Offline software development and data analysis (KSC).

E.Choumilov, KSC meeting 11.09.2010

1) TOF calibration (using sea level muons at KSC) :

a) A-side DAQ-files taken on 31.08.2010 were used. Complete set of calibration parameters (T0s, slewing correction , relative gains and absolute normalization) were extracted and used for reconstruction. Applied TDC linearity corrections were extracted from test beam data (just because require big statistics and these data were taken on A-side).

The calibration quality is illustrated on fig.1-5. Calibration is also good for later DAQ A-side files (AMS is in stable conditions).

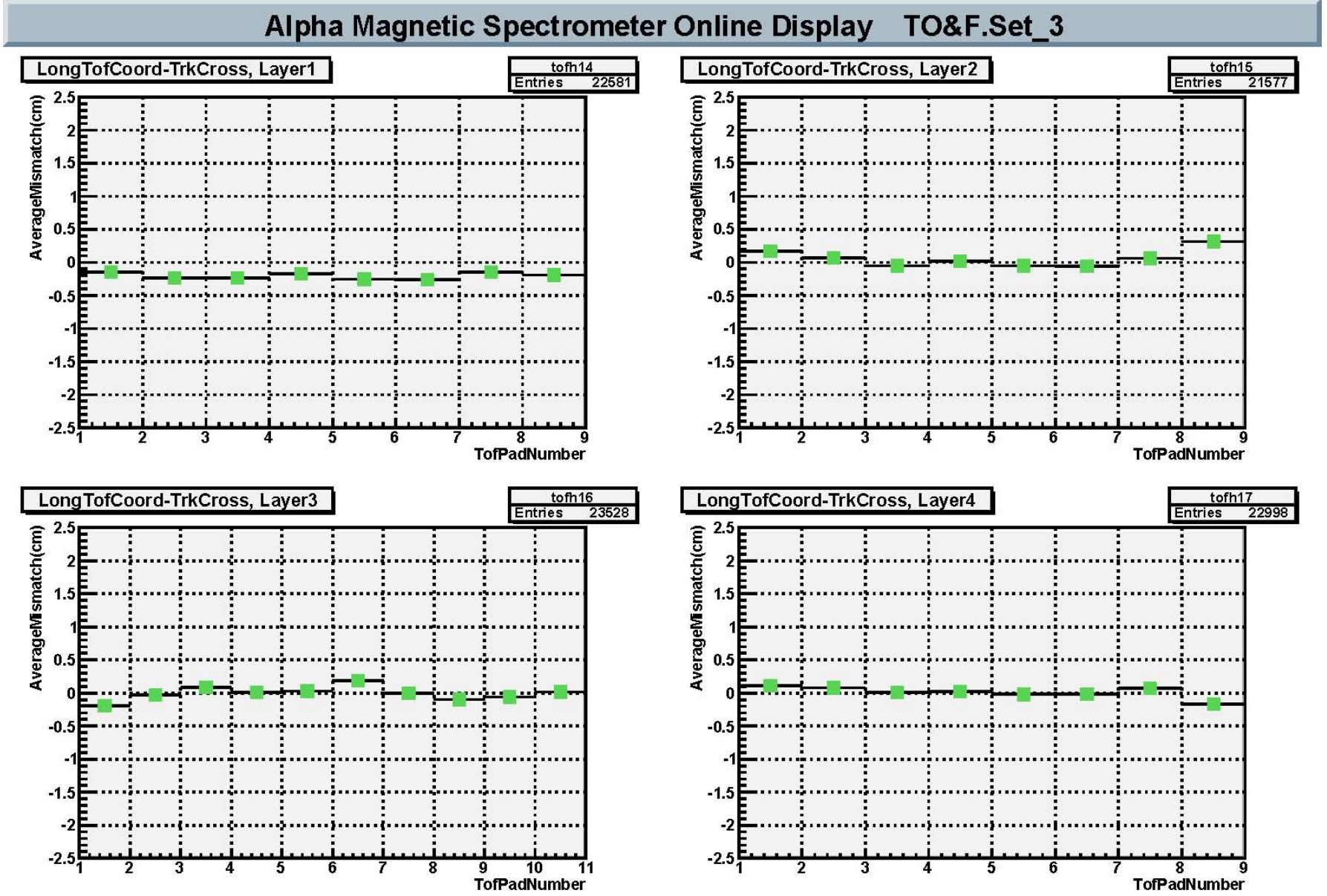

Fig.1. TOF-TRK longitudinal coordinates matching.

