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## Título puesto: Simulation of Synchrotron Radiation Diagnostics for ALBA II Curso: 2025/26 División: Aceleradores

## Descripción del proyecto:

Within the ALBA synchrotron light source upgrade, the development and enhancement of existing beam diagnostics are crucial for designing the new ALBA II machine. Specifically, beam size (or emittance) monitors utilizing synchrotron light require adaptation. Currently, ALBA employs two techniques for beam size measurements: the x-ray pinhole method and Non-Redundant Aperture (NRA) interferometry using visible light.

To adapt these techniques to the ALBA II requirements, simulations are necessary to characterize the synchrotron radiation produced by the new electron beam and to properly design the upgraded instrumentation. After mastering the simulation tools and benchmarking them with the experimental ALBA results, the student will conduct these simulations and contribute to the development of new synchrotron radiation-based instrumentation for ALBA II.





## Perfil del estudiante:

Student profile: Physics, Mathematics student or similar

Requirements:

- Good mathematical skills
- Basics knowledge of Optics
- Experience with python programming language
- Good level of spoken and written English.

Program:

- Introduction to Accelerators and synchrotron radiation
- Introduction to Synchrotron radiation simulations tools (SRW, XOP)
- Simulation of pinhole/NRA for the current machine with experimental verification
- Simulation for pinhole/NRA for the new ALBA II machine

Tutor: Laura Torino Responsable División: Francis Pérez

