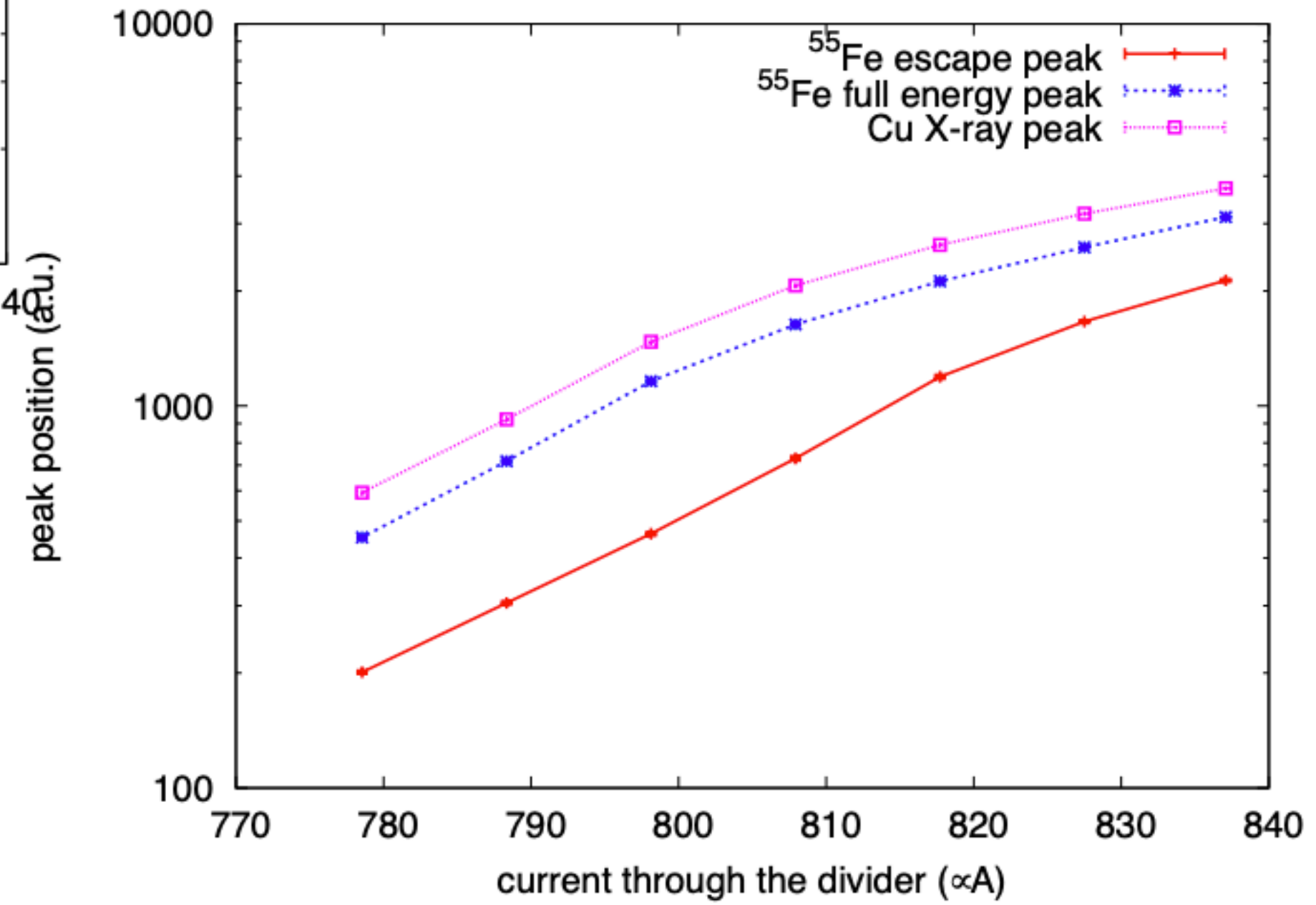
