

Preliminary results from winter data

D. Attié, P. Colas, M. Dixit, Yun-Ha Shin
(most of the plots from Yun-Ha)

Thanks to all who participated in shifts and preparation of the December test:

Klaus Dehmelt, Ralf Diener, A. Kaukher, T. Matsuda, D. Peterson, O. Schäffer, Lea Hallemann, Bakul Gaur, I. Giomataris, F. Hegner, Xavier Janssen, Gilles de Lentdecker, Marc Riallot, Jan Timmermans, Robert Volkerborn, Ryo Yonamine

B= 1T runs. Data from december 2008. z absolute values are under-estimated by 11mm

Z = 5.4, 11.1, 21.1, 31.1, 41.1, 51.1

Peaking time 100 ns, 200ns, 500ns, 1 μ s, 2 μ s

Zbeam vs Shaping Time

NOTE: 287, 288, 304, 305 : Before changing TPC angle !!

Standard (Edrift=230 V/cm)							Low diffusion (E=140 V/cm)				
	100	200	500	1000	2000		100	200	500	1000	2000
4.3	311	309	310	* 287	* 288			308	307	* 304	* 305
10	395	396	397	398	399		407	408	409	410	411
20	353	354	355	356	357		363	364	365	366	367
30	329	333	334	335	336		330	343	344	345	346
40	373	374	377	378	379		385	386	387	388	389
50	312	313	314	315	316		326	430	431	432	433

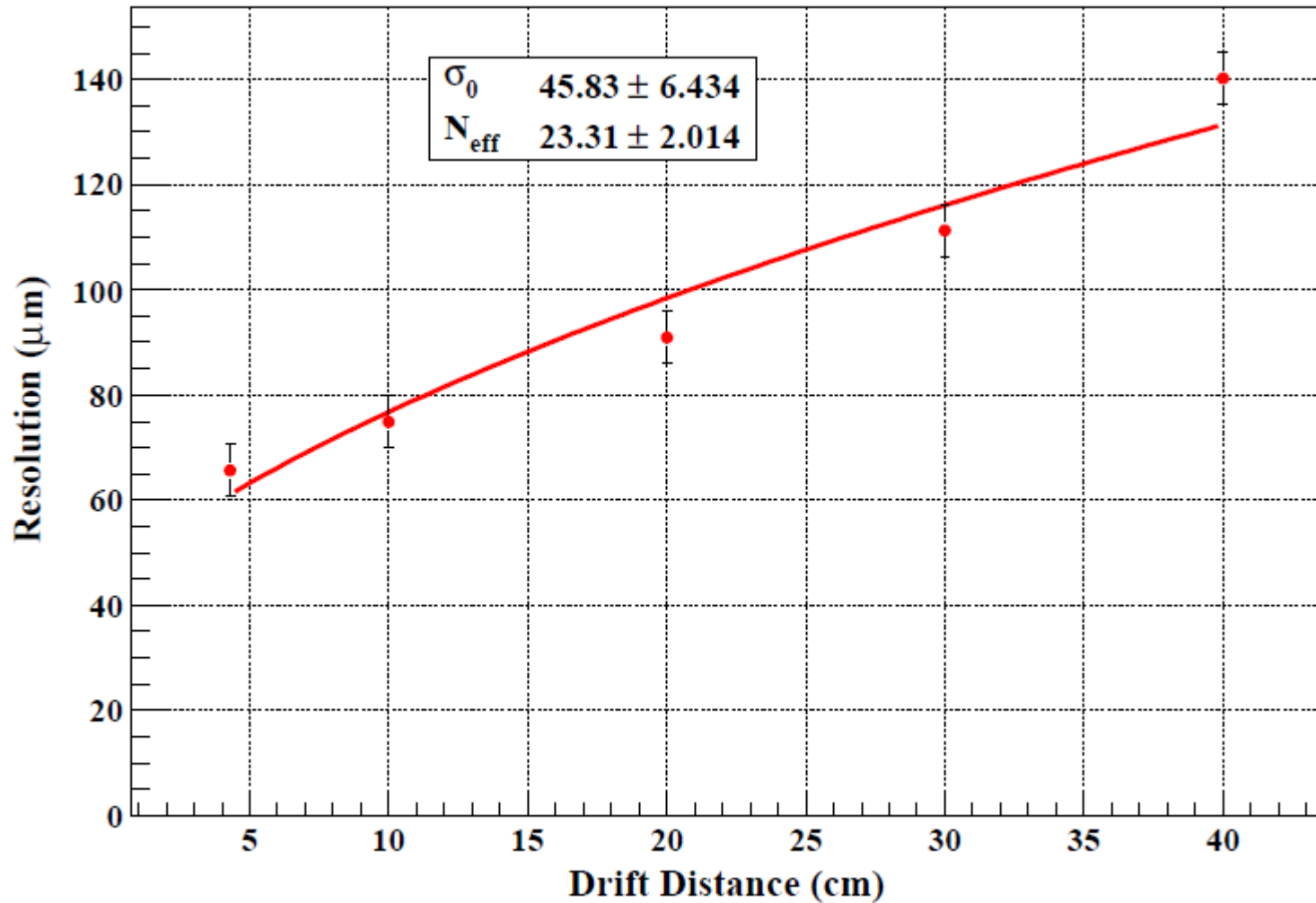
C_D for standard conditions at B=1T :

