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Entropy Methods for Stochastic Dynamical Systems and Evolution Equations

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Deadline for manuscript submissions:
closed (31 October 2021)

Message from the Guest Editors

Entropy has now become a key tool in the analysis and the simulation of dynamical systems, way beyond its traditional role in statistical physics and statistics. Entropy methods appear in connection with functional inequalities in the analysis of evolution equations and gradient flows, the modeling of inverse problems for UQ and data assimilation, or as a probabilistic tool for solving high-dimensional and nonconvex problems in combinatorial optimization and machine learning.

The focus of this Special Issue are original and/or review papers that deal with all aspects of entropy in dynamical systems. Possible topics include but are not limited to:

- Gradient flows and their geometric structures;
- Functional inequalities, optimal transportation;
- Information-theoretic aspects of coarse-graining;
- Sensitivity analysis of dynamical systems;
- Nonequilibrium statistical mechanics and large deviations;
- Machine learning and statistics (e.g., Stein's method);
- Duality methods in control and estimation;
- Maximum entropy methods for prediction and inference;
- Application to large-scale systems, e.g., molecular dynamics, fluid dynamics, material science.

mdpi.com/si/47764

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.

Entropy is an online open access journal providing an advanced forum for the development and/or application of entropic and information-theoretic studies in a wide variety of applications. *Entropy* is inviting innovative and insightful contributions. Please consider *Entropy* as an exceptional home for your manuscript.

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