Università degli Studi di Pavia

Dipartimento di Meccanica Strutturale

In collaborazione con
Centro di Simulazione Numerica Avanzata – CeSNA
Istituto Universitario di Studi Superiori

SEMINARIO

Analytical and semi-analytical approaches to modeling transient fluid-structure interaction

The application of some of the classical analytical methods of mathematical physics to modeling non-stationary fluid-structure interaction is considered. The proposed approach is based on using a combination of the Laplace transform with the separation of variables (purely analytical version), complemented where necessary by the use of finite-difference methodology (semi-analytical version). Although the solutions themselves are not overly complex, obtaining computable expressions is anything but trivial. A number of significant challenges that one encounters are discussed, and some efficient approaches to dealing with them are proposed. Some interesting theoretical outcomes that were obtained as a `side' result of the work are also presented. The numerical aspects of the simulations based on the solutions obtained are often non-trivial as well, and are examined in some detail. Specific practical recommendations for the use of the methodology developed are given, and the limitations of the formulation considered are discussed.

Prof. Serguei Iakovlev
Department of Engineering Mathematics
Dalhouise University - Halifax, Canada

Lunedì 26 Ottobre, Aula MS1
Seminar tentative schedule: 14.30 - 17.30
Dipartimento di Meccanica Strutturale
Via Ferrata,1 – Pavia

Professor S. Iakovlev will be visiting the Dipartimento of Meccanica Strutturale until July 2010