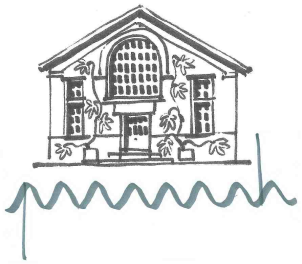

ESPCI
Laboratoire PMMH
10 rue Vauquelin, 75231 Paris Cedex 05

Séminaire PMMH

Amphithéâtre Urbain (A1), Escalier N, entresol

Vendredi 5 décembre 2014, 11h00-12h00

Leonardo Gordillo

Matière et Systèmes Complexes (MSC), Université Paris Diderot

Waves generated with an underwater programmed displacement function

In this talk, I will make a review of a set of laboratory experiments that we have carried out in the Laboratoire MSC at Université Paris Diderot. Our research is focused in the generation of surface waves in a fluid layer whose bottom undergoes an upward vertical motion. Experiments were run in two different setups : a 1m-size square tank and a 2m-long channel. Both setups have an elastic deformable region in the center of their bottom. While the deformable region in the tank moves as a block, the channel bottom is attached to sixteen independent pistons that can be moved upward or downward with a programmed spatiotemporal function. The wave amplitudes in the generation region are measured using Fourier-Transform Profilometry. Velocity fields are measured using Particle Image Velocimetry. Depending on the choice of the displacement function, we reproduce different tsunami scenarios, e.g. varying bathymetry, simultaneous bed downthrust and upthrust, fault propagation, submarine landslides. To our knowledge, this is the first time that such a large range of scenarios is probed in laboratory experiments. Results provide useful information about tsunami generation processes.