

Abstract Submitted  
for the DFD14 Meeting of  
The American Physical Society

**Lift-Off Instability During the Impact of a Drop on a Solid Surface** SHMUEL RUBINSTEIN, Harvard University, JOHN KOLINSKI, HUJI, L. MAHADEVAN, Harvard University — We directly measure the rapid spreading dynamics succeeding the impact of a droplet of fluid on a solid, dry surface. Upon impact, the air separating the liquid from the solid surface fails to drain and wetting is delayed as the liquid rapidly spreads outwards over a nanometer thin film of air. We show that the approach of the spreading liquid front toward the surface is unstable and the spreading front lifts off away from the surface. Lift-off ensues well before the liquid contacts the surface, in contrast with prevailing paradigm where lift-off of the liquid is contingent on solid-liquid contact and the formation of a viscous boundary layer. Here I will discuss the dynamics of liquid spreading over a thin film of air and its lift-off away from the surface over a large range of fluid viscosities.

Shmuel Rubinstein  
Harvard University

Date submitted: 01 Aug 2014

Electronic form version 1.4