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Titolo	Fundamentals of Nanomechanical Resonators // by Silvan Schmid, Luis Guillermo Villanueva, Michael Lee Roukes
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Descrizione fisica	1 online resource (VIII, 175 p. 90 illus., 66 illus. in color.)
Disciplina	620.0042
Soggetti	Engineering design Control engineering Robotics Automation Microtechnology Microelectromechanical systems Engineering Design Control, Robotics, Automation Microsystems and MEMS
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Resonance Frequency -- Quality Factor -- Responsivity -- Transduction -- Measurement and Noise.
Sommario/riassunto	This authoritative book introduces and summarizes the latest models and skills required to design and optimize nanomechanical resonators, taking a top-down approach that uses macroscopic formulas to model the devices. The authors cover the electrical and mechanical aspects of nano electromechanical system (NEMS) devices. The introduced mechanical models are also key to the understanding and optimization of nanomechanical resonators used e.g. in optomechanics. Five comprehensive chapters address: The eigenmodes derived for the most common continuum mechanical structures used as nanomechanical resonators; The main sources of energy loss in nanomechanical resonators; The responsiveness of micro and nanomechanical

resonators to mass, forces, and temperature; The most common underlying physical transduction mechanisms; The measurement basics, including amplitude and frequency noise. The applied approach found in this book is appropriate for engineering students and researchers working with micro and nanomechanical resonators.
