Weak Solutions of Nonlinear Diffusion Equations with Drift: Existence and Applications

Kyungkeun Kang (Yonsei University)

Abstract. We study weak solutions to porous medium and fast diffusion equations with drift terms, where the drift satisfies a scaling invariance condition depending on its L^q norm. As applications, we revisit various nonlinear systems of diffusion equations, improving or extending known results on existence and regularity.