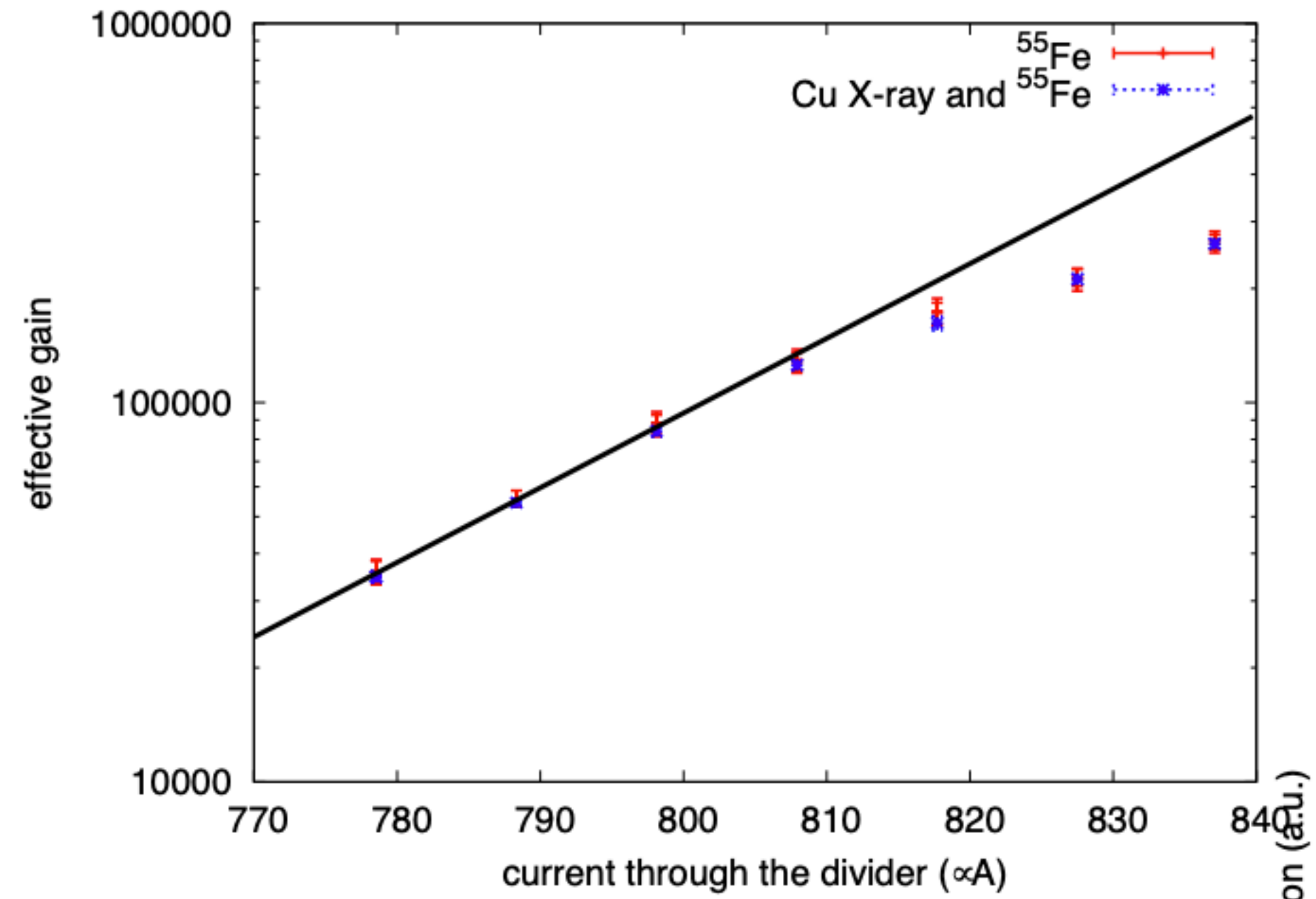


