

EINLADUNG

zum Gastvortrag

von

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Technische Universität Wien, Karlsplatz 13, 1040 Wien
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Method of Localized Lagrange Multipliers and its Recent Applications: Multi-Physics, Reduced-Order Modeling, and Uncertainty Quantification

The present talk introduces a localized version of *la méthode des multiplicateurs* (known as method of Lagrange multipliers) and its recent applications in computational engineering. We will, first, offer a brief review of a variational formulation for the partitioned equations of motion for multi-physics and/or multi-domains utilizing the method of localized Lagrange multipliers, with its earlier application examples: pore fluid-soil, structure-control, acoustic-structure, structural-thermal and structure-electromagnetic problems. We then focus on recent advances in the four categories: regularization for stiff coupled systems, reduced-order modeling, nonmatching interfaces, a direct generation of inverse mass matrices for explicit transient analysis, and uncertainty quantification analysis. The presentation concludes with potential areas of further developments in partitioned analysis employing the method of localized Lagrange multipliers.

Biosketch: Professor Park is a well-known leader in the field of computation dynamics, finite element and multiphysics both in academic as well as in industrial setting. Professor Park's current research activities include Computational Multiphysics, Fluid-Structure Interaction, Linear and Nonlinear Waves, Contact-Impact problems for heterogeneous systems, Engineering system identification, Dynamics of Metamaterials, Design of membranous structures, and Aerospace Structural Systems.