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Descrizione fisica	1 online resource (XVII, 358 p. 124 illus., 97 illus. in color.)
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Disciplina	538
Soggetti	Magnetism Magnetic materials Solid state physics Quantum computers Spintronics Quantum physics Optical materials Electronic materials Magnetism, Magnetic Materials Solid State Physics Quantum Information Technology, Spintronics Quantum Physics Optical and Electronic Materials
Lingua di pubblicazione	Inglese
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Nota di contenuto	The Zero-Wave Number Magnon: Ferromagnetic Resonance -- Spin Waves in Ferromagnets: Semi-Classical Approach -- Quantum Theory of Spin Waves: Magnons -- Magnonics in Ferromagnetic Films -- Magnons in Antiferromagnets -- Magnon Excitation and Nonlinear Dynamics -- Bose-Einstein Condensation of Magnons -- Magnon Spintronics -- Index.
Sommario/riassunto	Fundamentals of Magnonics is a textbook for beginning graduate students in the areas of magnetism and spintronics. The level of presentation assumes only basic knowledge of the origin of magnetism and electromagnetism, and quantum mechanics. The book utilizes

elementary mathematical derivations, aimed mainly at explaining the physical concepts involved in the phenomena studied and enabling a deeper understanding of the experiments presented. Key topics include the basic phenomena of ferromagnetic resonance in bulk materials and thin films, semi-classical theory of spin waves, quantum theory of spin waves and magnons, magnons in antiferromagnets, parametric excitation of magnons, nonlinear and chaotic phenomena, Bose-Einstein condensation of magnons, and magnon spintronics. Featuring end-of-chapter problem sets accompanied by extensive contemporary and historical references, this book provides the essential tools for any graduate or advanced undergraduate-level course of studies on the emerging field of magnonics.
