

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Photoelastic study of sound waves in grain packings XAVIER NOBLIN, GUILLAUME HUILLARD, JEAN RAJCHENBACH, LPMC, UMR 6622 CNRS-UNS, Parc Valrose, 06108 Nice Cedex 2, France — By means of photoelasticity, we succeed in visualizing in real time the propagation of acoustic waves in a granular packing of cylinders. Our experimental procedure allows an access to the local state of stress of individual grains as a function of time with a good accuracy. We first present results on 1d chains of cylinders that are constrained by a static confinement force. Both linear and nonlinear regimes are presented. We emphasize the role of the grains roughness on the propagation properties, and also of the solid friction with the walls. Our results concerning the wave velocity as a function of the amplitude, and of the confinement force, are compared to the theory and to the spherical beads case. We then present experimental results on 2d pilings, in particular for the wave speed.

Xavier Noblin
LPMC, UMR 6622 CNRS-UNS, Parc Valrose,
06108 Nice Cedex 2, France

Date submitted: 29 Nov 2011

Electronic form version 1.4