Sleeping particles in event-driven systems

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The inelastic hard sphere model has been widely used in the simulation of dilute granular systems. It is an elegant, fast and reliable method that exactly implements kinetic theory. Nevertheless, when confronted with dense systems (packing fraction around 0.6 and higher) it becomes extremely time consuming, so different methods must be used. We have extended the inelastic hard spheres model by implementing static particles in contrast to dynamic particles that move under the action of gravity. When adding simple rules to pass from one state to another -what we call sleep and wake up- one can speed up the simulation of solid-like granular regions. We use this extension to simulate the deposition of particles over a fixed ground, rotating drums and other solid-like systems.