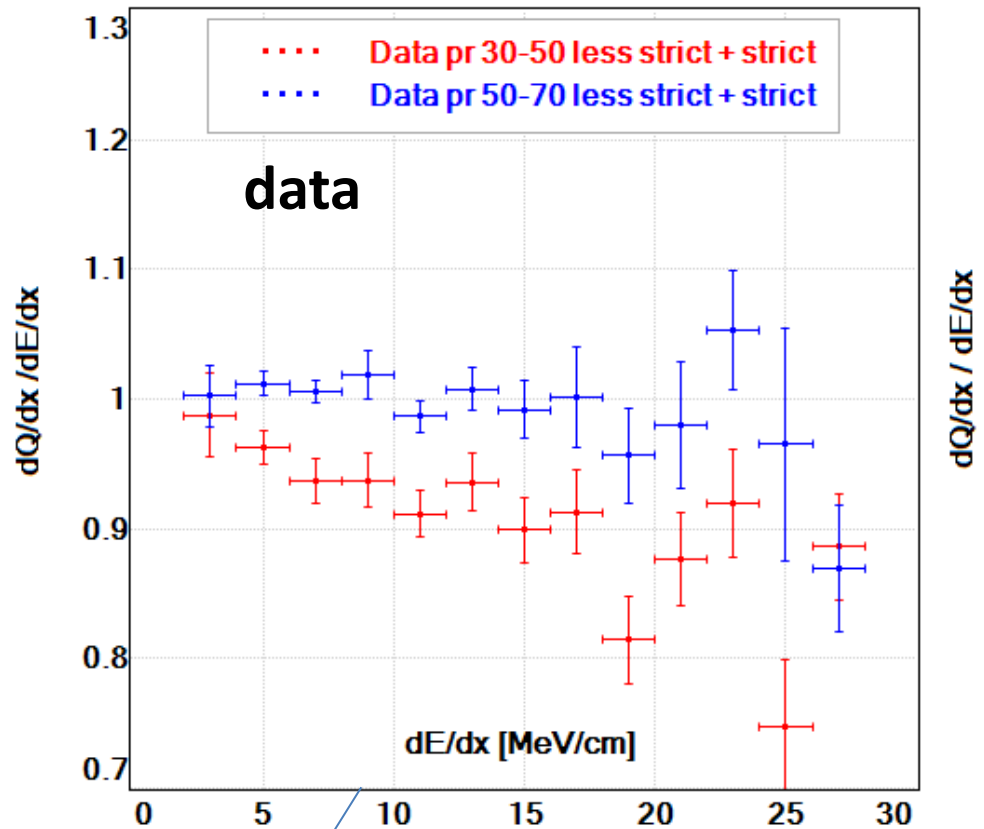
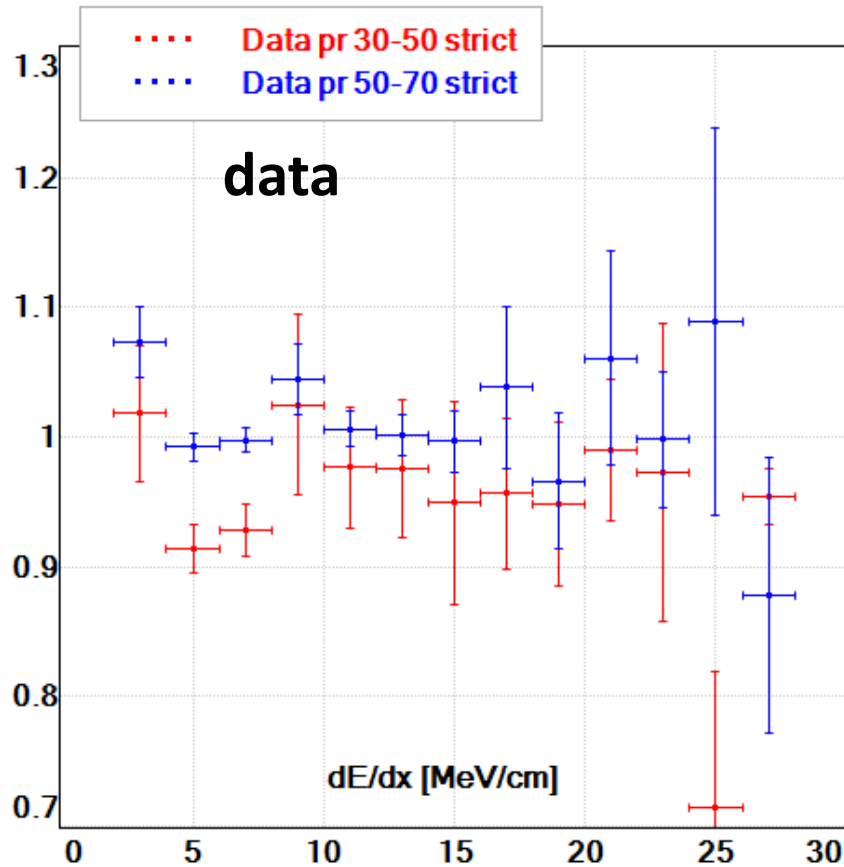


