PhD opening in Engineering Mechanics

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I am seeking a highly motivated and talented research assistant with background in applied physics/mathematics, or mechanical/civil engineering.

Wave Mechanics Group at CU Boulder aim to tackle some of the challenging *direct and inverse problems* in engineering mechanics involving *wave motion*. Examples include:

- inverse scattering in complex or unknown domains
- linear/nonlinear wave propagation in materials with periodic, random, or multiphase microstructure e.g. metamaterials, damage/degradation zones, porous/granular media
- elastic-wave cloaking
- nonlinear and multi-scale dynamics of material interfaces

Some of the direct *applications* of our research are in the areas of

- **oil/gas & energy** involving real-time targeted monitoring of subsurface processes e.g. fracking aiming to enhance energy production from hydrocarbon/geothermal resources,
- **next-generation NDE** (Non-Destructive Evaluation) including active sensing and characterization of *damage precursors* — i.e. micro-scale anomalies in highly heterogeneous materials, in sensitive structures (e.g. power plants),
- **biomedical imaging** entailing the nonlinear mechanics of soft tissue,
- **critical infrastructure protection** against natural hazards such as earthquake, or against unexpected interrogating waves.
- **failure prediction** via timely precursors of interfacial instability that may be found through deciphering the complex mechanics of interfaces

Our research leverage advanced tools of mathematical analysis as well as leading-edge computational and experimental techniques, catered for by the state-of-the-art facilities at the CU Boulder. Thus, a strong foundation (or interest) in theoretical analysis, good coding skills, and experience (or Interest) in conducting experiments are the characteristics of an ideal applicant. Qualified candidates should hold a BS or MS degree in Mathematics, Mechanics, Physics, or Engineering, and a solid knowledge of English.

The Wave Mechanics Group is part of the Engineering Science program, in the department of Civil, Environmental and Architectural Engineering at CU Boulder, with over twelve full-time faculty members conducting research in the most diverse areas of applied mechanics.

Applicants should submit their CV including the names and contact information of three references to fatemeh.pourahmadian@colorado.edu. Applications are considered for both Fall and Spring 2017. This research position is funded and include a full tuition coverage, health insurance, and a monthly stipend of over $2,000.