

## Master in Photonics – “PHOTONICS BCN” ERASMUS+ “EUROPHOTONICS”

### MASTER THESIS PROPOSAL

**Dates: April - September 2020**

**Laboratory :** Medical Optics

**Institution:** ICFO-The Institute of Photonic Sciences

**City, Country :** Castelldefels (Barcelona), Spain

**Title of the master thesis:** Neuroimaging toolbox for near-infrared, diffuse optical spectroscopy with laser speckle fluctuations

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**Keywords :** biophotonics; biomedical optics; neuroimaging

### **Summary of the subject (maximum 1 page) :**

We use the laser speckle statistics to measure cerebral blood flow in a non-invasive manner in the adult human brain using near-infrared diffuse optics. In particular, diffuse correlation spectroscopy and speckle contrast optical spectroscopy were developed for use in a wide variety of neuroscientific and clinical applications. In this project, we will adapt and optimize toolboxes developed for functional near-infrared spectroscopy for use with these methods. The student will work with the identification and customization of the toolboxes and their validation from *in vivo* studies with healthy subject and clinical data.



**Additional information :**

- \* Required skills :
- \* Miscellaneous :