KTH SOLID MECHANICS KEYNOTE SEMINAR; Tuesday, May 3rd, 16.15; https://kth-se.zoom.us/j/62082704349

Peter Wriggers*

"Application of virtual elements for simulations in solid mechanics"

Virtual elements (VEM) were developed during the last decade and applied to various problems in solid mechanics. The method includes elements that can have arbitrary shape including non convex polyhedra. This flexibility with respect to the geometry can be explored and utilized within engineering applications for specific problems.

This lecture will cover several applications of the virtual element method in the area of solids mechanics which are related to

- contact and interfaces,
- fracture using classical and phase field approaches,
- homogenization of polycrystal microstructural response,
- design C^1-continuous ansatz spaces for plates and gradient elasticity

For these problem classes we will discuss the pros and cons of virtual elements for efficient, reliable and robust solutions in the engineering world

Professor Dr.-Ing. habil. P. Wriggers studied Civil Engineering at the University Hannover, he obtained his Dr.-Ing degree at the University Hannover in 1980 on "Contact-impact problems". From 1983-84 he was Visiting Scholar at the UC Berkeley, USA. In 1990 he was appointed as Full Professor at the Institute of Mechanics at TH Darmstadt. In 1998 Prof. Wriggers changed to the Leibniz University Hannover where he held the chairs for Mechanics in Civil Engineering and in Mechanical Engineering. Since April 2022 he is Emeritus Professor at Leibniz Universität Hannover. From 2003 to 2004 he held the position of "Linkage Professor" at the University of Newcastle in NSW, Australia. From 2014 to 2021 he was Vice-President for Research of the Leibniz University Hannover Peter Wriggers is member of the "Braunschweigische Wissenschaftliche Gesellschaft", the Academy of Science and Literature in Mainz, the German National Academy of Engineering "acatech" and the National Academy of Croatia. He was President of GAMM, President of GACM and Vice-President of IACM. Furthermore, he acts as Editor-in-Chief for the International Journal "Computational Mechanics" and "Computational Particle Mechanics". He was awarded the Fellowship of IACM and received the "Computational Mechanics Award" and the "IACM Award" of IACM, the "Euler Medal" of ECCOMAS as well as three honorary degrees from the Universities of Poznan, ENS Cachan and TU Darmstadt.

* seminar coathored by **C. Böhm , B. Hudobivnik , A. Hussein and F. Aldakheel**