1. Record Nr. UNINA9910455593203321

Autore	Kuzelev M. V (Mikhail Viktorovich)
Titolo	Methods of wave theory in dispersive media [[electronic resource] /] / M.V. Kuzelev, A.A. Rukhadze
Pubbl/distr/stampa	Hackensack, N.J. ; ; London, : World Scientific, c2010
ISBN	1-282-75784-9 9786612757846 981-4261-70-X
Descrizione fisica	1 online resource (271 p.)
Altri autori (Persone)	RukhadzeA. A <1930-2018.> (Anri Amvrosievich)
Disciplina	531.1133
Soggetti	Wave-motion, Theory of Waves Dispersion Linear systems Electronic books.
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references (p. 257-258).
Nota di contenuto	Contents; Synopsis; Introduction; Chapter 1 Linear Harmonic Waves in Dispersive Systems. Initial-Value Problem and Problem with An External Source; 1. Harmonic Waves in Dispersive Systems; 2. Initial-Value Problem. Eigenmode Method; 3. Characteristic Function of the State Vector. Dispersion Operator; 4. Laplace Transform Method; Chapter 2 A Case Study of Linear Waves in Dispersive Media; 5. Transverse Electromagnetic Waves in an Isotropic Dielectric; 6. Longitudinal Electrostatic Waves in a Cold Isotropic Plasma. Collisional Dissipation of Plasma Waves 7. Transverse Electromagnetic Waves in a Cold Isotropic Plasma. Dissipation of Transverse Waves in a Plasma8. Electromagnetic Waves in Metals; 9. Electromagnetic Waves in a Waveguide with an Isotropic Dielectric; 10. Longitudinal Waves in a Hot Isotropic Plasma. Electron Diffusion in a Plasma; 11. Longitudinal Waves in an Isotropic Degenerate Plasma. Waves in a Quantum Plasma; 12. Ion Acoustic Waves in a Nonisothermal Plasma. Ambipolar Diffusion; 13. Electromagnetic Waves in a Waveguide with an Anisotropic Plasma in a

Strong External Magnetic Field

14. Electromagnetic Waves Propagating in a Magnetized Electron Plasma along a Magnetic Field15. Electrostatic Waves Propagating in a Magnetized Electron Plasma at an Angle to a Magnetic Field; 16. Magnetohydrodynamic Waves in a Conducting Fluid; 17. Acoustic Waves in Crystals; 18. Longitudinal Electrostatic Waves in a One-Dimensional Electron Beam; 19. Beam Instability in a Plasma; 20. Instability of a Current-Carrying Plasma; Chapter 3 Linear Waves in Coupled Media. Slow Amplitude Method; 21. Coupled Oscillator Representation and Slow Amplitude Method

22. Beam-Plasma System in the Coupled Oscillator Representation23. Basic Equations of Microwave Electronics; 24. Resonant Buneman Instability in a Current-Carrying Plasma in the Coupled Oscillator Representation; 25. Dispersion Function and Wave Absorption in Dissipative Systems; 26. Some Effects in the Interaction between Waves in Coupled Systems; 27. Waves and Their Interaction in Periodic Structures; Chapter 4 Nonharmonic Waves in Dispersive Media; 28. General Solution to the Initial-Value Problem; 29. Quasi-Harmonic Approximation. Group Velocity

30. Pulse Spreading in Equilibrium Dispersive Media31. Stationary-Phase Method; 32. Some Problems for Wave Equations with a Source; Chapter 5 Nonharmonic Waves in Nonequilibrium Media; 33. Pulse propagation in Nonequilibrium Media; 34. Stationary-Phase Method for Complex Frequencies; 35. Quasi-Harmonic Approximation in the Theory of Interaction of Electron Beams with Slowing-Down Media; Chapter 6 Theory of Instabilities; 36. Convective and Absolute Instabilities. First Criterion for the Type of Instability; 37. Saddle-Point Method. Second Criterion for the Type of Instability

38. Third Criterion for the Type of Instability

Sommario/riassunto

This book presents the main mathematical methods of description and general problems in the theory of linear waves in dispersive systems and media, including equilibrium and nonequilibrium waves. To show how the general theory can be applied in practice, the authors give a unified description of the waves in all important physical systems which are traditionally studied in the mechanics of continuous media, electrodynamics, plasma physics, electronics and physical kinetics. Consideration is also given to the interaction of waves in coupled systems, the propagation and evolution of localized w