

Università di Brescia - DICATAM  
Aula SEMINARI, 10 Settembre 2014, ore 14:30

# WAVE-CRACK INTERACTION IN FINITE ELASTIC BODIES

*In this talk we present results on crack propagation in a bounded linear elastic body under the influence of incident waves. We discuss the influence of shear waves and plane elastic waves to a running crack. The time dependent problem is formulated in a two-dimensional current cracked configuration by the classical wave equation (shear waves) and by a system of linear elasto-dynamic equations (plane elastic waves). In order to describe the behaviour of the elastic fields near the straight crack tip, we transform these equations to a reference configuration and derive the corresponding dynamic stress singularities. Furthermore, we assume that an energy balance law is valid. Exploiting the knowledge on the singular behaviour of the dynamic crack fields, we derive from the energy balance law a dynamic energy release rate. Comparing this energy release rate with an experimentally given fracture toughness we get ordinary differential equations for the crack tip motion. We present numerical simulations both for a mode-III and a mode-I crack propagation.*

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