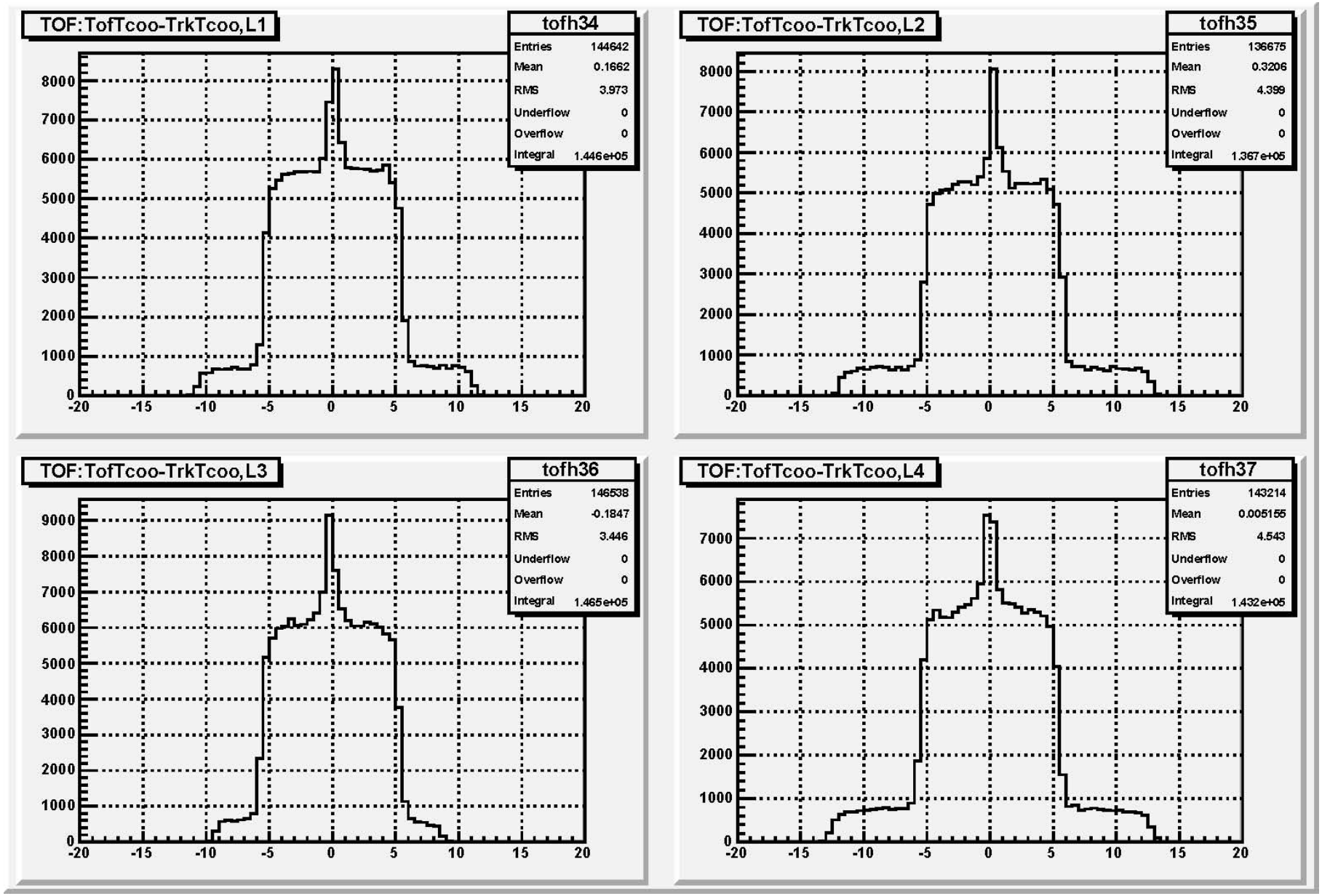

Fig.2. TOF-TRK transversal coordinates matching.

