

Institut de Minéralogie et de Physique des Milieux Condensés  
Unité Mixte de Recherche 7590  
Code 115, 4 Place Jussieu F-75252 Paris CEDEX 05

# SÉMINAIRE

## Vendredi 22 novembre, 10h30

*Salle de conférence, 4ème étage, Tour 22-23  
IMPMC, Université P. et M. Curie, 4, Place Jussieu, 75005 Paris*

# Alexei KONDRATOV

*Institut Chubnikov de cristallographie, Moscou*

## MACROSCOPIC VIEW OF LIGHT PRESSURE ON A CONTINUOUS MEDIUM

The ambiguity of the macroscopic description of light pressure on a continuous medium originates from the uncertainty of dividing the energy-momentum tensor of electromagnetically excited matter into a material and field parts or, equivalently, the total acting force into pressure and deformation terms. We show that, although there exists a continuum of formally correct formulations, one can adopt the appropriate form of the macroscopic field stress tensor that allows a unified description of pressure during elementary light-matter interactions, such as reflection, refraction, absorption, and nonlinear conversion. The derived simple expressions for the pressure force are compatible with the polariton momentum  $\hbar k$ . The corresponding relation for the electromagnetic momentum density generalizes Rytov's definition for right-handed and left-handed frequency dispersive media.