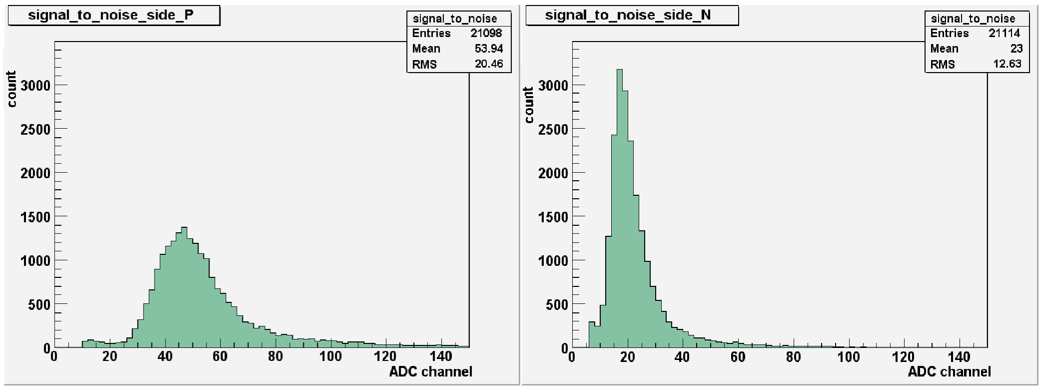

Figura 4.21: Signal-to-noise ratio.

	average (ADC channels)	σ (ADC channels)
P	43	6
N	17	2

Tabella 4.4: Fit parameters of the signal-to-noise ratio distribution.

Beam profile and charge distribution

At this analysis step it can be interesting looking at the integral of the signal on the strips. This is important to verify the cluster finding algorithms, because it allows to display their position. The upper part of figure 4.22 shows the scatter plot of the cluster charge as a strip function; in the lower part, the beam profile is the projection of the scatter plot along the x-axes. The beam profile is expected to have a gaussian progress; it is cut by the trigger *French* scintillator, placed as shown by figure 4.23. The figure 4.23 shows the SSD module twice to rappresent both the sides, as the distributions of figure 4.22. Both the hstograms are simmetric respect to the 768 strip; in fact the strip from 0 to 767 are the P-side ones, while the strip 768 is the first of N-side.

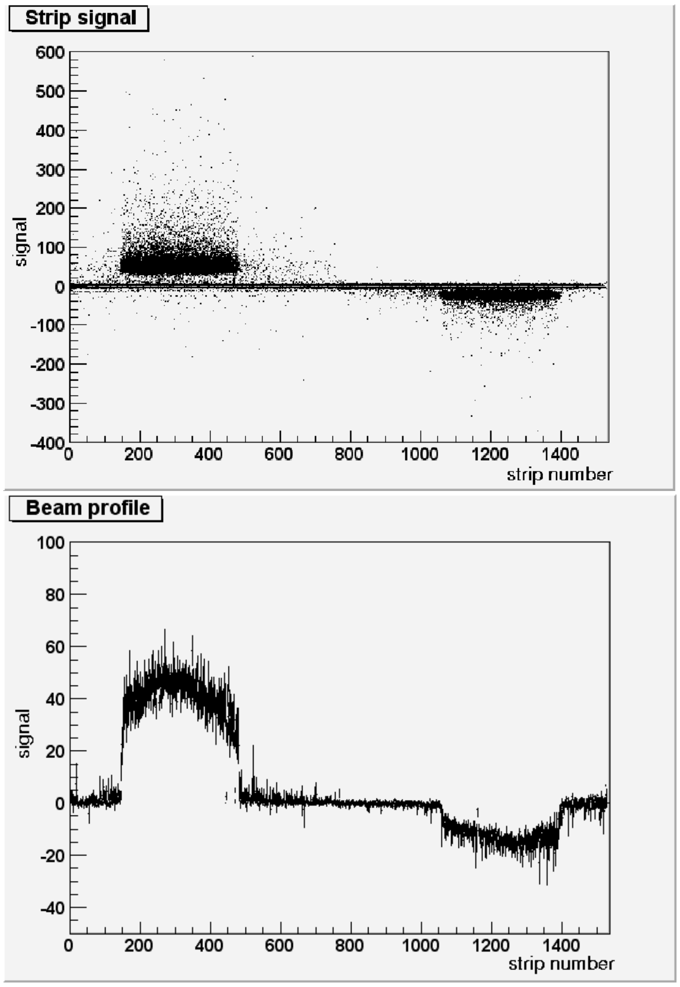

Figura 4.22: Histogram of the strip with a signal over four times the noise. We expect a simmetric distribution respect to the 768 strip. The gaussian profile of the beam is cut by the *French* scintillator (see fig. 4.23).

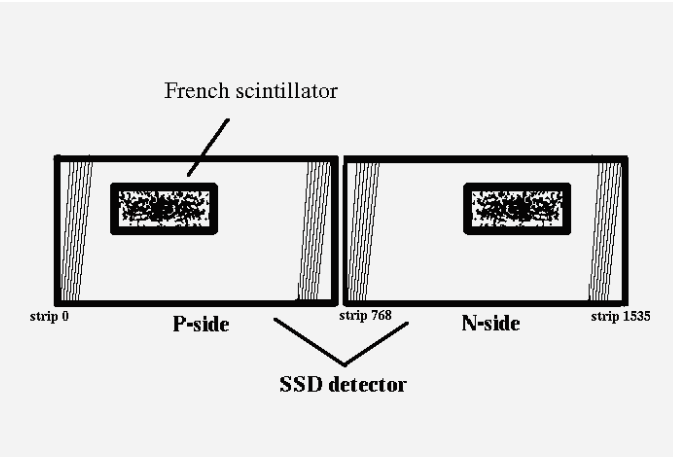

Figura 4.23: Placement of *French* scintillator respect to the SSD module. The SSD module is drawn twice to rapresent both the sides, as the distribution of figure 4.22.