94 μ /√cm in standard conditions

and

71 μ /√cm in low-diffusion conditions

Result for TIPPO9 : $\sigma_0 = 46 \pm 6 \mu\text{m}$



This was with rows 5-21, and the point at 50 cm was not in the fit

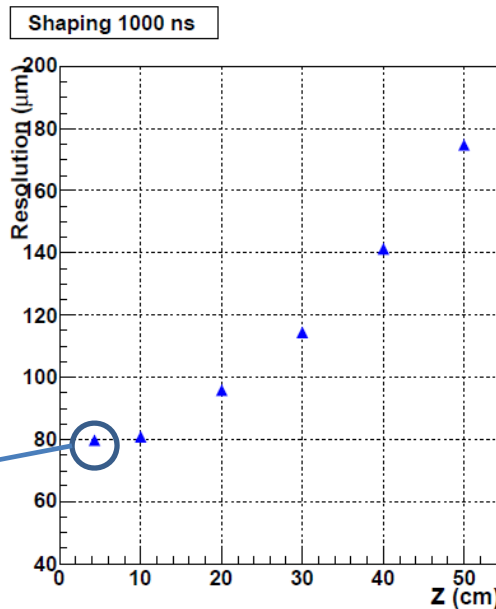
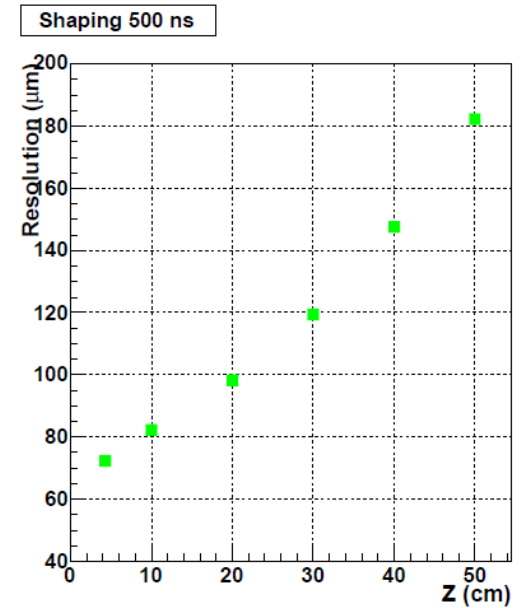
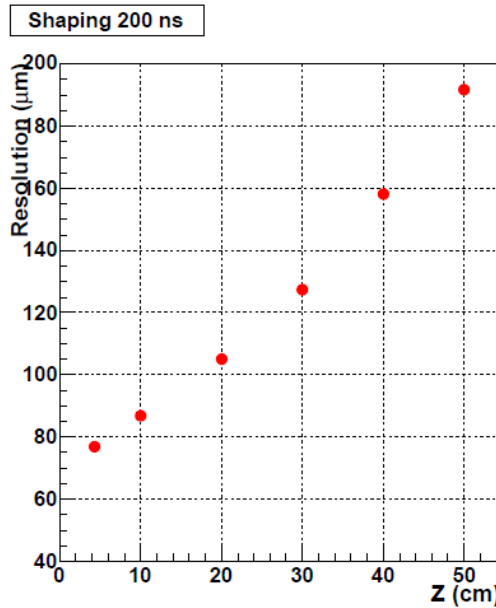
Resolution slightly better at longer shaping

However not the expected \sqrt{z} behaviour.