Several tests done using already processed data and MC (continuation of studies introduced in docdb 10204)

- simple approach to obtain rough estimate of effects;
- more realistic MC possible, likely with no dramatic change to results.

D.Stefan, R.Sulej

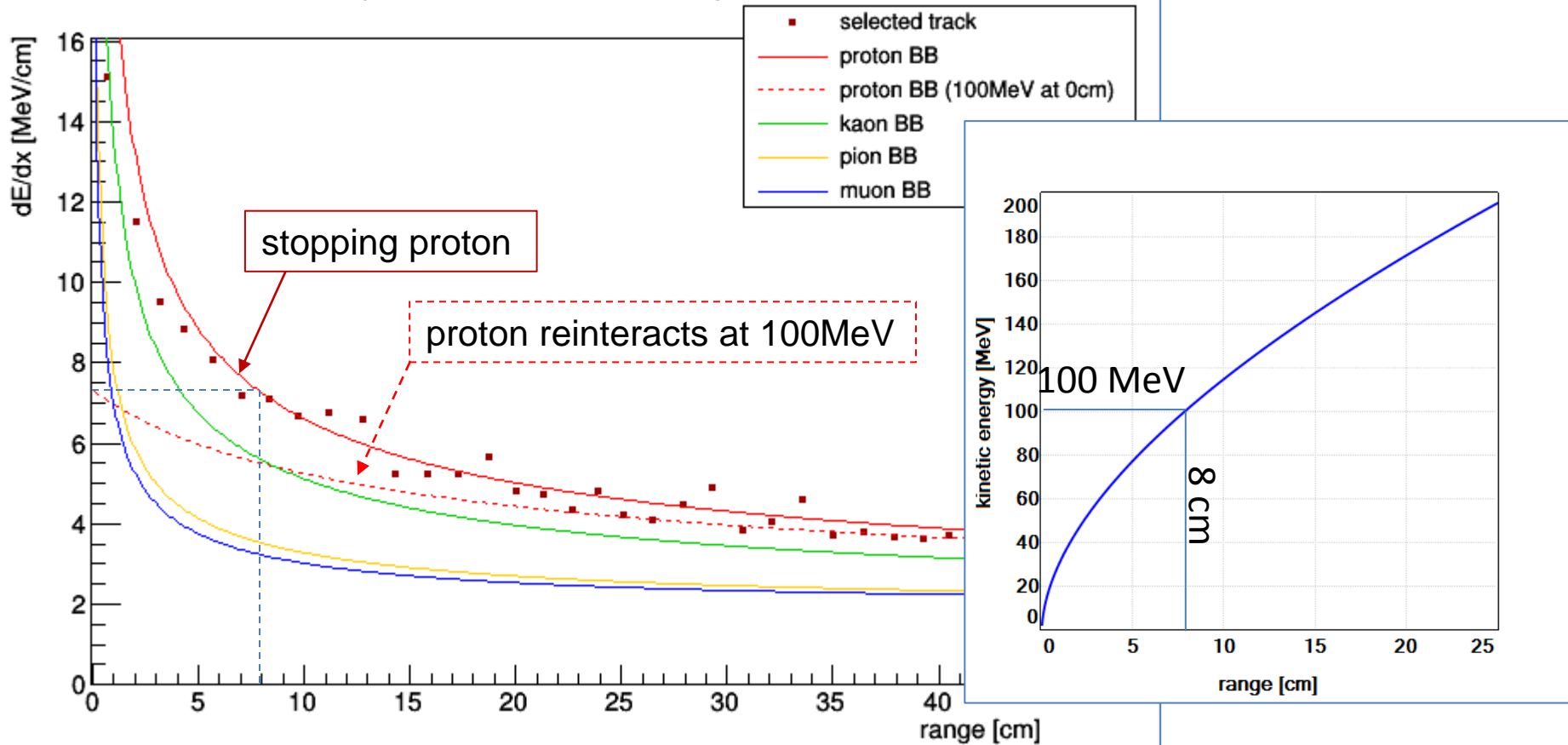
Comparison between strict and less strict PID applied to proton sample



