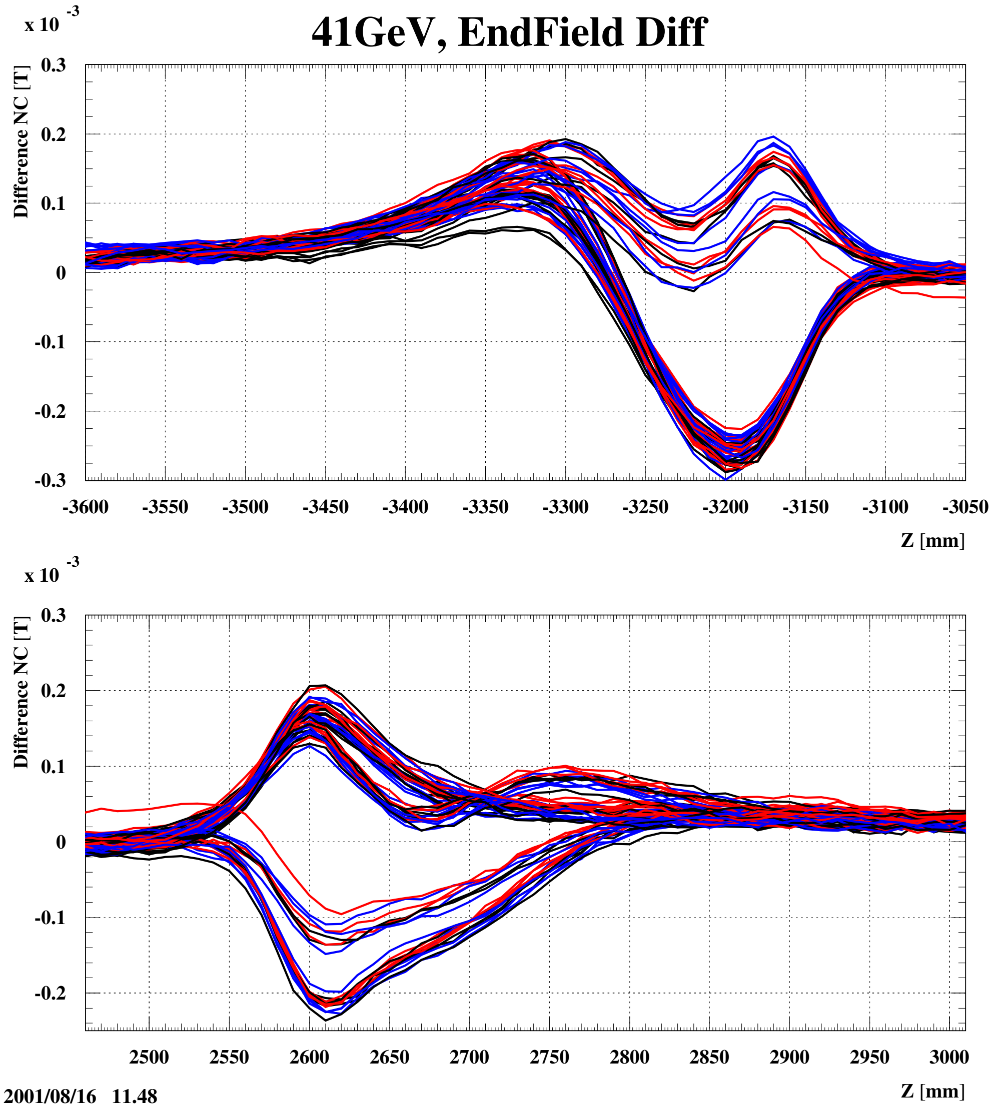
MBI Re-Mapping

Short review about:

- New investigations
  - Local End-Field Differences (measured)
  - Local End-Field Differences (simulation)
  - Coil-Collars effect

