

Lifetime measurement

Place: MLL Accelerator Laboratory, Am Coulombwall 6

<http://www.bl.physik.uni-muenchen.de/>

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The aim of the experiment is to get an insight in fast nuclear measurement techniques.

1. Procedure of the experiment

- Energy- and time calibration (ns) of a NaI coincidence spectrometer
- Determination of the activity of the ^{181}Hf source
- Determination of the time resolution by means of the e^+e^- - annihilation
- Speed of γ - rays in air
- Lifetime measurement of the $5/2^+$ level in ^{181}Ta

2. Essential physics

- Principle of scintillation counters and photomultipliers
- Interaction of gamma-radiation with matter
- Photo and Compton effect

3. Setup

Multichannel analyzer, NaI detectors, Fast-Slow coincidence

4. Notice

The experiment is usually carried on a single day (10 a.m. - ~ 3 p.m.)

The experiment is given in English, since unfortunately the tutor does not speak German, sorry.

If desired, a visit of the MLL Tandem accelerator is possible.