



Fractional Porous Medium Type and Related Equations

Guest Editor:

Prof. Dr. Petra Wittbold

Faculty of Mathematics,
University of Duisburg-Essen,
Thea-Leymann-Straße 9, 45127
Essen, Germany

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Message from the Guest Editor

Many diffusion processes in nature exhibit anomalous behavior and cannot be modeled by classical diffusion equations (e.g., the heat equation), the classical porous medium equation, or by the classical parabolic p-Laplacian equation.

Subdiffusion is an important special case of anomalous diffusive behavior. It has been experimentally observed in many diffusion processes (e.g., diffusion in amorphous semiconductors) that particles diffuse slower than in the classical case, which can be described by Brownian motion and which leads to the heat equation or some nonlinear version of this equation.

Time-fractional porous medium and related equations, however, are suitable to describe such subdiffusion processes.

They are also able to describe many other diffusion processes where memory effects play a substantial role. These include heat conduction in materials with memory or diffusion processes in porous media with memory effects.

The aim of this volume is to present recent results for fractional porous medium and related equations (possibly involving stochastic perturbation).

