New Achievements on Chaos, Turbulence and Complexity in Heliospheric Space Plasma Dynamics

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Message from the Guest Editors

Over the past three decades it has been realized that improving the understanding of the dynamics of space plasmas requires to explore novel approaches borrowed from dynamical systems' approaches. Numerous studies have clearly shown how dynamical complexity, chaos, turbulence are all physical processes which play a central role in the heliospheric space plasma dynamics. On the other hand, in the framework of dynamical systems several new tools and methods have been proposed to quantify and characterize the dynamical complexity and its role in the nonlinear out-of-equilibrium dynamical systems.

This Special Issue will focus on the new achievements in the role that dynamical complexity, turbulence and chaos perform on the energy, mass and momentum transfer in the framework of heliospheric space plasmas and Sun-Earth relations using nontraditional methods based on information theory and entropic measures.

In particular, papers presenting the potentiality of entropy and information theoretic concepts in unveiling and exploring the complex dynamics of these space plasma medium at different spatial and temporal scales are welcome.

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Special Issue

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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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