

Abstract Submitted  
for the DPP14 Meeting of  
The American Physical Society

**Dust density measurements in 3D dust clouds by tomography<sup>1</sup>**

ANDRE MELZER, Institute of Physics, University Greifswald, 17498 Greifswald, Germany — Dusty plasmas usually consist of (micron-sized) dust particles trapped in a gaseous discharge plasma. Volume-filling dust clouds can be generated in the laboratory by thermophoretic levitation of the particles against gravity or under the microgravity conditions of parabolic flights. In these discharges, the dust density is typically so high that together with the high charge on the particles, the dust charge density can compete with the ion and electron (charge) density indicating a regime of charge depletion. Here, we present a technique that allows to measure the spatially resolved 3D dust density in such dusty discharges. For that purpose, the dust cloud is transilluminated by a homogeneous light source and the transilluminated cloud is measured under different angles in a tomographic-like manner. This allows to reconstruct the full 3D dust density within the discharge volume and further to deduce the force balance for the dust component.

<sup>1</sup>Supported by DLR 50 WM 1138.

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Date submitted: 09 Jul 2014

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