Professor Marco Amabili

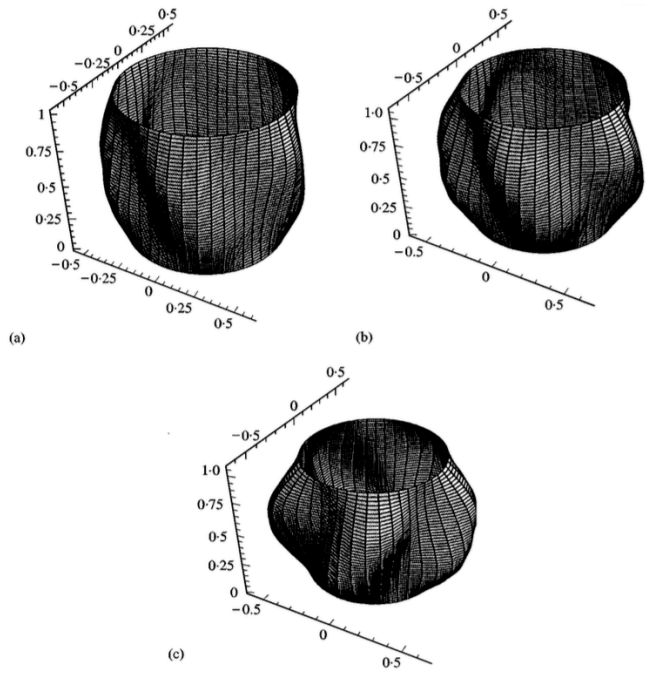

Figure 15. Shell shape for coupled-mode divergence at different flow velocities: (a) $V = 2$; (b) $V = 3$; (c) $V = 4$.

From: M. Amabili, F. Pellicano and M.P. Païdoussis, "Non-linear dynamics and stability of circular cylindrical shells containing flowing fluid. Part 1: Stability", Journal of Sound and Vibration, Vol. 225, No. 43, 26 August 1999, pp 655-699

Canada Research Chair (Tier 1) in Mechanical Engineering
Natural Sciences and Engineering
McGill University, Montreal, Québec, Canada

See:
http://en.wikipedia.org/wiki/Marco_Amabili
http://www.people.mcgill.ca/marco.amabili/
http://www.mcgill.ca/mecheng/staff/marcoamabili
http://www.unipr.it/persona/marco-amabili-242149
http://www.chairs-chaires.gc.ca/chairholders-titulaires/profile-eng.aspx?profileId=2595
http://www.researchgate.net/researcher/58100976_Marco_Amabili
http://www.barnesandnoble.com/c/marco-amabili
http://www.amazon.com/gp/pdp/profile/A1H8WB2YC5TR0R
http://www.scribd.com/doc/56003234/Cv-marco-amabili
http://65.54.113.26/Author/19002072/marco-amabili
http://www.bookdepository.com/Nonlinear-Vibrations-Stability-Shells-Plates-Marco-Amabili/9780521883290

Coming to Canada from University of Parma, Italy

Biography on Wikipedia, the free encyclopedia:
Biography:
Amabili is known for the study of nonlinear vibrations and dynamic stability of shell and plate structures. Professor Amabili serves as Contributing Editor for International Journal of Non-linear Mechanics (Elsevier). He is also Associate Editor of the Journal of Fluids and Structures, Elsevier, Applied Mechanics Reviews, ASME, Journal of Vibration and Acoustics, ASME, Mechanics Based Design of Structures and Machines. He is member of the Editorial Board of Journal of Sound and Vibration, Elsevier, and International Journal of Structural Stability and Dynamics. He has been the Chair of the ASME Technical Committee Dynamics and Control of Systems and Structures.

Professor Amabili is working in the area of vibrations, nonlinear dynamics and stability of thin-walled structures, reduced-order models and fluid-structure interaction. His research is multi-disciplinary, and it has been utilized in the design and analysis of aeronautical and aerospace structures, laminated and FGM shell structures, human blood flow problems in aorta, safety of pressure tanks and innovative flow-meters. Amabili is the author of over 300 papers (130 in referred international journals) in vibrations and dynamics and has achieved an h-Index 25. He is the author of the monograph Nonlinear Vibrations and Stability of Shells and Plates published by Cambridge University Press.

Amabili, together with M.P. Païdoussis and F. Pellicano, has showed for the first time the strongly subcritical behavior of the stability of circular cylindrical shells conveying flow. A series of papers presented theoretical, numerical and experimental investigations, showing that a supported circular shell made of aluminum, plastic or rubber presents divergence for much smaller velocity than predicted by linear theory.

Education:
PhD – University of Bologna, Italy, 1996
M.S. – University of Ancona, Italy, 1992

International Awards:
Fellow of the American Society of Mechanical Engineers (ASME)
Plenary lecture at the International Mechanical Engineering Congress and Exposition (IMECE) organized by ASME, Denver, 2011

Books:
M. Amabili, Nonlinear vibrations and stability of shells and plates, Cambridge University Press (2008). ISBN 978-0-521-88329-0
End of the biography given on Wikipedia

Research involves: Developing theory, numerical models and experimental tests to explore nonlinear phenomena in structural dynamics and stability with fluid-structure interaction. This research will lead to improved design in panels and shell structures.

Exploring nonlinear dynamics of advanced structures:
Shell structures can be found in aircraft, spacecraft, rockets, cars, CDs and DVDs, submarines, boats, trains, and the human body, to name just a few. These structures are usually immersed in fluids: air or liquid.

Interaction between these thin-walled shell structures and fluids may give rise to large-amplitude vibrations and instability, which need to be controlled to prevent the shell's failure. Fluid-structure interactions in aerospace applications are particularly challenging, since they involve new materials with lesser-known properties.

As Canada Research Chair in Vibrations and Fluid-Structure Interaction, Dr. Marco Amabili studies nonlinear dynamics (the study of how a small change in one variable can lead to a large, systemic change) and stability, fluid-structure interactions, and active control of shell structures, particularly for aeronautical and underwater vehicles.

The increasing need to produce lighter-weight aerospace shell structures has led to the use of advanced material systems and the demand for new design methods to guide product development. Amabili is seeking to develop solutions to open problems in the nonlinear dynamics of shell structures through groundbreaking innovations in experimental, theoretical and numerical techniques.

His work also seeks to merge branches of research that have in the past developed separately (e.g., nonlinear dynamics of aerospace and underwater vehicles), but that have many problems in common.