Apparent loss of N_{eff}

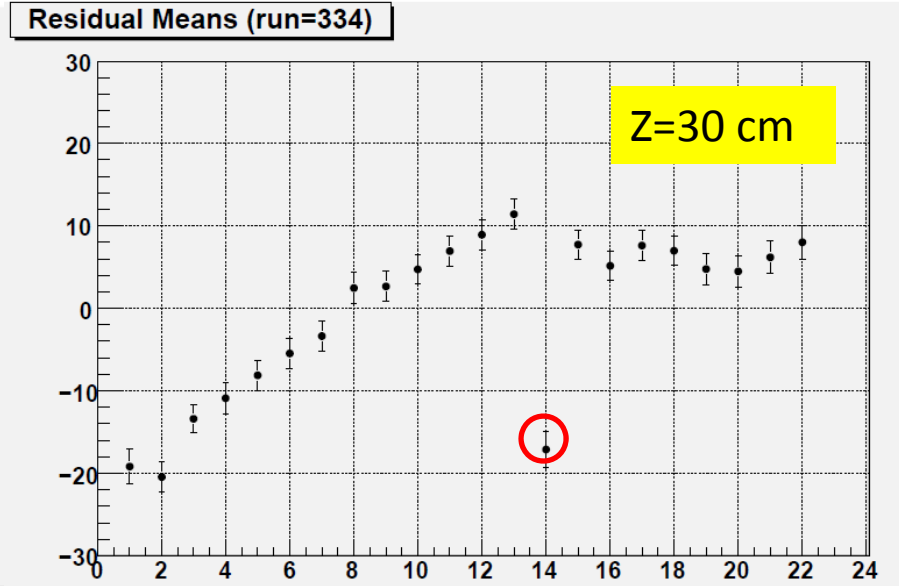
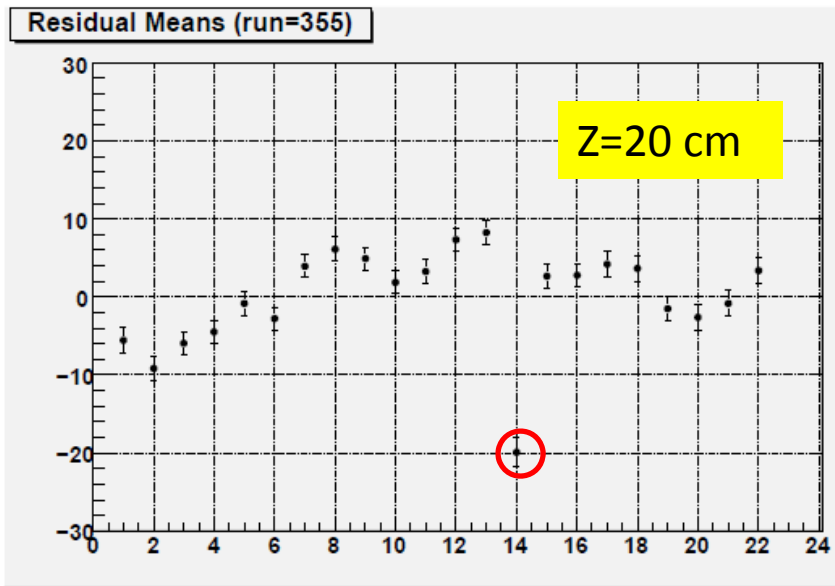