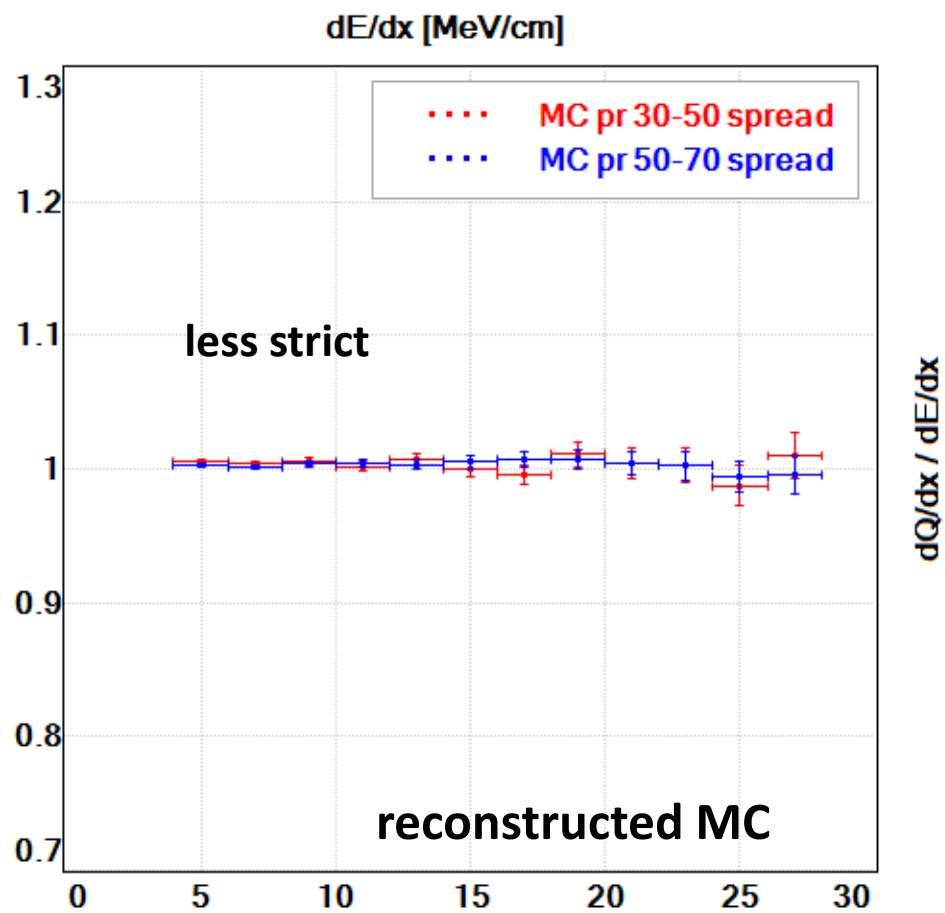
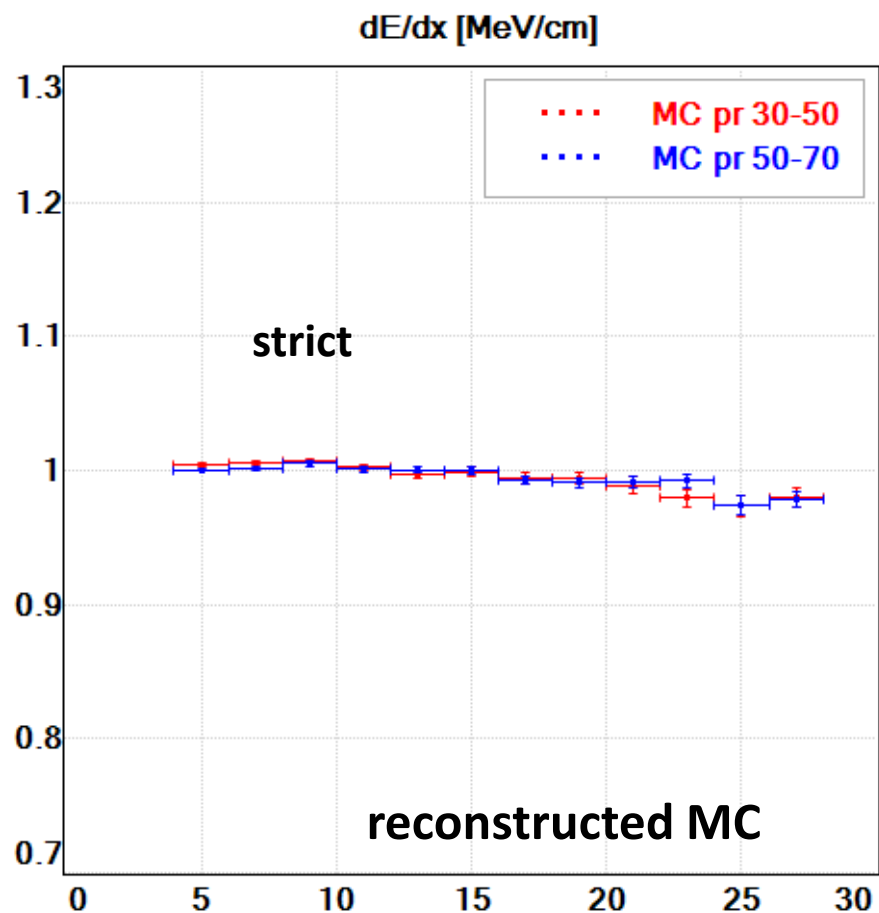
- accept reinteracting protons as well as stopping but possibly „attenuated”
- more statistics
- no meaning of comparison to theoretical BB

