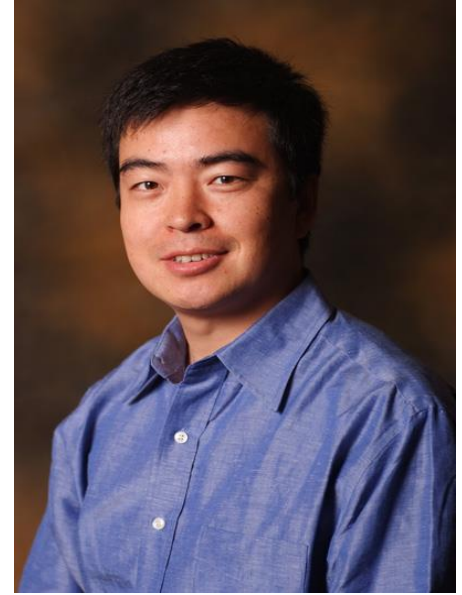


Interface problems and an adaptive time-step scheme

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Time: 10:30 am to 11:30 am
Venue: MAS Executive Classroom 2 #03-07,
School of Physical and Mathematical Sciences

Abstract

Many physical and biological problems involve interfaces separating different domains. To efficiently compute the dynamics of the interface, we develop an adaptive time-step scheme. The idea is to map the original time and space onto a new time and space such that the interface can evolve at an arbitrary speed in the new rescaled frame. In particular, for the expanding or shrinking interface problem, we choose (1) the space scaling function so that the expanding or shrinking interface is always mapped back to its initial size, i.e. the interface does not expand or shrink in the rescaled frame; (2) the time scaling function to speed up or slow down the motion of the interface, especially at later times when the interface expands slowly or shrinks extremely fast. We will show some examples.

Speaker Biography

Shuwang Li is an associate professor of the applied math department at Illinois Institute of Technology, Chicago. He got his Ph. D from the University of Minnesota, Twin Cities in 2005, and did his postdoc training at the University of California. He joined Illinois Institute of Technology Fall 2008. His research interests include modeling and computation of moving interface problems in materials, fluids, and bio-systems. His research has been supported by the National Science Foundation.

Host: Assistant professor Kelin Xia
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