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Free cooling of the one-dimensional wet granular gas VASILY ZABURDAEV, MARTIN BRINKMANN, STEPHAN HERMINGHAUS, Max Planck Institute for Dynamics and Self-Organization — In the present work we consider a one-dimensional gas of hard balls covered with a thin liquid film. A liquid bridge, formed at each collision, is responsible for the hysteretic and dissipative interaction. Each rupture of a liquid bridge requires a fixed amount of energy, and thus determines a threshold of relative velocities below which the two colliding particles form a bounded state loosing their relative kinetic energy. We aim to study the cluster formation process in the free cooling system. Macroscopic laws of energy dissipation and cluster growth are studied in this model on the basis of numerical simulations supported by a scaling-like system of equations. We show that the sticky gas regime is an attracting asymptotic limit of the wet granular gas and does not dependent on the liquid bridges strength. The next neighbor velocities correlations play the key role in the establishing of this regime.

Vasily Zaburdaev
Max Planck Institute for Dynamics and Self-Organization

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