

Neutron Yields from Polonium Alpha Particles (Roberts)

Thick targets of several of the light elements have been bombarded with alpha particles from polonium. The neutrons were detected by BF<sub>3</sub> counters in paraffin. The efficiency of detection was determined by a Ra + Be source of known neutron yield. Measurements were made with the counters 7 and 12 cm from the source. The efficiency for counting "C" neutrons was about .0007 per counter for the 7 cm position and .0003 per counter at 12 cm. Range measurements of the  $\alpha$  particles indicated that the polonium source was not sufficiently thin for high accuracy. No correction has been made for the effect of the energy of the emitted neutrons upon the efficiency of detection. It is unlikely that this correction would in any case amount to more than twenty percent. However, impurities in the target may have introduced, in some cases, an error of ten or twenty percent. The table gives the neutron yield per  $10^6$   $\alpha$  particles. In all cases except fluorine the element was used. Fluorine was measured using CF<sub>2</sub> target and correcting for the effect of C. The result was checked using MgF<sub>2</sub> and CaF<sub>2</sub>. The boron assayed 80% pure; the impurity was taken to be oxygen, and a correction was made. A complete report will be issued soon.

Element	7 cm $\eta$ per $10^6 \alpha$	12 cm $\eta$ per $10^6 \alpha$
A	.29	
Al	.58	.67
B	18.8	23.2
Be	65.9	75.8
C	.085	.12
F	9.5	
Mg	1.1	
N	0	0
Na	1.16	
O	.06	.07
P		.02
Si	.13	