

Near field asymptotics for the porous medium equation in exterior domains

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Let $\mathcal{H} \subset \mathbb{R}^N$ be a non-empty bounded open set. We consider the porous medium equation in the complement of \mathcal{H} , with zero Dirichlet data on its boundary and nonnegative compactly supported integrable initial data.

Kamin and Vázquez, in 1991, studied the large time behavior of solutions of such problem in space dimension 1. Gilding and Goncerzewicz, in 2007, studied this same problem dimension 2. Using their results in the outer field we study the large time behavior of the solution in the near field scale, in particular in bounded sets of $\mathbb{R}^N \setminus \mathcal{H}$.

This a joint work with Fernando Quirós (Universidad Autonoma de Madrid, Spain) and Noem Wolanski (Universidad de Buenos Aires, Argentina).