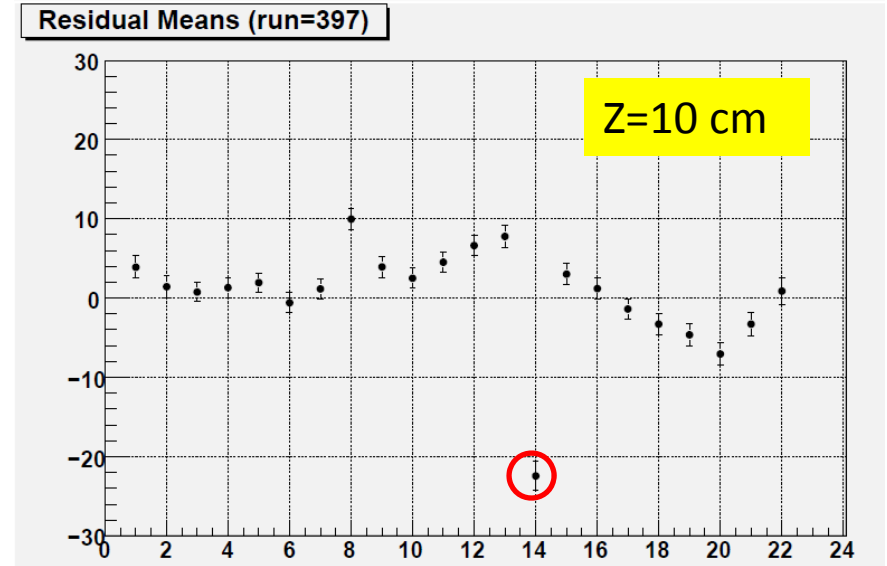
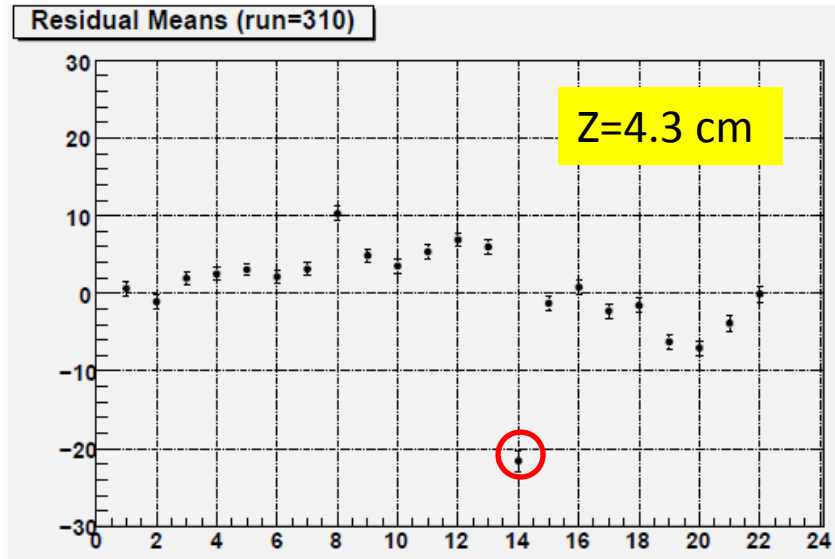
What can be the reason?

