# Evolution of the distance between plates in an experimental granular fault. Implications for earthquake forecast.

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We have recently developed an experimental system capable of –for the first time– reaching a stationary regime following *quantitatively* the main laws of seismicity [1]. The intermittent dynamics of our *labquakes* consists of frictional failures in the structure of a compressed granular medium [2] submitted to a continuous shear. By quantitatively replicating the main laws of seismicity : Gutenberg-Richter law [3,4], Omori law [5], distribution of waiting times between events [6] ; as well as other qualitative (for the time being) similarities, our work strongly indicates that these two very different system : earthquakes and our experiment, are governed by a similar physics. Moreover, thanks to the possibility of a significant statistics and better quality measurements than the real phenomenon, our system corroborates the existence of magnitude correlation in the dynamics, a result that has been previously associated to catalogue incompleteness [7]. Here we introduce new results focusing on the evolution of the packing fraction during the experiment, particularly around very large quakes and where we expect a dilatancy of the medium preceding mainshocks [8]. To do that, we have directly monitored the distance between the plates that compress the granular fault. Preliminary results indicate a precursory behaviour that seems more reliable than the analysis delivered so far by our acoustic data.

## Références

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