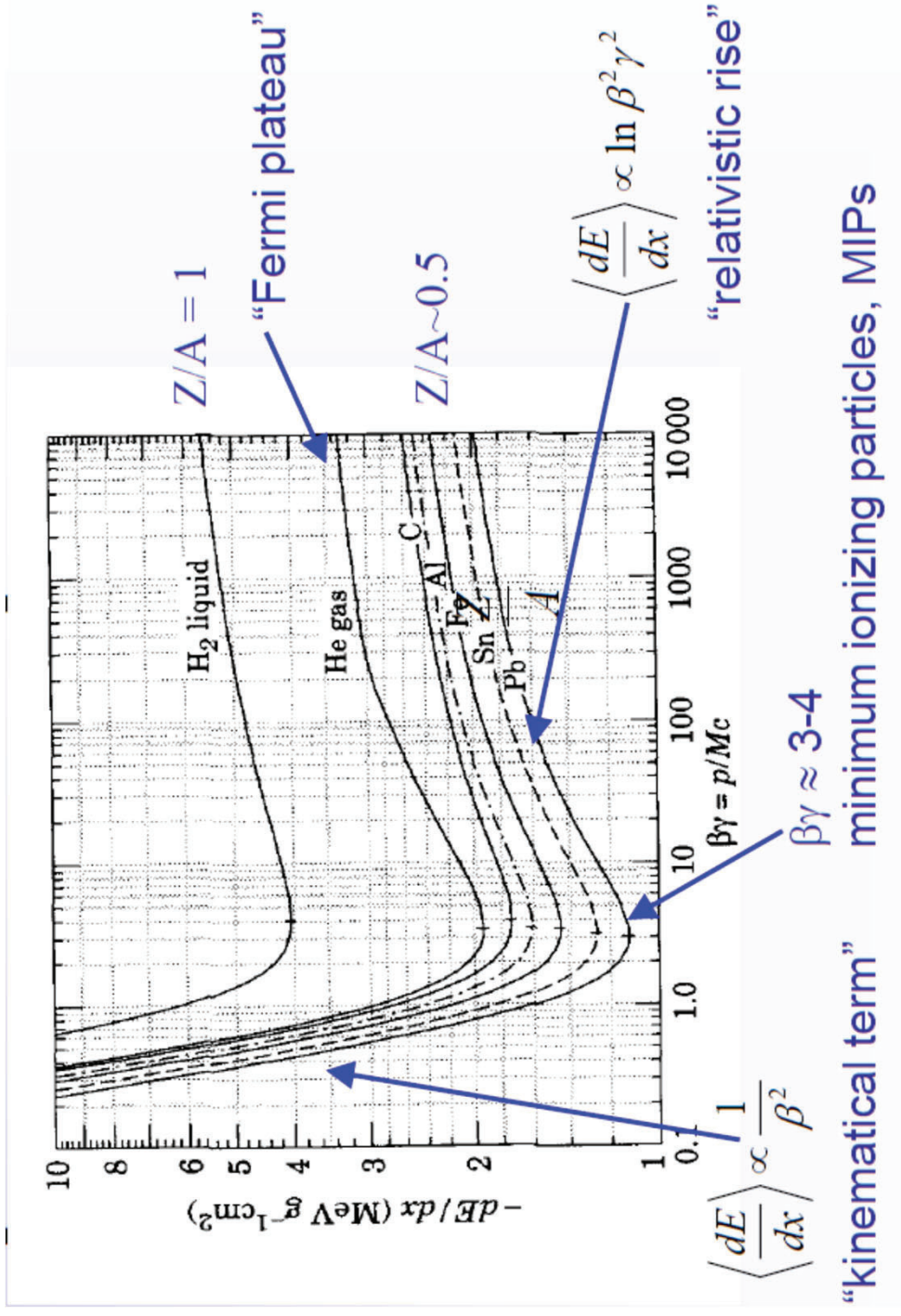
