

Título puesto: Improvements of the Beam Stability System of ALBA

Curso: 2024/25

División: Aceleradores/Computing

### Descripción del proyecto:

The beam stability of the ALBA storage ring is guaranteed by the Fast Orbit FeedBack (FOFB) system. The beam position is now measured by Beam Position Monitor (BPMs), read by a FPGA and sent to a CPU that calculates the orbit correction. Finally, results are sent to correctors magnet power supply at a frequency of 10 KHz.

The whole system is now working for 10 years but part of the components is getting obsolete and an update of the control hardware including the FPGA is needed. This upgrade foresees the development of many modular pieces of code for the new FPGA.

The student will contribute to the code that provides communication between the Beam Position Monitors and the FPGA, and depending on the progression he will contribute to the development on the correction algorithms.



## Perfil del estudiante:

Student profile: Electronics engineering, Telecommunication engineering, Computer engineering, Mathematical engineering, or Physics student

Requirements:

- Knowledge of FPGA and FPGA programming language (VHDL preferred)
- Knowledge of other programming languages (python, C) will be valued.
- Good level of spoken and written English.

Program:

- Introduction to Accelerators and Fast Orbit FeedBack system.
- Development of the FOFB codes.
- Validation of the code.
- Documentation of the project.

Tutor: Laura Torino

Responsable División: Francis Pérez

