

Título puesto: Pulsed Magnet Measurement Bench

Curso: 2023-24

División: Aceleradores

### Descripción del proyecto:

- The injection system of the ALBA light source is undergoing a major upgrade, a new system based on a non-linear pulsed magnet, currently under design will be installed aiming to reduce the parasitic stored beam oscillation observed with the current system. In such a new system the reduction of the perturbation of the stored beam is achieved by combining multiple conductors to achieve the cancellation of the magnetic field at the center of the magnet where the stored beam is located, while providing a sufficient magnetic kick to the injected beam so to achieve beam injection. The precise geometry of the conductors is of primary importance in such a design, furthermore other phenomena can spoil the quality of the magnetic field such as eddy current in the vacuum chamber coating or propagation delay of the signals in the conductors. For this reason the ability to characterize and validate the magnetic system before the put in operation is of crucial importance. A magnetic measurement set-up optimized for the measurement of oscillating magnetic field, based on the vibrating wire technique is currently under development.
- The candidate will study the principle of operation of the vibrating wire technique and will participate to the construction of the set-up. Finally, the candidate will carry out a first set of electrical and magnetic measurement using a functional mock-up of the pulsed magnet.



## Perfil del estudiante:

Student profile: Physics student or similar engineering education

Requirements:

- Knowledge of electromagnetism.
- Experience with programming languages like Python, C or Matlab.
- Good level of spoken and written English.

Program:

- Introduction to magnetic measurements
- Introduction to control system and data acquisition
- Use of Python for data analysis
- Documentation of the project.

Tutor: Michele Carlá

Responsable División: Francis Perez