



## **Percolation and solute diffusion in soil models; Laboratory and Numerical Experiments**

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Using ballotini of different size distributions enclosed in a Hele-Shaw type 2D enclosure the spread of dye in a porous media is examined in the laboratory. The role of the trapping areas induced by the side boundary conditions is also calculated numerically. The parameter space used to predict the effective percolation includes the fase angle of the side structures. The fractal dimension of the tracer in time is compared with the actual porous media multi-fractal structure for different non-dimensional parameters. There are regions in parameter space where resonances (leading to coherent structures) produce anomalous porous diffusion. Soil karstic and microtube conditions are discussed in the light of the experimental results.