Abstract Submitted
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**Structural Formation within Dusty Plasma**[1] TRUELL HYDE, LORIN MATTHEWS, Baylor, PETER HARTMANN, Wigner Research Centre for Physics, MARLENE ROSENBERG, UCSD, OLEG PETROV, JIHT, VLADIMIR NOSENKO, DLR, JIE KONG, KE QIAO, EVA KOSTADINOVA, JORGE CARMONA-REYES, Baylor — Complex plasmas have proven a versatile analog for the study of self-ordered systems, particularly those where structuring is determined by the particles' kinetic energy, local and global confinement and the interparticle forces created by the interaction of the dust particles with the plasma environment. Unfortunately, given the magnitude of these forces gravity often masks the underlying physics involved. In order to clarify this role, PK-4 data collected under microgravity on the International Space Station (ISS) has been compared to PK-4 data collected under gravity using the PK-4 BU analogue at Baylor University. The PK-4 BU analogue provides extended diagnostic capabilities allowing examination of dust systems trapped employing DC polarity switching and a RF field with a movable electrode. This talk will examine the physics underlying the formation of various dust particle structures (single particle(s), extended particle chains, hexagonal cylindrical structures) as observed in the PK-4 (ISS) and the PK-4 BU system. Data from the PK-4 ISS will be directly compared to data collected from the PK-4 BU as well as to numerical simulations of the dusty plasma system in order to examine dust charging, linear and non-linear interactions and interparticle interaction forces.

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