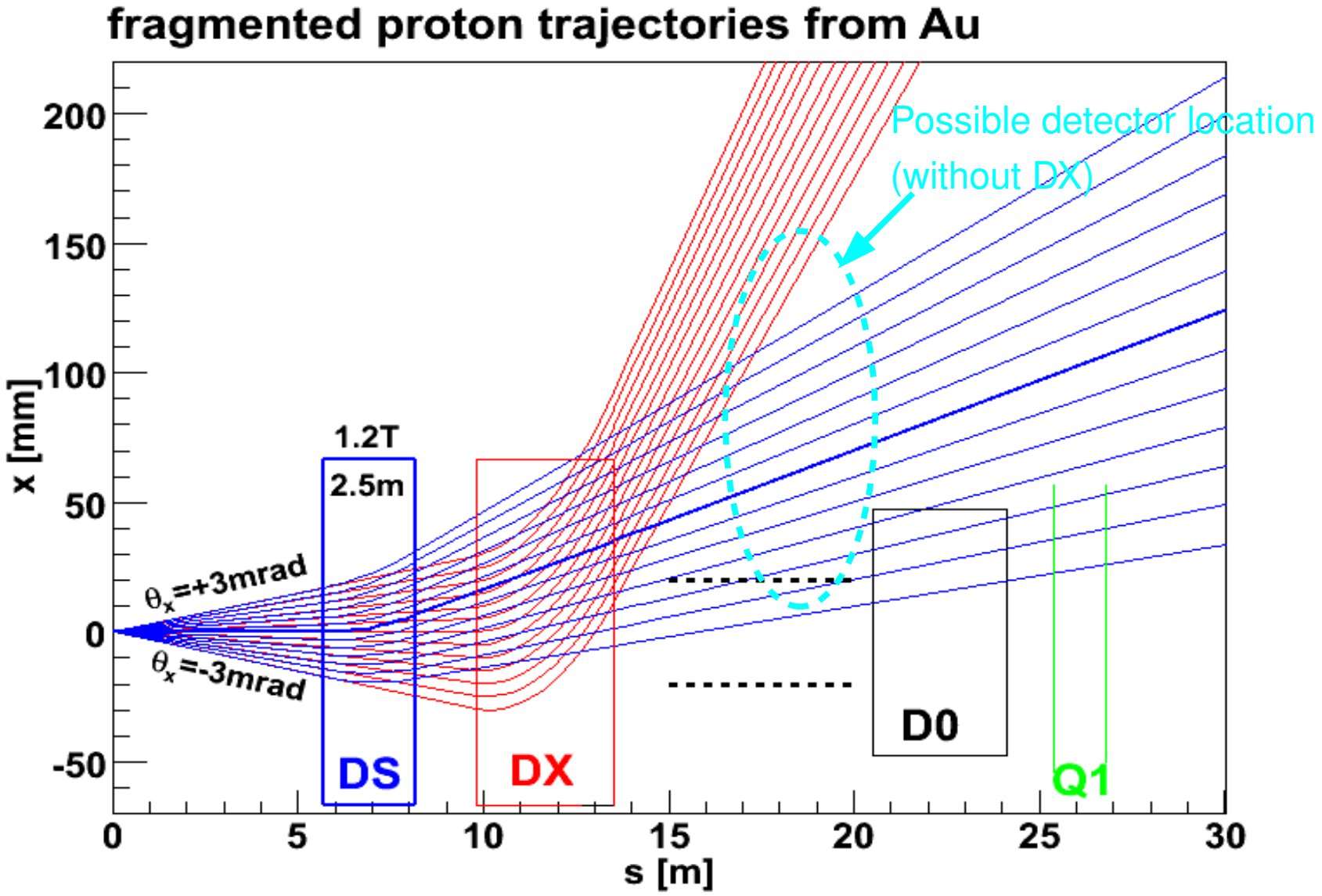
Tagging fragmented protons

- Tagging fragmented protons from Au in incoherent diffractive process:
  - Incoherent process >> coherent process at $t \neq 0$
  - Crucial to identify the process for isolating coherent diffraction: detecting fragmented nucleons
  - Fragmented neutrons will be detected by ZDC
  - Detecting fragmented protons:
    - Relying on magnetic rigidity (B_ρ) changes
    - Au: p = 197/79:1 ~ 2.5:1

Fragmented proton distribution

- Proton angular spread dominated by Fermi momentum p_F~ 250 MeV/c in transverse direction: ~a few mrad angular spread
- Longitudinal momentum smearing due to Lorentz boost
- Need bending power enough to separate them from the beam yet distribute them in detector reach
  - ∫Bdl (T·m) for DX:DS = 4.28x3.7:1.2x2.5 = 15.8:3

Fragmented proton bending from DS and DX



p+p at 250+250 GeV