

## **Massimo Ruzzene**



### ***Professor***

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### **Education**

Ph.D, Mechanical Engineering, Politecnico di Torino, Italy, 1999.

“Laurea” in Mechanical Engineering, Politecnico di Torino, Italy, 1995.

### **Biography**

Massimo Ruzzene is a Professor of Aerospace Engineering and holds a joint appointment in Mechanical Engineering. He conducts research in the areas of structural dynamics, structural acoustics, and wave propagation, with focus on high frequency vibrations and multi-scale modeling of complex structural components. In these areas, he has authored more than 260 journal and conference publications, and 2 books. He has participated in projects funded by the US Air Force, US Army, US Navy, DARPA, NASA, NSF, and by Boeing, Raytheon and TRW. M.Ruzzene is the recipient of the 2002 Young Investigator Award from ONR and of group achievement awards from NASA. He is a Fellow of ASME, an Associate Fellow of AIAA, and a member of ASA and of AHS.

### **Research**

Structural dynamics and wave mechanics, with applications in the following areas:

- Structural health monitoring and damage detection in composite and metallic aerospace structures
- Analysis and design of novel cellular structural configurations with multi-functional capabilities
- Analysis and design of acoustic-based sensors and signal processing MEMS devices
- Adaptive passive strategies for vibration isolation and noise control

### **Honors and Distinctions**

Fellow, ASME

Associate Fellow, AIAA

Office of Naval Research Young Investigator Award, 2002

C.H. Kaman Award for Excellence in Research, 2002

## **Selected Publications**

F. Casadei, T. Delpero, A. Bergamini, P. Ermanni, and M. Ruzzene. Piezoelectric resonator arrays for tunable acoustic waveguides and metamaterials. *Journal of Applied Physics*, 112(6):064902{064902, 2012.

N. Apetre and M. Ruzzene. Spectral and perturbation analysis for ultrasonic guided waves. *Journal of Sound and Vibration*, 2012.

K. Manktelow, R.K. Narisetti, M.J. Leamy, and M. Ruzzene. Finite-element based perturbation analysis of wave propagation in nonlinear periodic structures. *Mechanical Systems and Signal Processing*, 2012.

M. Carrara, MR Cacan, MJ Leamy, M. Ruzzene, and A. Erturk. Dramatic enhancement of structure-borne wave energy harvesting using an elliptical acoustic mirror. *Applied Physics Letters*, 100(20):204105 {204105, 2012.

F. Casadei and M. Ruzzene. Frequency-domain bridging method for the analysis of wave propagation in damaged structures. *Wave Motion*, 2012.

L. Airoidi and M. Ruzzene. Design of tunable acoustic metamaterials through periodic arrays of resonant shunted piezos. *New Journal of Physics*, 13:113010, 2011.

M. Oudich, M. Senesi, M.B. Assouar, M. Ruzenne, J.H. Sun, B. Vincent, Z. Hou, and T.T. Wu. Experimental evidence of locally resonant sonic band gap in two-dimensional