ID de Contribution: **23** Type: **Non spécifié**

An H-matrix based direct solver for the Boundary Element Method in 3D elastodynamics

vendredi 5 février 2016 16:40 (35 minutes)

The main advantage of the Boundary Element Method (BEM) is that only the domain boundaries are discretized leading to a drastic reduction of the total number of degrees of freedom.

In traditional BE implementation the dimensional advantage with respect to domain discretization methods is offset by the fully-populated nature of the BEM
coefficient matrix. In the present work, we propose a fast method to solve the BEM system in 3-D frequency-domain elastodynamics.

Using the H-matrix arithmetic and low-rank approximations (performed with Adaptive Cross Approximation), we derive a fast direct solver.
We assess the numerical efficiency and accuracy on the basis of numerical results obtained for problems having known solutions.
In particular, we study the efficiency of low-rank approximations when the frequency is increased.
The efficiency of the method is also illustrated to study seismic wave propagation in 3-D domains.

This is a joint work with Patrick Ciarlet and Luca Desiderio

Orateur: Dr CHAILLAT, Stéphanie