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

### MASTER THESIS PROPOSAL

**Dates: April - September 2020**

**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:** Automatic data inversion platform for near-real time lidar retrievals

**Name of the master thesis supervisor:** Alejandro Rodríguez Gomez

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**Keywords:** lidar inversion, aerosol optical properties, automatic platform

**Summary of the subject (maximum 1 page):** The UPC multi-wavelength lidar system, used to monitor the vertical distribution of tiny particles in the atmosphere, is becoming an autonomous system with programmable measurement cycles and rain and aircraft warning sensors. This autonomy has a direct impact on the number of measurements performed which has increased significantly in the last two years. In the meantime the inversion chain, i.e. the algorithmic chain converting the raw lidar measurements into aerosol optical properties, is still a manual process. In this project the student will develop an automatic platform in charge of automatically detect newly saved measurements, convert them in netcdf format, upload them to a European central inversion server, download products and plots, and feed the UPC local database and other European databases linked to international projects in which the RSLab is participating.

#### **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.