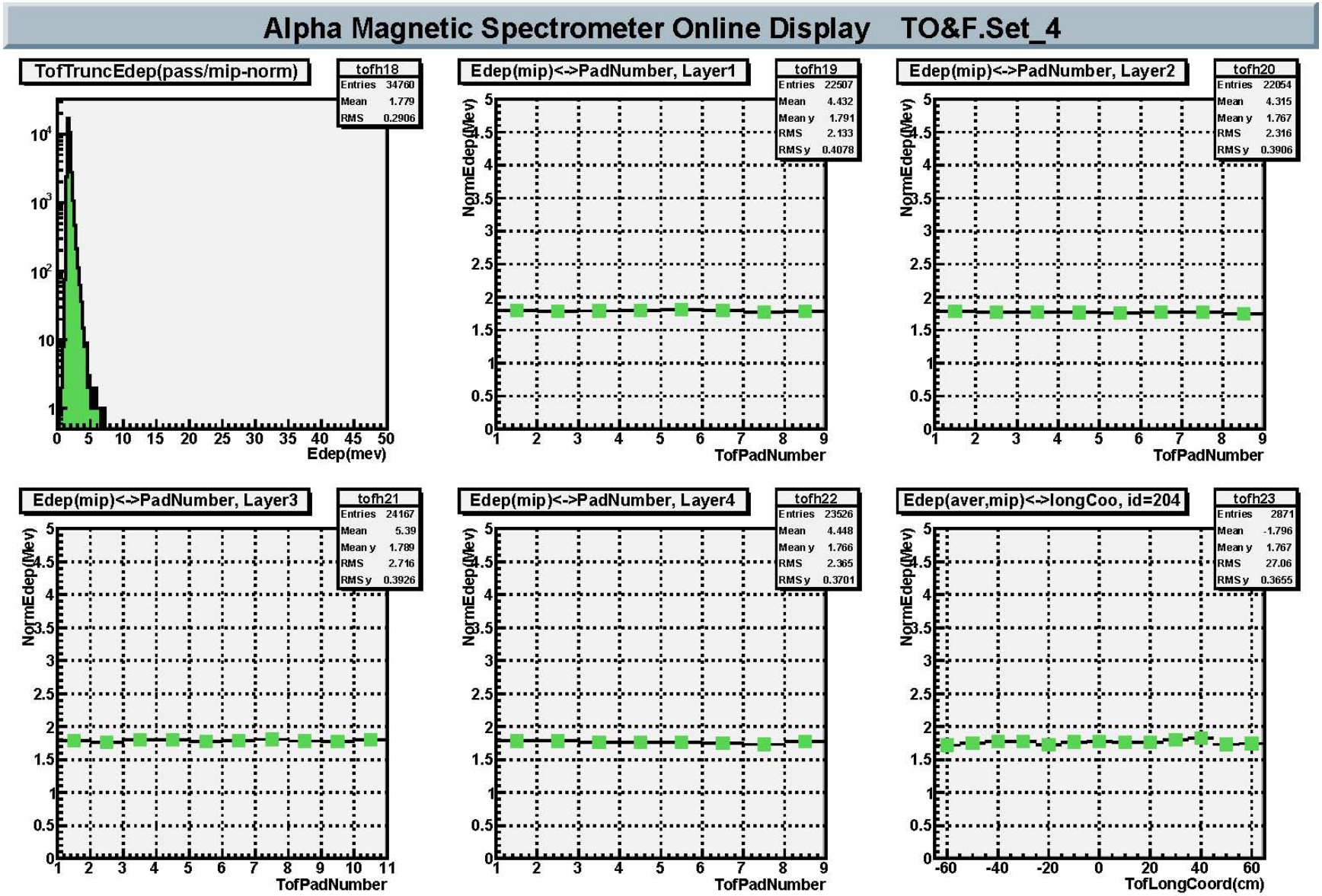

Fig.3. Energy deposition measurements uniformity.

