PhD) in Aerospace Engineering, Università di Roma La Sapienza (1989).
Visiting Scientist at Massachusetts Institute of Technology (USA) (1991-1992).
Ricercatore (Assistant Professor) at la Sapienza since 1990,
Associate professor since 1998,
Full professor since 2000. Since 2002

Editor, Editorial boards, Conference scientific committees:
Editor of "Aerotecnica, misili e spazio", the Journal of aerospace science, technology and systems
Associate editor of the Int. Journal of Intelligent Material Systems and Structures (2000-2010)
Associate editor of the IEEE Trans on Aerospace and Electronic systems(2008-2010)
Member of the International board of the CEAS Space Journal and CEAS Aeronautical Journal
Member of the international editorial board of the Journal Computers and Structures
Member of the international editorial board of the Journal Composite Structures
Member of the international scientific committee of the conferences:
SECESA- Esa System and concurrent engineering for space
ICAST-International Conferences on Adaptive Structures and Technologies;

ICCST International Conference Computational Structures Technology;
ICCS International Conference on Composite Structures
MIT conference on Computational Fluid and Solids mechanics
European conf. on spacecraft structures, materials and mechanical testing (ESA,CNES, DLR).
CEAS air and space conference for the Space systems panel

Research interests:

aerospace structures and constructions
laminated and composite structures
active materials and intelligent structures
finite element modelling
satellites systems
cost engineering

Publications:

Paolo Gaudenzi has published more than 100 articles and one book on Smart Structures (J. Wiley 2009).

Selected Publications (papers on buckling of composite structures by Paolo Gaudenzi and co-authors):

On delamination buckling of composite laminates under compressive loading, P Gaudenzi, Composite structures 39 (1), 21-30, 1997

ABSTRACT: The effects of the presence of a delamination on the buckling load of composite laminates under compression are investigated. The linearized buckling analysis for two- and three-dimensional solid finite elements is proposed as an effective and practical tool for the prediction of the critical loads both for bi-dimensional and for tri-dimensional cases. The accuracy of the numerical procedure is assessed by comparing the results with existing analytical solutions obtained from the literature for simple bi-dimensional applications. A tri-dimensional analysis is then presented for the case of a square plate with a circular delamination. The effects of radius and depth of the delamination on the buckling load are also illustrated.

Post-buckling analysis of a delaminated composite plate under compression, P Gaudenzi, P Perugini, F Spadaccia, Composite structures 40 (3), 231-238, 1997

ABSTRACT: The post-buckling behaviour of compressed composite laminates in presence of a through-width delamination is considered. A 2D finite element procedure is proposed as an effective and practical tool for the nonlinear analysis of the examined structure. An incremental analysis is performed with the introduction of contact constrains to fully account for the real behaviour of the structure. Some illustrating examples are then presented which show the effect of the geometry of delamination on the post-buckling behaviour. Local and global buckled geometries of the deformed structures are also shown corresponding to different levels of the compressive loading.

Post-buckling behavior of composite panels in the presence of unstable delaminations, P Gaudenzi, P Perugini, A Riccio, Composite Structures 51 (3), 301-309, 2001

ABSTRACT: The analysis of the non-linear behavior of delaminated composites panels under compression is considered. A modification to the incremental continuation method (by Riks) for the analysis of the non-linear behavior of damaged composites is proposed to improve the numerical treatment of the analysis of unstable delamination growth. The theoretical formulation of this modification is first presented in conjunction with a general formulation of the continuation method and the modified virtual crack closure technique (MVCCT) for

the evaluation of delamination growth. Finally, numerical results for delaminated composite plates through the width and circular delaminations are presented and compared with existing experimental and numerical data.

Post-buckling behaviour of thermoplastic matrix composite laminates subjected to pure shear, P Gaudenzi, R Barboni, G Mormino, P Dinardo, Composite structures 46 (4), 381-386, 1999
ABSTRACT: The present study focuses on the determination of the buckling load and post-buckling behaviour of simply supported laminated composite rectangular panels loaded in shear. The nonlinear structural response is studied with a non-linear finite element approach. In order to determine the accuracy of the procedure, several tests have been performed comparing the finite element solutions for isotropic and laminated composite rectangular panels with existing ones, adopting different sequences of lamination and different length to width ratios. The analysis then considers the behaviour of laminates produced with innovative thermoplastic matrix composites developed in the frame of a national research program.