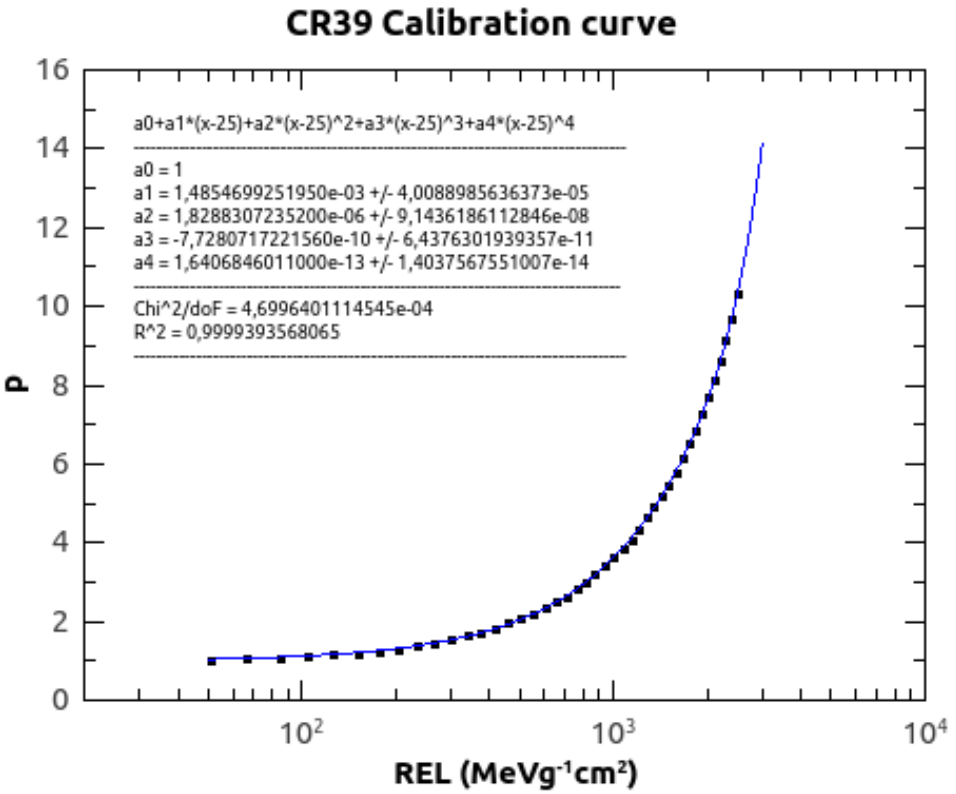
BOLOGNA STATUS REPORT

December 20th, 2019

Z = 1e and 2e charged particles detection in CR39

Procedure:
- Restricted energy Loss (REL) versus β.
- Etch rate (p) versus REL. (calibration)
- Max angle :

