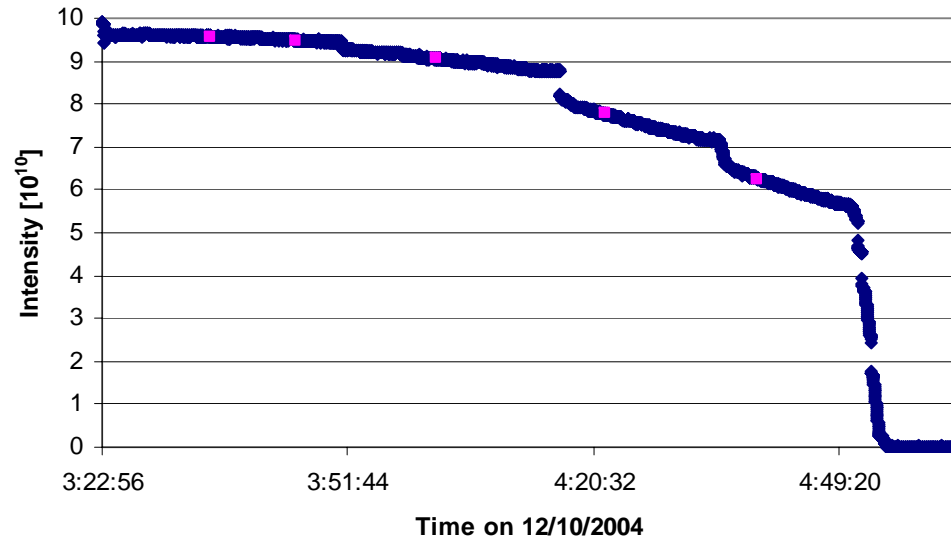


# SPS (HORIZONTAL) PROTOTYPE OF THE LHC COLLIMATOR : LINEAR THEORY VS MEASUREMENTS

E. Métral

- ◆ **Data analysis with the help of Gianluigi Arduini (Many thanks!)**

# DATA ANALYSIS (1/3)



1st measurement

Time

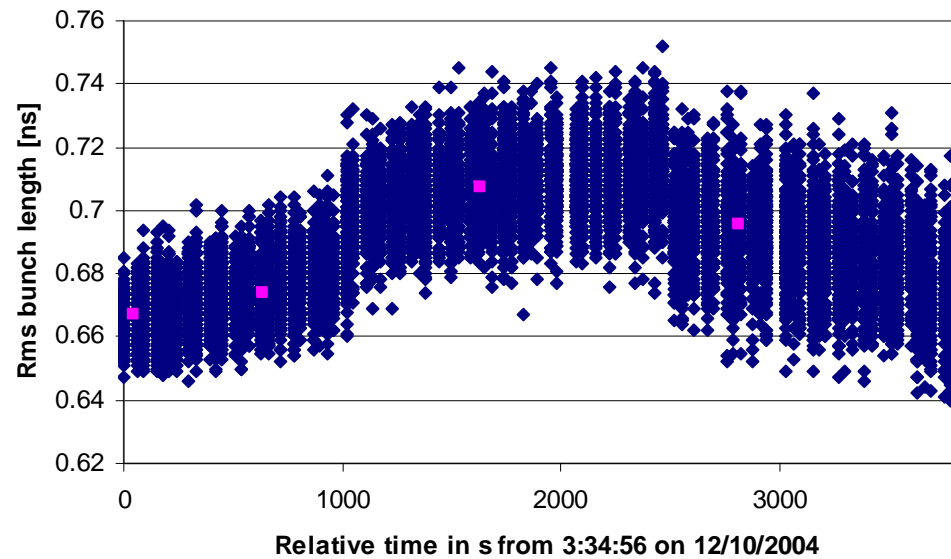
3:35:42

3:45:34

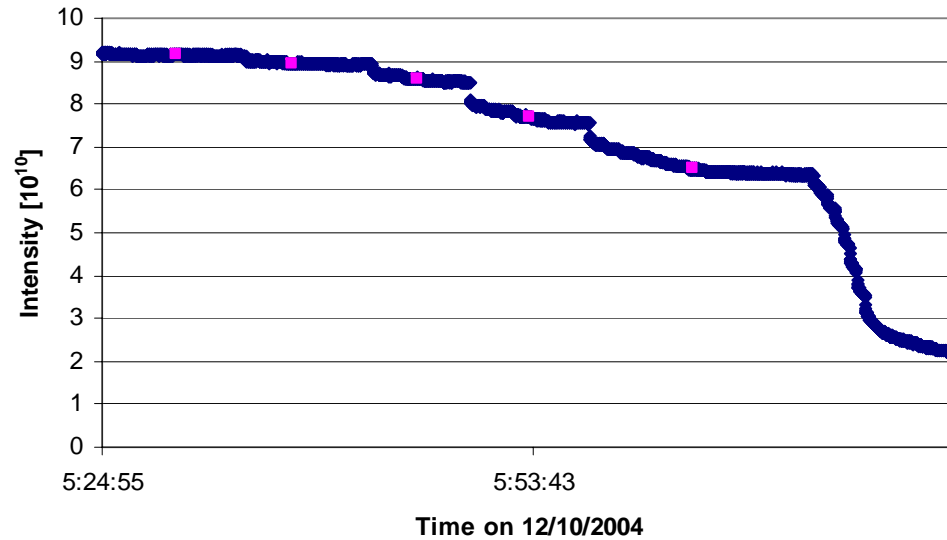
4:02:04

4:21:46

4:39:43



## DATA ANALYSIS (2/3)



2nd measurement

