

DC 8: Development of an adaptive optics module for nonlinear microscopy based on the use of Multi Actuator adaptive Lenses and wavefront sensor optimisation algorithms.



Project Description: the aim of DC8 is to design an adaptive optics module for nonlinear microscopy based on the use of Multi Actuator adaptive Lenses and wavefront sensor optimisation algorithms. Comparison of results obtained with closed loop systems and sensor-less systems. Optimisation of the wavefront correction for volumetric image acquisition. Additionally, it aims to integrate adaptive optics module in the nonlinear microscope, evaluation of the performance and test with biological samples.

Expected Results: proof of concept design of the adaptive optics module with integrated multi actuators adaptive lens for nonlinear microscopy with wavefront sensor-less control algorithm. Demonstration of the increasement of the penetration depth in biological samples.

Requirements

- Master-equivalent degree in fields of science or engineering related to optics or photonics. The degree must be completed by the start of the PhD.
- Good programming skills in commonly used languages (e.g. Matlab, Python, C/C++, LabView).
- Ability to work both independently and in a team.
- Previous research experiences in optics or adaptive optics or optical microscopy, optical design, optimisation algorithms, deep learning are positively evaluated but not necessary.
- English fluency* (Both written and oral). English fluency can be demonstrated by providing evidence of any of the following: TOEFL (CBT) – >= 210; TOEFL (iBT) – >= 78; TOEFL (PBT) – >= 547; TOEFL (ITP®) – >= 543; TOEIC – >= 720; IELTS – >= 6; Trinity College London – >= ISE II.

*Exceptions for native speakers and applicants having completed a prior cycle of studies in English apply. [Click here to learn more about your specific requirements!](#)

Host Institution: CNR (Padova, Italy)

Supervisor: Dr. Stefano Bonora

Estimated gross allowance: 38,217 €/year

PhD awarding institution: POLIMI

Secondment 1	Secondment 2	Secondment 3	Secondment 4
Partner: UJI Supervisor: Dr. Jesus Lancis	Partner: CWI Supervisor: Dr. Felix Lucka	Partner: FYLA Supervisor: Dr. P. Pérez Milan	Partner: UJI Supervisor: Dr. Jesus Lancis

Planned Starting Date: 12/09/2023 or 01/11/2023 **Application Deadline:** 15/05/2023

Contact: stefano.bonora@pd.ifn.cnr.it