

**Title: A granular monolayer as a lubricant.**

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Abstract:

We investigate the dynamics of a disk shaped intruder sliding on a granular monolayer. The monolayer is on an inclined transparent plane, tilted at an angle much smaller than the angle of avalanche. A high speed camera allows us to measure the dynamics of both the intruder (filming from top) and the grains (filming from below). Experimental results for both experimental situations are related through a phenomenological model that allows to calculate the intruder's acceleration from the dynamics of the beads below it. We find a frictional force with a quadratic dependence on the speed of the intruder. It is also possible to highlight the influence of the density of the beads that form the monolayer on the dynamics of the disk. We also find that the fluidization produced by the intruder's action reduces substantially the effective friction coefficient.