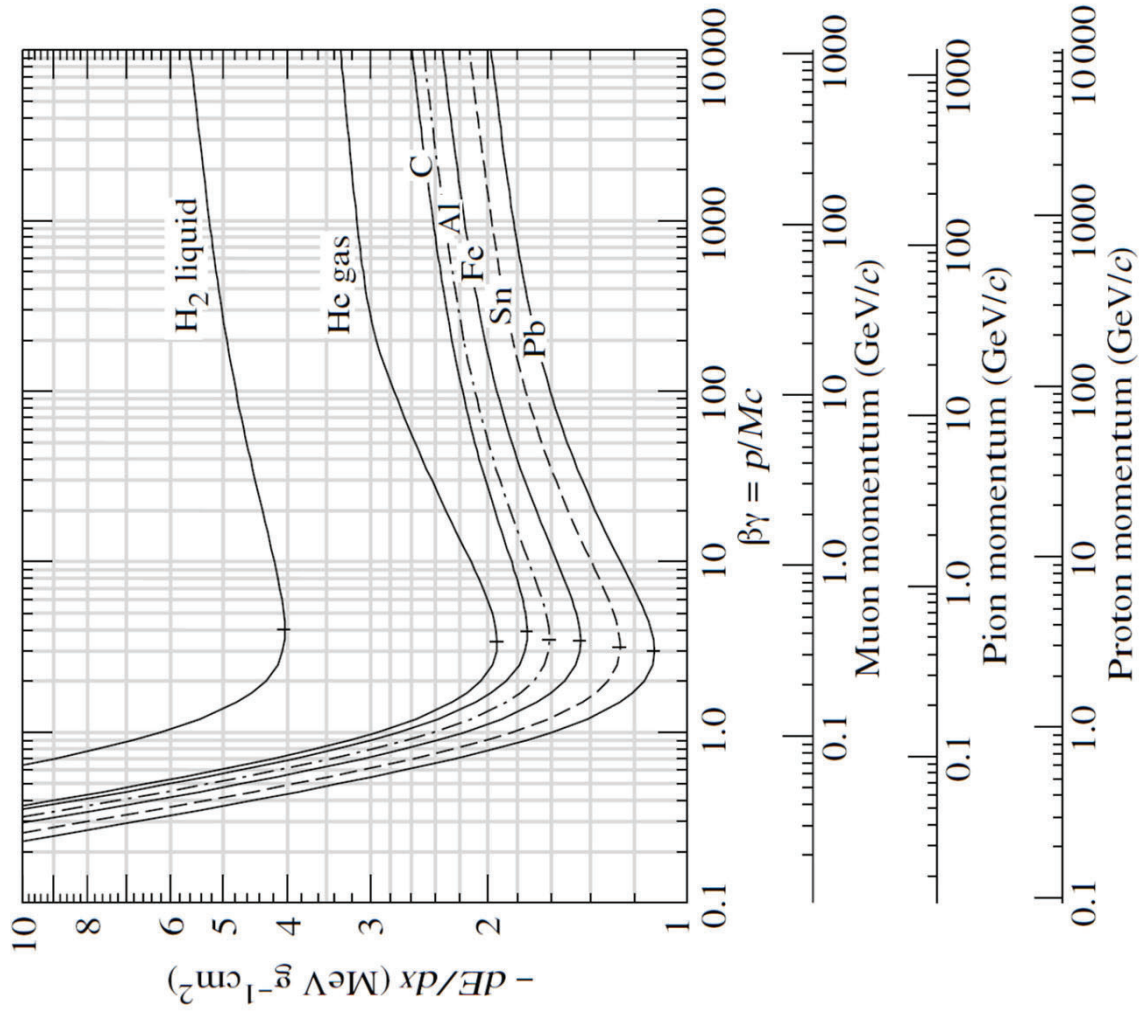
