2. An Experiment on the Discharge Mechanism of the Geiger-Müller Counter

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Attempts were made to verify the various explanations about the action and the discharge mechanism of the G.M. counter.

Measurement

(1) By varying the grid bias of the sharp cut-off tube 6SH7, we selected all pulses with regard to its height; and counted every pulse at its respective state. This was done with every applied voltage. The cases in which the measurements were made were three as follows. The counter was filled with i) 88 mmHg argon and 15 mmHg alcohol mixture; ii) 16.9 mmHg alcohol only; iii) 86.8 mmHg argon only.

(2) The pulse shape and width were observed by the synchroscope, and it was determined whether these were of the "Nach-Entladung" or not.

(3) The efficiency of the counter which was filled with only alcohol to the cosmic rays was measured.

Results

(1) In the Geiger region, the true pulses were almost of the same height under the same applied voltage; and besides these true counts, we found other smaller and larger pulses. The former, we may admit, are the "Nach-Entladung" and the latter are now to be inquired. Exempting both larger and smaller pulses, the plateau curve becomes flat.

(2) When filled with only alcohol we found the pulses which were larger, but not the smaller at all, and the plateau curve had inclination. The efficiency to the cosmic rays was about 70% (when the alcohol pressure was 15 mmHg).

(3) In the case when the counter was full of only argon, there were many smaller pulses and larger ones. As the Geiger region was very short, it was difficult to draw the plateau curve.

Concluding these, we can see that alcohol plays the part of absorbing the photon which is emitted from argon atom when thd electron avalanches occur.

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3. On Some Properties of 2π-type G-M Counter. (III)

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In order to study the relative efficiency at each part of the plane perpendi-