RESEARCH

- **Computational Mathematics**: Numerical Analysis; Numerical Solutions to Partial Differential Equations; Finite Element Methods: Linear and Non-linear Problems, the p and the hp versions, Non-conforming elements; Domain decomposition and numerical algorithms for commercial finite element codes; Structural Mechanics; Fluid-Structure Interaction; Numerical linear algebra for advanced scientific and parallel computing; Stability and Error analysis; Inverse problems; Stochastic PDEs.

- **Computational Biomechanics**: Membrane mechanics; Constitutive formulations; Inverse finite element methods and parameter estimation; Fluid-structure interaction of blood flow through the arteries; Growth and remodeling.

- **STEM Education**: Enhancing learning with new technologies; Pedagogical Content Knowledge; Mathematical Modeling for Teachers; Multicultural Education; K-12 Improving Teacher Quality Professional Development Programs; Mathematics Enrichment and K-12 outreach programs; Programs to enhance the next generation STEM (Science, Technology, Engineering & Mathematics) workforce. (http://math.gmu.edu/~pseshaiy/outreach.html)

PUBLICATIONS (BOOKS, JOURNALS, BOOK CHAPTERS AND PROCEEDINGS)

A. BOOKS (GRADUATE TEXTBOOK IN MATHEMATICS AND MATHEMATICS EDUCATION)


B. ARTICLES IN REFEREED JOURNALS

B.1 Applied and Computational Mathematics


B.2 Mathematical Biology, Epidemiology and Computational Biomechanics


**B.3 Mathematics Education/Outreach/Curriculum**


63. "Leveraging Coach-Facilitated Professional Development to Create Collaborative Teacher Networks for Enhancing Professional Practice", APME, Chapter 7, pp 89 - 100 (2017).


B.4 ARTICLES IN REFEREED PROCEEDINGS


