ALBA
SYNCHROTRON LIGHT SOURCE

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# Título puesto: Pulsed magnets characterization studies for ALBA.

Curso: 2024/25

División: Aceleradores

## Descripción del proyecto:

Several pulsed magnets (kickers and septa) are used to transfer the electron beam between the different ALBA accelerators: linac, booster and storage ring. An understanding of the current pulses is crucial to optimize the beam transmission. In this project we want to analyze the current pulses and correlate its shape with the electronic circuit components of the pulsed power supply. To control the current pulses ADC cards have been recently installed at each pulsed magnet.

The selected student will be introduced to the ALBA pulsed magnets and their corresponding pulsed power supplies (components and circuits). He/She will make use of the ADC acquisition setup to analyze the data by applying circuit analysis in the pulsed power supply electronics in order to obtain the analytical expression of the pulse. Then, by means of a script/code fit the previous expression and the reading. This will give us the ability to read the equivalent magnitudes of the circuits (capacitance, inductance and impedance) directly from the pulse, as well as the usual operation parameters like pulse maximum, and delay.

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## Perfil del estudiante:

**Student profile**: Physics, physics engineering, electronics, telecommunication or similar.

**Desirable:**

- Knowledge of electronics and electromagnetism.
- Experience with programming languages like MATLAB or Python.
- Good level of spoken and written English.

**Program:**

- Introduction to accelerators and pulsed magnets.
- Measurement and modeling of pulsed magnets.
- Documentation of the project.

Tutores: Pablo Lengua / Jaume Casanova
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