Capitolo 4

Beam test for SSD modules

Before the production of SSD module for the Alice ITS detector starts, we performed some tests using minimum ionizing particles by Cern PS, to study how the prototypes work. In detail we studied three modules with different readout chip setup. Beside the tests on single module, we performed also telescope measure; in this way also the study of module resolution caould be possible, by the development of alignment and tracking algorithms.

The data were used to correct the simulation parameters explained in the previous chapter, as it will be shown in the chapter 5. Moreover, we found the power supply conditions that allow the detectors work at the best. Particularly we studied the noise as a function of the bias voltage and the clusters signal-to-noise ratio. We tested several arrangement about high voltage and low voltage, using a linear power supply for low voltage and two other power supply for each high and low voltage. The study of CAEN A1517A was really interesting because it will be used also in Alice because of the possibility of intefacing to the electronic system and to the control software.

A third goal was the scan of the modules surface, to verify all strips work. For this we used time by time a different trigger whichincluded also one or two small scintillators, placed on the area to be studied.

4.1 Sperimental setup

The measurement setup is a compound of two plastic scitillators which form the master trigger, of the module or telescope to be tested, and of other three scintillators for surface scanning (figure 4.1, 4.2 and 4.3). Using the telescope, its 4 modules are placed in a special support, far 3 cm each other, and an other trigger scintillator is used (see figure 4.4).