

OPEN LECTURE

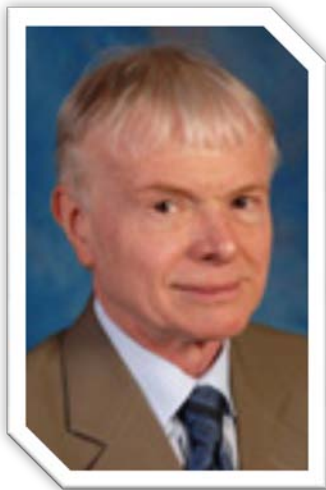
2010.10.20 Wednesday

15:00~16:00

Title: Isogeometric Analysis

Prof. Thomas J.R. Hughes

(Institute for Computational Engineering and Sciences University of Texas at Austin)



Dr. Hughes joined the Department of Aerospace Engineering and Engineering Mechanics in the fall 2002 semester. He has served as a faculty member at UC Berkeley, the California Institute of Technology, and Stanford University, where he served as Chairman of the Division of Applied Mechanics and Chairman of the Department of Mechanical Engineering. He is an internationally known expert in computational engineering and sciences and has published over 300 scientific works on computational mechanics, and is the author or editor of eighteen books.

Abstract

Computational geometry has until very recently had little impact upon the numerical solution of partial differential equations. The purpose of this talk is to explore Isogeometric Analysis, in which NURBS (Non-Uniform Rational B-Splines) and T-Splines are employed to construct exact geometric models [1,2] of complex domains. I will review recent progress toward developing integrated Computer Aided Design (CAD)/Finite Element Analysis (FEA) procedures that do not involve traditional mesh generation and geometry clean-up steps, that is, the CAD file is directly utilized as the analysis input file. I will summarize some of the mathematical developments within Isogeometric Analysis that confirm the superior accuracy and robustness of spline-based approximations compared with traditional FEA, and I will present applications to problems of solids, structures and fluids, and a modeling paradigm for patient-specific simulation of cardiovascular fluid-structure interaction. (This lecture will closely follow the Plenary Lecture I delivered at ICM 2010, the International Congress of Mathematicians, Hyderabad, India, 19-27 August, 2010.)

**Place : Science Hall (과학관) , Room 225
Yonsei University, Seoul, Korea**