

南昌大学百年校庆系列学术报告—空间研究院学术 报告

Title: Turbulence Theory Application in Plasma Dissipation

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Abstract

Turbulence enters into space and astrophysical plasmas in many guises. Observed turbulence in space and astrophysics is expected to involve cascade and subsequent dissipation and heating. The complexity and variability of the behavior of plasma turbulence is largely due to the involvement of dynamics at many scales, ranging from macroscopic fluid to sub-electron scales. A common feature is the cross-scale energy transfer scenario. This talk discusses how plasma dynamics bridges multiple scales and identification of key steps in cross-scale transfer. Study of this transfer leads to better understanding of plasma dissipation and heating. Statistical study of magnetic field line curvature in turbulence will be presented as well. Where feasible, examples are given from MHD, Particle in Cell, hybrid Vlasov-Maxwell simulations and from MMS observations.

Bio

Yan Yang currently is a research assistant professor at the Department of Mechanics and Aerospace Engineering of SUSTech. Prior to joining SUSTech in 2018, Yan received her Ph.D. in Fluid Mechanics in 2018 and her B.S. in Theoretical and Applied Mechanics in 2012 both from Peking University. She also visited Department of Physics and Astronomy at the University of Delaware for a two-year period. Yan works in turbulence in magnetohydrodynamics (MHD) and space plasmas. She employs analytical, computational, and observational methods to study the turbulence cascade, with applications to dissipation and heating of space plasmas. Her research on MHD and plasma turbulence was published by Springer as a book titled “Energy Transfer and Dissipation in Plasma Turbulence”.

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