

STUDY OF ($\alpha, \alpha x$) REACTIONS INDUCED BY 200 MeV α -PARTICLES

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The inclusive spectra of charged particles p, d, t, ^3He , and ^4He , and those in coincidence with alpha particles in reactions induced by 200 MeV alpha particles with ^{58}Ni targets have been measured. The charged particles were detected using two six-element detector telescopes. The first (second) of the telescopes consists of a 53μ (15μ) and a 1000μ (500μ) silicon surface barrier detectors plus four intrinsic germanium detectors of 10-15 mm thickness each. Measurements were made with one of the telescopes fixed at the laboratory angle of 12.5° on one side of the beam and the other telescope placed at 14.5° , 23° , 35° and 55° on the other side. The reduction of the data is in progress.

These measurements were motivated to obtain data to compare with similar results obtained in proton induced reactions.¹⁻⁴ Qualitatively the characteristics of the inclusive charged particle

spectra produced with the two probes are similar. Some features of the (p,2p) results can be understood (see a contribution by G. Ciangaru et al in this report) in a picture which assumes that after the incident proton has initiated a (p,p₁p₂) reaction with a target proton, the energy spectra of protons in coincidence with a high energy forward going proton (p₁) corresponds to that produced by the other proton (p₂) inelastically scattered from the nucleus as it propagates through it. If this picture is valid then one should see similar proton spectra in coincidence with alpha particles in reaction of ($\alpha, \alpha p$) type.

- 1) T. Chen et al., Phys. Lett. 103B, 192 (1981); R.E. Segel et al., Phys. Rev. C 26, 2424 (1982).
- 2) A.A. Cowley et al., Phys. Rev. Lett. 45, 1930 (1980).
- 3) G. Ciangaru et al., submitted for publication; also see this report, p. 143.
- 4) J.R. Wu et al., Phys. Rev. C 19, 659 (1979).