

A lattice model for granular-like systems: from global stability to an H -theorem

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We present a simple one-dimensional lattice model which provides a simplified approach to granular-like velocity fields. Momentum conservation and energy dissipation due to collisions between nearest neighbours are the main features of the system. [1, 2, 3]

We prove the global stability of the steady state of the system for different driving mechanisms, including both boundary and bulk driving. We do so by proposing an H -functional [4, 5] which is non-increasing in the long time limit. Furthermore, we extend the non-increasing nature to all times for two specific energy injection mechanisms, which lead to physically relevant states, reaching an H -theorem.

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