JEFF M. MCNALLY, St. Francis Xavier University, Antigonish, Nova Scotia, B2G 2W5
A Parallel Solution for Diagonally Dominant Pentadiagonal Toeplitz Linear Systems

Symmetric pentadiagonal Toeplitz systems of linear equations arise in many application areas involving finite difference methods with equi-step sizes. Recently, significant advancement has been made into algorithm development for fast parallel scalable solutions for solving diagonally dominant tridiagonal Toeplitz Linear systems as well as in sequentially solving diagonally dominant symmetric pentadiagonal problems using similar fast approaches. In this talk we will introduce two new scalable parallel algorithms for solving symmetric pentadiagonal Toeplitz systems of linear equations based upon parallel techniques used by McNally et al. in *A communication-less parallel algorithm for tridiagonal Toeplitz systems* (2008) and a sequential algorithm presented by McNally in *A Fast Algorithm for Solving Diagonally Dominant Symmetric Pentadiagonal Toeplitz Systems* (2008).