

# PHYSICAL MATHEMATICS SEMINAR

## SPLENDOR AND MISERY OF THE LOTUS EFFECT

**MATHILDE REYSSAT**

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### ABSTRACT :

Hydrophobic surfaces can be made super-hydrophobic by creating a texture on them. This effect, sometimes referred to as the "fakir" effect, is due to air trapped in the structure: the textured substrate behaves as a composite surface made of solid and air, and displays enhanced hydrophobicity. We give evidence for this effect using forests of micro-pillars which we obtained by micro-fabrication techniques. This situation where the drop sits on the top of the micro-pillars is not always the most stable: the liquid can prefer to fill in the texture. We have studied the transition between these two states by different ways: by pressing on drops, by letting drops evaporate and by carrying impact experiments. We have also achieved surfaces displaying gradients in the density of micro-pillars and have discussed the possibility to observe spontaneous movement of droplets. At last, we have studied the wicking of well-defined surfaces by wetting liquids and have inferred dynamics laws of imbibition.

**TUESDAY, NOVEMBER 6, 2007**

**2:30 PM**

**Building 2, Room 105**

*Refreshments at 3:30 PM in Building 2, Room 349  
(Applied Math Common Room)*



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