

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 : 8 novembre 2018

Responsable du stage / internship supervisor:			
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Nom du Laboratoire / laboratory name: Laboratoire Photonique Numérique et Nanosciences			
Code d'identification : UMR 5298		Organisme : Institut d'Optique Graduate School	
Site Internet / web site: https://sites.google.com/site/bordeauxnanophotonicsgroup/home			
Adresse / address: 1 rue François Mitterrand, 33400 Talence			
Lieu du stage / internship place: LP2N			

Titre du stage / internship title: Multicolor 3D SELFI super-resolution microscopy
Keywords: Super-resolution microscopy, single molecule detection, neurosciences, biophysics
<p>Over the last decades, single molecule detection and super-resolution microscopy have provided unique details about nanometer organization of complex biological structures in cells[1]. However, until recently, such approaches were not suitable for the study of intact tissue because of the limited brightness of fluorescent emitters, the poor access to molecular probes, confinement the optical aberrations induced by the samples and/or the poor penetration of the light at visible wavelengths. To circumvent these limitations, we recently developed several new approaches [2-4].</p> <p>One of them is relies on a novel paradigm in 3D super-localization microscopy which allows for the first time to achieve 3D super-resolution studies within intact tissues[3]. It is based on creating and analysing self-interference (SELI) of the point spread function of the microscope.</p> <p>The primary goal of this internship project (followed by PhD) is to extend the SELFI method to sequential multicolor super-resolution imaging for addressing questions ranging from nanotechnologies to neuroscience. Strategies for extending the depth-of-focus of the SELFI method will also be investigated.</p> <p><u>Some publications of the team related to this project :</u></p> <p>[1] Heine et al Science 320 (2008) 201, see also www.cognet-research.com for other examples from our team. [2] Varela, et al Nature Commun. 7 (2016) 10947 [3] Godin, et al Nature Nanotechnol. 12 (2017) 238 [4] Bon et al Nature Methods, 15 (2018) 449–454</p>

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

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