



Investigation of a pulse shape based discrimination of surface interactions in high purity germanium crystals

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The detectors of the direct dark matter search experiment EDELWEISS consist of high purity germanium crystals operated at cryogenic temperatures (< 20 mK) and low electric fields (< 1 V/cm). At the moment the surface discrimination is based on the simultaneous measurement of the charge amplitudes on two different types of electrodes. As the rise time of a charge signal strongly depends on the location of an interaction in the crystal, a time-resolved measurement can also be used to identify surface interactions. This contribution presents the results of a study of the discrimination power of the rise time parameter from a hot carrier transport simulation in comparison with special measurements using an EDELWEISS-type detector. In addition, we show the setup for the time-resolved ionization signal read-out in the EDELWEISS-III experiment and first results from data taking in the underground laboratory of Modane.