

Abstract Submitted
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Steady-state structure formation of two-phase flow in porous media.¹ THOMAS RAMSTAD, ALEX HANSEN, Department of Physics, NTNU, Trondheim, Norway — Transport of fluids in porous media is highly complex and creates remarkable patterns. We study these structures and the physics behind them in numerical models based on real porous sediments. These are embedded in a steady-state environment so that they represent selections of a larger, global system. As the saturation of the phases are changed within our models, we see a process towards creation of fluid clusters that eventually span the whole system and have a distribution that approaches a power law behavior. The critical saturation where this phase transition takes place, is dependent of the ratio between viscous and capillary forces inside the pores. We study these scaling properties and the physics that leads to the cluster behavior.

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Thomas Ramstad
Department of Physics, NTNU, Trondheim, Norway

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