Time

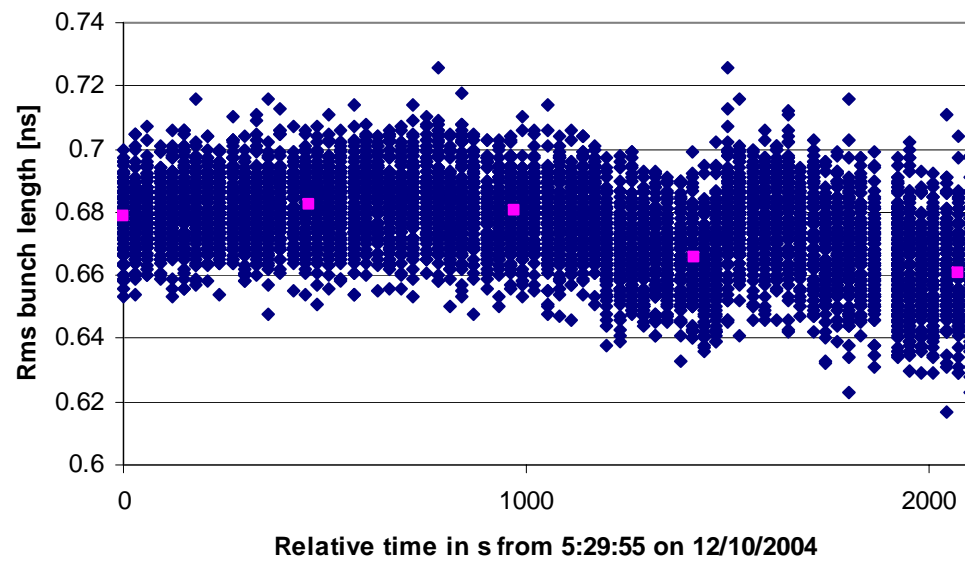
5:29:55

5:37:35

5:46:03

5:53:33

6:04:25



## DATA ANALYSIS (3/3)

From S. Redaelli (07/03/05)

### 1st measurement

Date	Time	Half gap [mm]	Intensity [ $10^{10}$ ]	Rms bunch length [ns]
10/12/2004	3:35:42	2.43025	9.56	0.67
10/12/2004	3:45:34	1.93025	9.48	0.67
10/12/2004	4:02:04	1.43025	9.06	0.71
10/12/2004	4:21:46	1.13025	7.78	0.7
10/12/2004	4:39:43	0.98025	6.24	0.67

