

**Post-Doc Position on
« Scattering properties of finite size mechanical metamaterials »**

Location: INSA-Lyon, Lyon, France

Supervisor: Angela MADEO, Full Professor, GEOMAS, INSA-Lyon

Start: May/June 2019

Duration: 1 year and 2 months

This Post-Doc is related with the implementation of scattering problems of elastic waves generated by a metamaterial's specimen of finite size in the commercial code COMSOL Multiphysics.

More particularly, a specific metamaterial like e.g., the one presented in [1,2] will be selected and a geometry of a specimen of finite size of such metamaterial embedded in an infinite homogeneous medium will be established. The candidate will be requested to implement the problem of the scattering properties of the obstacle in the framework of linear elasticity, when considering a plane incident wave and/or a gaussian incident beam.

The solution field of such problem will serve as a basis for the comparison with the solution of an analogous problem solved via the relaxed micromorphic model.

The ideal candidate should be familiar with the implementation of scattering problems of mechanical waves in the code COMSOL Multiphysics.

If interested, please send an email with your CV and a motivation letter to angela.madeo@insa-lyon.fr

[1] G. Barbagallo, D. Tallarico, M.V. d'Agostino, A. Aivaliotis, P. Neff, A. Madeo, (2018) "Relaxed micromorphic model of transient wave propagation in anisotropic band-gap metastructures". International Journal of Solids and Structures, DOI: <https://doi.org/10.1016/j.ijsolstr.2018.11.033>

[2] A. Madeo, G. Barbagallo, M. Collet, M.V. d'Agostino, M. Miniaci, P. Neff, (2017). Relaxed micromorphic modeling of the interface between a homogeneous solid and a band-gap metamaterial : new perspectives towards meta-structural design. Mathematics and Mechanics of Solids, DOI: <https://doi.org/10.1177/1081286517728423>