



UNIVERSITÀ DEGLI STUDI
DI TRENTO

Dipartimento di Ingegneria Civile,
Ambientale e Meccanica

AVVISO DI SEMINARIO

Si comunica che il **giorno Martedì 16 Luglio 2013 a partire dalle ore 14:30**
presso l'aula **H1** (via Mesiano 77) si terrà il seguente seminario

Elastodynamic cloaking with pre-stressed solids: theory and experiment

Dr. William Parnell

(in cooperation with A.N. Norris, T. Shearer, I.D. Abrahams)

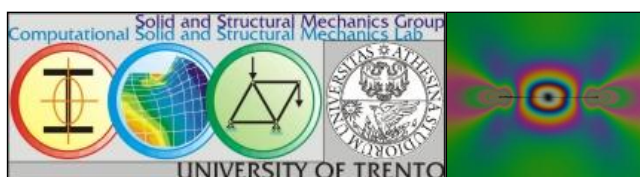
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Interest in cloaking theory (i.e. rendering objects near-invisible to incident waves) and its practical realization has grown significantly since the early theoretical work in 2000's. Methods have largely been based on the idea of coordinate transformations, which motivate the design of cloaking metamaterials. These materials are able to guide waves around a specific region of space. Research has subsequently focused on the possibility of cloaking in the contexts of acoustics, surface waves in fluids, heat transfer, fluid flow and linear elastodynamics. It was shown by Milton and co-workers that elastodynamic cloaking is made difficult due to the lack of invariance of Navier's equations under general coordinate transformations which retain the symmetries of the elastic modulus tensor. Invariance of the governing equations can be achieved if assumptions are relaxed on the minor symmetries of the elastic modulus tensor but commonly occurring elastic materials do not possess this property.

Here we shall describe an alternative approach to construct elastodynamic cloaks. We show that it is theoretically possible to construct elastodynamic cloaks by pre-stressing hyperelastic (nonlinear) solids (e.g. rubber). We describe the two dimensional antiplane and in-plane problems and some related experiments which appear to show the feasibility of the approach.

Il seminario è organizzato dal gruppo di **Scienza delle Costruzioni**

D. Bigoni, L. Deseri, N. Pugno, M. Gei, F. Dal Corso, A. Piccolroaz, R. Springhetti



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