

# WHY DO WE NEED the FORMULA for the ENERGY RESOLUTION of a SCINTILLATION SPECTROMETER with SEVERAL PHOTODETECTORS?

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Now, there are many works on the theory of scintillation spectrometers, which offer different formulae for the energy resolution of scintillation spectrometers, sometimes contradicting each other. The terms included in the formulae for the energy resolution differ not only in their names but also in the physical meaning of the processes they take into account. The main drawback of all existing theories of scintillation spectrometers is the possibility of introducing various terms into the formula for the energy resolution without giving specific formulae for their relationship with the characteristics of the detector. This approach is not only wrong but also counterproductive, since it does not allow comparing the results obtained by different scientific groups. In this paper, based on the microscopic theory of scintillation spectrometers with several photodetectors, the shortcomings of existing theories are analyzed. It is shown that only the formulas of the microscopic theory for arbitrary moments of the signal distribution function at the outputs of a scintillation spectrometer with several photodetectors can serve as a standard theory of scintillation spectrometers, and will be a reliable basis for linking theoretical and experimental research in the field of physics of scintillation detectors.

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