- Existing MC modified to verify idea of less strict selection in data.
- Quick simulation of stopping protons mixed with reinteracting protons.

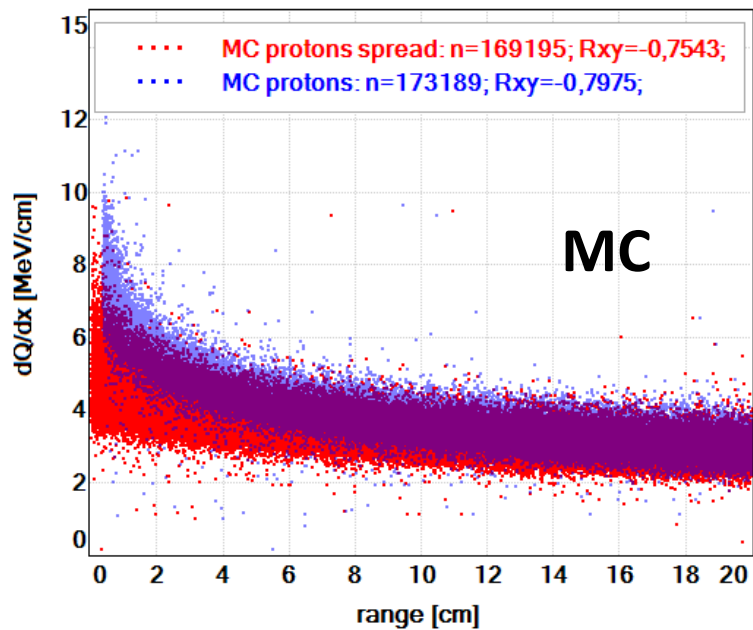
Track dE/dx (recombination corrected) over BB curves



