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| Titolo                  | Theory of One-Dimensional Vlasov-Maxwell Equilibria : With Applications to Collisionless Current Sheets and Flux Tubes // by Oliver Allanson   |
| Pubbl/distr/stampa      | Cham : , : Springer International Publishing : , : Imprint : Springer, , 2018  |
| ISBN                    | 3-319-97541-2  |
| Edizione                | [1st ed. 2018.]  |
| Descrizione fisica      | 1 online resource (XX, 195 p. 39 illus., 22 illus. in color.)  |
| Collana                 | Springer Theses, Recognizing Outstanding Ph.D. Research, , 2190-5053   |
| Disciplina              | 530.44   |
| Soggetti                | Plasma (Ionized gases)<br>Magnetism<br>Magnetic materials<br>Space sciences<br>Plasma Physics<br>Magnetism, Magnetic Materials<br>Space Sciences (including Extraterrestrial Physics, Space Exploration and Astronautics)  |
| Lingua di pubblicazione | Inglese  |
| Formato                 | Materiale a stampa   |
| Livello bibliografico   | Monografia   |
| Nota di contenuto       | Introduction -- The Use of Hermite Polynomials for the Inverse Problem in One-Dimensional Vlasov-Maxwell Equilibria -- One-Dimensional Nonlinear Force-Free Current Sheets -- One-Dimensional Asymmetric Current Sheets -- Discussion.   |
| Sommario/riassunto      | This book describes and contextualises collisionless plasma theory, and in particular collisionless plasma equilibria. The Vlasov–Maxwell theory of collisionless plasmas is an increasingly important tool for modern plasma physics research: our ability to sustain plasma in a steady-state, and to mitigate instabilities, determines the success of thermonuclear fusion power plants on Earth; and our understanding of plasma aids in the prediction and mitigation of Space Weather effects on terrestrial environments and satellites. Further afield, magnetic reconnection is a ubiquitous energy release mechanism throughout the |

Universe, and modern satellites are now able to make in-situ measurements with kinetic scale resolution. To keep pace with these challenges and technological developments, a modern scientific discussion of plasma physics must enhance, and exploit, its 'literacy' in kinetic theory. For example, accurate analytical calculations and computer simulations of kinetic instabilities are predicated on a knowledge of Vlasov–Maxwell equilibria as an initial condition. This book highlights new fundamental work on Vlasov–Maxwell equilibria, of potential interest to mathematicians and physicists alike. Possible applications involve two of the most significant magnetic structures known to confine plasma and store energy: current sheets and flux tubes. .

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