4.4 Beam test using a telescope

As said, in a second measure shift we used a telescope with five detectors; each time we switched on only four of them beacause of DAQ limits.

For these tests new power supply systems and new DAQ system were developed, and these are more similar to the ones will be used in ALICE than the previous beam test. Moreover, using a telescope allow to track particles, so we can study also the spatial resolution of the modules.

From the clusters, reconstructes as in the paragraph 3.4.1 and 4.3.3, is possible to obtain the geometrical points where a particle went through the module, using the algorithms already implemented in ALIROOT. A linear fit on the points of three modules per event allows to reconstruct the track of the particle. The distance from the so obtained line to the reconstructed point on the fourth module is the *residue*; the distribution of the residues calculated for all the events of a run give the *spatial resolution* of the module.

To recontruct the track we need the alignment of the modules. The modules were placed manually in the telescope, so we expect disalignmentalong the three axes of the order of hundreds of micron and rotation of the order of milliradiant. These facts introduce errors from hudreds of micron to millimiters, almost two order bigger than the expected resolution.

At the moment the analysis of the data collected using a telescope is still in progress; preliminary results agree with what we expected [3].

4.5 The graphical interface BETEA (BEam TEst Analyzer)

Before the tests using a telescope of detectors, we develop a graphical interface to analyze the data and display the results. The analysis program developed before this needed specific technical and informatic knowledge to be used; a simple graphical interface allows to analize the data intuitivly, without knowing any specific tschnical knowledge.

In the interface development I decided to do a complete analysis also for noise runs. Moreover only the most common options can be displayed: pedestal, noise, signal-to-noise ratio, cluster size. I chose these options to create a simple program, usable by all the measure team.

As all the analysis, also the grphical interface is based on the ROOT libraries and it is written using C++. This choice required to transform the analysis programs, at the origin indipendent each other and recalled by specific shell-scripts, in C++ classes. The figure 4.24 shows how is the interface.

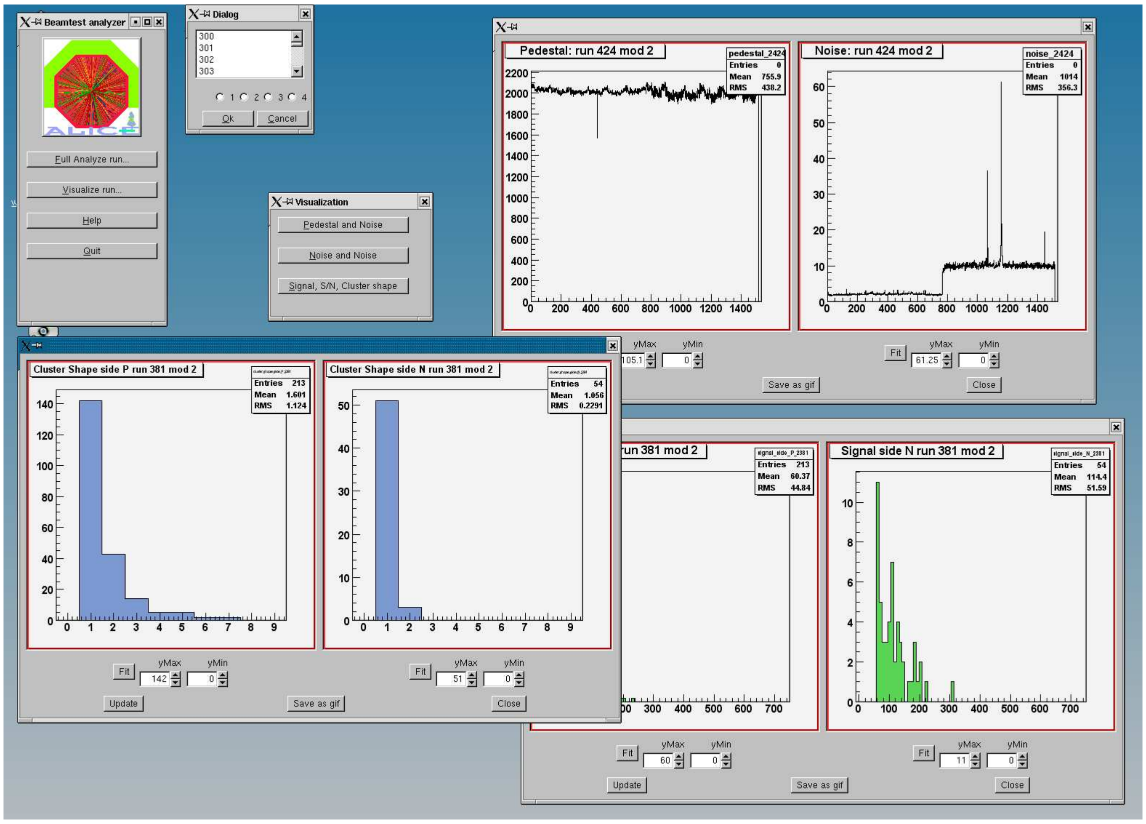

Figura 4.24: The graphical interface Betea at work. There are the master interface, with the ALICE logo, some dialog windows for analysis and the final results presentation.