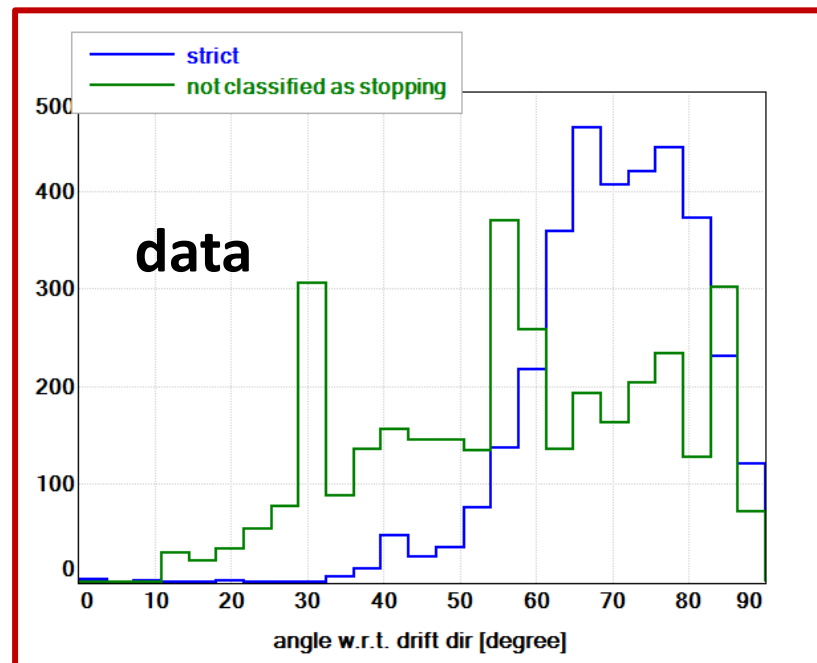
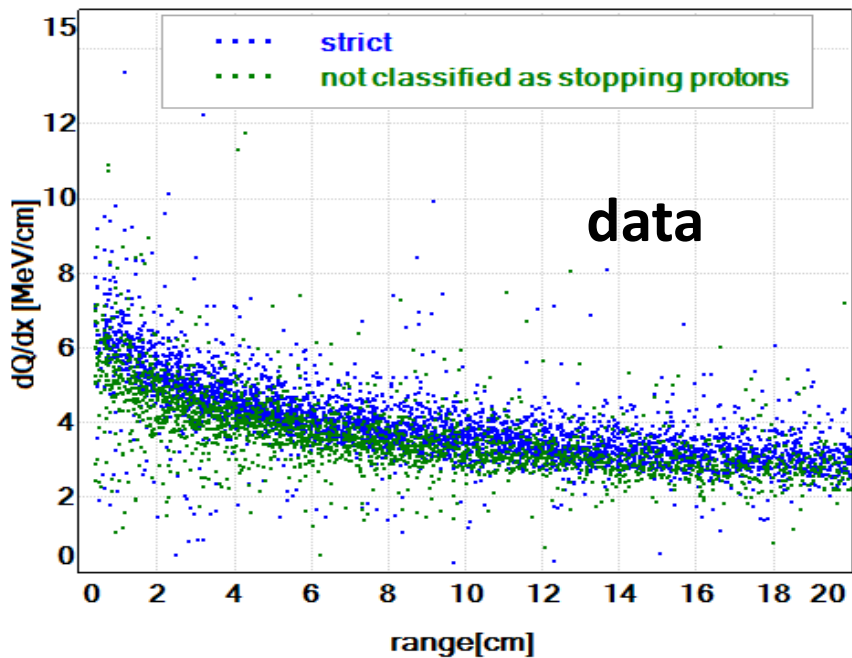
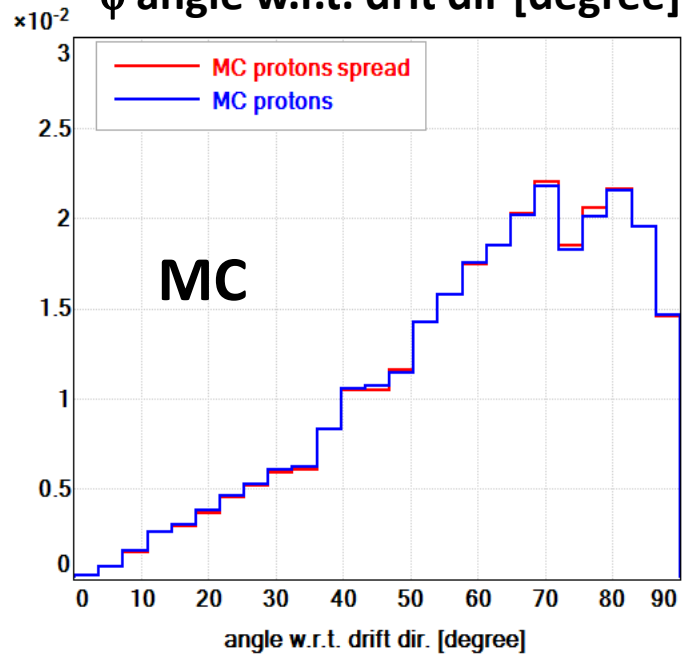
Spoiling the original procedure does not introduce errors from the reconstruction.



