

# Großes Physikalisches Kolloquium an der Universität zu Köln

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### *Physics in a Sandbox: Dynamics of Granular Matter in Microgravity*

Granular materials are both important in numerous applications as well as fascinating examples for the physics far from equilibrium. Many phenomena in granular materials are familiar from everyday experience. In contrast to their apparent simplicity, granular materials pose many challenges to both experiment and theory. In theory, the energy loss at the collision of particles breaks time-reversal symmetry and leads to emerging effects such as cooling and cluster formation. In experiments, the energy loss leads to quick sedimentation on ground and motivates experiments in microgravity. In a broad overview, the interplay between theory and experiment shall be presented for topics such as dynamics of granular gases, light scattering from granular fluids, force transmission in granular solids, rheology, and the migration of sand dunes. The picture below demonstrates an emerging granular cluster in a system of ellipsoidal candy measured on board the International Space Station (ISS).



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16<sup>45</sup> Uhr / HS III

