PhD opening in

Wave Mechanics of Engineered Materials

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Objective: We are seeking a highly motivated and talented research assistant with background (BS or MS) in applied mathematics, physics, or mechanical/civil engineering.

Project description: This research project aims to decipher the interplay between micro-structural length scales intrinsic to engineered materials with random microstructure and the wave transmission characteristics of such media e.g. dispersion and attenuation. Such developments contribute towards establishing a fundamental and holistic platform for elastic wave steering, shielding of sensitive structures and seismic cloaking, see Fig 1 for examples. To this end, advanced computational and analytical tools of applied mathematics such as asymptotic analysis, dynamic homogenization and stochastic formulation will be required.

Relevant skills/interests: The nature of our research is comprehensive leveraging not only recent advances in mathematical analysis, but also cutting-edge computational and experimental techniques, catered for by the state-of-the-art facilities at CU-Boulder. Thus, a strong foundation in theoretical and numerical analysis, and experience or interest in conducting experiments is desirable.

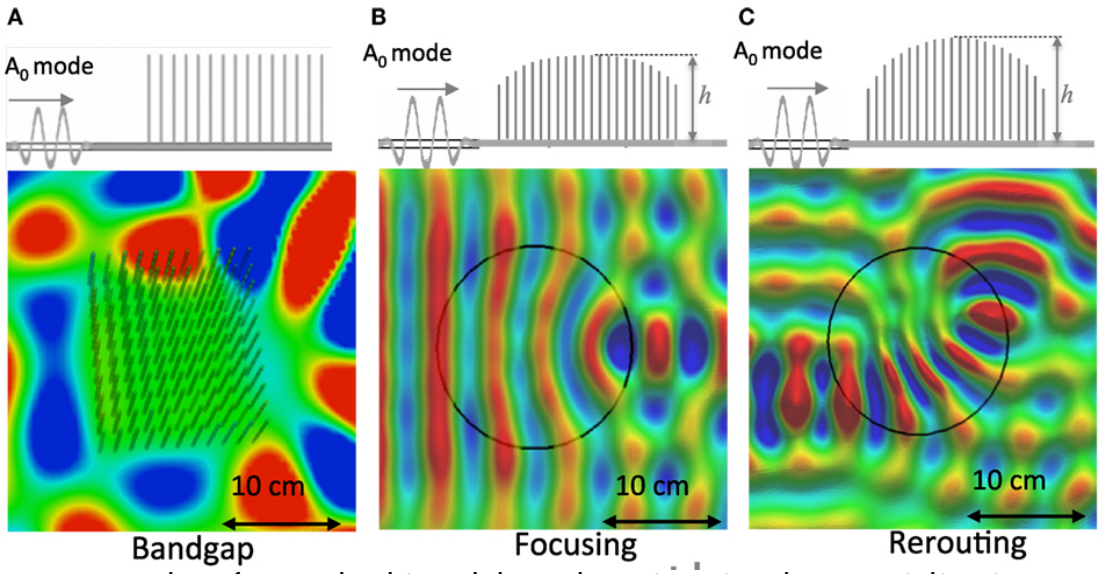

Figure 1 . Examples of control achieved through engineering the material's microstructure (Colorcode represents the vertical displacement calculated from time domain numerical simulations): **(A)** Band-gaps can stop the propagation of flexural and Rayleigh waves and shield desired regions against uninvited motion, and **(B,C)** Elastic energy can be guided or focused in a medium (Courtesy of A. Colombi et al).

Qualifications: Qualified candidates should hold a BS or MS degree in Applied Mathematics, Mechanics, Applied Physics, or Engineering with an average grade of ~3.2/4 or higher, and (at least) an upper intermediate English level. All applicants should submit their GRE and TOEFL scores. While there are no specific restrictions on the GRE results, the mandatory TOEFL (internet-based) score is ≥95.

Instructions: *Applications will be considered all year round until the position is filled*. The intended start date is Fall 2018. If you are interested, please submit your detailed CV, statement of interest, and a copy of your transcripts (unofficial is OK) to Dr. Fatemeh Pourahmadian at fatemeh.pourahmadian@colorado.edu. This research position is funded and include a full tuition coverage, health insurance, and a monthly stipend of over $2,000.

Formal application to CU-Boulder: Interested individuals should also consider formal application to the Engineering Science Program in the department of Civil, Environmental and Architectural Engineering. The application instructions may be found here.

For further inquiries, please contact Dr. Fatemeh Pourahmadian at fatemeh.pourahmadian@colorado.edu.