

Stochastic Ion Heating in the Near-Sun Environment

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July 7, 2015

Abstract

Constraining the nature of dissipation of turbulent fluctuations in the near-Sun environment and the related plasma heating is an important goal in the study of plasma turbulence. Several mechanisms have been proposed to act to dissipate the turbulent cascade, and concerted theoretical effort combined with upcoming observations from Solar Probe Plus and Solar Orbiter will help in determining which mechanisms are operating in this region. In this work, we focus on one mechanism, stochastic ion heating, and produce heating rates and predictions for the structure of the perpendicular particle distribution function using radial magnetic and velocity profiles. The structure and dynamics of the distribution function in particular may prove useful in identifying the role of stochastic heating in future observational studies of dissipation.