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Dynamics of stable and unstable externally driven dust clouds[1]
IRIS PILCH, MARK KOEPKE[2], ALEXANDER PIEL, THOMAS TROTTENBERG, Institute for Experimental and Applied Physics, Christian-Albrechts University, D-24098 Kiel, Germany — An individual dust cloud, formed in the anodic glow discharge immersed in a radio-frequency-produced plasma, is shown to support dust-acoustic waves (DAW) if the number of dust grains is sufficiently large. Below this threshold, the dust cloud sloshes and compresses synchronously when the anode voltage is modulated (1-50 Hz). Above this threshold, the dust acoustic waves become resonant when the modulation amplitude is large and the modulation frequency is near the spontaneous dust acoustic frequency. We report on the three-dimensional structure and dynamics of both the cloud and the dust acoustic wave.

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