- distortions? (E, B inhomogen.)
- loss of electrons due to longitudinal diffusion

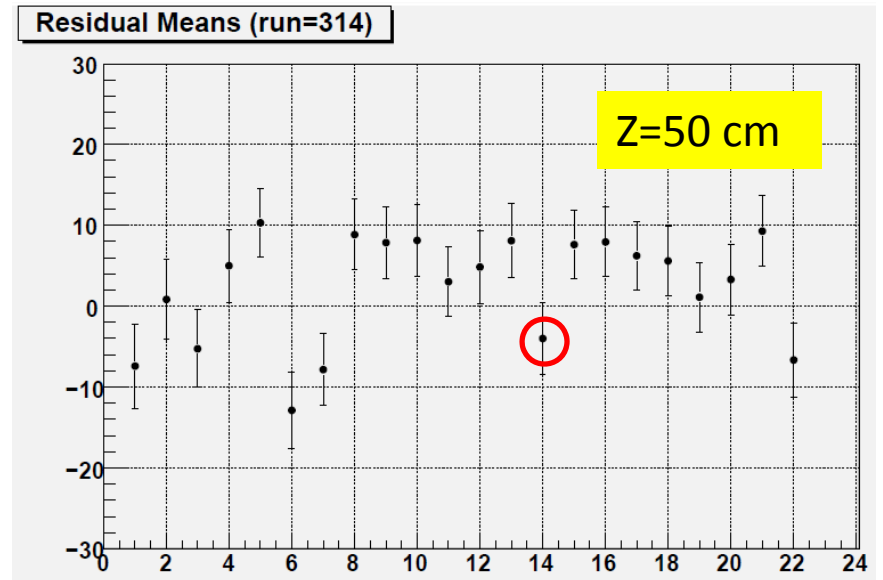
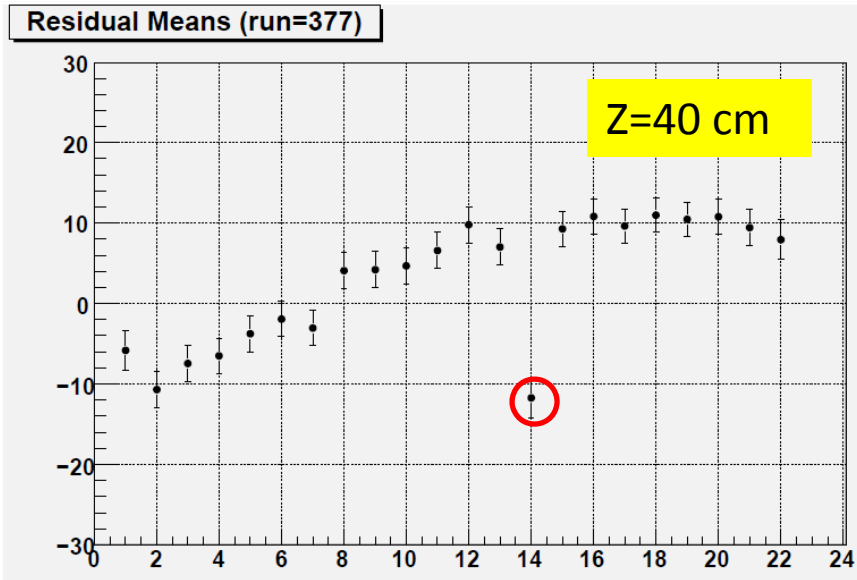


