

ON THE NECESSITY OF ALTERNATIVE METHODS TO DETERMINE SAMPLE THICKNESSES
AND MASSES

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Abstract

The great impact of an inaccurate determination of the sample mass or the layer thickness on nuclear data measurements is discussed. This is illustrated by selected realistic examples.

A short survey of the advantages and disadvantages of various methods to determine the mass or the thickness of a layer is given, especially with respect to their consequences on the accuracy of nuclear data measurements.

THE INFLUENCE OF TARGET PROPERTIES
ON NUCLEAR SPECTROSCOPY MEASUREMENTS

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A B S T R A C T

A broad review of different kinds of in-beam nuclear spectroscopy measurements particularly influenced by the target properties is outlined. To illustrate such an influence a few typical examples of in-beam electron and gamma-ray spectroscopy measurements, performed at the Orsay MP Tandem accelerator, are reported. In particular several applications of the recoil ion catcher method in the study of short lived nuclear isomers (with half-lives between ten and a few hundred nanoseconds) are briefly described. This method is operated mostly with

a pulsed heavy ion beam, bombarding a thin self supported target but avoiding to hit the catcher foil. Moreover, the time of flight filtering properties of this experimental device is improved by a fast detection of compound nucleus deexcitation (performed with an array of several BaF_2 crystals). This kind of measurements shows clearly the importance of the target qualities as well as the need of good focusing properties and time structure for the accelerated particle beam. Finally, the required characteristics of the targets and recoil ion stopper foils needed for these measurements (and similar ones performed with the recoil ion shadow method) are analyzed in detail for a few typical experimental arrangements.

The Target for Heavy Ion Physics

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ABSTRACT:

We are engaged in researches on nuclear and atomic physics using heavy ion accelerators such as Linac, Tandem Van de Graaff, separate-sector cyclotron. Beam energies covered range from a few MeV/u to 100 MeV/u. The requirements for target properties widely vary with the individual research chosen and the type of beam used. Typical problems are concerned with thickness uniformity, heat tolerance, target preparation of non-metallic elements, density of gaseous target and so on. In this report we illustrate several specific examples of such problems encountered in current experiments.