Joint Math Colloquium

Millersville University and Franklin & Marshall College

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**

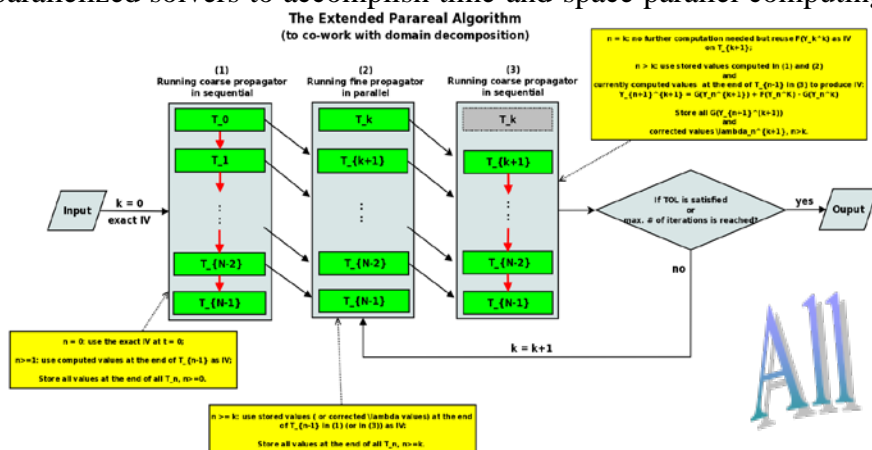Date: **October 30, 2017 (Monday)**

Time: **4 – 5 p. m.**

Place: **Room 201, Wickersham Hall, Millersville University**

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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 cardiactissues will also be provided.

All are Welcome