TPC was rotated

DISTORTIONS : LOOK AT MEAN RESIDUALS wrt CIRCULAR TRACK FIT



DISTORTIONS : LOOK AT MEAN RESIDUALS wrt CIRCULAR TRACK FIT

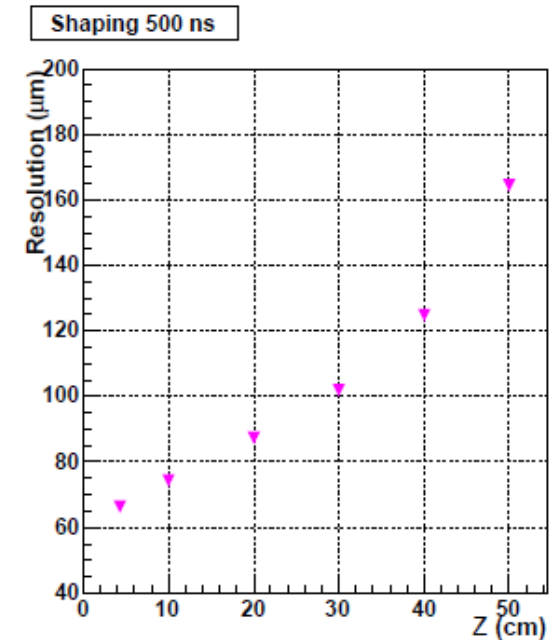
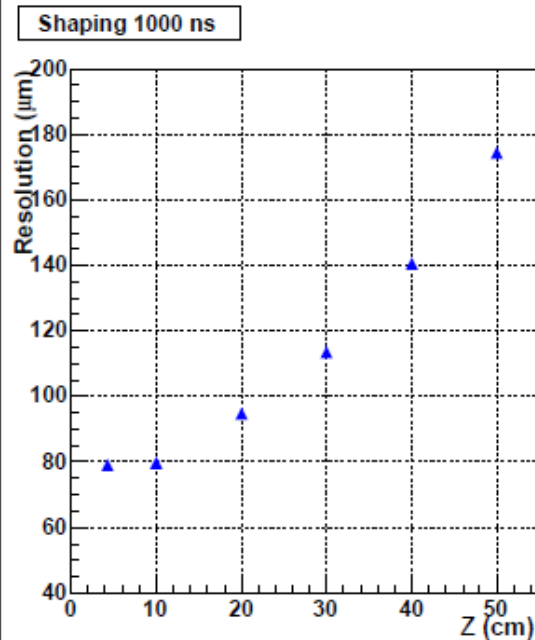
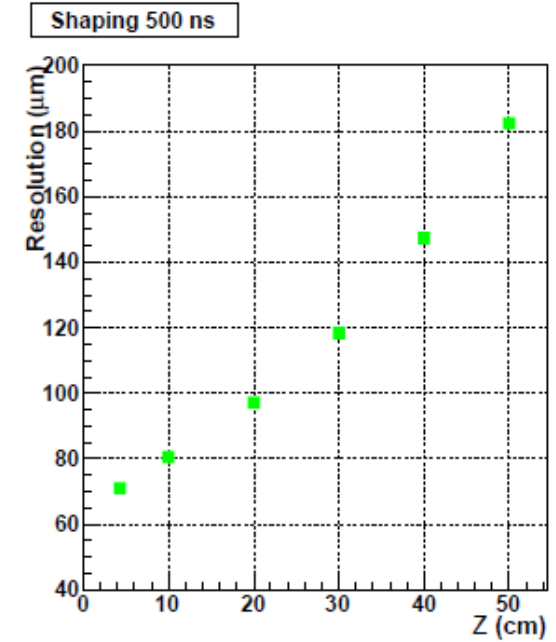
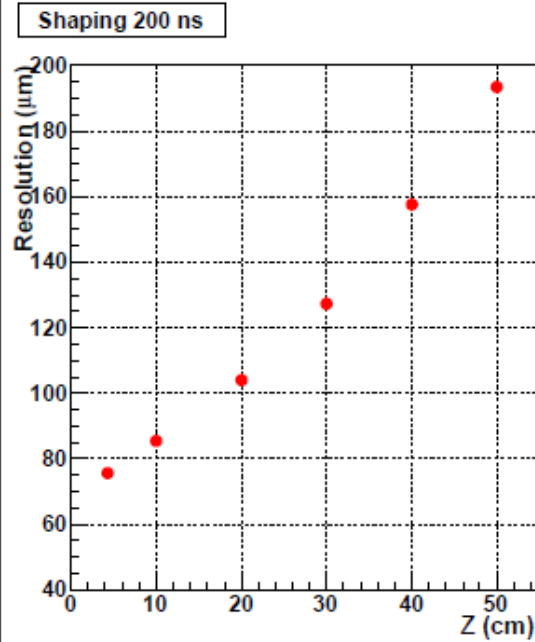


