

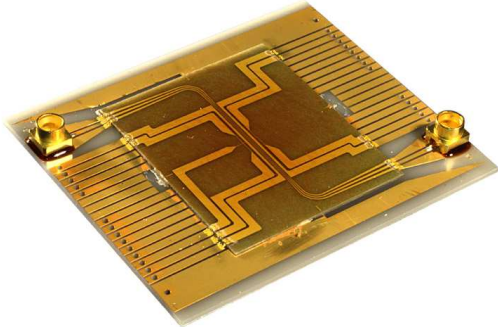
# Spécialité de Master « Optique, Matière, Plasmas »

Stage de recherche (4 mois minimum, à partir de début mars 2010)

Proposition de stage pour l'année 2009-2010 (**ne pas dépasser 1 page**)

Date de la proposition :

<b>Responsable du stage /internship supervisor</b>			
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Courriel/mail :	Peter.Rosenbusch@obspm.fr		
<b>Nom du Laboratoire / Laboratory name :</b> SYRTE – Observatoire de Paris			
Identification Code d	UMR8630	Organisme :	Observatoire de Paris
Site Internet/web site :	syrte.obspm.fr/?h_puce		
Adresse/ address :	61 av de l'Observatoire, 75014 Paris		
Lieu du stage/ Internship place:	Observatoire de Paris		

<b>Titre du stage /internship title :</b> Atom – chip microwave interaction
Résumé/summary
<p>Since the discovery of cold atoms their application in high precision measurements and quantum computing is investigated by numerous research groups. These experiments rely on the coherent control of the external and internal atomic states. In the TACC (Trapped Atom Clock on a Chip) experiment, we have recently demonstrated that the coherent superposition between two internal states of Rb can be sustained for more than 15 s. This truly macroscopic time was achieved by holding the atoms in magnetic levitation above an “atom chip” (see photo). On-chip microwave guides were used, for the first time, to create the atomic coherence.</p> <p>Up to now, the atom – chip interaction has been a classical process. During this internship we will address the question, whether there can be a quantum mechanical coupling of the atoms to an on-chip microwave cavity. We will investigate the use of such a cavity in reading-out the atomic state. The candidate will engage in a theoretical study calculating the coupling between the atoms and the existing micro-wave structure. He/she will evaluate experimentally the possibility to create a high finesse cavity using the on-chip microwave strip-line.</p> <p>The candidate will join a team of PhD students, post-docs and permanent researchers. He/she will benefit from the interaction with the cold atoms teams at the SYRTE and LKB.</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 : DGA</b>

Lasers et Matière	x	Physique des Plasmas	
Optique de la science à la technologie	x	Lumière, Matière : Mesures Extrêmes	x

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