Special Issue

Solar and Stellar Variability and Statistical Mechanics

Message from the Guest Editor

One of the most outstanding unsolved problems in classical physics is understanding solar and stellar activity and variability. Ever improving observational technologies such as high-resolution imaging data have revealed the complex, rich dynamics of solar/stellar surface phenomena on a broader range of time/length scales. Typically, the solar magnetic field varies on time scales ranging from a fraction of a second to billions of years; solar flare energy is now observed on multiple scales spanning several orders of magnitude; solar wind presents strong variability on differing time scales. Some of these phenomena (e.g. the solar cycle) are almost periodic, while others (e.g. solar flares, coronal mass ejections) are volatile and explosive. Furthermore, newly emerging data from different types of stars (e.g. Proxima) reveal similar variability and provide an excellent opportunity to test and develop statistical theory.

This Special Issue aims to present different theories of statistical mechanics to understand solar and stellar variability. Submissions addressing recent observational data and/or new theoretical development are especially welcome.

Guest Editor

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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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Editor-in-Chief

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