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#10-254 EASY: Educational Alibava System

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EASY, a plug-and-play educational system, is portable, compact and a complete system for microstrip sensor characterization. Ideal for making basic or complex experiments. It is based on the Alibava System, largely used within the CERN community to test micro-strip detectors for particle experiments. The system can be configured to work with laser light or radioactive sources.

The aim of this system is to illustrate students in the operation of a silicon strip detectors, in particular:

- To observe the noise of a silicon strip detector as a function of bias voltage-
- To observe the signal spectra due to a minimum ionising particle in a silicon detector and demonstrate the Landau distribution shape of collected charge.
- To determinate the Charge Collection efficiency of a silicon detector and depletion voltage.
- To observe charge sharing between strip and relate this to the position resolution of the detector.
- To illustrate the structure of a typical micro-strip detector.
- To compare the charge deposition of minimum ionization particles and gamma particles.
- And, to calculate the laser penetration in silicon.

The components of the EASY systems are the Control Unit and the Sensor Unit. The Control Unit is the heart of the system communicating with the Sensor Unit and the Computer software. It contains the Data Acquisition Control and it is also in charge of processing of the sensor data and trigger inputs. In addition, it contains an adjustable Hight Voltage unit for microstrip sensor bias, with voltage and current display and Includes the laser source. The Control Unit communicates with computer software via USB. The Sensor Unit accommodate a p on n silicon micro-strip sensor segmented in 128 strips.

EASY comes with an activity book where the students, through 10 exercises, are introduced in the main concepts and functionalities of microstrip silicon detectors, used in the actual particle physic experiments. The book also provides a full description of the EASY device and the data Acquisition system.

Primary author: GARCÍA, Carmen (Instituto de Física Corpuscular (CSIC-Universidad de Valencia))

Presenter: GARCÍA, Carmen (Instituto de Física Corpuscular (CSIC-Universidad de Valencia))

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