The theory of fractional heat equations

Juan Luis Vázquez [1]

The area of elliptic and parabolic equations revolves around the role of the Laplacian operator in modeling multiple phenomena either of stationary type or subject to evolution. Much recent research is taking place currently, aimed at understanding the effect of replacing the Laplace operator, and its usual variants, by a fractional Laplacian operator or other similar nonlocal operators, which represent long distance interactions in the particle or probabilistic approach. Linear and nonlinear models are involved. After presenting the topic, the lecture will describe some of the progress made by the author and collaborators, mainly on the topic of nonlinear fractional heat equations.

[1] Departamento de Matemáticas, Universidad Autónoma de Madrid,
Campus de Cantoblanco, 28049 Madrid *e*-mail: juanluis.vazquez@uam.es