

X-Talk in the tracker: Episode II

L. Baldini, J.Bregeon, C.Sgro'
INFN-Pisa



Introduction

➤ **Leon's fault:**

"Is there any chance of pushing to higher charges?

In particular, iron (~3.5 pC, 7 pC at 60 deg) and xenon (~15 pC), the first because we are probably going to try to measure iron on orbit, and the second as a check on the xenon value (~15 strips) that I "measured" in the GSI runs...

Also, you mentioned that you might measure a few more strips. I encourage you to do so!"

➤ **We observed new features...**

❑ **For fixed input charge the average hit multiplicity depends on pulse rate (see following slide)**

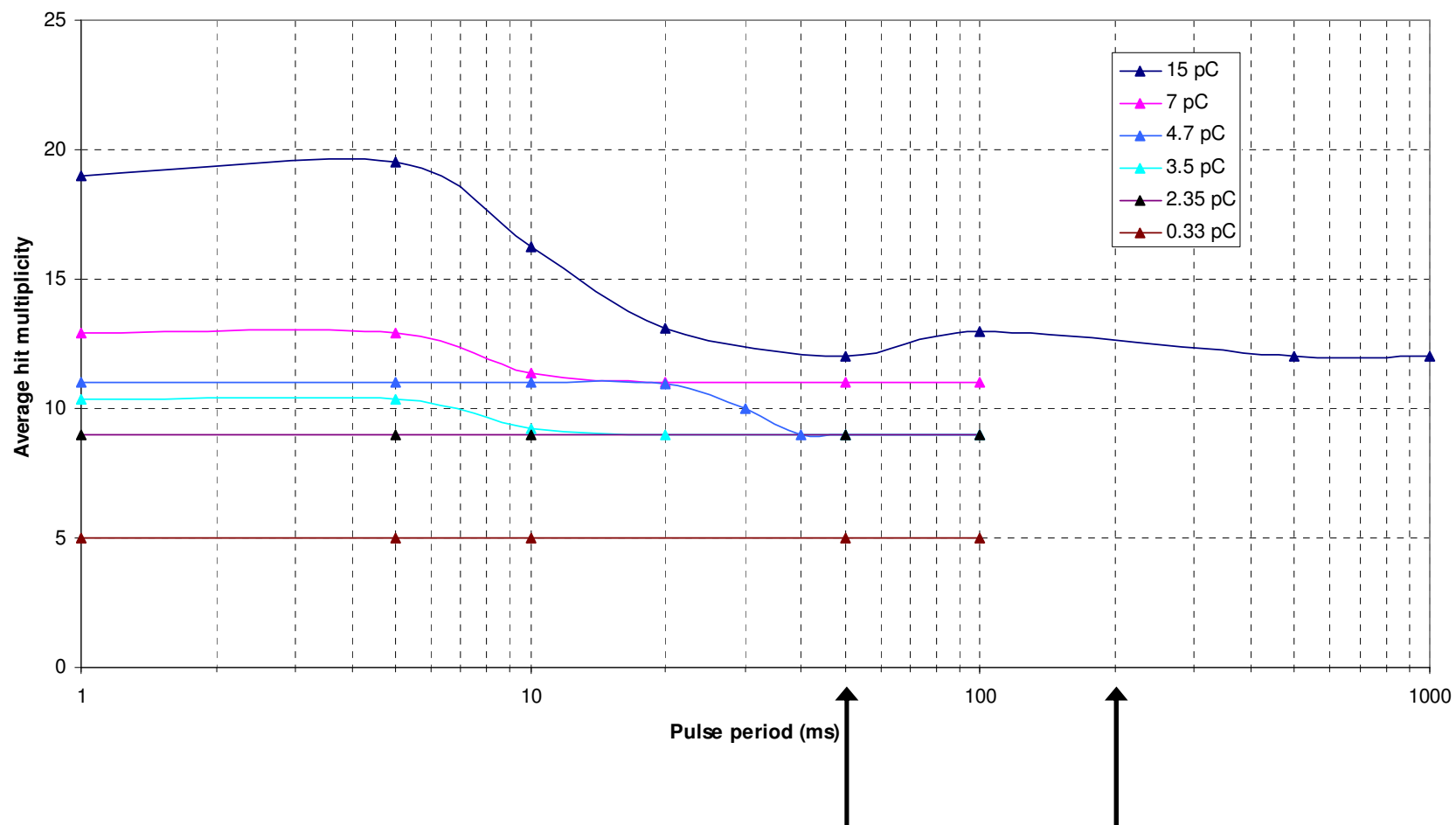
- The pre-amp recovery time increases with input charge
- The falling edge of the calib. pulse produces a signal of the wrong polarity
- For particular pulse height/rate combination the pulsed strip is NOT readout

