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A stochastic p-adic model of the capillary flow in porous random medium

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**Highlights:**

Methods of  $p$ -adic physics are applied to modeling of propagation of fluids (e.g., oil and water) in capillary networks.

The hierarchic structure of a system of capillaries is mathematically modeled by endowing trees of capillaries with the structure of an ultrametric space.

the penetration of fluid into a porous random medium is described as inhomogeneous Markov process

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