2012年 中華民國數學會年會 大會手冊

2012年12月7日(星期五)至12月9日(星期日)

17:00~18:30	中華民國數學會會員大會(含頒獎)	SA321
18:30~20:00	晚宴	

第3天：2012.12.09（星期日）

08:20~09:00	報到	SA 2F
09:00~09:50	大會演講(三)　Irene Fonseca 【SIAM President-Elect, Carnegie Mellon University】 Variational Methods in Materials Science and Image Processing	SA321
09:50~10:10	茶點	SA 3F
Chair	葉立明（交通大學 應用數學系）	
10:10~10:35	黃聰明（臺灣師範大學 數學系）	SA321
10:35~11:00	Fast Eigensolver for Band Structures of Three Dimensional Photonic Crystals	SA321
11:00~11:25	郭岳承（高雄大學 應用數學系） Structure-preserving doubling algorithm for large-scale nonlinear matrix equations	SA321
11:25~11:50	李哲榮（清華大學 資訊工程系） Block Checkerboard Method for Exponentiating Sparse Matrices and Its Applications in Quantum Statistical Mechanics	SA321
11:50~13:00	午餐	
Chair	王辰樹（成功大學 數學系）	
13:00~13:25	黃楓南（中央大學 數學系） A GPU-based multi-elimination preconditioner for elliptic PDE problems	SA321
13:25~13:50	李宗錂（中山大學 應用數學系） A Scalable Reformulation of the Parallel Algorithm for the Mixed Volume Computation	SA321
13:50~14:15	陳鵬文（台灣大學 數學系） A Perfect Match Condition for Point-Set Matching Problems Using the Optimal Mass Transport Approach	SA321
14:15~14:40	曾正男（政治大學 應用數學系） Multi-processing techniques of singular value decomposition by python programming	SA321
14:40~15:00	茶點	SA 3F
Chair	張書銘（交通大學 應用數學系）	
15:00~15:25	劉玫瀅（義守大學 應用數學系） Wave Propagation in Magneto-electro-elastic Plate Using Wavelet Spectral Element Approach	SA321
15:25~15:50	李雪甄（文藻外語學院 通識教育中心） An adaptive refined least-squares finite element approximation to the generalized Newtonian flows	SA321
15:50~16:15		SA321
16:15~16:40		SA321

An adaptive refined least-squares finite element approximation to the generalized Newtonian flows

Hsueh-Chen Lee [1] Wenzao Ursuline College of Languages

The goal of this work concerns an adaptive refined weighted least-squares method for the solutions of the incompressible generalized Newtonian flows based on the application of the least-squares minimization principle to an equivalent first order system of the Navier-Stokes equations and Carreau generalized Newtonian fluid. To capture the flows region, an adaptive refinement algorithm based on mesh redistribution is developed for a weighted least squares functional. A mesh redistribution approach is considered to generate the refined grids which agree well with the physical attributes of the models. The least-squares solutions exhibit optimal L^2-norm error convergence in all unknowns. Numerical solutions for flows through a 4-to-1 contraction channel are demonstrated. The effects of physical parameters for the generalized Newtonian fluid are also investigated.