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Oscillations; 3.6.1 Example 1: Nuclear Magnons; 3.6.2 Example 2: Magnetoelastic Oscillations; 3.7 Discussion; 4 Microwave Pumping of Magnons; 4.1 Linear Theory; 4.1.1 Ferromagnetic Resonance; 4.1.2 Threshold of Parametric Resonance; 4.2 Parametric Resonance in a Resonator Cavity; 4.3 Nonlinear SR Theory; 4.4 Experimental Techniques; 4.5 Experimental Results; 4.5.1 Equivalent Circuit; 4.5.2 SR Theory and Experiment; 4.5.2.1 Modulation Response; 4.6 Discussion; 5 Thermodynamic Description of Strongly Excited Magnon System
6.2 Quasi Equilibrium Magnons6.2.1 Ideal Gas of Quasi Equilibrium Magnons; 6.2.2 Example: Isotropic Spectrum; 6.2.3 Kinetic Equations; 6.2.3.1 The Case of Teff = T; 6.2.4 Magnon System with Bose Condensate; 6.2.5 Magnetodipole Emission of Condensate; 6.3 Frohlich Coherence; 6.4 Discussion; 7 Magnons in an Ultrathin Film; 7.1 Model; 7.1.1 Magnetic Energy; 7.2 Magnons; 7.2.1 Magnon Interactions; 7.2.2 Effective Four-Magnon Interactions; 7.3 Example; 7.4 Discussion; 8 Collective Magnetic Dynamics in Nanoparticles; 8.1 Long-Lived States in a Cluster of Coupled Nuclear Spins; 8.2 Electronic Spins
8.3 Spin-Echo Logic Operations

Sommario/riassunto

This much-needed book addresses the concepts, models, experiments and applications of magnons and spin wave in magnetic devices. It fills the gap in the current literature by providing the theoretical and technological framework needed to develop innovative magnetic devices, such as recording devices and sensors. Starting with a historical review of developments in the magnon concept, and including original experimental results, the author presents methods of magnon excitation, and several basic models to describe magnon gas. He includes experiments on Bose-Einstein condensation of