

is extremely large and presents difficulties in the analysis of data. A programme for the analysis of double decay processes in the decay of nuclear levels has been written in the Real Time Fortran language for the off-line analysis of data in a CAE 9040 computer.

The system was electronically tested for linearity, time resolution, stability etc. For the measurements of a double gamma decay in which two coaxial Ge(Li) detectors were applied, a calibration of the system was made by Compton scattering of gamma rays from one detector into another. The time difference between the pulses from the two detectors was recorded in one channel and the amplitudes of the pulses in the other two channels. The calibration measurements yielded a straight line in the amplitude 1 — amplitude 2 diagram, since a continuous distribution of energy deposited in each detector was obtained (due to the variation of the scattering angle), with the condition of a constant sum. The same applied in the case of double decay. A detailed investigation of the time spectra (time dimension) along the constant sum line was made. When one amplitude increases the other decreases, and this causes shifts (of about 30 ns) of the time distributions. A considerable improvement of the time resolution was obtained when corrections for these shifts were introduced in the analysis of data, depending on the channel numbers of amplitude 1 and amplitude 2.

2.8. Automatic analysis of the gamma radiation spectra

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2.9. The short dead time of halogen parallel plate counters

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Introduction. The investigation of properties of halogen (Ne-Br₂) parallel plate counters of the Srdoč type¹⁾ revealed the possibility of constructing counters with a dead time shorter by an order of magnitude than that of cylindrical GM counters.

In general, the decrease of the impedance connected to the counter causes the reduction of the dead time. The dead time of parallel plate counters with low impedance (300 kΩ) and the pressure ratio $P_{Br_2} : P_{Ne} = 100$ is short, less than 10 μs. In particular cases, if P_{Br_2} is 1.2 torr and the distance between the electrodes 3 mm, the dead time is 6 μs.

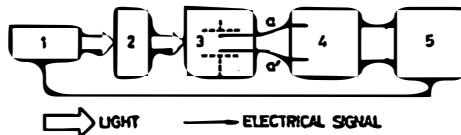


Fig. 1.

To explain this phenomenon, the discharge in the counter caused by gamma or beta particles was measured using the experimental setup described below.