

Physics 410-510

Experiment N-2

Range and Straggling of Alpha Particles

1. Determine the scale reading corresponding to the superposition of the source and detector-, using the dependence of the counting rate on the separation of the source and detector.
2. For air and helium at atmospheric pressure-, make a series of counting rate measurements to determine the shape of the number versus range curve near the end of the range. Do this for several bias settings and extrapolate the mean range to zero bias.
3. Compare your determinations of mean range and straggling with other results given in the literature

References

1. O. Bilaniuk, Semiconductor Particle Detectors, *Scientific American*, Oct 1962
2. Holloway and Livingston, *Phys. Rev.* 54, 18 (1938)
3. Price, Nuclear Radiation Detection, Ch I Sections I-1 to I-5
4. Segre, Experimental Physics, Vol I, Part II, Sections IA and IC.