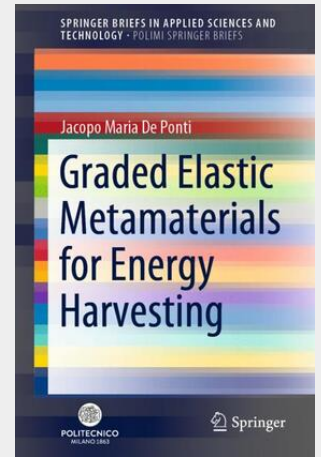


De Ponti

## Graded Elastic Metamaterials for Energy Harvesting

This book presents a complete framework for energy harvesting technologies based on graded elastic metamaterials. First, it provides a comprehensive survey of state-of-the-art research on metamaterials for energy harvesting and then explores the theoretical wave mechanics framework, going from inhomogeneous media to graded elastic metamaterials. The framework can be used to thoroughly analyse wave propagation phenomena in beams, plates, and half-spaces and to investigate the effect of local resonance on creating bandgaps or wave mode conversions. All these concepts converge together with piezoelectric materials in the study and design of piezo-augmented arrays of resonators. The energy harvesting performances of the graded metamaterials are then compared to conventional solutions, in order to quantify their advantages for applications.



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