

MAR07-2006-006456

Abstract for an Invited Paper
for the MAR07 Meeting of
the American Physical Society

Localisation of interacting Bose-Einstein Condensates expanding in a 1D random potential created by laser speckle

LAURENT SANCHEZ-PALENCIA¹, Laboratoire Charles Fabry de l'Institut d'Optique

We have studied the 1D expansion of a coherent interacting matter wave (a Bose-Einstein condensate) in the presence of disorder. Well controlled 1D random potentials are produced with laser speckle patterns. We observe the suppression of the transport of the BEC in the random potential, and we study this localisation phenomenon as a function of the parameters of the random potential. A theoretical analysis and numerical simulations allow us to interpret the observed behaviours.

¹CNRS et Université Paris Sud 11