MSS-Seminar
Wednesday, Sept. 26th, 15:30, Nägelsbachstr. 49b

Simulating immiscible two-phase flow and wetting by means of stochastic rotation dynamics (SRD) - from 2D to 3D

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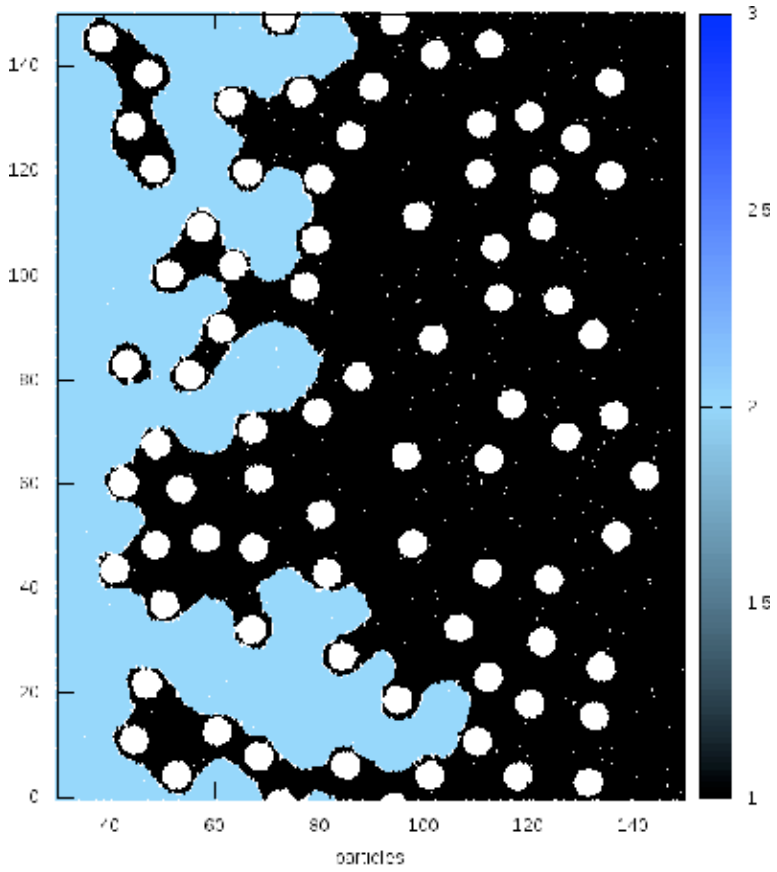

A mesoscopic particle simulation method based on the stochastic roation dynamics (SRD) is employed to simulate immiscible two-phase flow. As an extension to the standard SRD method, we present a model that accounts for a spatially varying wettability of the confining walls. This model allows us to simulate flow through a two-dimensional array of circular obstacles with defined spatial wetting correlations. We show how these wetting correlations influence the dynamics of percolation and the residual saturation of the initial phase. As an outlook we present the extension of the SRD algorithm into three dimensions to simulate immiscible multi-phase flow in arbitrary complex geometries. Our preliminary results demonstrate the capability to address a variety of applications. This can be for instance flow through channels with complex cross sections or the formation of capillary bridges in assemblies of spherical beads.