dQ/dx vs range



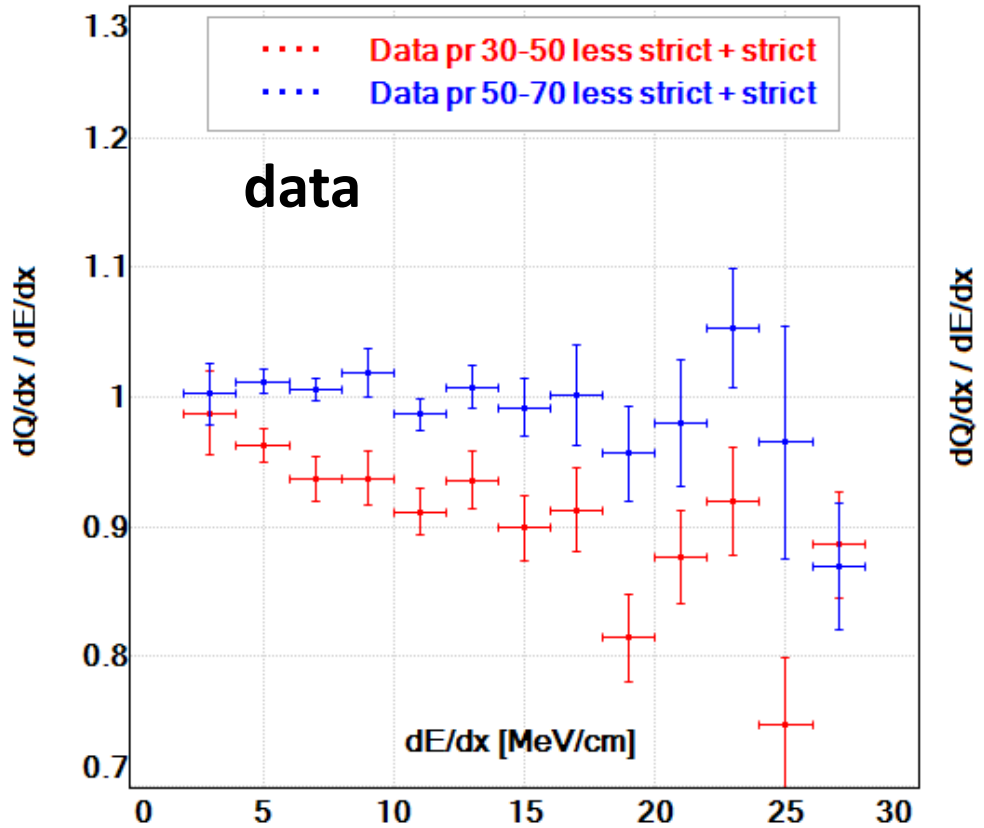
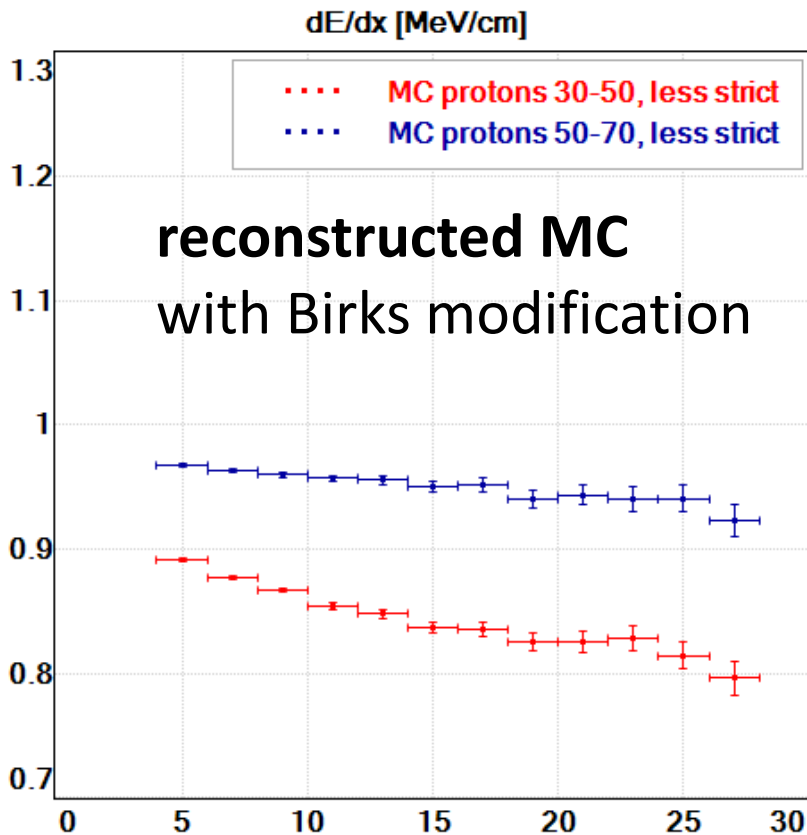
ϕ angle w.r.t. drit dir [degree]



