Speaker: Dr. Chuan Li  
Department of Mathematics  
West Chester University  

Topic: An efficient Time-and-Space Parallel Computing Algorithm for Solving Time-Dependent Differential Equations  

Date: October 30, 2017 (Monday)  
Time: 4 – 5 p.m.  
Place: Room 201, Wickersham Hall, Millersville University  
Contact: Baoling Ma (717) 871-4263 Baoling.Ma@millersville.edu  
Kevin S. Robinson (717) 871-7313 krobinson@millersville.edu  

Abstract: In nowadays, solving time dependent differential equations on large systems has become more and more popular in computational society. Due to its nature of high computational costs in both time and memory, new parallel computing techniques are desirable aiming at working together with advanced numerical methods to dramatically accelerate the calculations. Most existing parallel computing algorithms are developed based on geometrically spatial domain decomposition, while one interesting parallel computing algorithm, called the Parareal Algorithm, introduced by Jacques-Louis Lions, Yvon Maday, and Gabriel Turinici, allows parallel computing to be carried out in time for solving time-dependent differential equations. In this talk, I will present the original Parareal Algorithm, as well as a work to extend it to effectively embrace spatial-parallelized solvers to accomplish time-and-space parallel computing. As an example, its performance on solving the Cable equation on long cardiac tissues will also be provided.