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Characterization of a Multichannel Analyzer Implemented with FPGA Board.

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In this work the characterization of a multichannel analyzer conceived in the CEADEN and developed on the basis of an FPGA, is presented. The system consists of 2048 channels; 32 000 counts per channel at most; 4.5ns of sampling time and a dead time of 16ns. A differential non-linearity (DNL) of $+3.62 \pm 1.56$ and a non-integral linearity (INL) of $+0.29 \pm 0.05$, in addition with the increase of the counting rate the channel of the centroid of the peak moves 64 channels as an average towards the left Of the spectrum, while the FWHM of the peaks remains practically constant between 7 and 8 channels. The spectra obtained for radiation sources are in correspondence with the characteristics of each source. In summary these features ensure that this multi-channel analyzer can be used in nuclear spectrometry.

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