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| 1. Record Nr. | UNINA9910144726603321 |
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| Titolo | The physics of Alfvén waves [[electronic resource] /] / Neil F. Cramer |
| Pubbl/distr/stampa | Berlin ; ; New York, : Wiley-VCH, c2001 |
| ISBN | 1-280-55957-8 9786610559572 3-527-63502-5 3-527-60312-3 |
| Edizione | [1st ed.] |
| Descrizione fisica | 1 online resource (314 p.) |
| Disciplina | 530.44 538/.6 |
| Soggetti | Magnetohydrodynamic waves 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. [273]-289 and index). |
| Nota di contenuto | The Physics of Alfvén Waves; Contents; 1 Descriptions of Magnetized Plasmas; 1.1 Introduction; 1.2 The Multi-Fluid Equations; 1.3 The Magnetohydrodynamic Model; 1.4 The Hall-MHD Model; 1.5 Fourier Transforms; 1.6 The Kinetic Theory; 2 Waves in Uniform Plasmas; 2.1 Introduction; 2.2 Waves with the MHD Model; 2.2.1 The Alfvén Mode; 2.2.2 The Fast and Slow Magnetoacoustic Modes; 2.3 The Hall-MHD Model; 2.3.1 Cold Plasma; 2.3.2 Warm Plasma; 2.4 Cold Collisionless Plasmas; 2.5 Collisional Damping; 2.5.1 Low Frequency; 2.5.2 Hall Effects; 2.6 Multiple Ion Species; 2.7 Kinetic Theory of Waves 2.7.1 Parallel Propagation2.7.2 Low Plasma Beta; 2.7.3 High Plasma Beta; 2.8 Kinetic Alfvén Wave and Inertial Alfvén Wave; 2.8.1 Fluid Theory; 2.8.2 Parallel Electron Temperature Effects; 2.8.3 Two-Potential Theory; 2.8.4 Kinetic Theory; 2.8.5 Localized Alfvén Waves; 3 Waves in Nonuniform Plasmas; 3.1 Introduction; 3.2 Stratified Plasmas; 3.2.1 Ideal MHD; 3.2.2 Hall MHD; 3.2.3 Multi-Ion Plasmas; 3.2.4 Effects of Collisions; 3.3 Waves in Smooth Nonuniformities; 3.3.1 Ideal MHD; 3.3.2 Cold Plasma; 3.4 Alfvén Resonance Absorption; 3.4.1 Narrow Interfaces; 3.4.2 Analytic Derivation 4 Surface Waves4.1 Introduction; 4.2 Surface Waves at Density Jumps; |

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Sommario/riassunto

Low-frequency wave modes of magnetized inhomogeneous plasmas have been subject to intense study in the last decade because they play important roles in the transport of energy in the plasmas. The ""Alfvén wave heating"" scheme has been investigated as a supplementary heating scheme for fusion plasma devices, and it has been invoked as a model of the heating of the solar and stellar coronae. This book covers the latest research into the properties and applications of low-frequency wave modes in magnetized plasmas, the Alfvén waves and magneto-acoustic waves, in the context of laboratory, spa