Saturation

Measurement

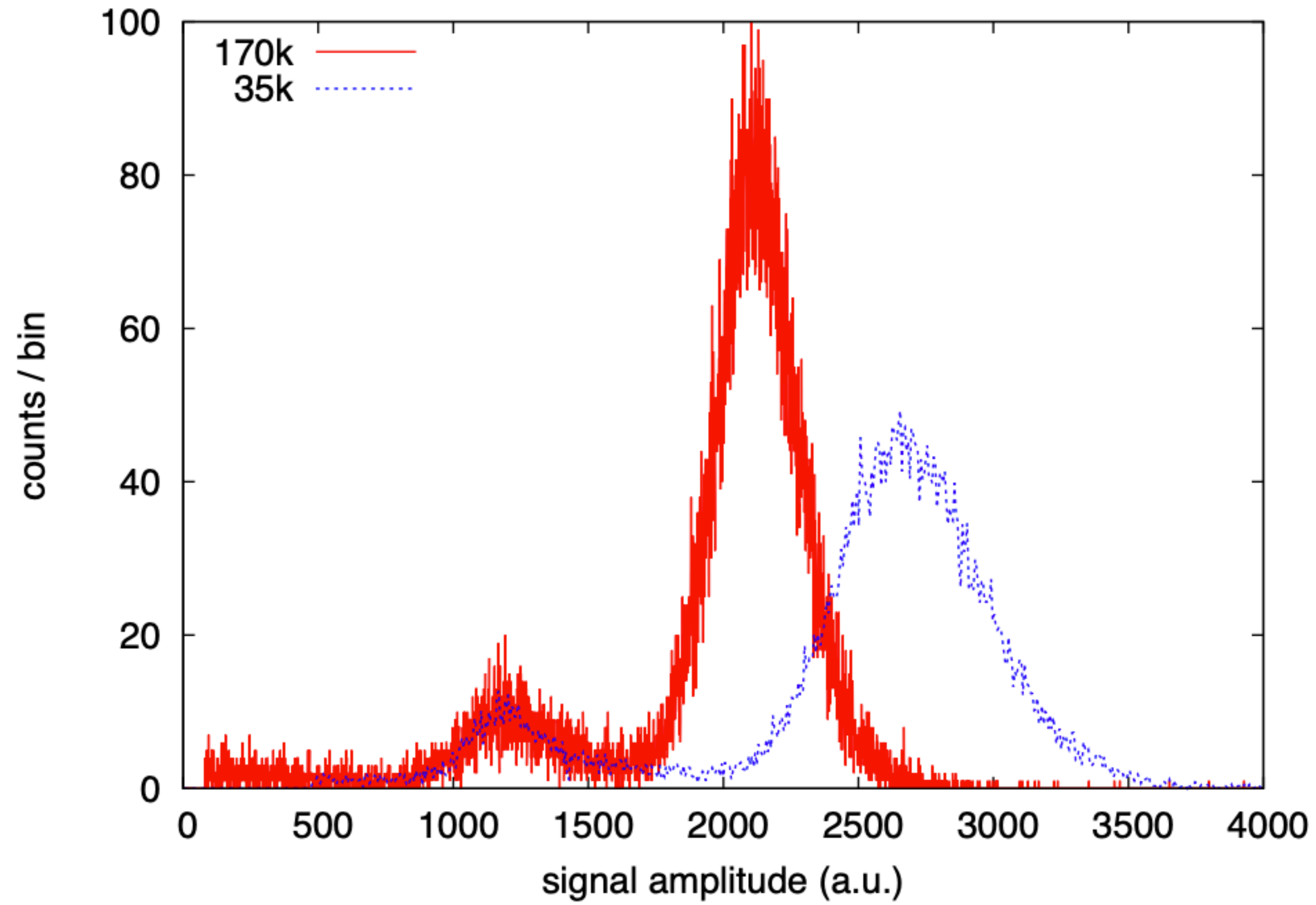
at CERN

Clearly related to each single event



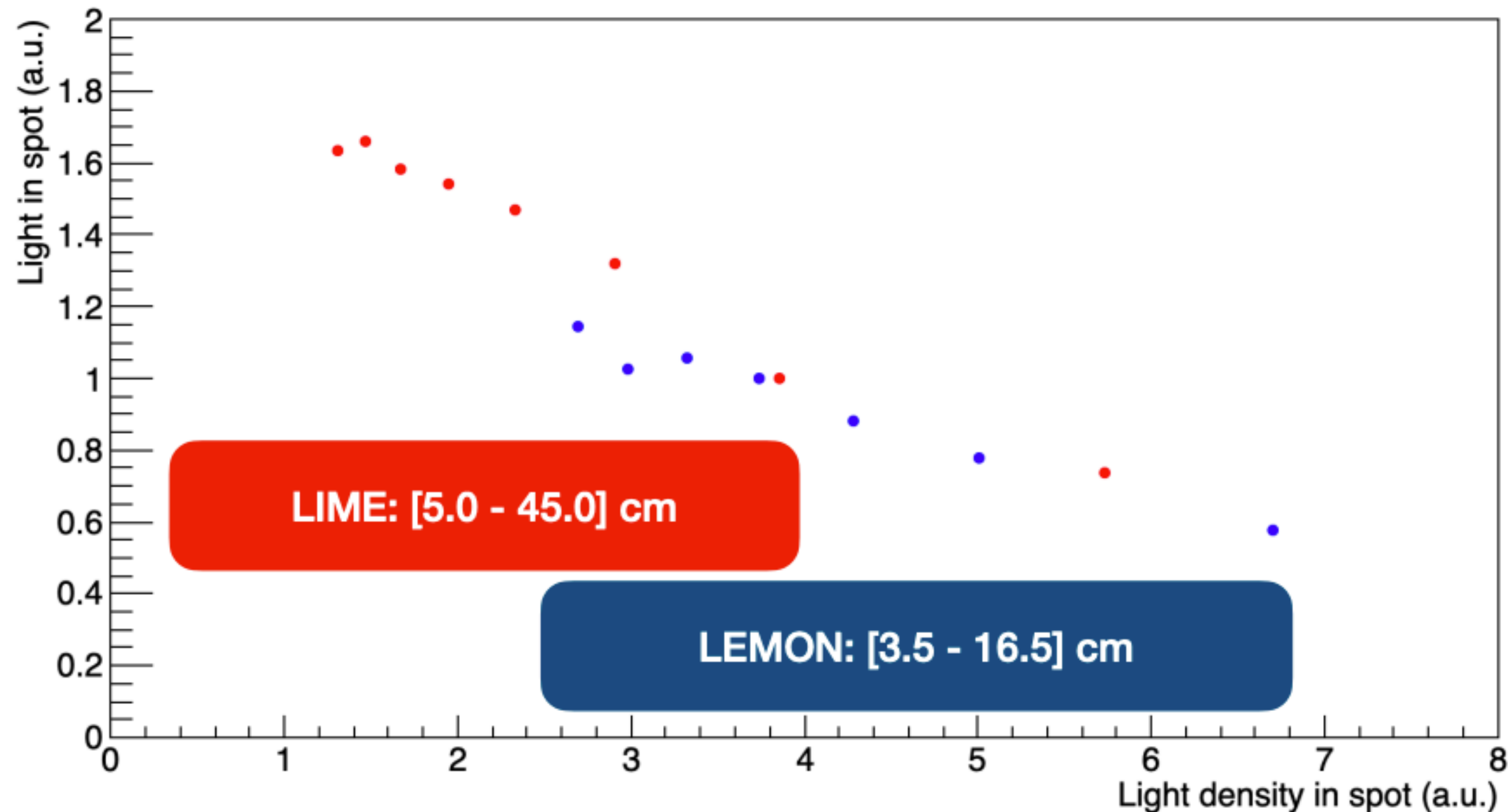
