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Trapping and dynamics of levitated ice particles at low pressures NICHOLAS KOWALSKI, BERNARD XIE, COLIN PARKER, CHENG CHIN, James Franck Institute, Enrico Fermi Institute, Department of Physics, University of Chicago — We report on experimental methods for trapping ice particles in medium vacuum, at pressures between 5 Torr and 25 Torr. At appropriate conditions aggregate ice particles hover at short distances due to the Knudson compressor effect. Additionally particles can launch and levitate robustly for extended periods of time. First we describe the experimental setup used to produce levitation, including producing the temperature gradients across the chamber. Additionally we describe our procedure for generating and introducing ice into the experimental setup. We describe the conditions necessary for levitation, and the dependence of levitation on the experimental parameters. In addition, we report on the behavior of particles during levitation and ejection, including position and stability, by analyzing particle trajectories. This includes events in which simultaneously levitated particles collide and merge.

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