

===== for ODC&Scifi (figure is [odc_residual.eps]) =====

We did an experiment to evaluate the performance of 2 drift chambers(ODCs) and scintillation fiber detectors(Scifis) which are to be installed for the BESS 2002 balloon experiment. ODC is a thin drift chamber of a mixture of 90-10 % CO₂-Ar gas having 4 sensitive planes.

Scifi consists of 2 layers of 64 square-shaped plastic scintillation fibers. The Light output is collected by 16-ch multi-anode PMTs.

4 Scifis were placed at the front and back of each ODC along the beam direction and used to calibrate drift parameters.

The beam position and angle into ODC are changed variously. We can collect clear and high quality data which are impossible to get using cosmic muons.

The spatial resolution of ODC was measured as about 100 microns which is as good as our target value. (figure)

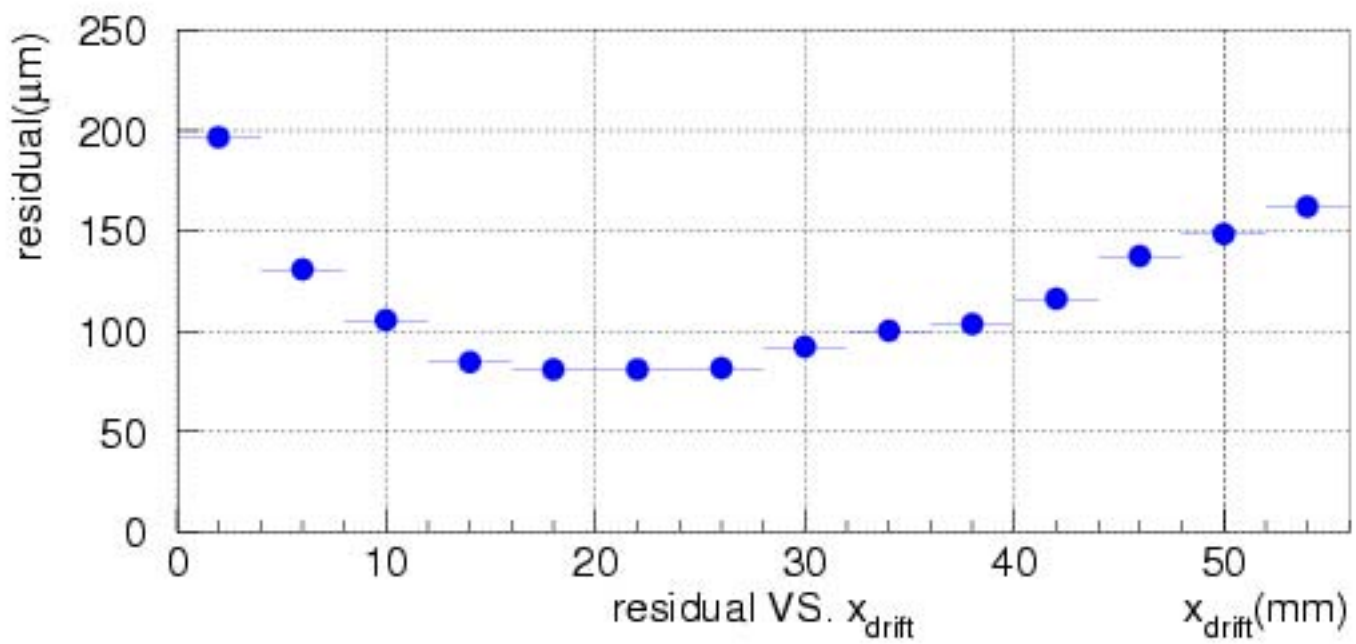
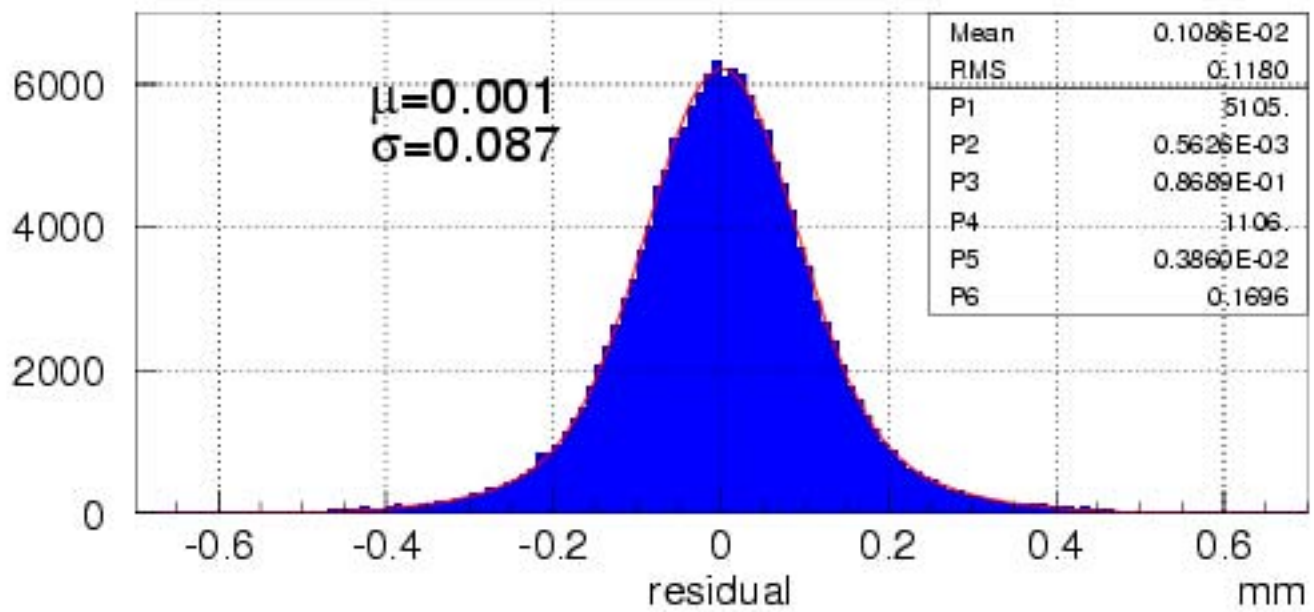
===== for Middle TOF (figure is [run5t.z-dep4.eps]) =====

We also tested the middle time-of-flight(TOF) counters for low energy anti-proton measurement in BESS-Polar experiment. The counters are planned to locate within the magnet of BESS-Polar detector, and low energy particles which will stop in the bottom half area of the magnet can be detected and identified by TOF between upper TOF counter and middle TOF counter. The energy range covered by middle TOF counter is important for the search of primary anti-proton which may be distinguishable from secondary anti-protons.

We prepared 4 types of the test counters. In the beam test, we investigated the performance of these counters. Position dependence of ADC(dE/dx) and timing resolution were obtained for proton and pion beam of +0.5 and +1.0 GeV/c. (figure)

The timing resolution for +0.5GeV/c proton beam ranges from 200 to 600 psec, and this performance is enough for the separation between anti-protons and negative charged muons at low energy where use of the middle TOF is only the way to identify.

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z dependence (timing reso. for pion and proton)

