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Session ST13: AOGS 12th Annual Meeting during 2 to 7 Aug., 2015 in Singapore

Title: Nature of Turbulence, Dissipation, and Heating in Space Plasmas: From Alfven Waves to Kinetic Alfven Waves

Description:

Turbulence and dissipation of plasma waves have been widely investigated both observationally and theoretically. Wave dissipation is also intimately related to plasma heating. In plasma physics, however, the physical nature of these concepts still remains largely uncertain. For example, so far there has no unambiguous definition about what is the turbulence of plasma waves. Alfven waves (AWs), from large-scale MHD AWs to small-scale kinetic AWs (KAWs), are the most popular fluctuations in space plasmas. Owing to the in situ spacecraft measurements, space plasmas provide us a natural laboratory to study in-depth the turbulence and dissipation of AWs and the related plasma heating.

In this session, we will focus on both observational analysis and theoretical modeling related to the transition regime between large MHD scales and small kinetic scales in the continuous wavevector-spectrum of AWs. We believe that, in this transition regime, turbulence, dissipation, and heating share some common physical processes.

In their submitting abstracts participants are welcome to append a brief description in a few sentences about “what is the turbulent state of plasma waves”, or more generally “what is the turbulence in plasma physics”. These ideas will be discussed during this session. Through the discussions, we hope to improve our understanding of the physical nature of the turbulence, dissipation, and heating, and the relationship amongst them.

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