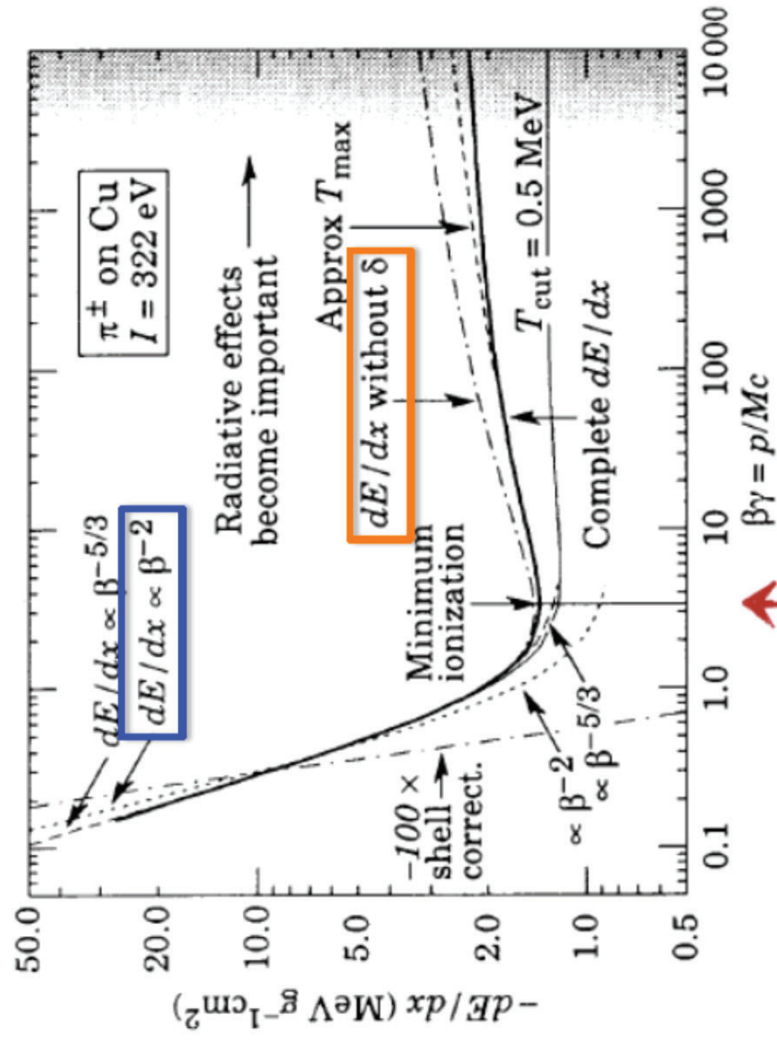