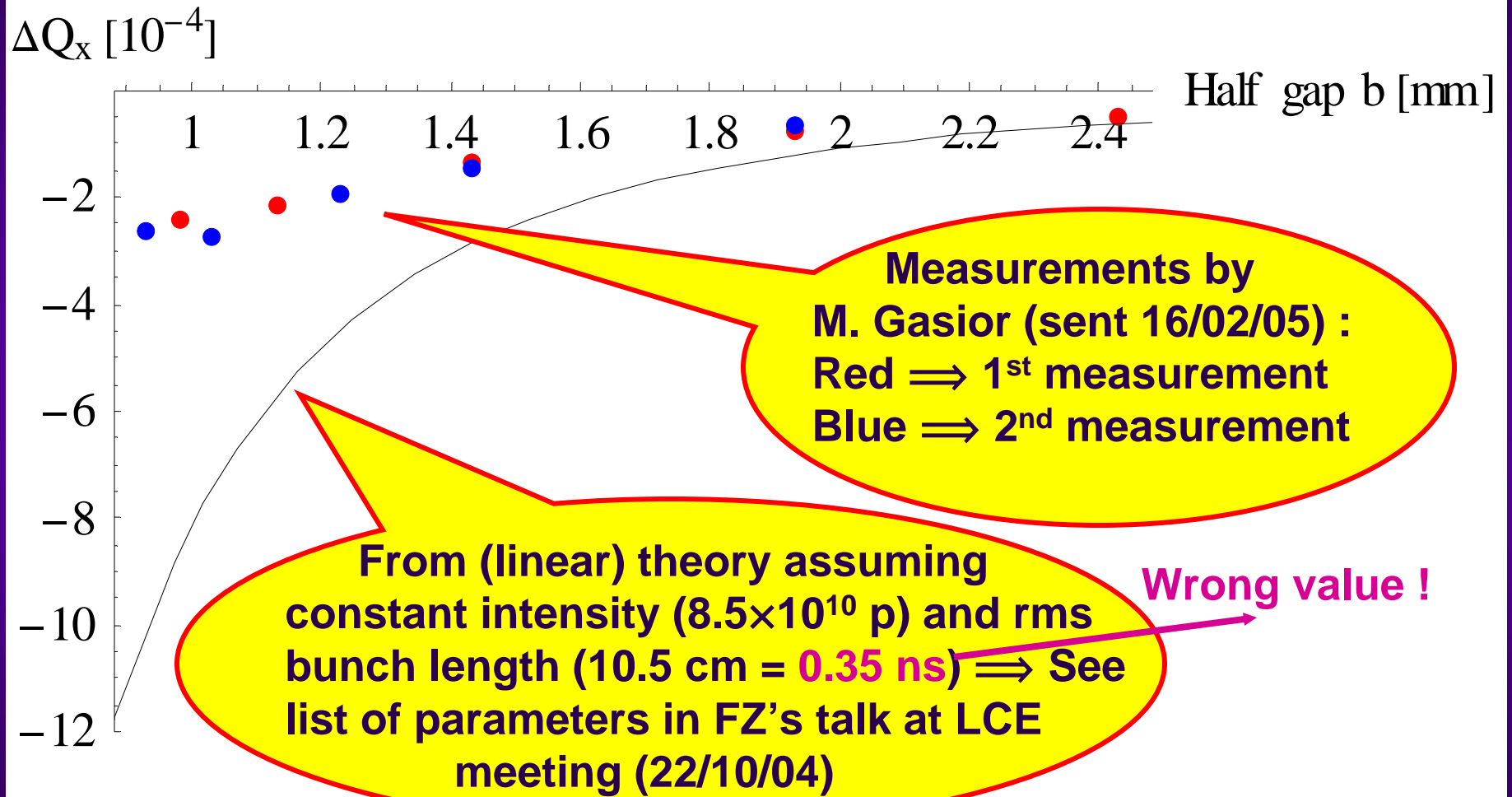
### 2nd measurement

Date	Time	Half gap [mm]	Intensity [ $10^{10}$ ]	Rms bunch length [ns]
10/12/2004	5:29:55	1.93025	9.15	0.68
10/12/2004	5:37:35	1.43025	8.95	0.68
10/12/2004	5:46:03	1.23025	8.6	0.68
10/12/2004	5:53:33	1.03025	7.69	0.67
10/12/2004	6:04:25	0.93025	6.5	0.66