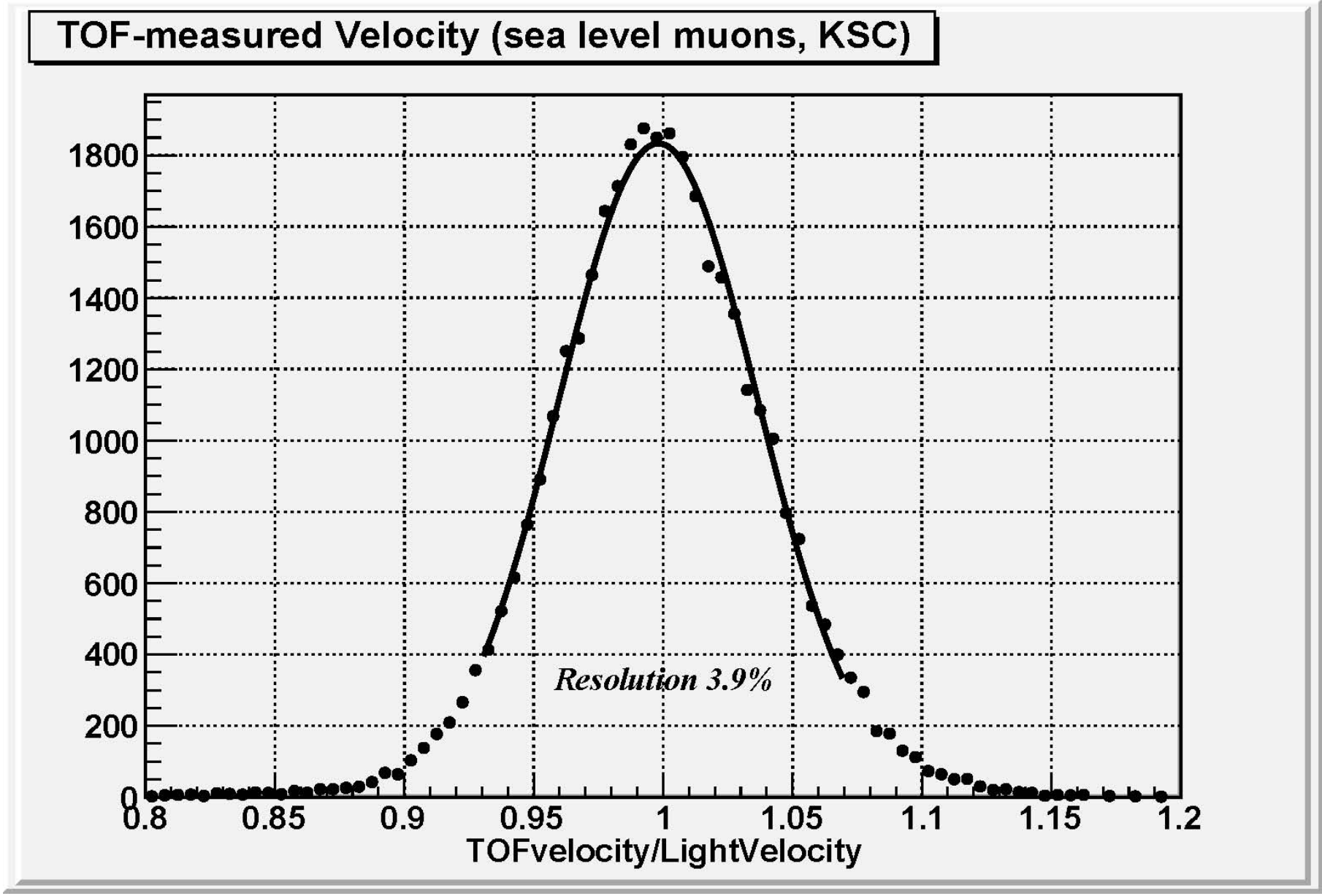

Fig.4. Beta resolution (at Beta=1, A-side, outer counters not included).

