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**Self-excited dust-acoustic waves in dusty plasmas under microgravity conditions** ALEXANDER PIEL, MARKUS KLINDWORTH, OLIVER ARP, Christian-Albrechts-University, D-24098 Kiel, Germany — We have performed dusty plasma experiments under microgravity in the rf-driven IMPF-K plasma chamber. Under these conditions, a particle-free region (“void”) appears in the center of the discharge. In dependence on the neutral gas pressure and the particle density in the cloud, self-excited compressional dust density waves are released from the void’s sharp boundary and propagate radially outwards. On their way towards the cloud edge, the wave is refracted and propagates under a distinct angle along the medium boundary with almost constant intensity. The instability has been characterized by its frequency and wave number over a range of discharge parameters. The observation is compared with theoretical dispersion relations for the ordinary dust-acoustic wave and the dust-acoustic surface wave. Conclusions on the driving mechanism can then be drawn on base of the refractive behavior and the background plasma parameters which have been gained by Langmuir probe measurements.

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