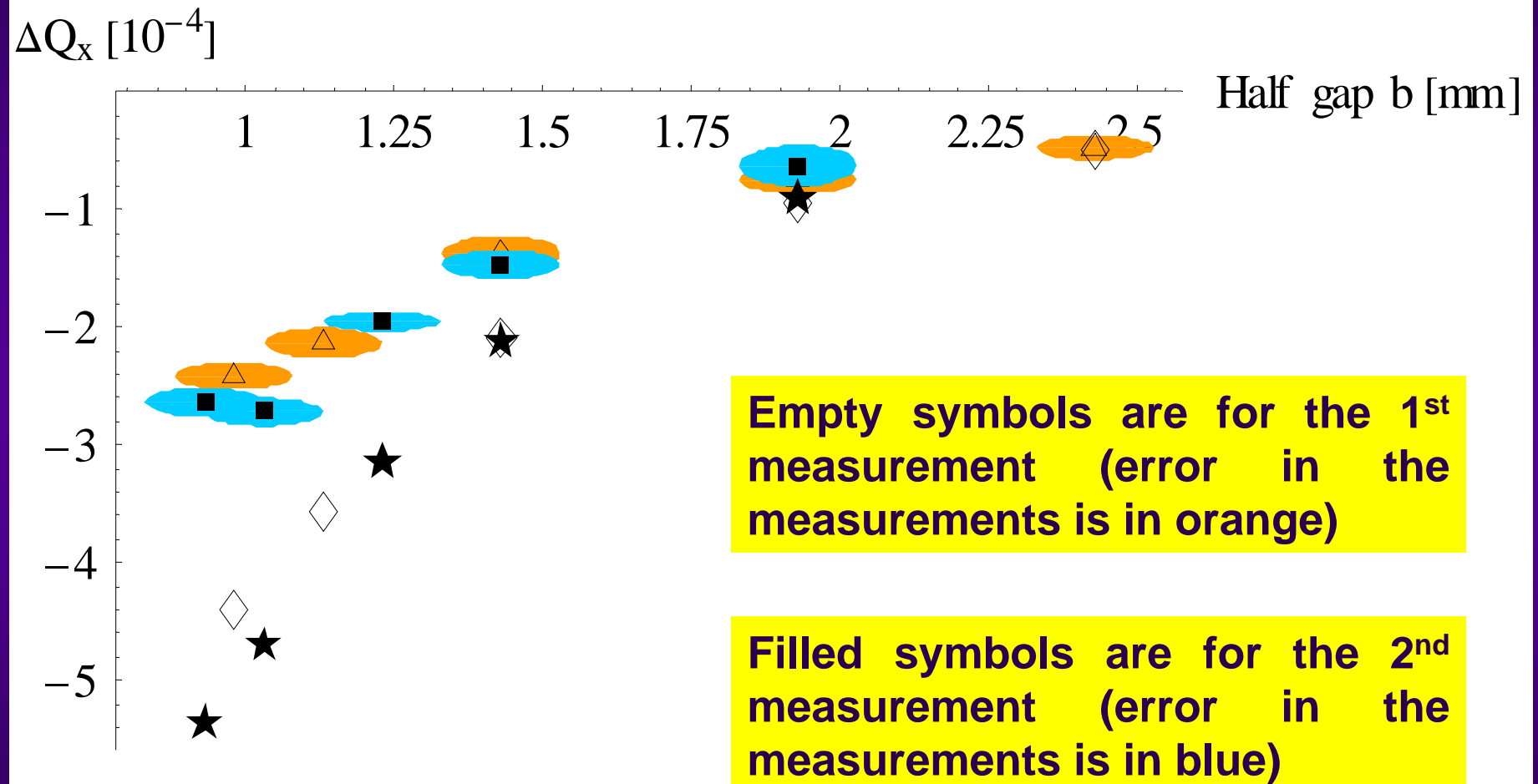
### Remark

All the intensities may be 10% higher (transfo calibration to be checked)

## WHAT WE HAD BEFORE THE DATA ANALYSIS



## WHAT WE HAVE NOW AFTER THE DATA ANALYSIS



## CONCLUSION

- ◆ **The maximum difference between measurements and (linear) theory is a factor 2 (for the smallest gap)**
- ◆ **Estimated error from the theory : ~ 50%**
- ◆ **Error in the theoretical points due to an error in the measured intensity : Can be 10% higher  $\Rightarrow$  The theoretical points can be 10% downwards in the previous plot**