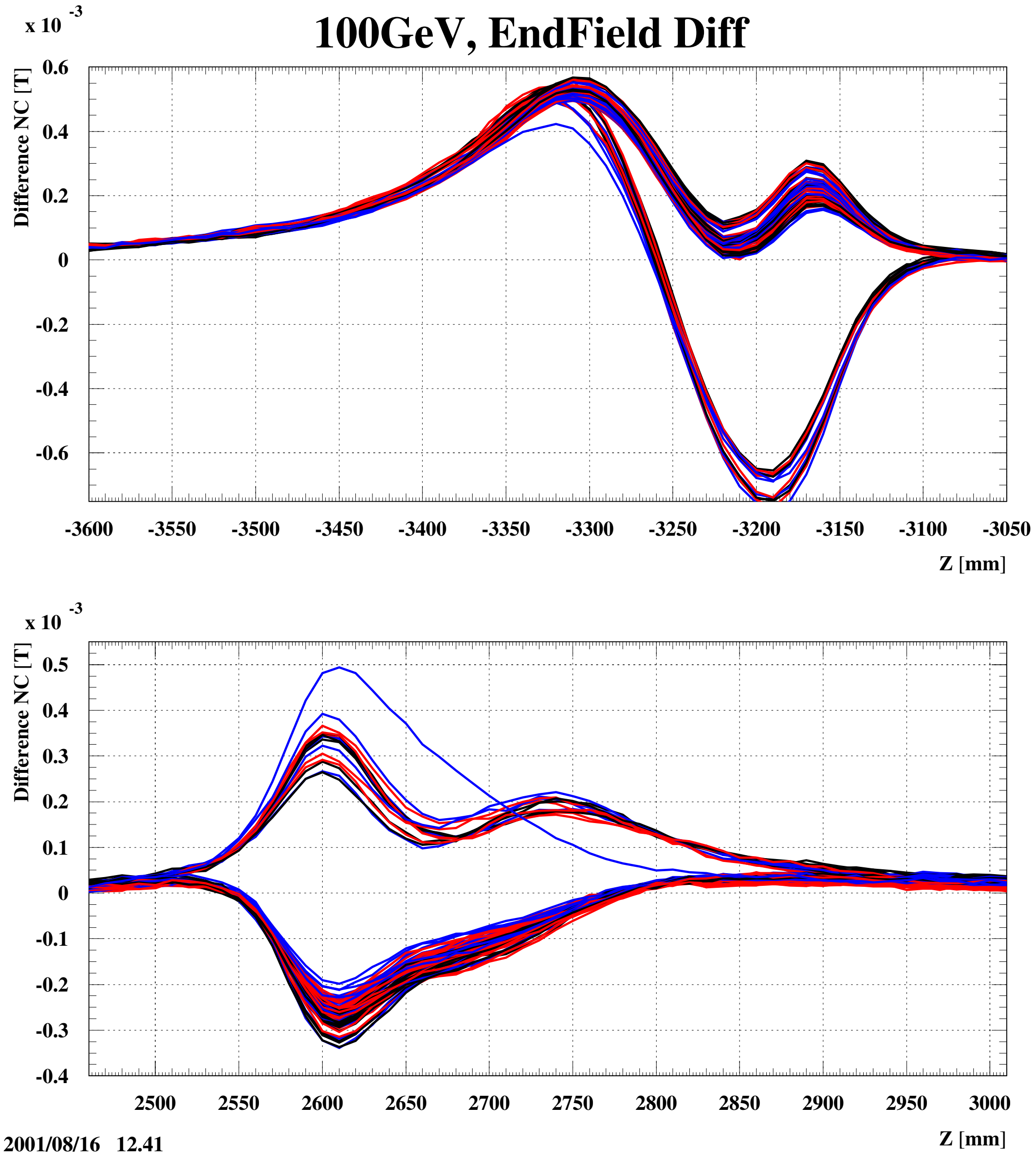
Local Endfield Differences I

Deeper investigations showed two sets of peaks in the differences ISR-2001 maps, for each magnet side.



Local Endfield Differences II

The same behaviour at 100 GeV:

