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Energy Dissipation in a Microgravity Complex Plasma Cloud<sup>1</sup> LORI SCOTT, EDWARD E THOMAS JR., UWE KONOPKA, Auburn University, JEREMIAH WILLIAMS, Wittenberg University, TRUELL HYDE, LORIN MATTHEWS, EVDOKIYA KOSTADINOVA, Baylor University, MIKHAIL PUSTYLNIK, HUBERTUS THOMAS, German Aerospace Center (DLR) — Complex plasmas under microgravity conditions allow the study of interparticle forces that are masked by gravity. To overcome the gravitational influence, we use the dc glow discharge Plasma Kristall-4 (PK-4) microgravity laboratory on the International Space Station (ISS). Dust particles injected into PK-4 flow along an axial electric field until stopped by the application of a periodic oscillation of the electric field. We seek to understand the redistribution of kinetic energy of the dust particles at the onset of this periodic oscillation. This presentation will focus on comparing data obtained using the ground-based science reference module and the ISS microgravity experiment. Initial results show a substantive difference in the shape of the velocity distribution functions between ground and flight data. While the distribution function from ground data is reasonably well described using a Maxwellian distribution, the distributions from flight data show evidence of extended, skewed tails and other non-Maxwellian features. This presentation will focus on the modification of the velocity distribution shape and the subsequent determination of the thermal properties of the dust component of the plasma system.

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