

# PHYSIKALISCHES KOLLOQUIUM

Mittwoch, 27.06.2012, um 17:15 Uhr

Ort: Reichenhainer Str. 90, Neues Hörsaalgebäude, Raum: 2/N013



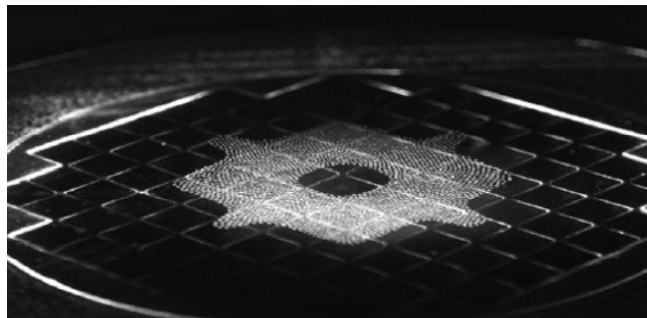
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## Micro-particles as plasma probes

Complex (dusty) plasmas, which can form plasma or Coulomb crystals (Fig.1) are at recent a topical research subject in plasma physics [1]. The complexity of dusty plasmas results in complicated interactions at different scales in energy, space, time and mass. Experimental and theoretical studies initiated the idea of using externally injected small particles, which are negatively charged and affected by several forces in plasma, as micro-probes. From the behavior of the particles in the surrounding plasma local electric fields can be determined ('particles as electrostatic probes') [2]. Moreover, momentum fluxes in energetic ion beams ('particles as force probes') [3] as well as energy fluxes towards the particles ('particles as thermal probes') [4] are worth studying.

*Fig. 1: A two-dimensional cloud of mono-disperse dust micro-particles ( $10\mu\text{m}$ ) is trapped in a plasma sheath in front of the adaptive electrode in an rf-plasma. The electrode is segmented, allowing to manipulate the trapped micro-particles in real time.*



- [1] G.E. Morfill, H. Kersten; Focus issue on complex (dusty) plasmas, *New J. Phys.* **5** (2003) 1
- [2] G. Schubert, R. Basner, H. Kersten, H. Fehske; *Eur. Phys. J. D* **63** (2011) 431
- [3] T. Trottenberg, V. Schneider, H. Kersten; *Phys. Plasmas* **17** (2010) 103702
- [4] H. Maurer, R. Basner, H. Kersten; *Rev. Sci. Instrum.* **79** (2008) 093508

Alle Zuhörer sind ab 17.00 zum Kaffee vor dem Hörsaal eingeladen.