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Applications of Information Theory in Solar and Space Plasma Physics

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Deadline for manuscript submissions:
closed (15 April 2024)

Message from the Guest Editors

Astrophysical space plasmas exhibit extremely complex dynamics that are characterized by turbulence and nonlinear processes. This is especially true for plasma in the solar, heliospheric, magnetospheric, and ionospheric regions. The complexity of the dynamics of such plasma systems can be revealed by using unconventional methods based on information theory methods and dynamical systems, as has become clear over the past two decades.

The purpose of this Special Issue is to collect studies on solar, heliospheric, and space plasma dynamics using methods developed within the framework of information theory and dynamical systems. Studies using the previously described techniques and approaches on phenomena in solar, heliospheric, magnetospheric, and ionospheric plasmas, as well as more broadly on space physics, such as Sun–Earth interaction processes, are welcome. In particular, works dealing with the investigation of heliospheric and magnetospheric plasma turbulence from MHD to kinetic scales using information entropy measure approaches are highly encouraged.

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Message from the Editor-in-Chief

The concept of entropy is traditionally a quantity in physics that has to do with temperature. However, it is now clear that entropy is deeply related to information theory and the process of inference. As such, entropic techniques have found broad application in the sciences.

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