

the film, and by shifting it quickly, we get the direct image and mirror image alternately, so that, by those motion, the judgement of the coincidence of the two images are made very easy.

(ii) We made two images of the end points or any distinctive points of the tracks coincide at a point on the white paper, which is freely movable along the x , y , z -axes. Then x , y , z , coordinates of the point were read with the vernier, and from these values the ranges and the spacial arrangements of tracks were determined.

We found these methods were very convenient and accurate.

44. On the Property of the Proportional Counter.

Masateru Sonoda.

The counting property of a CH_4 , $\text{CH}_4\text{-Ar}$, $\text{C}_2\text{H}_5\text{OH}$, and $\text{C}_2\text{H}_5\text{OH-Ar}$ proportional counter was investigated under the intense γ -ray background and the followings were found.

(1) The plateau was 150V~200V with the rise of about 10 %.

(2) The γ -ray background became sensitive on the plateau for the higher value of the total pressure. The relatively small pressure (7~10 cm Hg) was found to be most suitable for counting α -particle or proton under such intense γ -ray background.

(3) The increase of Ar decreases the operating voltage of the counter so far as the amount of CH_4 or $\text{C}_2\text{H}_5\text{OH}$ is kept greater than a certain lower limit (about 3 cm Hg).

The counter of the CH_4 flow type was also investigated and found to be used satisfactorily both for α -particle and β or γ -rays. The plateau was about 200V for the α -particle and 100V for the β -particle, with the slope flatter than for the former type in both cases.

45. The Efficiency of the G-M Counter for High Energy γ -quanta.

Masateru Sonoda.

The efficiency of the lead counter was calculated theoretically for the γ -ray of high energy such as emitted by (Li-p) or (F-p) reaction, taking into account the effect of the multiple scattering and the radiation loss of the secondary electrons. The contribution due to the secondary radiation produced by the brems-