Contribution ID: **1130** Type: **Oral (Student, In Competition) / Orale (Étudiant(e), inscrit à la compétition)**

Understanding the signal induced within a gaseous spherical detector used by the NEWS experiment

Tuesday 14 June 2016 14:00 (15 minutes)

More than eighty years after its existence was originally postulated, the search for Dark Matter is still ongoing. NEWS is a direct detection experiment that aims to detect WIMPs with a metallic spherical detector with a high voltage electrode in its centre, with gas as its target mass.

In the context of the NEWS experiment, our estimators of the energy of events, and their position within the detector, are based on the amplitude and risetime of our signal. We have developed an in-depth understanding of the formation process of our signal, specifically the response function of our physical detector and its electronics. Through a digital deconvolution of this response function, we recover the original electronic signal released by an energy deposition in the target volume. This allows for optimum discrimination between nuclear recoils and other pulses, and improved estimators of the energy and position of events.

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