

Neutron spectra measurement with Time of Flight Technique
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During the experiment we will measure a neutron spectra coming from a ${}^7\text{Li}(p,n)$ reaction using the Time of Flight (TOF) method. We will setup the flight path in order to have the best compromise between energy resolution and count rate. Signals from a pickup and from a detector will be acquired with a digitizer. We will observe and study the signals coming from different types of detectors suitable for measuring the different neutron energy regime. Together with ${}^6\text{Li}$ -glass detector (GS20) taken as a standard scintillator for thermal neutrons, we will use novel scintillating systems based on ${}^6\text{LiF}$ loaded solid siloxane scintillators. On the other hand, the response to fast neutrons of liquid siloxanes added with suitable fluorophores will be studied and compared to the performance of a standard liquid scintillator EJ309, where the main component is a flammable, non-toxic liquid. Hence, the produced neutron spectra will range from thermal neutrons to fast one (couple of MeV energy). In order to obtain an absolute value for the measured yield, an activation measurement will be performed using HPGe detectors to measure the Be activity of the Li target.