Università degli Studi di Pavia
Computational Mechanics & Advanced Materials Group

UNIVERSITÀ DI PAVIA
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SHORT COURSE

A Novel Method of FEM Modeling and Solution without Assembly: Can It Be Possible?

Part II: Initial Applications

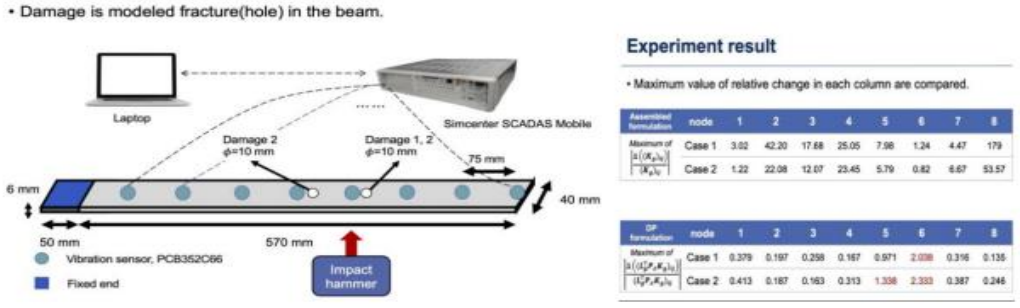
A new formulation for the displacement-only partitioned equations of motion for linear structures presented in Part I is summarized as

$$\boldsymbol{M}\,\ddot{\boldsymbol{d}} = \mathbf{Pd}(\boldsymbol{f} - \boldsymbol{K}\,\boldsymbol{d}) \quad (1)$$

where ($\ddot{\boldsymbol{d}}$, $\boldsymbol{d}$, $\boldsymbol{f}$) the partitioned accelerations, partitioned displacements and partitioned applied forces acting on each partition, (M, K) are block-diagonal partitioned mass and stiffness matrices, and Pd is the coupling projector.

Part II presents initial applications of the proposed formulation as applied to: unconditionally stable explicit-implicit transient analysis, static parallel analysis in an iterative solution mode; reduced-order modeling (component mode synthesis); localized damage identification which can pinpoint damage locations.

Part II ends with potential additional applications such as multuphysics modeling and solution methods, optimization and active vibration/noise control, etc.



05 Ottobre 2023
Dalle 12.15 alle 13.00
Aula MS1, DICAr

Prof. **K. C. Park**
University of Colorado, Boulder CO, USA