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Autore	Zohm Hartmut
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6.4.1 Small ELM Regimes6.4.2 Active ELM Control; Chapter 7 Combined Pressure and Current Driven Modes: The Ideal -Limit; 7.1 Tokamak Operational Scenarios; 7.2 External Kink Modes in a Tokamak with Finite ; 7.3 The Effect of a Conducting Wall on External Kink Modes; 7.3.1 Ideally Conducting Wall; 7.3.2 Resistive Wall; 7.4 The Resistive Wall Mode (RWM); 7.5 The Troyon Limit; Chapter 8 Resistive MHD Stability; 8.1 Stability of Current Sheets; 8.2 Reconnection in the Presence of a Guide Field; 8.3 Magnetic Islands in Tokamaks; 8.4 The Rutherford Equation
Chapter 9 Current Driven (`classical') Tearing Modes in Tokamaks9.1 Effect of Tearing Modes on Kinetic Profiles; 9.2 Nonlinear Saturation; 9.3 Tearing Mode Rotation and Locking; 9.3.1 Rotation of Tearing Modes in Tokamaks; 9.3.2 Locking of Pre-existing Magnetic Islands; 9.3.3 Ab-initio Locked Modes; Chapter 10 Disruptions; 10.1 Phenomenology of Disruptions; 10.1.1 The Density Limit; 10.2 Consequences of Disruptions; 10.2.1 Thermal Loads; 10.2.2 Mechanical Loads; 10.2.3 Runaway Generation; 10.3 Disruption Avoidance and Mitigation; Chapter 11 M=1 Modes beyond Ideal MHD: Sawteeth and Fishbones
11.1 The Sawtooth Instability

Sommario/riassunto

This book bridges the gap between general plasma physics lectures and the real world problems in MHD stability. In order to support the understanding of concepts and their implication, it refers to real world problems such as toroidal mode coupling or nonlinear evolution in a conceptual and phenomenological approach. Detailed mathematical treatment will involve classical linear stability analysis and an outline of more recent concepts such as the ballooning formalism. The book is based on lectures that the author has given to Master and PhD students in Fusion Plasma Physics. Due its strong lin