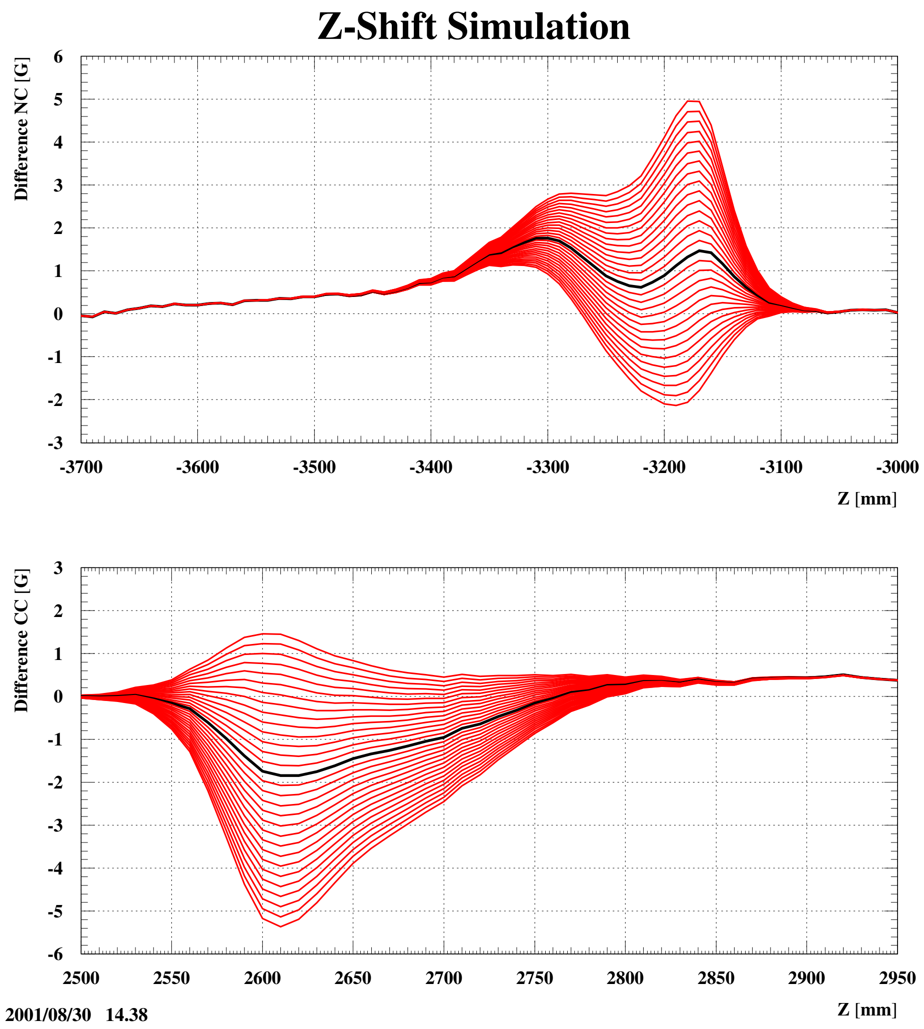


Local Endfield Differences-Simulation I

Among the reasons for such peaks, the possibility of a position-measuring-error has been studied.
"Error" could mean:

- Misalignment between the magnet and the measurement bench
- The ruler non-linearity
- A shift between the coil and the iron-core

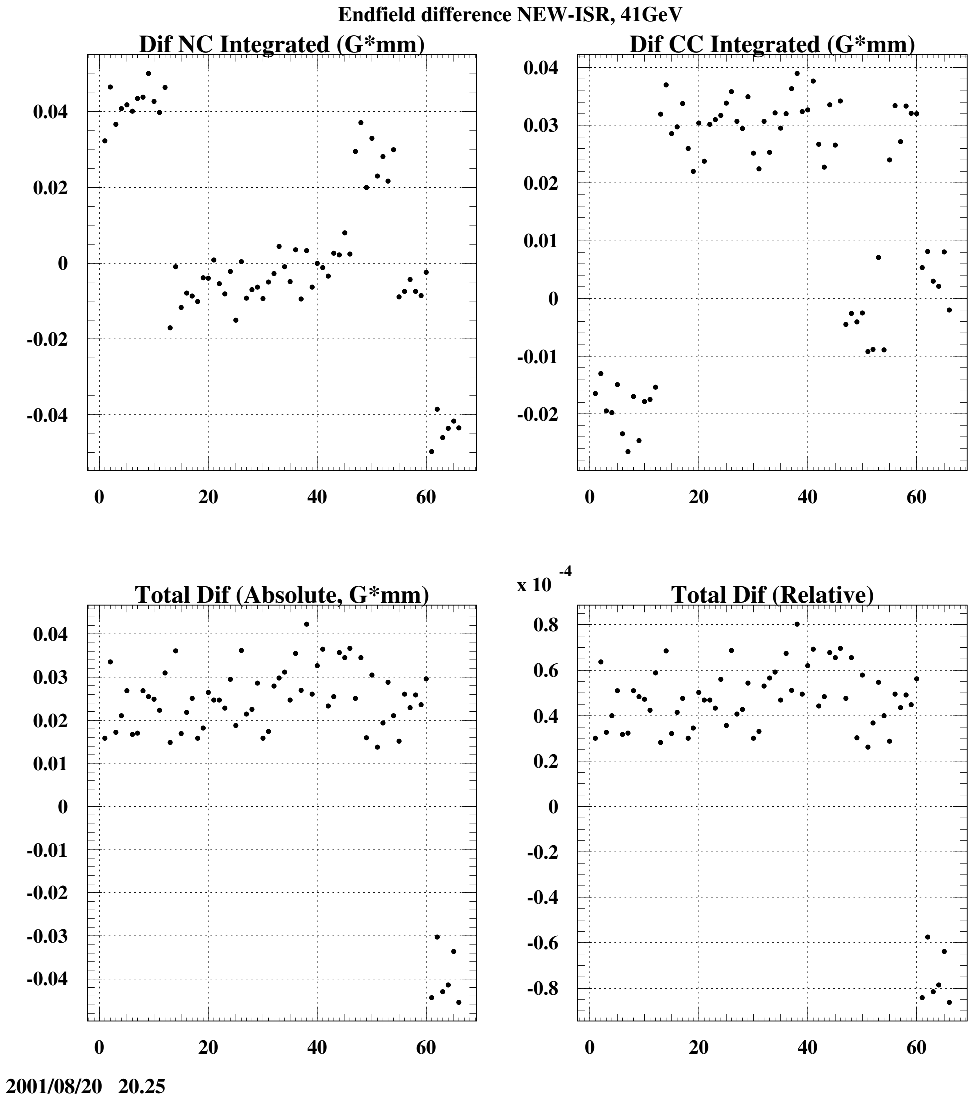
In the following plot the simulation considers an error of $\pm .5\,mm$, in the difference between two maps (ISR-2001) at 41 GeV.