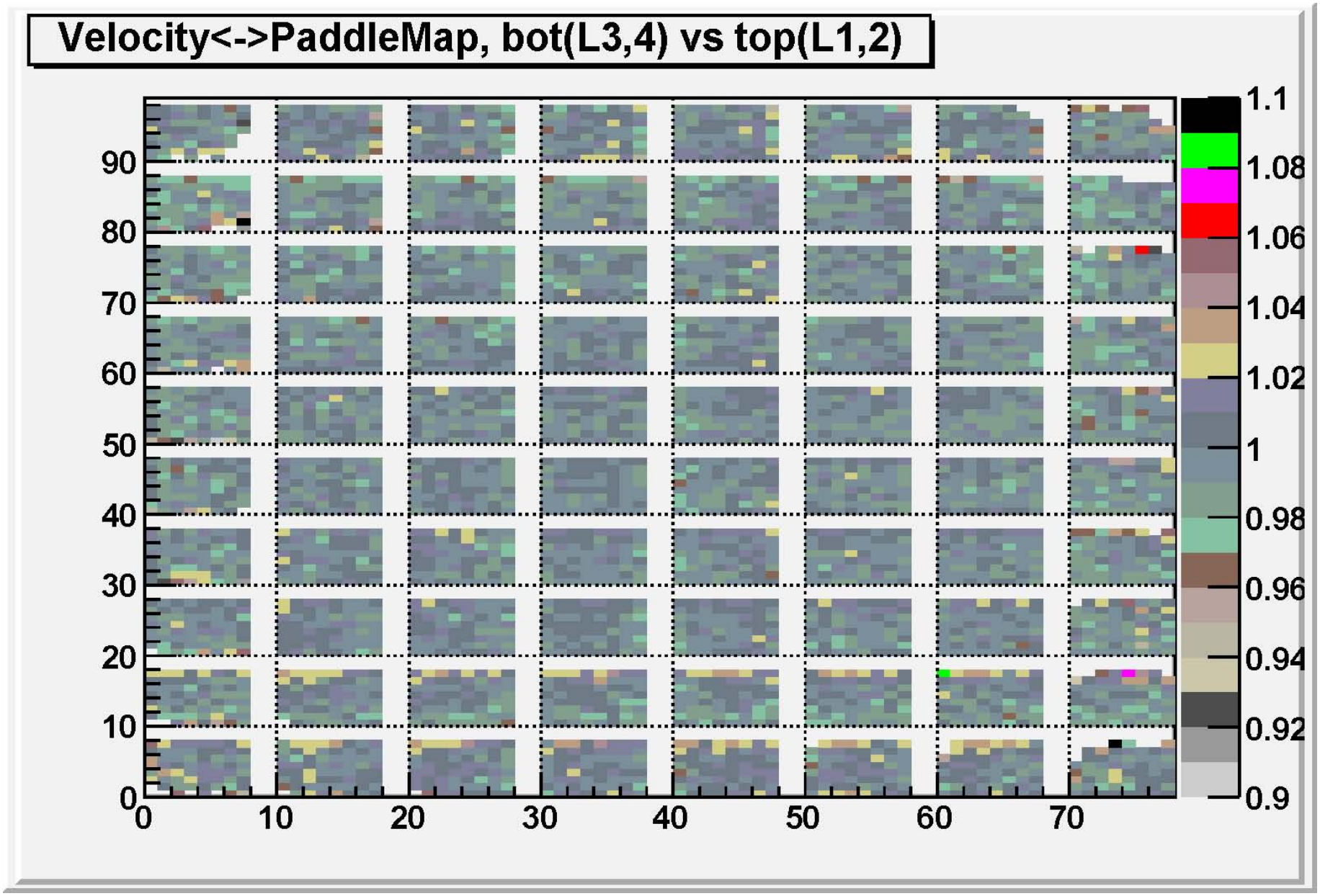

Fig.5. Average TOF velocity for every paddles combination (4 layers events).

b) B-side calibration was done using DAQ-files taken on 18-21.09.2010.
The same A-side set of TDC linearity corrections was used.
Beta resolution is shown on fig.6 and is closed to A-side one.

