



## **MASTER IN PHOTONICS – “PHOTONICS BCN” ERASMUS+ “EUROPHOTONICS”**

### **MASTER THESIS PROPOSAL**

**Dates: April - September 2019**

**Laboratory:** Remote Sensing Lab., CommSensLab

**Institution:** Dept. of Signal Theory and Communications, Univ. Politècnica de Catalunya

**City, Country:** Barcelona, Spain

**Title of the master thesis:** Lidar instrument constant retrievals

**Name of the master thesis supervisor:** Adolfo Comerón / Michaël Sicard

Email address: comeron@tsc.upc.edu / msicard@tsc.upc.edu

Phone number: 934016812 / 934011065

Mail address: UPC, Dept. TSC

c/ Jordi Girona, 1-3, Edif. D3-202

08034, Barcelona, Spain

**Keywords:** lidar system, instrument constant, monitoring

**Summary of the subject (maximum 1 page):** Atmospheric aerosol particles are a key component of the atmosphere, having an important influence on the Earth's climate. Their continuous, long-term monitoring is necessary to detect long-term tendencies, and also for the validation of particle transport models and satellite sensors. Continuous, long-term monitoring implies a thorough monitoring of the system constants in order to detect rapidly any degradation of the system. In this project we propose to retrieve the system constants at the three emitting wavelengths (355, 532 and 1064 nm) with a synergetic approach combining lidar and photometer measurements. In addition to the implementation of the method, the student should also develop a small monitoring script plotting in near-real time the temporal evolution of the system constants in order to help the operator to rapidly detect changes in any of the channels.

#### **Additional information:**

\* Desirable skills: background in atmospheric sciences and notions of Matlab and LabVIEW would be appreciated.

\* Miscellaneous: The UPC closes in August, but the student will have full access to his/her office and should be able to work on his/her own during that month.