Row 14 systematically off by 20-25 microns

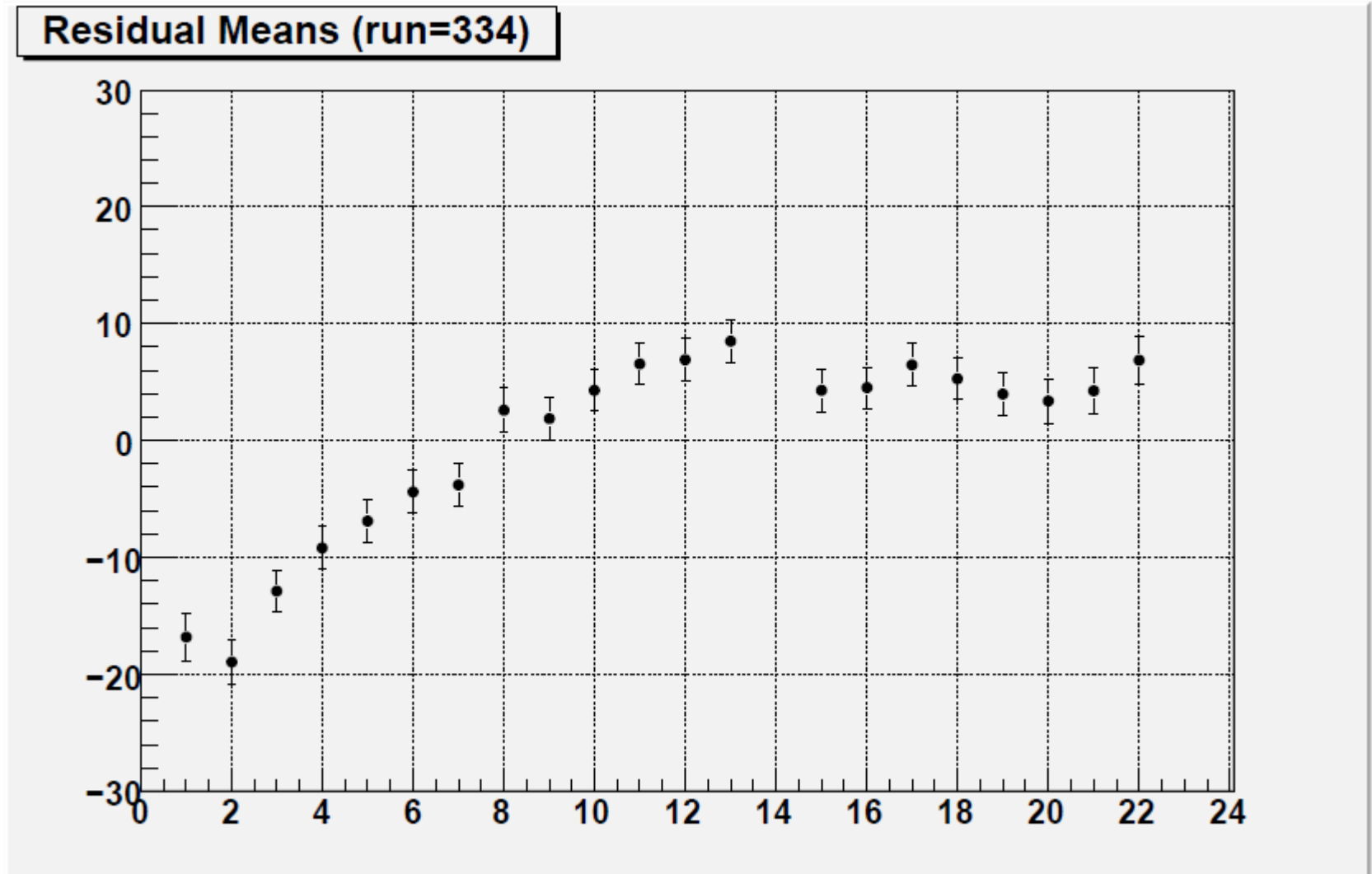
Distortions are very low (few microns) at small distances but reach 10-20 microns at large distances