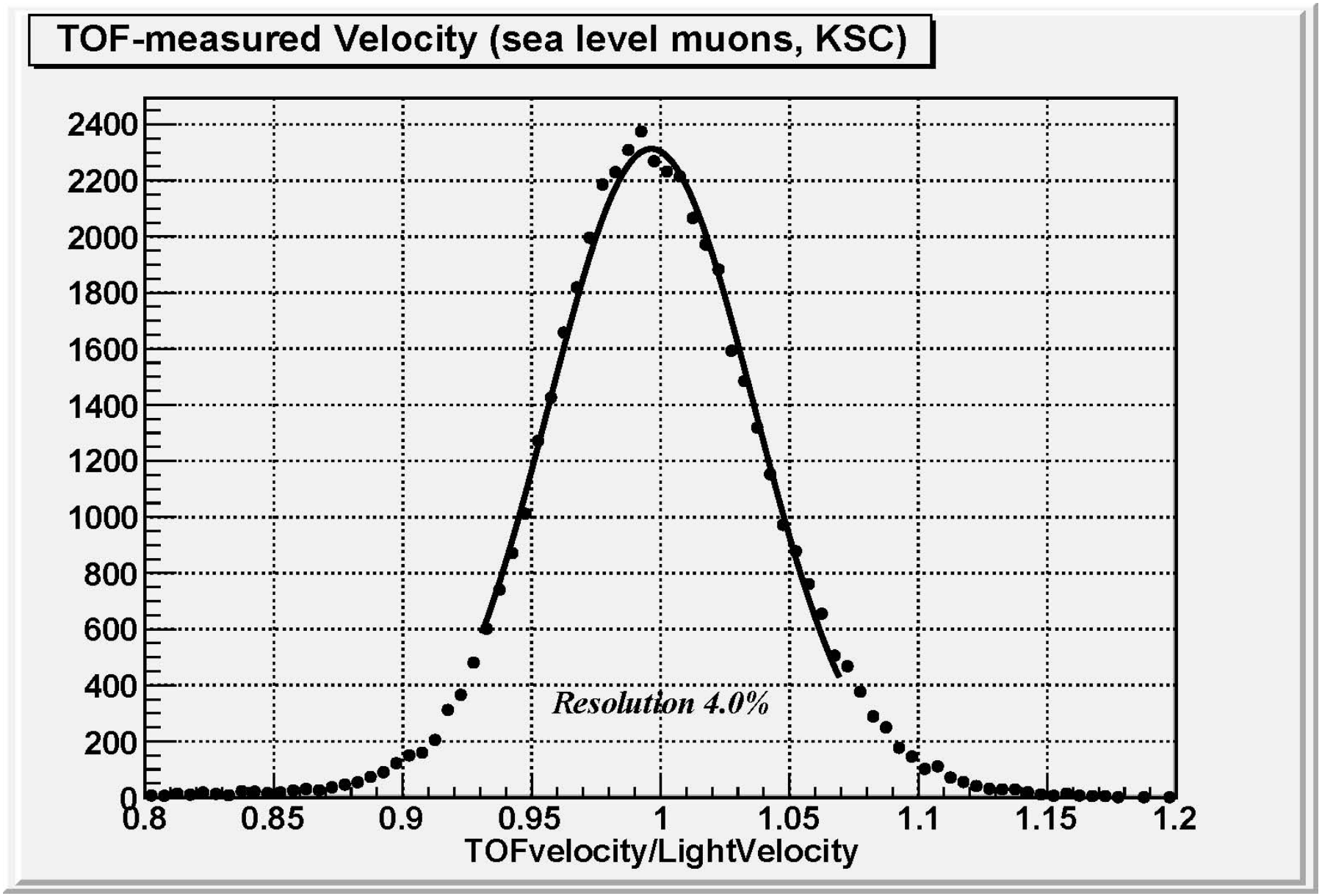

Fig.6. Beta resolution (at Beta=1, B-side, outer counters not included).

2) Test beam data :

a) TOF-velocity systematic shift for events with top and bottom impacts is confirmed. First time was seen in clean room horizontal runs. Now test beam data with opposite impact direction are used. The same paddles combination 5/4/5/5 (layer1->4) was considered. See fig.7

b) ECAL relative gains and high/low gain ratios calibration was done using 180gev test beam protons (+ pions) with different impact points and directions. These events cover whole calorimeter. The results are stored in the AMS Data Base.

