

Diffusion MRI in porous media: theoretical challenges

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Diffusion MRI is a non-invasive experimental technique which is often used to probe the microstructure of biological tissues (brain, lungs) and mineral porous media (rocks, cements) [1, 2, 3, 4]. In this talk, we review some theoretical and numerical studies of the intricate relation between the microstructure and the macroscopic signal [5]. Starting from the classical Gaussian phase approximation, we discuss limitations of apparent diffusion coefficients and notable deviations from Gaussian behavior, potential pitfalls of phenomenological models, and more recent developments such as matrix formalism and two-dimensional correlation experiments [6, 7].

Références

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