



Preface

The crucial role of Green's functions can hardly be overestimated in the area of qualitative analysis of boundary-value problems that arise in engineering science. For a long time, however, the development of Green's function-based numerical procedures for solving practical settings in engineering had been restrained due to some objective circumstances, the most critical of which is a scarcity of implementable representations for Green's functions in the existing literature. With some intensive studies in the field, this discrepancy is being gradually ameliorated in recent years, showing the high potential of the approach.

This Special Issue of the *Journal of Engineering Mathematics* was originally intended as a report on the current progress made by a group of experts working in the area of modern applications of Green's function-based methods in engineering science. When about a year ago the Editor-in-Chief of the JEM came up with a suggestion to put together such a special issue, the idea was discussed with a number of potential contributors who overwhelmingly supported it. An offer to submit manuscripts was then made to those who were most enthusiastic about the participation and, what was especially important, who expressed a perfect readiness to meet a tentative submission deadline for manuscripts. Original submissions had been put through a careful review process resulting in eight papers that ultimately made up the Issue.

Thus, the Issue is a collection of original papers, most of which dealing with different settings in mechanical engineering. These include fractural mechanics, time-dependent and steady-state heat conduction, piezoelectric and electrostatic phenomena. The focus is, in these papers, on advanced anisotropic nonhomogeneous materials and on complex configurations of considered bodies. Some computational aspects of series expansions of Green's functions are also analyzed. One paper in the Issue touches upon financial engineering. The inclusion of this area of engineering science in the scope of the Journal is, in our opinion, a natural step which will hopefully lead to a notable broadening of the journal's readership.

It is with gratitude that the authors and the Guest Editor acknowledge our almost a year long collaboration with Professor Kuiken whose highly professional work ethics made our effort a pleasant, productive and worthwhile one. We are especially thankful to the reviewers whose expertise in the field, along with the creative content of their critical comments, helped the authors to significantly lift up the level of presentation and will, as we keenly believe, make the Issue a success.

Yuri A. Melnikov
Middle Tennessee State University
Murfreesboro, TN 37132, USA
ymelniko@mtsu.edu