

PhD position in Quantitative Phase Imaging (QPI) and its Applications

We offer a **full time PhD grant** (48 months – FPI grants from Ministerio de Ciencia, Innovación y Universidades) within the research project titled “COHERENT SENSING APPLIED TO OPTICAL INSTRUMENTATION – COSENO(PI)”.

Starting date: January/February 2025

Affiliation: Optoelectronic Image Processing Group (GPOEI, www.uv.es/gpoei/), Department of Optics and Optometry and Vision Sciences, Physics Faculty, Burjassot (Valencia).

Supervision: Profs. Vicente Micó and Javier García.

Requirements:

- Bachelor's and master's degree in physics (preferred option) but also in physical engineering, photonics, electrical and/or electronic engineering (or similar).
- Knowledge of optics, diffraction, holography, coherence, optical image processing.
- Experimental skills and previous experimental internships and projects will be positively evaluated.
- Basic computational skills (MATLAB).

Application (updated): Interested candidates should send their application form through the “Electronic application” item of the following link: <https://www.uv.es/uvweb/administrative-service-staff/en/research-staff/calls/fpi-24/cpi-24-530-1285937983159/ConvPASInves.html?id=1286402710830>. Suitable candidates will be contacted to continue their evaluation including an online interview for more details.

Deadline (updated): November 5th 2024.

Project overview: COSENO(PI) project relates with the development of new methodologies in QPI mainly applied to microscopy working with or without imaging lenses. Some examples are coherent superresolution in digital holographic microscopy concerning diffractive or geometrical constraints, quantitative phase measurement and characterization of topographical objects and biosamples, and lensless microscopy/tomography. From the theoretical analysis to the manufacturing of functional prototypes and passing through experimental validation and redesign of experiments, the target is to propose novel techniques for QPI in the field of microscopy.

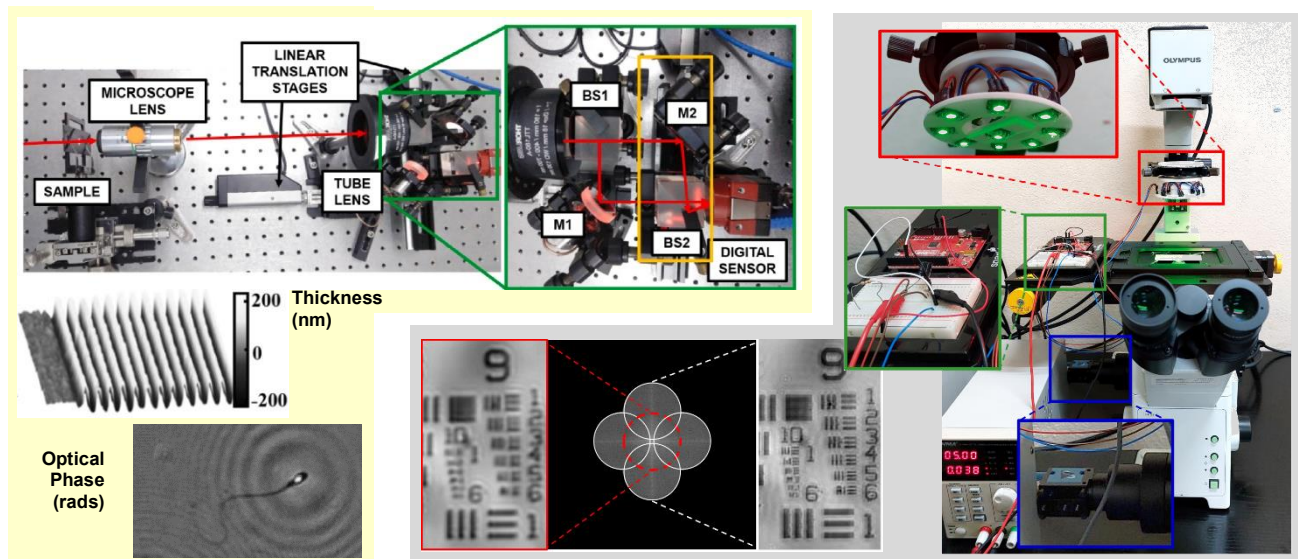


Figure. In yellow background, a compact interferometric arrangement for profile characterization (1D grating) and QPI of biosamples (sperm cell) – V. Micó et al., *Opt. Express* 29, 42738 (2021); R. Rubio-Oliver et al., *Opt. Laser Technol.* 174 110626 (2024); R. Rubio-Oliver et al., *Opt. Laser Technol.* 177 111121 (2024) – and in grey background, modifications on a conventional microscope for superresolved imaging using TIE algorithm – J. A. Picazo-Bueno et al., *Opt. Laser Engineering* 107601 (2023).

The selected candidate will work on the development of new approaches for QPI as a combination of theory and validation through experiments. One possibility is the use of the geometrical phase to improve QPI and search for novel applications. Another possibility is to develop a system for superresolution using TIE at video rate. In addition, the candidate will be part of our international collaborations having the opportunity to carry out international internships in prestigious research groups. He/she will participate in national and international congresses to disseminate his/her results to the scientific community. The candidate will be included in our active research group, thus being in contact with other PhD students working on different subjects in the fields of coherent metrology, novel instruments development, nonlinear optics, transient phase imaging and ultrahigh accuracy phase imaging, research fields well recognized at international level.

We look forward to receiving your application!