Measurement

at CERN



Charge Density related issue

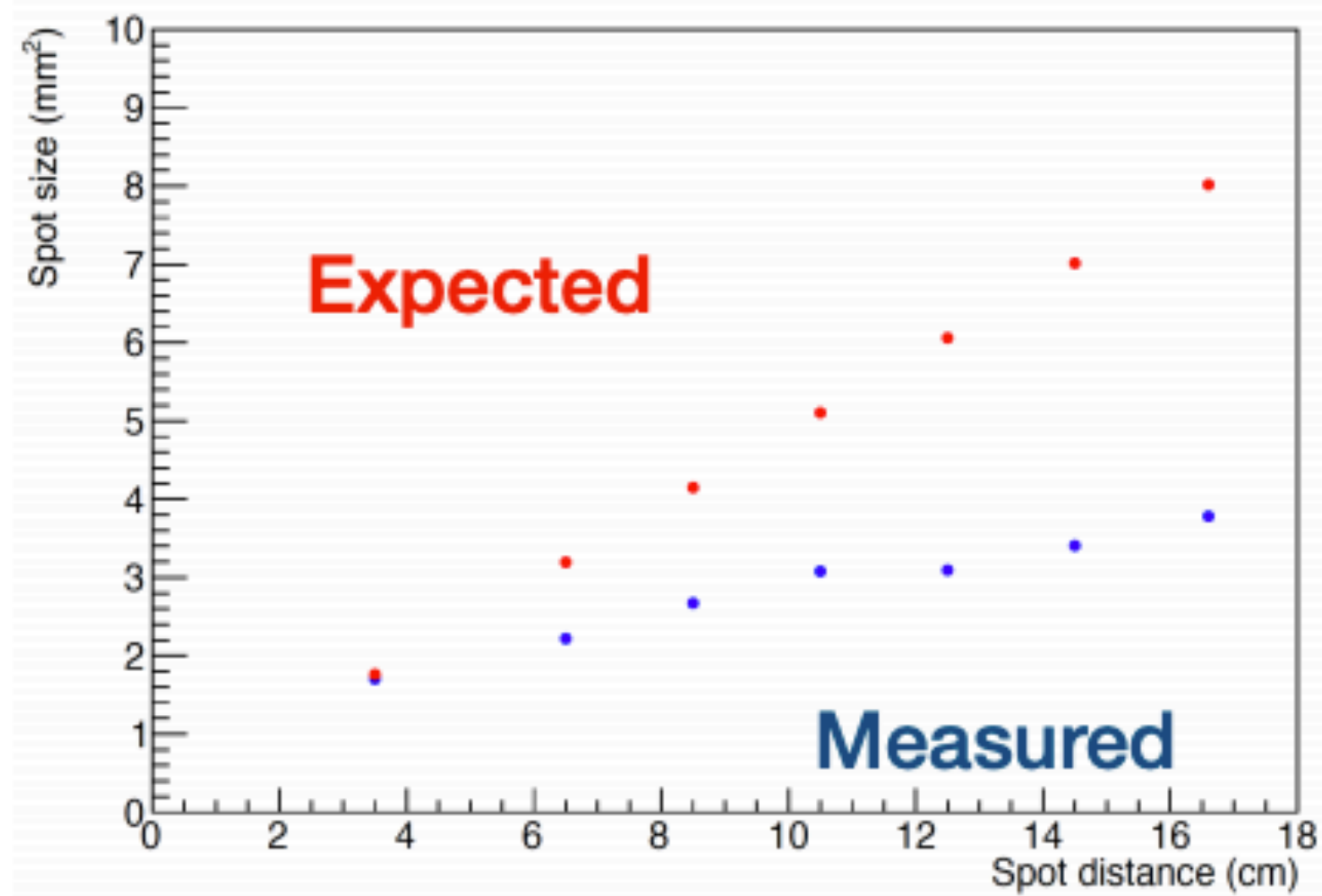
The average light collected in the ^{55}Fe spots is plotted as a function of the **expected density** evaluated from diffusion parameters simulated and confirmed by measurements