Local Endfield Differences-Simulation II

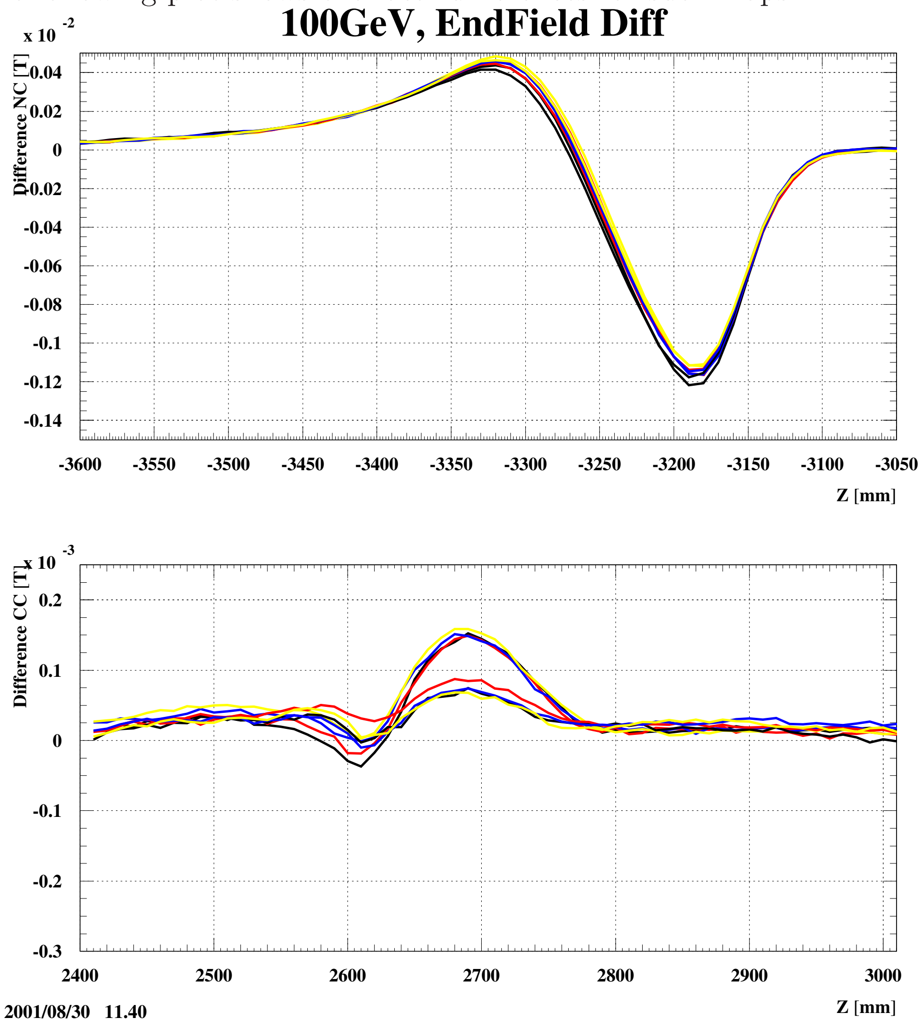
- The simulation shows how the real data fit in the simulation. An error of $\approx 500-600\,\mu m$ would explain the two different sets of measured peaks.

- However the time-dependent differences ISR-2001 in the two magnet sides compensate each-other, the difference in the total $\int_L B \cdot dl$ remains of the order of $5-7 \cdot 10^{-5}$ (energy dependent). The following plot shows the endfield differences integrals as function of map-number in the 2001.



Last Maps

- After the horizontal-field scan the hall probes have been put again horizontal (i.e. measuring the vertical field) and few maps were performed to investigate possible effects of some collars installed on one side of the coil (in order to fix some temperature probes which were not installed in the ISR).
- the following plot shows the local differences for such maps



- The peaks changed in a not-compensating way. The integrals are in fact different from all the others 2001 maps, of about $1 \cdot 10^{-4}$
- Such difference should be due to the non-precise re-alignment of the probes
- Anyway no effect of the collars is evident