

# Spécialité de Master « Optique, Matière, Paris »

Stage de recherche (4 mois minimum, à partir de début mars)

## Proposition de stage (**ne pas dépasser 1 page**)

Date de la proposition : 14 octobre 2015

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<b>Nom du Laboratoire / laboratory name:</b> Laboratoire Kastler Brossel	
Code d'identification : UMR8552	Organisme : UPMC-CNRS-ENS-Collège de France
Site Internet / web site: <a href="http://www.lkb.ens.fr/-Determination-of-h-M-on-atomic,295-">http://www.lkb.ens.fr/-Determination-of-h-M-on-atomic,295-</a>	
Adresse / address: LKB, T13, étage 2, 4 place Jussieu 75005 Paris	
Lieu du stage / internship place: Laboratoire Kastler Brossel, Jussieu	

<b>Titre du stage / internship title:</b> <b>Atom interferometry with frequency combs</b>
Résumé / summary
<p>This project aims at investigating velocity-selective Raman transitions using frequency combs. The challenge is to implement an atomic beam-splitter and then an atomic interferometer using only a frequency comb. The main advantage of this approach is to propose a solution to perform atomic interferometry with atomic species whose transitions are not accessible such as the extreme ultraviolet, because no continuous laser source is available nowadays. Such a solution would have an important impact on the Gbar projet, which is designed to test and measure gravity using anti-hydrogen atoms.</p> <p>The goal of the internship is to perform the calculation of the coupling rate of the Raman transition induced by a frequency comb in a <math>\Lambda</math> atomic system. We will determine the most suitable excitation scheme and investigate the optimized frequency comb parameters (repetition rate, spectral broadening, shape of the frequency comb) in order to minimize all stray phase-shifts, and then to obtain a superposition of two coherent atomic states.</p>
<b>Toutes les rubriques ci-dessous doivent obligatoirement être remplies</b>

<b>Ce stage pourra-t-il se prolonger en thèse ? Possibility of a PhD ? : Oui</b>			
<b>Si oui, financement de thèse envisagé/ financial support for the PhD: Bourse EDPIF</b>			
Lumière, Matière, Interactions	<b>Oui</b>	Lasers, Optique, Matière	<b>Oui</b>

Fiche à transmettre (fichier pdf **obligatoirement**) sur le site <http://stages.master-omp.fr>