Comparison between MC and data protons

Angular dependence – simple simulation applied to existing MC

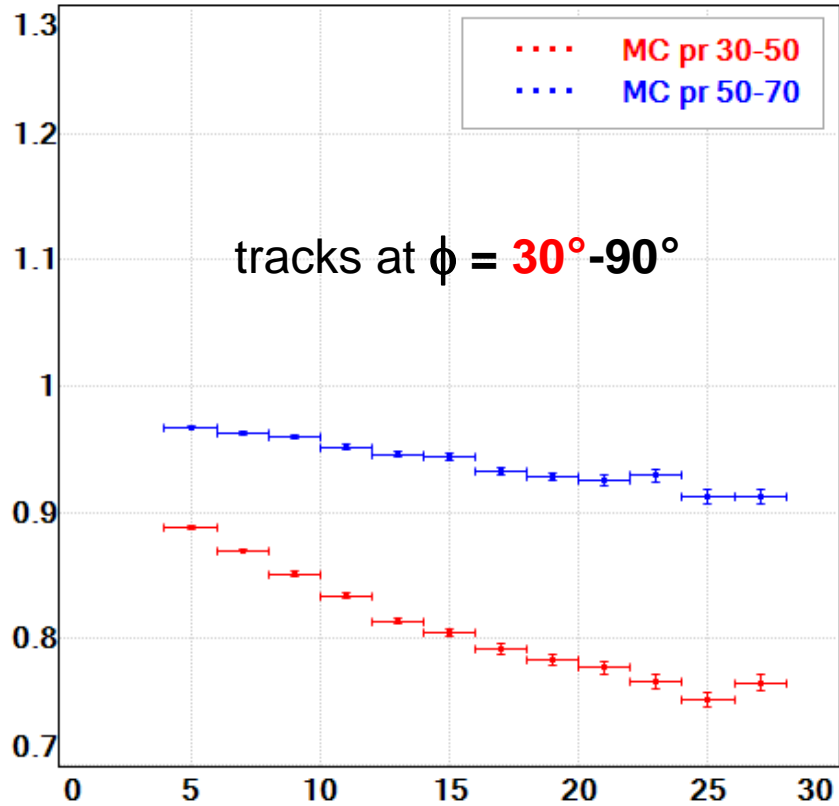
$$Q \approx Q_0 \frac{A}{1+k(dE/dx)/(\epsilon \sin \phi)}$$



