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Eventual Self-Similarity of Solutions for Diffusion-Absorption Equation with a Singular Source

Abstract

We consider a class of diffusion-absorption equations with a singular source in R^n. We establish existence of a weak self-similar solutions for these equations which arise in a limit of an infinitely strong singular source. We prove uniqueness of such solution in a suitable weighted energy spaces. Moreover, we show that the obtained self-similar solutions are the long-time limits of the solutions of the initial value problem for considered class of diffusion-absorption problems with zero initial data and a singular source of arbitrary constant strength. This is a joint work with Cyrill Muratov.