$$-\frac{dE}{dx} = \rho K Z^2 \frac{Z}{A} \frac{1}{\beta^2} \left[\ln \frac{2mc^2 \beta^2 \gamma^2}{I} - \beta^2 - \frac{\delta(\gamma)}{2} \right]$$

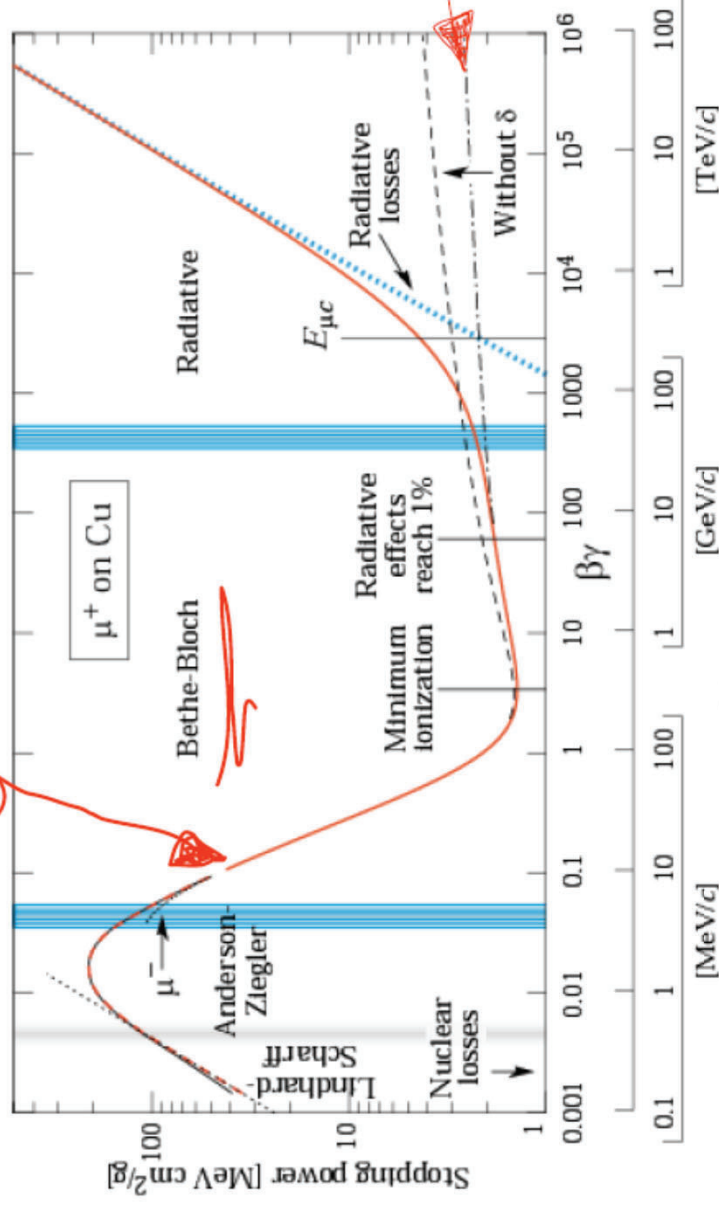




$$\beta\gamma = 3-4$$

$$\frac{dE}{dx} \propto \frac{Z^2}{\beta^2} \ln(a\beta^2\gamma^2)$$

$$\frac{dE}{dx} = KZ^2 \frac{Z}{A} \frac{1}{\beta^2} \left[\frac{1}{2} \ln \frac{2m_e c^2 \beta^2 \gamma^2 T_{\max}}{I^2} - \beta^2 - \frac{\delta}{2} \right]$$



Stopping power ($\equiv \langle dE/dx \rangle$) for positive muons in copper as a function of $\beta\gamma \approx p/Mc$ over nine orders of magnitude in momentum (12 orders of magnitude in kinetic energy). Solid curves indicate the total stopping power.

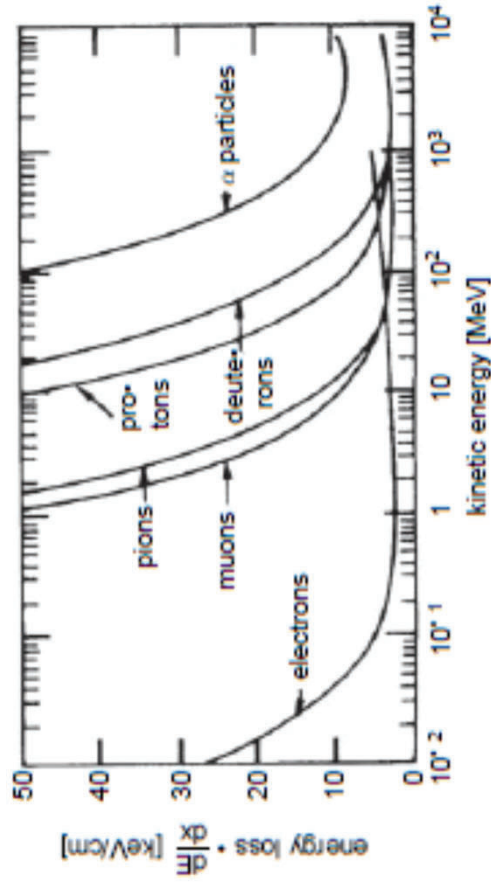


fig. 1.2. Energy loss for electrons, muons, pions, protons, deuterons and α particles in air [14].

- **STAR Time-Projection Chamber (TPC):**

10% Methan / 90% Argon (2mbar above athm. pressure)

