

waves (MSW), The terms 'magnetostatic modes', 'Walker modes', and 'magnetostatic waves' are often used interchangeably in the literature. The theory of Damon and Eshbach (DE) has served as the basis for numerous.

Magnetic Properties of Materials. Magnetic Moments of Atoms and Ions. Angular Momentum in Quantum Mechanics. Construction of Ground States of Atoms and Ions. Elements Important to Magnetism. Weiss Theory of Ferromagnetism. Neel Theory of Ferrimagnetism. Equation of Motion for the Magnetization. Susceptibility Without Exchange or Anisotropy. Susceptibility with Exchange and Anisotropy. Electromagnetic Waves in Anisotropic Dispersive Media. Energy Densities in Lossless Dispersive Media. Polarization of the Electromagnetic Fields. Group and Energy Velocities. Plane Waves in a Magnetized Ferrite. Propagation Parallel to the Applied Field. Propagation Perpendicular to the Applied Field. Normally Magnetized Ferrite Film. Tangentially Magnetized Ferrite Film. Propagation Characteristics and Excitation of Magnetostatic Waves. Energy Velocities for Magnetostatic Waves. Relaxation Time for Propagating Modes. Summary of the Phenomenological Loss Theory. Mode Orthogonality and Normalization. Excitation of Magnetostatic Waves. Discussion of Excitation Calculations. Variational Formulation for Magnetostatic Modes. Formulation for One Independent Variable. Extensions to Three Independent Variables. Small-Signal Functional for Ferrites. Interpretation of the Functional. Effect of Medium Inhomogeneity. Optical Mode Orthogonality and Normalization. Definition of Magnetization at High Frequencies. Symmetry Requirements on the Permittivity. Solutions to the Coupled-Mode Equations. Tightly Bound Optical Mode Approximation. Properties of Yttrium Iron Garnet. Under the proper circumstances these waves can exhibit, for example, either dispersive or nondispersive, isotropic or anisotropic propagation, nonreciprocity, frequency-selective nonlinearities, soliton propagation, and chaotic behavior. This rich variety of behavior has led to a number of proposed applications in microwave and optical signal processing. This textbook begins by discussing the basic physics of magnetism in magnetic insulators and the propagation of electromagnetic waves in anisotropic dispersive media. It then treats magnetostatic modes, describing how the modes are excited, how they propagate, and how they interact with light. There are problems at the end of each chapter; many of these serve to expand or explain the material in the text. The bibliographies for each chapter give an entry to the research literature. Magnetostatic Waves will thus serve not only as an introduction to an active area of research, but also as a handy reference for workers in the field. Nielsen Book Data Subjects.

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It is fortunate that the garnet films that support magnetostatic wave propagation are also transparent to infrared light in the range of wavelengths between 1 and 5 μm .

Under the proper circumstances these waves can exhibit, for example, either dispersive or nondispersive, isotropic or anisotropic propagation, nonreciprocity, frequency-selective nonlinearities, soliton propagation, and chaotic behavior. This rich variety of behavior has led to a number of proposed applications in microwave and optical signal processing. This textbook begins by discussing the basic physics of magnetism in magnetic insulators and the propagation of electromagnetic waves in anisotropic dispersive media. It then treats magnetostatic modes, describing how the modes are excited, how they propagate, and how they interact with light. There are problems at the end of each chapter; many of these serve to expand or explain the material in the text. The bibliographies for each chapter give an entry to the research literature. Magnetostatic Waves will thus serve not only as an introduction to an active area of research, but also as a handy reference for workers in the field.

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Magnetostatic Waves will thus serve not only as an introduction to an active area of research, but also as a handy reference for workers in the field. Keywords crystal magnetic material magnetism mechanics oscillation scattering soliton.

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since magnetostatic waves can be viewed as coupled electromagnetic and spin waves. Still, the term "magnetostatic wave" has come to be the most widely used. The properties and physics of magnetostatic waves comprise an unusually rich.

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