We NEED the moving table to keep the TPC in the homogeneous part of the magnet

Removing row
14 improves a
little but still
positive
concavity

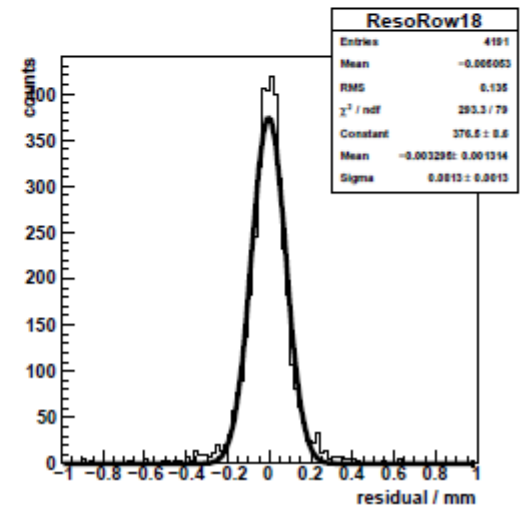
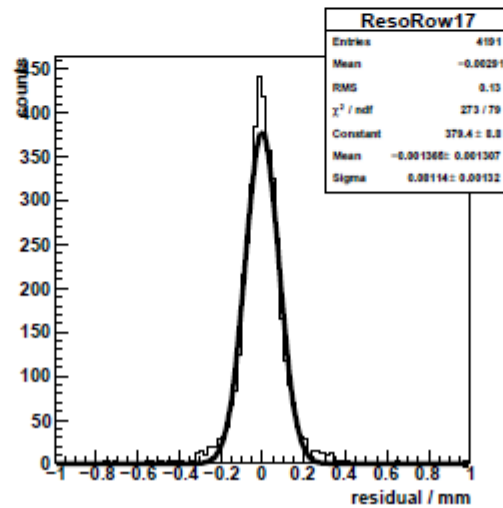
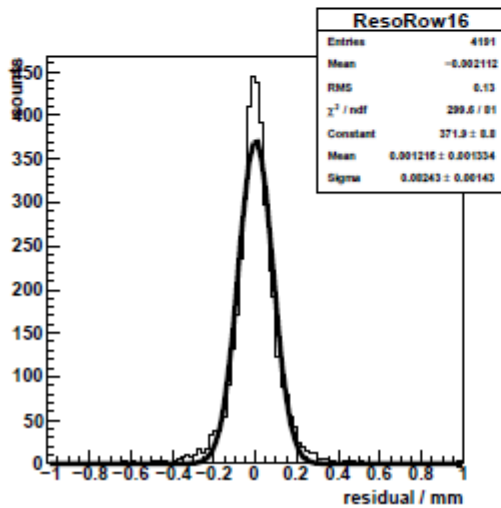
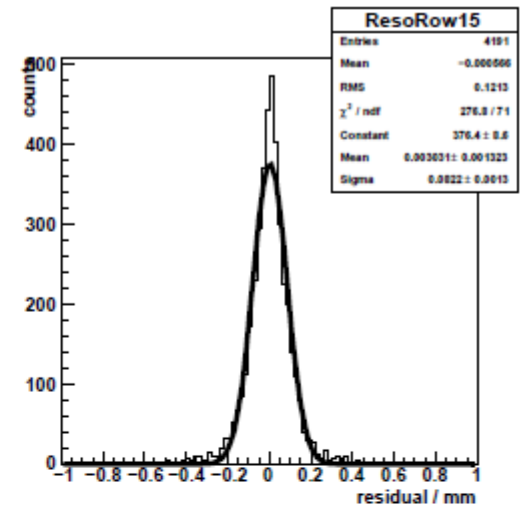
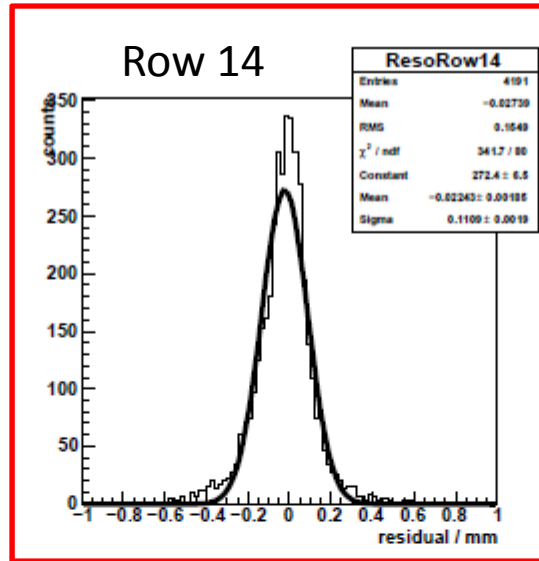
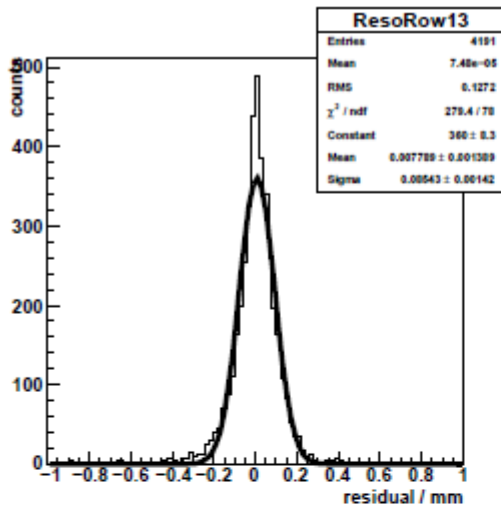


B=1T – transverse displacement vs row, z(beam)= 30cm, **row 14 excluded**



Removing row 14 from the track does no change the picture

RESIDUALS PER ROW



News from the May run

- Smooth data taking (not full rate, rather 30% of December, but read more time bins and more pads)
- Very nice data monitoring (once mirror of Dew point device cleaned by Oliver, even H₂O reasonable : 45-70 ppm H₂O, 40 ppm O₂)
- Worry on the field cage currents
 - Resistance (1st to 7th strip) = 5 M Ω should be 6 (short?)
 - Resistance (1st strip to cathode) = 208 \pm 1 M Ω should be 210
 - We lost one M Ω at z<0, maybe one more at z>0
 - Since when? Seems to be after GEM run, before mM run