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Associate Professor

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Education

- PhD, Hong Kong Baptist University, 2010
- Master, Sichuan University, 2006
- Bachelor, Sichuan University, 2003

Work experience

- Associate Professor, Department of Mathematics, University of Macau, August 2018 - present
- Assistant Professor, Department of Mathematics, University of Macau, August 2012 - August 2018
- Visiting Research Associate, Department of Mathematics, Michigan State University, January 2010 - August 2012

Teaching

- Spring semester of 2019: MATH2004 Mathematical Analysis II for undergraduates, and MATH7019 Topics in Partial Differential Equations for postgraduates.
- Previous courses: Mathematical Analysis I, Numerical Methods for Differential Equations, Numerical Analysis, Advanced Engineering Mathematics, Calculus(at Michigan State University).

Research interests, Publication list

I am interested in the adaptive numerical methods for partial differential equations, the related numerical analysis, as well as their applications in computational physics. In particular, my research focuses on the following two problems,

- Computational fluid dynamics:

  My research in this area focuses on the highly efficient numerical methods for simulating the compressible flows. More specifically, I am interested in developing a high order and

adaptive finite volume framework for steady Euler equations and their applications in the optimal design of the vehicles. I am also interested in developing efficient numerical methods for reactive Euler equations, which is a model for detonation simulations.

- Density functional theory:

  In this research area, I am interested in using adaptive finite element methods to solve the Kohn-Sham and time-dependent Kohn-Sham equations, which can be used to describe the ground state of a given electronic structure, and dynamics of the system with a given external potential. In particular, I am interested in the simulating the high harmonic generation (HHG) phenomenon, which is of fumdamental importance in quantum optics, by solving the time-dependent Kohn-Sham equation in the time domain.

To support the numerical simulations of the above two works, we develop and maintain a C++ library AFVM4CFD for solving Euler equations, and a C++ library AFEABIC for solving the density funcitonal theory, respectively. Both libraries inherit from a general purposed, C++ library of adaptive finite element package, named AFEPack (Adaptive Finite Element Package).

Awards

- FST Teaching Excellence Award 2017/2018 of Faculty of Science and Technology at University of Macau, 2018
- The Best Thesis Award of Hong Kong Mathematical Society, 2010
- The First Prize Winner of the Third Student Paper Competition for Young Computational Mathematicians, China Society for Computational Mathematics