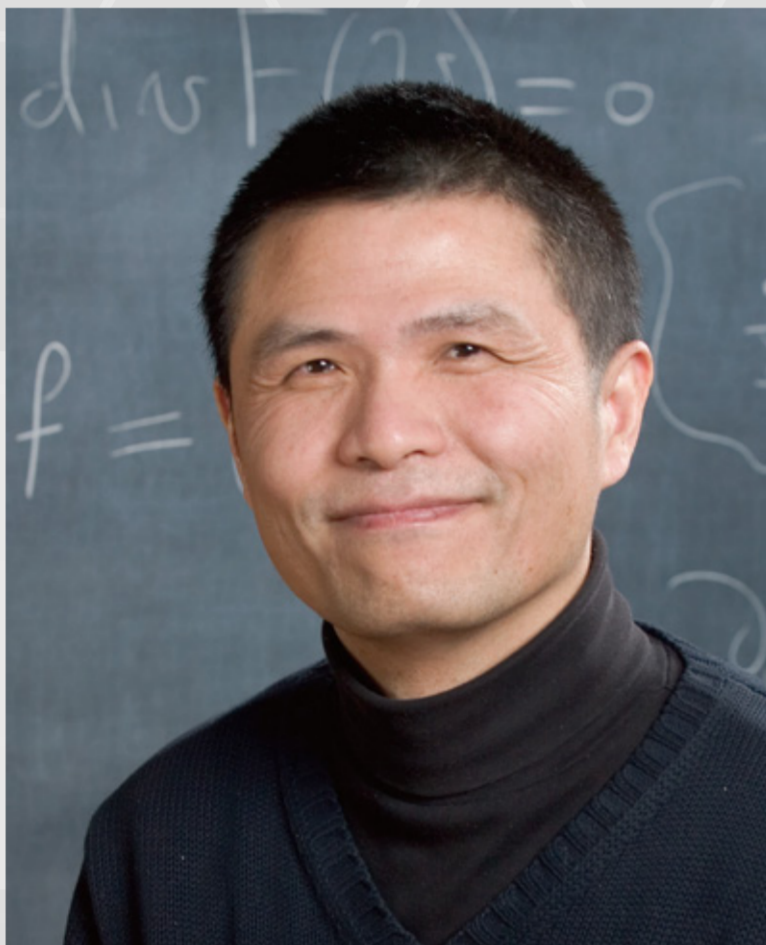




Frontiers of Mathematics Lecture

Discontinuous Galerkin Method for Convection Dominated Partial Differential Equations



Professor Chi-Wang Shu

*Theodore B. Stowell University Professor
Division of Applied Mathematics, Brown University, USA*

Date : September 28, 2018 (Friday)
Time : 5:30 – 6:30 pm
(Tea Reception starts at 5:00 pm)
Venue : Lecture Theatre A, G/F,
Chow Yei Ching Building,
The University of Hong Kong

Abstract

Discontinuous Galerkin (DG) method is a finite element method with features from high resolution finite difference and finite volume schemes such as approximate Riemann solvers and nonlinear limiters. It was originally designed for solving hyperbolic conservation laws but has been generalized later to solve higher order convection dominated partial differential equations (PDEs) such as convection diffusion equations and convection dispersion equations. The DG method has been widely applied, in areas such as computational fluid dynamics, computational electromagnetism, and semiconductor device simulations, just to name a few. In this talk we will give a general survey of the DG method, emphasizing its designing principles and main ingredients. We will also describe some of the recent developments in DG methods.

Biography

Professor Chi-Wang Shu received his Ph.D. degree in Mathematics from University of California Los Angeles in 1986. Since 1987 he has been at the Division of Applied Mathematics at Brown University, as Professor since 1996, as Chair of the Division of Applied Mathematics between 1999 and 2005, and as Theodore B. Stowell University Professor since 2008. In 1995 he received the first Feng Kang Prize of Scientific Computing from the Chinese Academy of Sciences. Since 2004 he has been listed as an ISI Highly Cited Author in Mathematics by the ISI Web of Knowledge. In 2007 he received the SIAM/ACM Prize in Computational Science and Engineering for the development of numerical methods that have had a great impact on scientific computing, including TVD temporal discretization, ENO and WENO finite difference schemes, discontinuous Galerkin methods, and spectral methods. Professor Shu was selected in 2009 as an inaugural Fellow of the Society for Industrial and Applied Mathematics (SIAM), and in 2012 as an inaugural Fellow of the American Mathematical Society (AMS). In 2014 he was an Invited Speaker of the International Congress of Mathematicians (ICM) held in Seoul. Currently Professor Shu is the Chief Editor of the Journal of Scientific Computing, the Co-Chief Editor of Methods and Applications of Analysis, the Co-Chief Editor of Annals of Mathematical Sciences and Applications and a member of the editorial boards of many other research journals including Mathematics of Computation and Journal of Computational Physics.