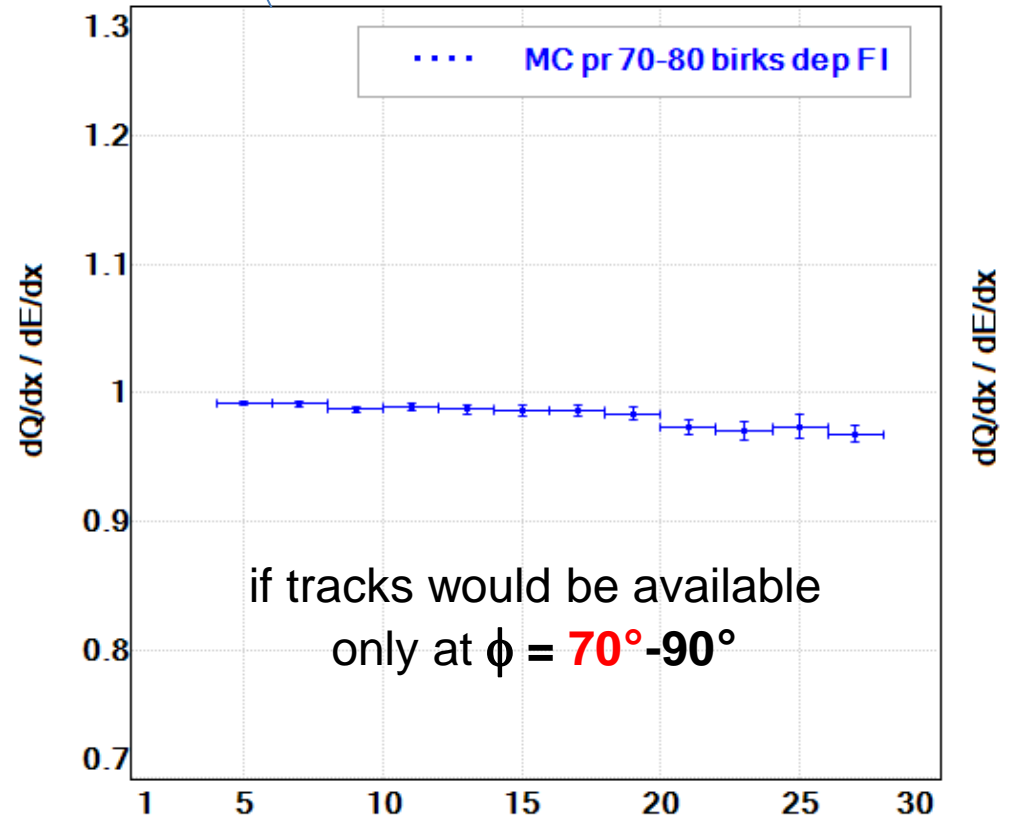
It can be that angular dependence exists but the effect is smaller than predicted in the Columnar theory.

Angular dependence using two angular bins: 70° - 80° w.r.t. 80° - 90° .

dE/dx [MeV/cm]



dE/dx [MeV/cm]



Summary

- Angular effect is visible in data if no strict selection of stopping protons.
- The reconstruction uncertainty tested also for this case.
- Realistic simulation is possible to introduce in FLUKA thanks to Paola Sala – (~next week is enough?)
- The observed effect is smaller than in the columnar theory. If the effect depends on the purity we need to learn how to simulate this dependence.
- Possibilities to measure the dependence:
 - rather not with big angles only...
 - one can use kaons (muons for low dE/dx) to avoid confusion with particles reinteracting at low E_k (but must check prob. of K decaying in flight)
 - we are testing alternative approach to optimize angular correction in data: distribution of particle range at given energy