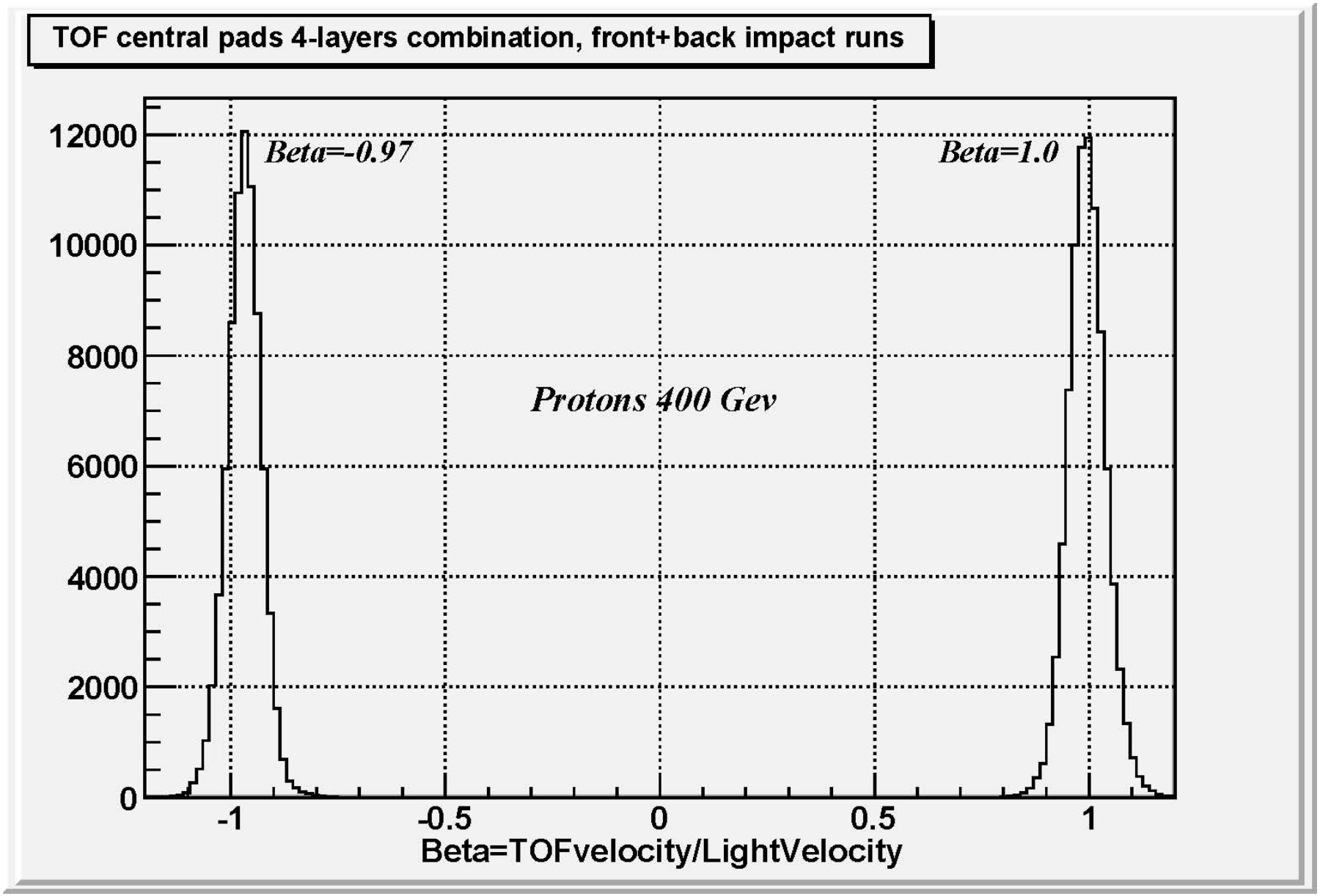

Fig.7. Top (beta>0) and bottom (beta<0) impact directions comparison.

3) MC software development (debugging of DAQ-files writing mode) :

a) TOF/ACC/LVL1 codes tested – OK

b) ECAL codes tested, bug fixed – now OK

c) TRD codes tested (by TRD group) – OK

d) TRK(PG) codes tested (debugging by P.Zuccon).
Working but need some additional study by TRK-group.
TRK (old version) tested – OK

4) First priority tasks:

a) TOF simulation software tuning using cosmic muons and TB data; incorporation of TOF temperatures readings into offline reconstruction.
b) ACC simulation tuning, calibration codes revision. New ideas + codes welcome (by whom ?).
c) ECAL abs. normalization calibration on orbit (existing codes need to be revised and tuned on TB data, new ideas (codes) welcome.

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