

## Preface

### *Special Issue: Models, Algorithms and Software Tools in Computational Mechanics and Applied Mathematics*

On May 14, 2021, a one-day online seminar entitled “The Workshop on Computational Mechanics and Applied Mathematics” was held virtually at Laboratory of Computational Mechanics, Southern Federal University, Rostov-on-Don, Russia. The purpose of this academic seminar is twofold: The first is to make an interim summary for the mega-grant “Models, Algorithms and Software Tools for Multiscale Analysis of New Materials and Physically Active Media”; and the second is to memorize the late Professor Lev A. Krukier for the seventieth anniversary of his birthday.

On the seminar, there were 24 academic talks presented by senior scientists and young scholars from China, Russia, and Sweden. The contents of these talks are diverse, including block-diagonal preconditioning for structured linear systems such as the Navier-Stokes control problems and the fractional time-dependent diffusive control problems, matrix splitting iteration methods based on skew-symmetric or dominant Hermitian splittings, randomized iteration methods, generalization of locally Toeplitz theory and analysis of nonsymmetric preconditioners, solutions of nonlinear time-dependent problems by exponential schemes with block Krylov subspaces, inhomogeneous polarization models of porous piezoceramics and finite-element technique of homogenization, and personalization of computational hemodynamics. Some carefully selected and regularly reviewed works among these talks are now published in this special issue of “East Asian Journal on Applied Mathematics”.

It should be necessary to give a brief introduction about the above-mentioned mega-grant and say some words about Professor Lev A. Krukier.

This mega-grant is one of the governmental grants of the Russian Federation released and administrated by the Ministry of Science and Higher Education, it was one of the 36 winners among the 433 application projects from all over the world in 2019. The mega-grant was officially approved in November of 2019 for the period from November 2019 to December 2021, with the leading scientist being Professor Zhong-Zhi Bai from Academy of Mathematics and Systems Science at Chinese Academy of Sciences. The associatively established scientific research laboratory, named as “Laboratory of Computational Mechanics”, is financially supported by this mega-grant, daily operated by I.I. Vorovich Institute of Mathematics, Mechanics and Computer Science, and administratively managed by Southern Federal University. The leading scientist is naturally and officially the founding director of the laboratory.

Lev Abramovich Krukier (May 13, 1951 — February 19, 2016) is a dedicated scientist, great teacher, and gifted leader, who has been well-known for his work on precondi-

tioned iterative methods based on skew-symmetric triangular splittings for solving large sparse linear systems of strongly nonsymmetric coefficient matrices. He was passed away on February 19, 2016 after a long illness. For many years, Professor Krukier was the head of the Computer Center of Rostov State University, and also the vice-rector of Rostov State University and Southern Federal University. He was very active in establishing and leading the China-Russia academic collaboration on numerical algebra and, especially, he and Professor Zhong-Zhi Bai were the initiators and organizers of the series of the bilateral academic events: "China-Russia Conference on Numerical Algebra with Applications", which has been lasted to today.

Finally, we would like to sincerely thank the editors-in-chief, Professors Victor Didenko, Chuan-Ju Xu, and Tao Zhou, for their great help and support on the publication of this special issue on "East Asian Journal on Applied Mathematics".

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