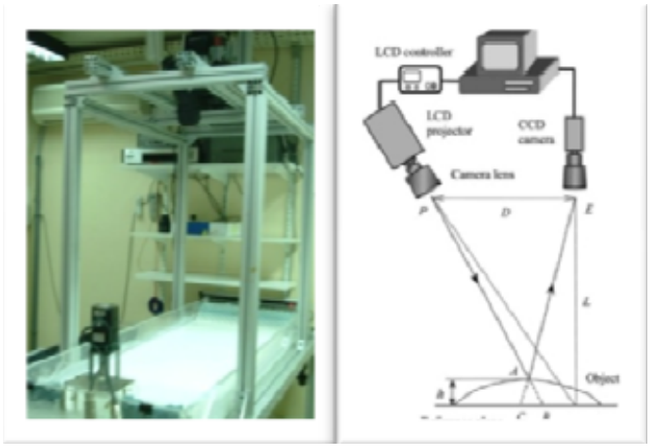
Post Doctoral Proposal:
Metamaterials for non-linear water waves



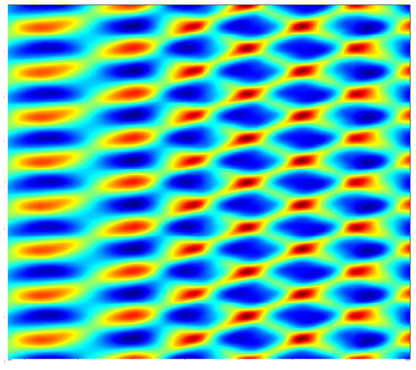
Recently, different groups of researchers have demonstrated the feasibility of metamaterials for water waves, using either layered structures to built effective anisotropic medium or periodic structures as photonic/ phononic crystals. However, the control of the propagation of surface waves has to be robust with respect to the non linearities which are inherent to such waves in the seas and oceans

The particular metamaterial that will be studied is a variable bathymetry; the non linear effects will be particularly strong at the places with minimal depths and we will characterize the threshold of wave amplitude where the metamaterial properties are lost. Besides, another configuration owing to non linearities will be considered: water wave diode, allowing for non reciprocal propagation.

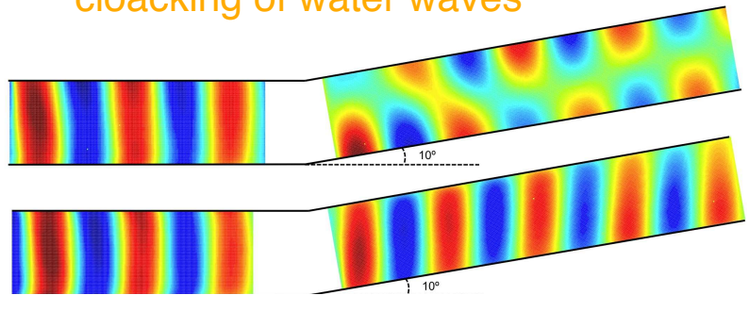
The post-doc concerns experimental and theoretical study of the non linear propagation of water waves.
Our group has developed an optical technique that measures the surface elevation instantaneously in laboratory experiments of water waves. This technique characterizes very accurately the spatio-temporal behavior of the surface waves.

Public Grant from the Agence Nationale de la Recherche,
Location: ESPCI, 10 rue Vauquelin, Paris, France

Spatio-temporal evolution
of non linear water waves



cloacking of water waves



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