**118th MSS-Seminar**
Wednesday, March 28th, 15:30
Nägelsbachstr. 49b

# Dynamics of neutral and charged granular gases

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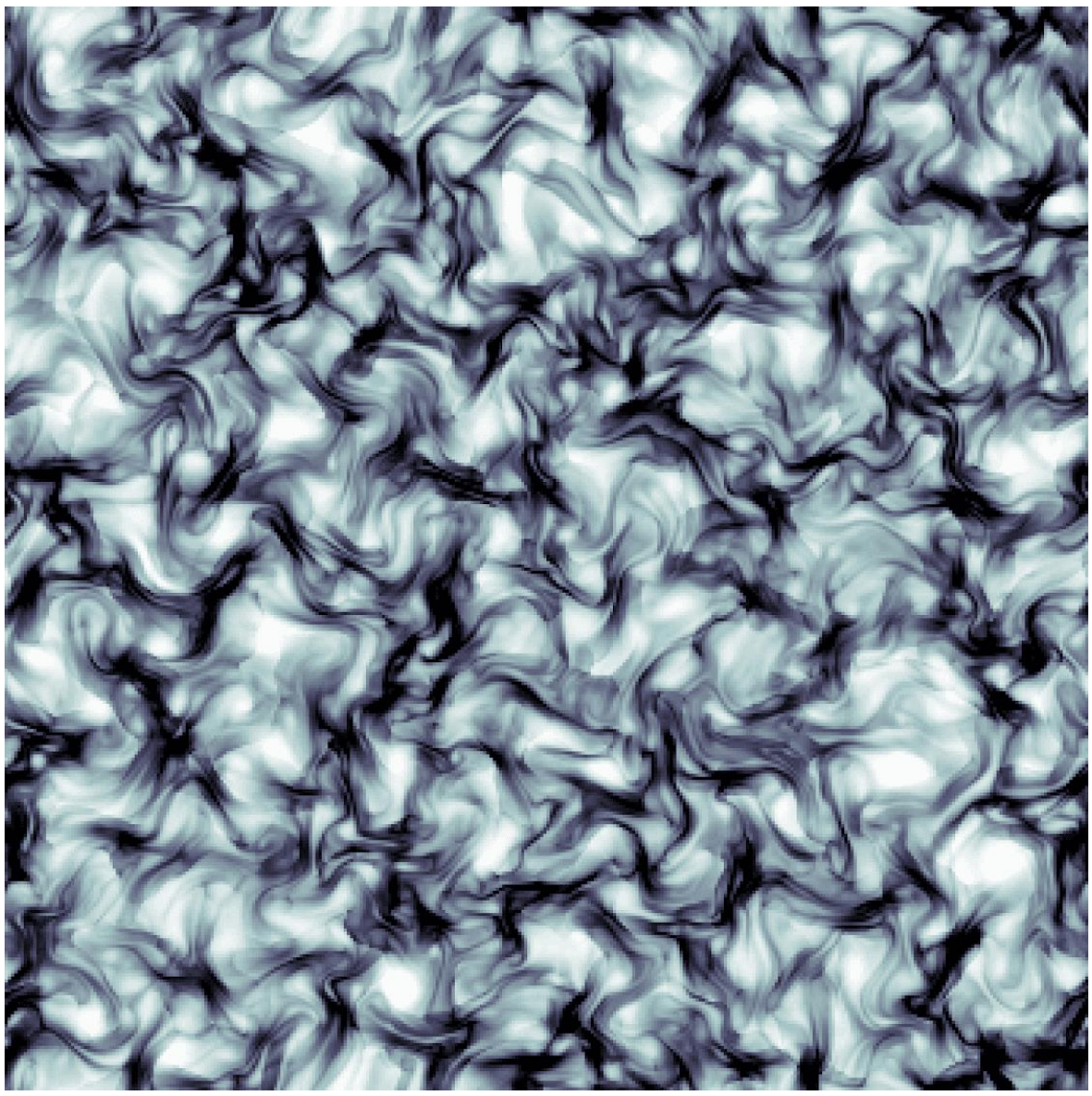

Since classical antiquity lightnings have been associated with the ashes produced during volcanic activity. It has been long speculated that collisional charging may play a significant role in particle's aggregation in such natural processes, e.g., in the formation of planetesimals during the early stages of the birth of a planet, charging in dust devils, lightnings in thunderclouds, and electric sparks in dunes. We perform molecular dynamic simulations in three dimensions for a dilute, freely-cooling granular gas of viscoelastic particles that exchange charges during collisions. Using percolation theory, we find a stronger power law growth of the average cluster size in the collisionally charged gas than in the neutral case. Remarkably, z is found to be independent of the typical Bjerrum length, or equivalently, of the ratio of characteristic Coulomb to thermal energy. However, this ratio alters the crossover time of the growth. The velocity distribution of the charged viscoelastic particles does not show a relaxation towards Maxwellian within the early stages of aggregation.