First study of muon MIPs using truncated means, uniformity

Vladislav Balagura LLR – Ecole polytechnique / IN2P3 / CNRS 10 Mar 2016

You may find my old analysis of cosmic muons with the previous PCB FEV8, dating back to 2013-2014 attached to the same Indico page (this was a report for ANR grant).

Run 361, DIF 1, all channels, example

Pedestals are subtracted as explained in last presentations: using events without any retriggers (even without BX+3 in any other chip). MIP signal below is for all channels (ADC-pedestal>10). Only events above 40 (left blue line) are considered. Right blue line separates 57% - 43% of remaining points MPV is taken as the truncated mean between two blue lines



All standard runs, layers, channels

All channels having Nev>50 above ADC-pedestal>40 in all 9 two-hours muon runs with standard configuration (spill, angle) have been analyzed. In average: 83% of all channels. Not enough statistics at the corners. Truncated means (=MPV) are given below. RMS/mean = 6.4% (17682 entries = MIP spectra).



Some structures are visible

Even in one run one can see several MPV peaks (here all DIFs combined)



Some structures are visible

Even in one run, one layer and one chip, the channels (randomly) may form two MPV peaks



Plans

Fit MIP spectra with Landau + resolution + S-curve. The latter is due to trigger threshold which is common, but S-curves are channel dependent.