

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 : 07/11/2016

Responsable du stage / internship supervisor:		
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Nom du Laboratoire / laboratory name: Laboratoire Charles Fabry		
Code d'identification : UMR8501	Organisme :	
Site Internet / web site: www.lcf.institutoptique.fr/ Adresse / address: 2 av. A. Fresnel, 91120 Palaiseau Lieu du stage / internship place: Institut d'optique		

Titre du stage / internship title: Cooling and imaging potassium condensates
Résumé / summary Our group is experienced in controlling interspecies interaction in potassium 39 condensate, in reduced dimensionalities (1D and 2D) in laser traps and in introducing disorder by laser speckle. We can thus probe the properties of a variety of interacting quantum systems. The well controlled and tunable environment offered by ultracold atomic gases allow for a quantitative comparison with theories. We propose a Master internship with title: Cooling and imaging potassium condensates A new science chamber is now being built for our 39K cooling apparatus,. It will allow larger condensates and an efficient imaging. The intern will participate to the installation and characterization of the new system. It is a nice occasion to discover the complex experimental apparatus that are used in the field of ultracold atoms. The internship could continue with a PhD thesis. On this time scale, several projects are envisioned: -The dynamics of bright solitons (1D condensates that remain bound because of attractive interaction) when colliding with a quantum barrier. Is it possible to create a Schrödinger cat useful for atom interferometry ? -The study of coherent forward scattering in disorder, an effect that has never been observed and that is unambiguous signature of Anderson localization. -The study of dilute quantum droplets, condensates that are self-bound because of dominant beyond mean-field effects and that may appear in 39K spin mixtures with appropriate interspecies interactions.
Toutes les rubriques ci-dessous doivent obligatoirement être remplies

Ce stage pourra-t-il se prolonger en thèse ? Possibility of a PhD ? : Yes			
Si oui, financement de thèse envisagé/ financial support for the PhD: Ecole doctorale			
Lumière, Matière, Interactions	YES	Lasers, Optique, Matière	Yes

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