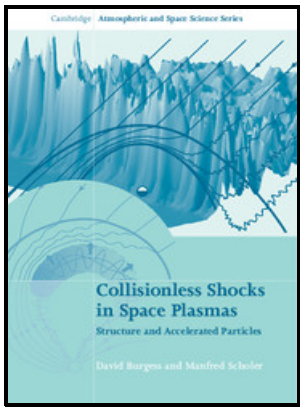
Reconnection of magnetic fields - magnetohydrodynamics and collisionless theory and observations

Cambridge University Press - ShieldSquare



Description: -
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Nuclear fuel claddings -- Deterioration.
Spent reactor fuels -- Storage.
Magnetic reconnection
MagnetohydrodynamicsReconnection of magnetic fields - magnetohydrodynamics and collisionless theory and observations -Reconnection of magnetic fields - magnetohydrodynamics and collisionless theory and observations
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Tags: #Collisionless #Reconnection #in #Magnetohydrodynamic #and #Kinetic #Turbulence

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If, however, this is the case, we may compute the energy spectrum, provided that Equation holds and that the tearing mode growth rate in the early nonlinear regime remains unchanged from its linear value. We check the validity of this paradigm considering various regimes of tearing mode spontaneous reconnection including effects of particle collisions and shear of magnetic field.

Mechanisms of Spontaneous Reconnection: From Magnetospheric to Fusion Plasma

We discuss evidence from observations and simulations of Solar System plasmas that support this theory and summarize some prominent locations in which this new reconnection theory is relevant in astrophysical plasmas.

Reconnection of Magnetic Fields

The shape is modulated with cos ky or sin ky in the direction parallel to the current sheet.

An intuitive two

This new scale parameter reflects a new, reconnection-mediated regime of turbulence, which may qualitatively impact not only the physics of the transition between the Alfvénic and the kinetic regimes, but also the physics of the kinetic range itself. Here we report detection of electron reconnection in the magnetotail using high-resolution measurements by the Magnetospheric Multiscale MMS spacecraft , and further analysis shows that the electron reconnection does occur within a strongly externally driven environment, which provides experimental evidence for the onset of magnetotail reconnection caused by electron kinetics with a strong external driver.

Magnetic Reconnection

Basic Theory of Collisionless Reconnection: 3.

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Pritchett, Does ion tearing exist? In addition to the above electron-tearing mode instability, an ion-tearing mode instability has also been proposed to explain the onset of magnetotail reconnection. The book is aimed primarily at students entering the field, but will also serve as a useful reference text for established scientists and senior researchers.

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The tilted current caused by flapping motion, however, cannot be resolved by our two-dimensional PIC simulations, therefore, in this study, we use a local LMN coordinate system and focus on local dynamics of this current sheet.

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