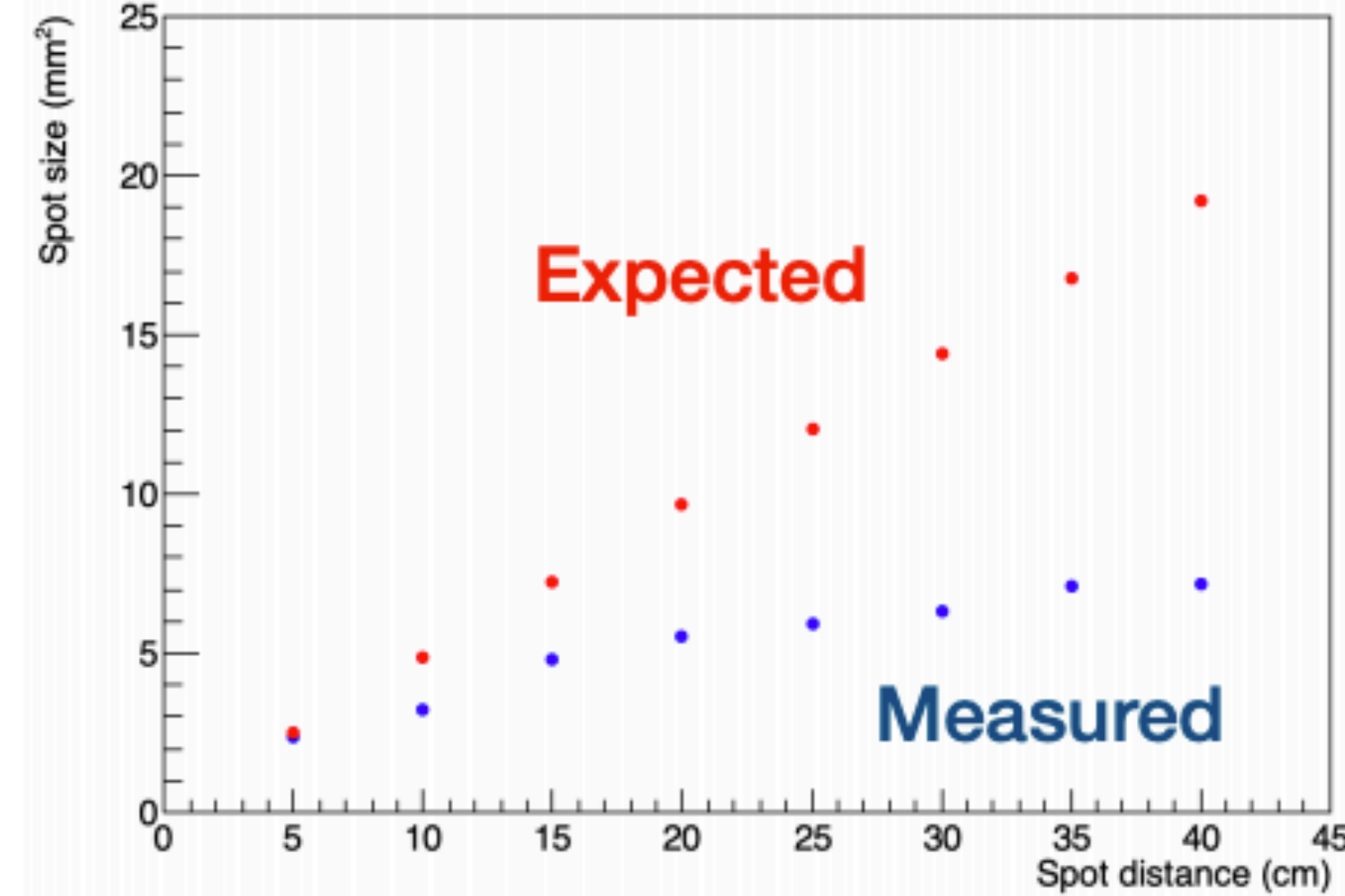
Light decreases very rapidly with the density

