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PADME electromagnetic calorimeter

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The PADME experiment, hosted at Laboratori Nazionali di Frascati in Italy, is going to start its data taking in a short time. It is designed to search for the Dark Photon (A'), an hypothetical particle that can explain the Dark Matter elusiveness, possibly produced in the reaction $e^+ e^- \rightarrow A' \gamma$.

Together with the target, the segmented electromagnetic calorimeter is the most important component of the experiment, since it is needed to detect the recoil photon energy and position, in such a way to measure the A' mass. It will consist of 616 $2.1 \times 2.1 \times 23.0 \text{ cm}^3$ BGO crystals arranged in a cylindrical shape and read by HZC photomultipliers with a diameter of 1.9 cm.

Here we present the results obtained during the measurements performed on the scintillating units with a radioactive source and test beams, together with an overall description of the entire experiment.

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Secondary topics

Applications

Design concepts for future calorimeter at the intensity frontier

Primary topic

Crystals

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