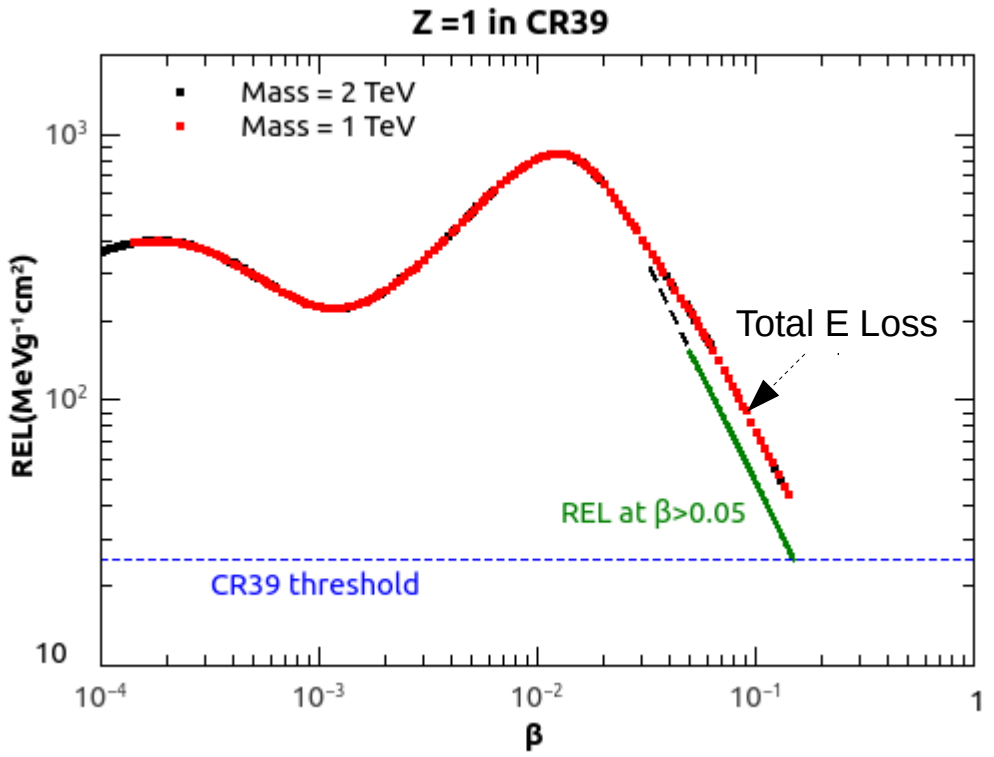
$$\cos \delta_{max} = 1/p$$

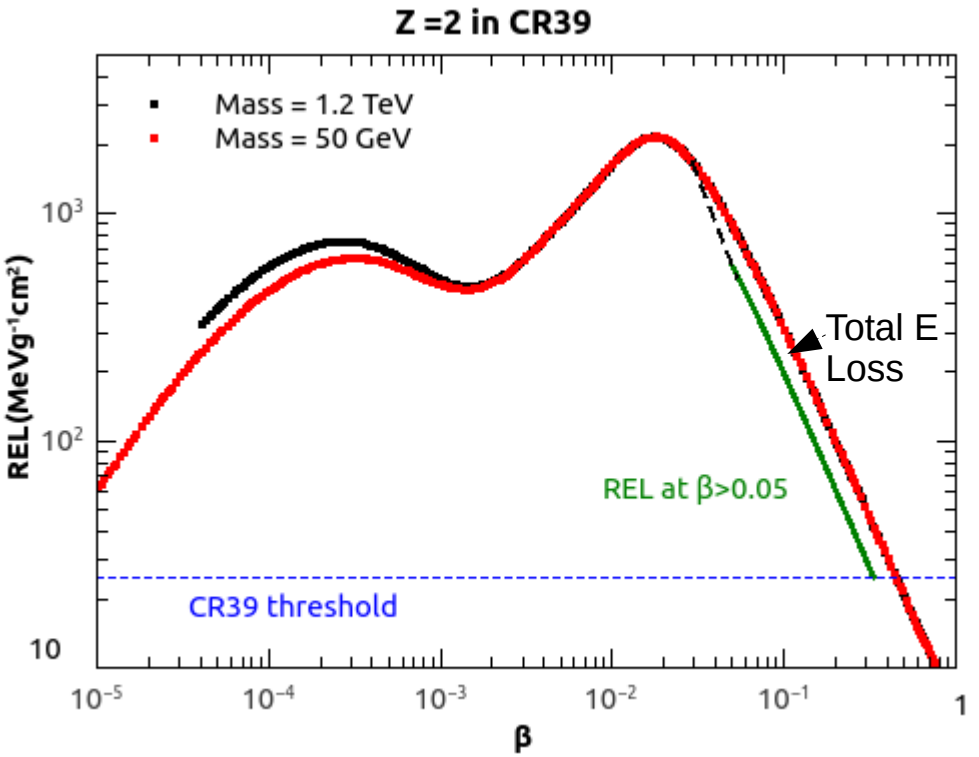


Parametrization of CR39 calibration Curve

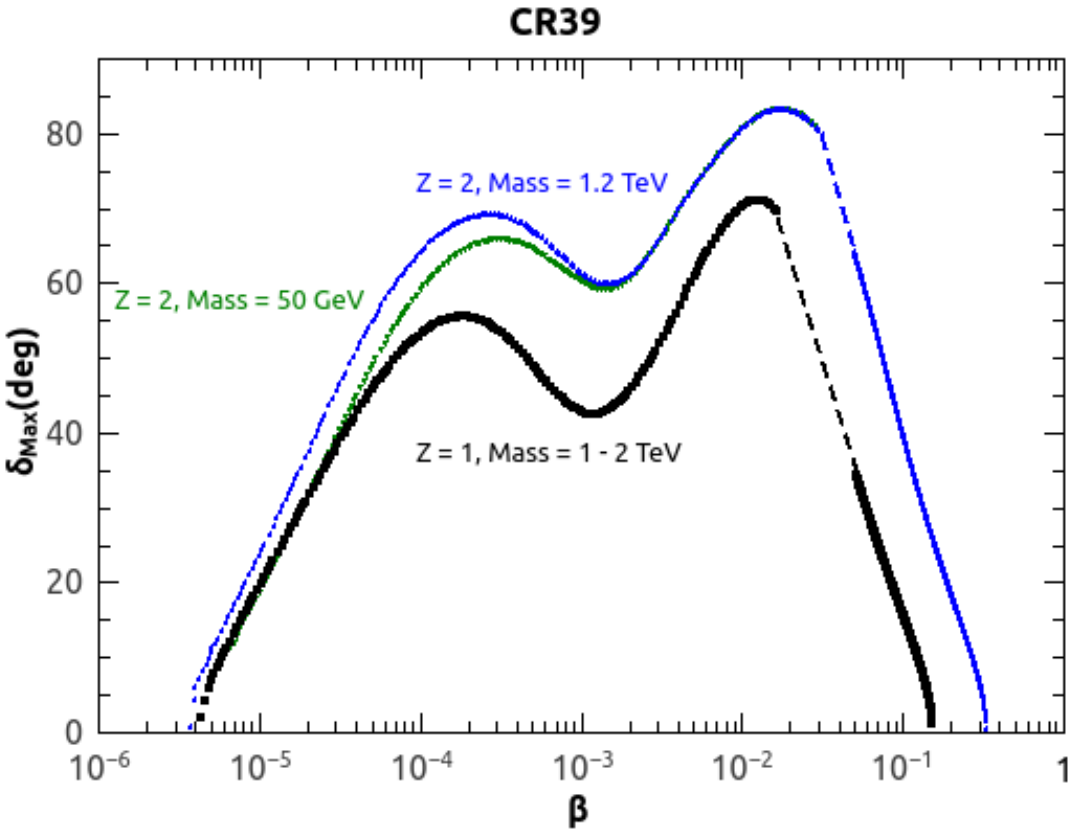
Restricted energy loss in CR39

→ For $\beta \leq 0{,}01$ REL is equivalent to the energy loss.
→ For $\beta < 0{,}05$ REL from PDG.
→ For β in the range 0.01 - 0.05 : approximation/interpolation.





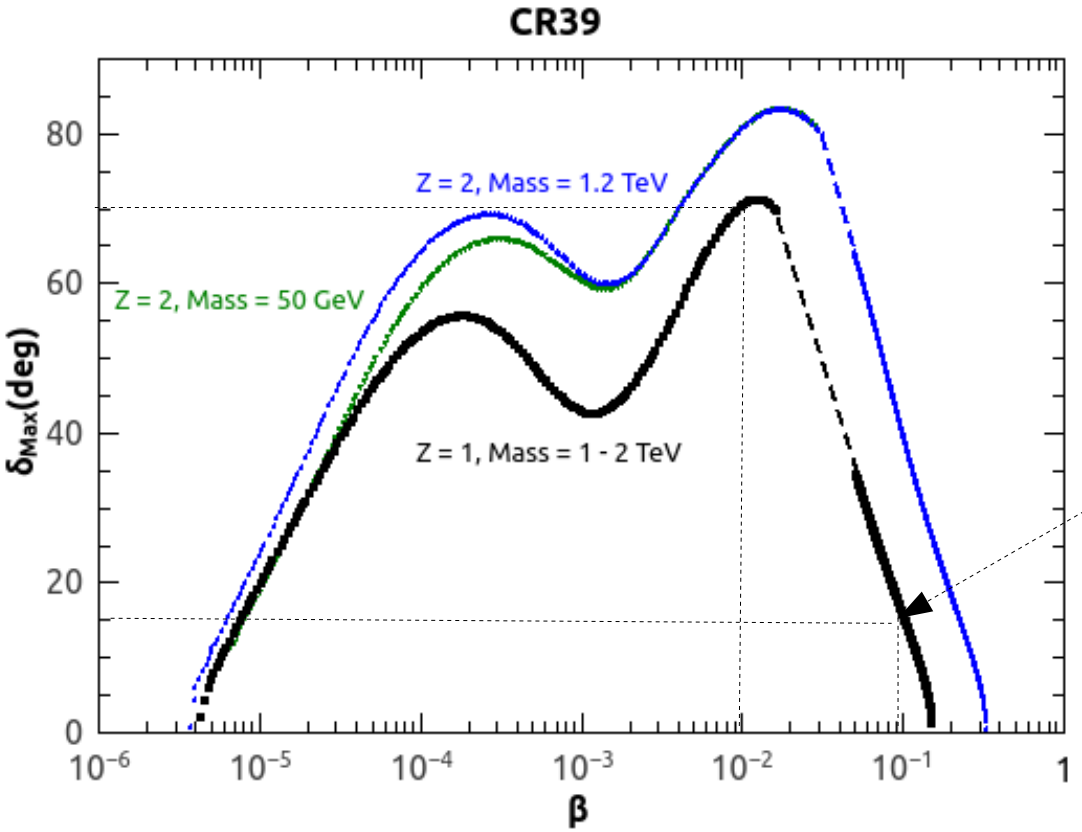
Maximum zenith angle for detection



→ for Z = 1e, 2e charges, at $\beta = 3\times10^{-6}$ and 1.5×10^{-1} (3×10^{-1}) only particles with normal incidence can be detected

Maximum zenith angle for detection

For Z = 1e , $\beta = 10^{-2}$ particles can be revealed for incidence angles within a cone of 70°.



Z = 1e , $\beta = 10^{-1}$ incidence angles should be within a cone of 15°.

→ for Z = 1e, 2e charges, at $\beta = 3\times10^{-6}$ and 1.5×10^{-1} (3×10^{-1}) only particles with normal incidence can be detected