➤ **We made sure to avoid all those effects in the measurements**



Rate effect

Hit multiplicity vs. pulse period (square wave, 50% duty cycle)



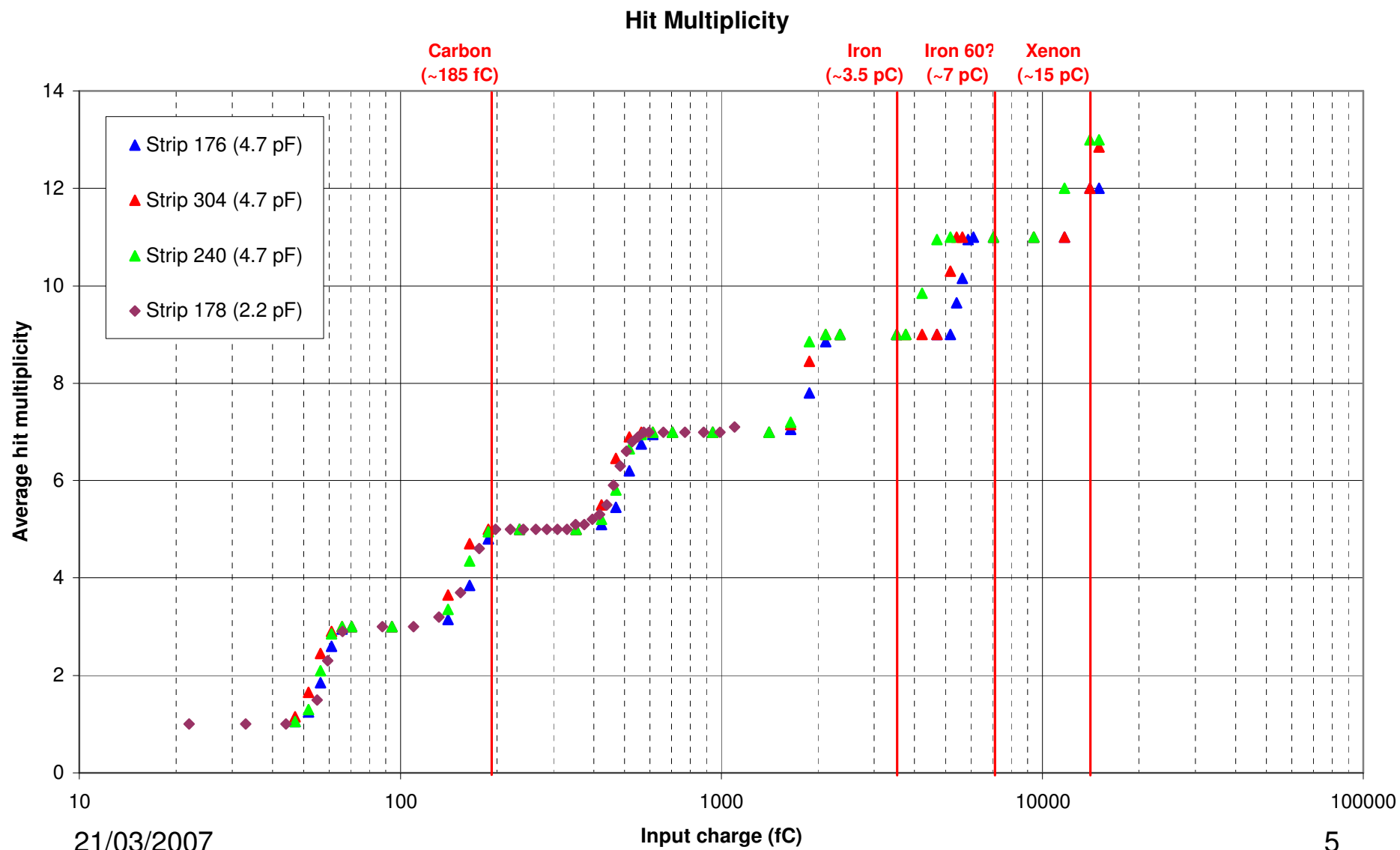


The measurement

- We used a 4.7 pF calibration capacitor (instead of 2.2 pF)
- Measurement performed on three different strips close to the center of the GTFE (three different chips)
 - ❑ Not much difference between them (at least up to Iron)
- Measurement on the GTFE edges is more difficult:
 - ❑ Neighbor chips are more sensitive to the probe induced noise than the one which is pulsed
 - ❑ For “small” input charge the measurements are compatible with those performed close to the center
 - We already know that the pure electronic x-talk component is small
- We cross-checked the TOT distributions with external pulser vs. internal calibration system
 - ❑ Systematic errors on the absolute charge scale of the order of 10-20% (not bad, includes components, timing, etc...)



The Plot





Conclusions

- We measured x-talk up to Xenon (~13 strips)
 - ❑ Close to Leon's measurement on Beam Test data
- No big differences among channels