

Abstract Submitted  
for the DFD07 Meeting of  
The American Physical Society

**Destabilization of a Saffman–Taylor finger in a granular suspension** ANKE LINDNER, CHRISTOPHE CHEVALIER, ERIC CLEMENT, PMMH/ESPCI, Paris, France — We study the Saffman–Taylor instability in a granular suspension formed by micrometric beads immersed in a viscous liquid. We use an effective viscosity for flow of the suspension in the Hele-Shaw cell to define the control parameter of the system. The results for the finger width of stable fingers are then found to be close to the classical results of Saffman–Taylor for a large number of experimental conditions. One observes however an early destabilization of the fingers that can be attributed to the discrete nature of the individual grains. The addition of even a slight fraction of grains to the pure fluid decreases the threshold of destabilization drastically. This destabilization is classically attributed to the noise in the cell and is thus difficult to quantify. We show that the grains represent a “controlled noise” and produce an initial perturbation of the interface with an amplitude proportional to the grain size. The finite amplitude instability mechanism proposed by Bensimon *et al.* allows to link this perturbation to the value of the threshold observed.

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Date submitted: 08 Aug 2007

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