

PHYSICAL MATHEMATICS SEMINAR

The effects of surface tension variations on coalescing and settling drops

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ABSTRACT:

We present numerical simulations of interacting drops and bubbles with variable surface tension. The surface tension variations may be due to compositional differences or to the presence of surfactants. In particular, we give an overview of the partial coalescence of drops with a reservoir. After presenting the basic mechanism at play, as confirmed by numerical simulations and experimental evidence, we investigate cases where the surface tension of the drop differs from that of the reservoir because of compositional differences. We then present numerical simulations of coalescence in the presence of surfactants, and explain why the influence of surfactant is non-monotonic. We conclude by presenting how drops settling in a stratified ambient, like oil drops in the oceans, are affected by density and surface tension variations, even when the latter are very small.

TUESDAY, March 4, 2014

2:30 PM

Building E17, Room 136

*Reception following in Building E17, Room 401A
(Math Dept. Common Room)*

<http://math.mit.edu/pms/>



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