KTH SOLID MECHANICS SEMINAR; Thursday, January 14th, 16.15; https://kth-se.zoom.us/j/61359989778

Thomas J.R. Hughes' KEYNOTE seminar "Isogeometric Analysis: Origins, Status and Recent Progress"

The vision of Isogeometric Analysis (IGA) was first presented in a paper published October 1, 2005 [1]. Since then it has become a focus of research within both the fields of Finite Element Analysis (FEA) and Computer Aided Design (CAD) and has become a mainstream analysis methodology and provided a new paradigm for geometric design [2-4]. The key concept utilized in the technical approach is the development of a new foundation for FEA, based on rich geometric descriptions originating in CAD, more tightly integrating design and analysis. Industrial applications and commercial software developments have expanded recently. In this presentation, I will describe the origins of IGA, its status, recent progress, and areas of current activity.

[1] Hughes, Cottrell and Bazilevs, Isogeometric Analysis: CAD, Finite Elements, NURBS, Exact Geometry and Mesh Refinement, CMAME, 194, 2005.

[2] Cottrell, Hughes and Bazilevs, Isogeometric Analysis: Toward Integration of CAD and FEA, Wiley, Chichester, U.K., 2009.

[3] Special Issue on Isogeometric Analysis, (eds. Hughes, Oden and Papadrakakis), CMAME, 284, 2015.

[4] Special Issue on Isogeometric Analysis: Progress and Challenges, (eds. Hughes, Oden and Papadrakakis), CMAME, 316, 2017.

Dr. Hughes is Peter O'Donnell Jr. Chair in Computational and Applied Mathematics and Professor of Aerospace Engineering and Engineering Mechanics at The University of Texas at Austin. Previously we worked at Berkeley, Caltech and Stanford. He has made numerous seminal contributions to the FEM, many of them have been incorporated in industrial and commercial computer programs. He is a highly cited researcher with over 120,000 citations and an h-index of 153 in Google Scholar. Dr. Hughes holds B.E. and M.E. degrees in Mechanical Engineering from Pratt Institute and an M.S. in Mathematics and Ph.D. in Engineering Science from the University of California at Berkeley. He is a fellow of many societies, such as SIAM, AAAS, AAM, AIAA, ASCE, ASME, USACM, IACM. He is co-editor of Computer Methods in Applied Mechanics and Engineering (CMAME,), a founder and past President of USACM, IACM, past chairman of ASME and USNC/TAM. Dr. Hughes is an elected member of the U.S. National Academy of Sciences, the U.S. National Academy of Engineering, the American Academy of Arts and Sciences, and the Academy of Medicine, Engineering and Science of Texas, and a Foreign Member of the Royal Society of London, the Austrian Academy of Sciences, and the Istituto Lombardo Accademia di Scienze e Lettere. He has been awarded the Walter L. Huber Civil Engineering Research Prize and the von Karman Medal from ASCE, the Melville, Worcester Reed Warner, and Timoshenko Medals from ASME, and many other high/highest awards in the field.