

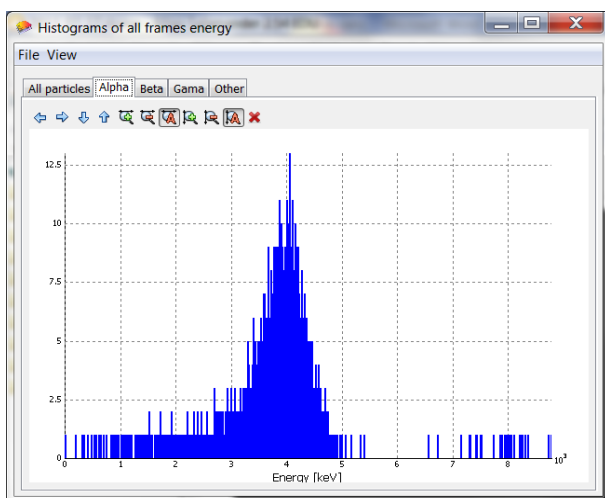
Alpha Particle Absorption in a Food-wrapping Film – Evaluation of Energy Histograms

extract from the *Experiment Guide* by Dr.Vladimir Vicha (IEAP CTU Prague) and Dr.Peter Žilavý (Department of Physics Education - Faculty of Mathematics and Physics – Charles University in Prague)

The alpha particles lose part of their kinetic energy upon passing through the film and slow down. Low velocity alpha particles can be obtained this way.

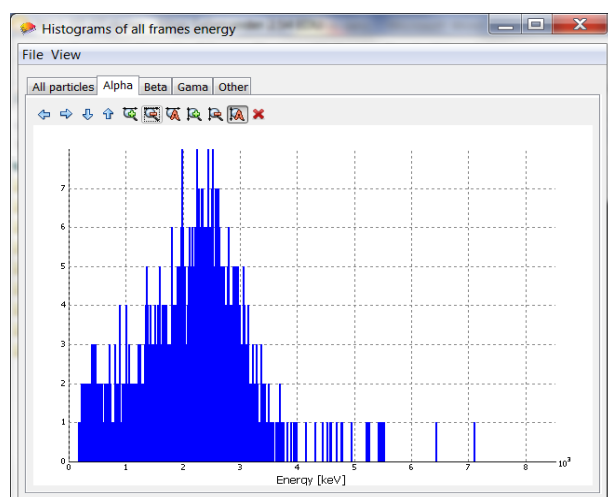
Simple preview: *Mode spectrometer, Exp. Count 1000, Exp. Time 0,01 s, Bias 18 V, Analysis type Basic, Finite count of steps - checked, Set color map Hot, Min. level 0, Max. level 100*

Procedure: Fix the MX-10 detector into the adjustable positioner and select the sieve as the particle outlet hole (position 2). Place the source of particles several millimetres from the detector chip so that a food-wrapping film or a microtone bag can be inserted between the emitter and the chip. Take the first snapshot without a film, the second one with a single film and the third one with a double film. Display the energy histograms (*Tools – Histogram of particle properties – Energy-all frames*).



1. Snapshot – no film

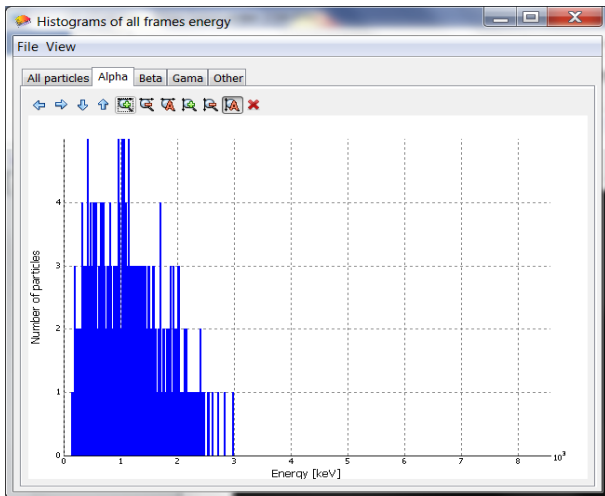
The peak in the energy histogram appears at a value of about 4 MeV.



2. Snapshot – single film

The peak has moved to lower energy of about 2.5 MeV. This means the alpha particles lost energy of about 1.5 MeV while passing through one film.

You can also see that the peak width has increased. This is how the material through which the particles pass influences their energy.



3. Snapshot – double film

The peak has moved to even lower energy of about 1 MeV. This means the alpha particles lost energy of about 1.5 MeV again while passing through the second film.