

# ROBUST AND SCALABLE NUMERICAL METHODS FOR WAVE PROPAGATION IN HETEROGENEOUS MEDIA: DESIGN, ANALYSIS AND APPLICATION

4000 COMPUTATIONAL APPLIED MATHEMATICS

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## ABSTRACT

Effective simulation of wave propagation in large-scale problems is a prerequisite step for solving real-world applications such as noise control, electromagnetic compatibility, non-destructive testing, medical and seismic imaging, or seismic risk assessment. Such a critical step remains however very challenging due to the highly oscillatory nature of the solutions and intrinsic properties of the mathematical problems. Clearly, there is a pressing need of paramount importance for developing either new solution methodologies or strategies to improve, when possible, the efficiency of the existing methods and expand their frequency range.

This mini-symposium will provides an opportunity for engineers, scientists, and applied mathematicians to share their new ideas and approaches for solving large-scale wave propagation problems as well as their recent findings. These problems encompass direct, inverse, and eigenvalue problems, whether they are temporal or harmonic.

Topics of interest include but not limited to:

- high-order methods,
- time-stepping schemes,
- non-reflecting boundary conditions,
- a priori and a posteriori error estimates,
- domain decomposition methods and preconditioning techniques,
- computational strategies for modern parallel computing.