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Laboratoire PMMH
10 rue Vauquelin, 75231 Paris Cedex 05

ESPCI PARIS
EDUCATION SCIENCE INNOVATION

Séminaire café - PMMH

Bureau d'Études, Batiment L, 2 ème étage

Jeudi 24 novembre 2016, 13h30

Thomas Humbert

Post-doctorant au PMMH, ESPCI

Wave-induced vortex recoil and nonlinear refraction

When a vortex refracts surface waves, it exerts a force on the wave field, and the waves exert a reaction force on the vortex. We study experimentally the resulting vortex recoil.
Incoming surface gravity waves impinge on a steady vortex driven magneto-hydrodynamically at the bottom of a fluid layer. The waves induce a shift in the position of the vortex center, together with a decrease in surface vorticity. We interpret these two phenomena in the framework introduced by Craik and Leibovich : we identify the dimensionless Stokes drift $S = U_s/U_0$ as the relevant control parameter, Us being the Stokes drift velocity of the waves. Such wave-induced vortex distortion has important consequences for the nonlinear regime of wave refraction : the refraction angle rapidly decreases with wave intensity.
I will also present briefly some experiments that consider the refraction of surface waves by an array of vortices.

Prochain séminaire : jeudi 15 décembre 2016 **à 13h30**,
Présentation rapide des sujets de thèse des doctorants en 2 ème année.

Programme des séminaires café : https://www.pmmh.espci.fr/?-Seminaire-Cafe-Interne-
Contacts : Charles Duchêne (charles.duchene@espci.fr) et Armelle Gas (armelle.gas@espci.fr)