

JOB OFFERS

Postdoctoral position: Wavefront sensing and quantitative phase imaging based on a thin diffuser.

Context

Well-known for their use in adaptive-optical (AO) systems, wavefront sensors (WFS) are also fundamental for ophthalmology, quantitative phase imaging, laser-beam characterization or imaging through turbid media. Typically, in the Shack-Hartmann configuration, a lens array is placed in front of a camera, so-allowing local wavefront tilts to be measured across the field of view. Subsequent integration then provides the wavefront profile. Several alternative solutions have been developed to replace the micro-lens array.

At the Neurophotonics Laboratory (Univ Paris Descartes), we recently proposed a compact, broadband and quantitative imaging wavefront sensor based on a simple diffuser [1] for performing quantitative phase imaging of biological samples. Contrary to former techniques, the unique signature of the speckle patterns generated by the diffuser avoids any possible reconstruction artifacts associated with identification ambiguity encountered with periodic masks. Moreover, the WFS we proposed here possesses the unique property to have a continuously tunable phase sensitivity by allowing changing the separation distance between the diffuser and the camera.

The offered position aims at continuing the development of this novel wavefront sensor in the context of bio-imaging. More precisely, the candidate will participate in the improvement of the WFS performances (sensitivity, resolution) by exploring several strategies based on statistics of random light. This work will be achieved in the context of the development of a new application of wavefront sensing to super-resolution microscopy.

[1] P.Berto, H.Rigneault, M. Guillon, Wavefront-sensing with a thin diffuser, Optics letters 42 (24), 5117-5120

Required skills: We are looking for a highly motivated candidate with good collaborative and communication abilities in English. The candidate should have a PhD in experimental optics and/or computational imaging. Knowledge of Matlab is also required.

Starting date: May 2018, one year contract.

Location: Neurophotonics Laboratory, Paris

Contacts: Applications should include a cover letter describing your interest in the position, a detailed CV, and some contact details of one or two referees. Applications should be addressed to:

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