1 novembre (1950)

1° Modello

- Neutron production by cyclotron particles - 1

In the experiment with the water tank, one can get an idea of the neutron energy by measuring the space distribution of neutrons (for example measure $\langle r^2 \rangle_{Av.}$). A comparison at different energies is interesting. $\langle r^2 \rangle_{Av}$ would be probably representative of the "evaporation" process, while the ~~neutron~~ relaxation lenght would be probably characteristic of the "knock on" process.

Excitation function of fission + neutron production, in the π^- region

In connection with the problem of increasing $\sigma_{fission}$ by increasing Z^2/A (see program), the following experiment would be ~~characteristic~~ sensitive: Plot not only $\sigma_{f\,Bi}$ versus energy, but plot

$$\frac{\sigma_f}{\text{Total production}/\sigma_{\text{inelastic}}} \quad \text{as a function of Energy.} \qquad (1)$$

This should increase when π^- emission appears, as ~~not~~ only π^- emission increases the charge, but also it "loses" ≈ 160 MeV.

It would be interesting to measure the ratio (1), at the same time, on the same beam, so that ~~these~~ it would be easily accurate and not need the knowledge of the absolute flux.