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Waves and Vibrations in Soils:
Earthquakes, Traffic, Shocks,
Construction works



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OBJECTIVE OF THE BOOK

The main scientific and engineering goal of this book is to deal simultaneously with soil dynamics/vibrations and wave propagation in soils (including seismic waves). These various fields are generally considered separately and the important links between them, both from scientific and practical points of view, are unfortunately not investigated. They are usually considered in separate disciplines such as earthquake geotechnical engineering, civil engineering, mechanics, geophysics, seismology, numerical modelling, etc.

The objective of the book is to offer in a single publication an overview of soil dynamics and wave propagation in soils with emphasis on engineering applications. It starts from a wide variety of practical problems (e.g. traffic induced vibrations, dynamic compaction, vibration isolation), then deals with 1D and 2D/3D wave propagation in heterogeneous and attenuating media (with application to laboratory and in situ dynamic characterization of soils), gives an overview of various numerical methods (e.g. FEM, BEM) to simulate wave propagation (including numerical errors, radiation/absorbing conditions, etc) and finally investigates seismic wave propagation and amplification in complex geological structures (e.g. irregular topographies, alluvial deposits).

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