Selected Topics in Computational Mathematics

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Computational mathematics is a discipline of mathematical research in areas of science where computation plays a central and essential role. Our everyday lives have been transformed by the impact of computation and communication. This impact can be observed in the world economy, where information technology has contributed in significant and numerous ways to growth in productivity and the development of a plethora of new products and services. For example, advances in computational techniques have led to improvements in healthcare diagnoses, access, and delivery; in education where learning is increasingly mediated by information technologies; and in science and engineering where increasingly pervasive and sophisticated cyberinfrastructure are revolutionizing research methodology. Applying computation to problem-solving has led to the development of new ways of conceptualizing, analyzing, and solving problems that are otherwise difficult to tackle.

This special issue consists of a few selected topics of research in computational mathematics from a prominent group of young researchers. The contributing papers address some of the key issues in computational mathematics: from model development to design, analysis, and implementation of numerical methods and computational algorithms. All papers are invited, but all have been carefully peer-reviewed. I would like to thank all the contributors for their diligent, high-quality work, and all the anonymous referees who have made constructive suggestions and comments that led to a much improved collection of papers.