A measurement of light density could help in correcting

LEMOOn



LIME

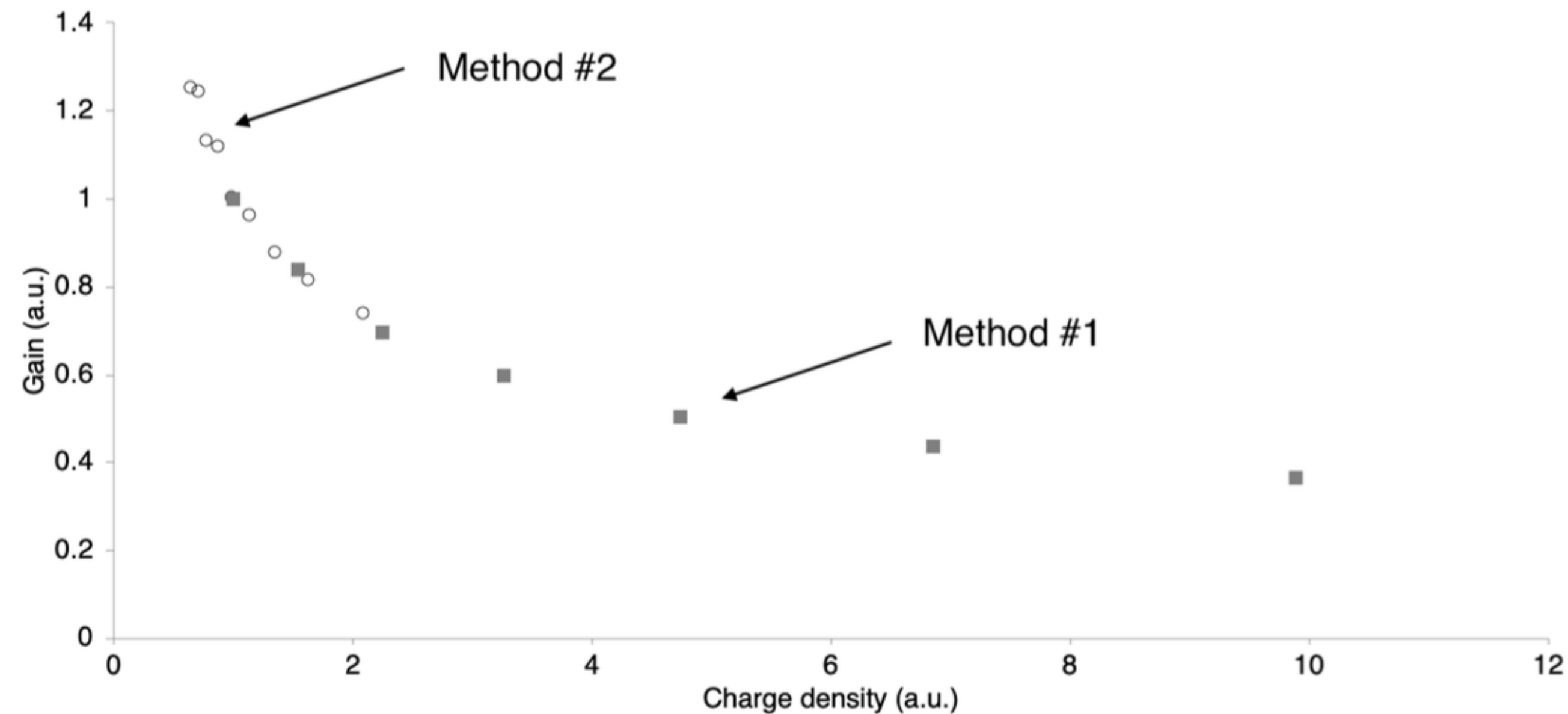


From a preliminary analysis it seems that the **measured size becomes smaller** than the real one.

This can be due to diffusion that makes peripheral photons of the spots go under CMOS threshold (if one takes into account the very poor geometrical acceptance);

Comparison with current vs. distance measurements

- Current vs. HV_1 = current vs. number of electrons in GEM_3 = current vs. charge density (method 1)
- current vs. distance = current vs. spot size (diffusion) = current vs. charge density (method 2)



A simple model

- Field in the GEM screened by the ions

$$E = E_0(1 - \beta n) \rightarrow \frac{dn}{ds} = \alpha E_0(1 - \beta n)n \rightarrow G = \frac{Ae^{\alpha V_{GEM}}}{1 + \beta n_0(e^{\alpha V_{GEM}} - 1)}$$

