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The CUORE bolometric detectors: pulse shape analysis of the thermal signals

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A complete understanding of the pulse shape of the signals produced by the CUORE bolometers is a crucial topic which can contribute to the identification of the physical parameters which are affecting the detector performance.

The CUORE experiment could profit from the development of a predictive model of the bolometers response. Indeed, understanding which are the intrinsic thermal or extrinsic noise contributions to the resolution, would allow for improvements in order to reach the design goal of 5 keV energy resolution in the ROI. Moreover, an effective model of the detector operation could help improving also the analysis of the low energy events, leading to lower energy thresholds by distinguishing small pulses from noise fluctuations. This would allow to access more rare and low energy processes.

Making use of previous pulse shape studies on CUORE-like bolometers, we present here the current status of the development of an accurate dynamic thermal model to describe the CUORE signals.

Less than 5 years of experience since completion of Ph.D

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Student (Ph.D., M.Sc. or B.Sc.)

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