PROBABILISTIC REPRESENTATION OF A GENERALIZED POROUS MEDIA TYPE EQUATION AND RELATED FIELDS

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We consider a porous media type equation (PME) over the the real line with monotone discontinuous coefficient and prove a probabilistic representation of its solution in terms of an associated microscopic diffusion. We will distinguish between two different situations: the so-called **non-degenerate** and **degenerate** cases. In the first case we show existence and uniqueness, however in the second one for which we only show existence. The proofs require a careful analysis of the deterministic (PME) equation. Some comments about an associated stochastic PDE with multiplicative noise will be provided.

This talk is based on two joint papers: the first with Ph. Blanchard and M. Röckner, the second one with V. Barbu and M. Röckner.