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Applications of Nonlinear Diffusion Equations

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Message from the Guest Editors

Dear Colleagues,

Nonlinear diffusion equations occur widely in the modelling of phenomena that invariably involve irreversible processes. Irreversibility may be signified by some time-monotonic function or “entropy” on the space of state functions. We welcome contributions that have some reference to real irreversible systems whose state functions involve dependence on both space and time variables or their analogues (e.g., age of individuals). Such systems may include but are not limited to heat transfer, solute transport, mixing processes, evolution of solid surfaces and crystal defects, cell migration, tumour growth, population dynamics, disease transmission, and population genetics. “Nonlinear” is a key word, but linear models may be used if the effects of nonlinear extensions are also discussed. Within this field, analysis of the properties of practical nonlinear diffusion equations and approaches to their solution remain important.

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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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