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The PADME experiment

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The PADME experiment at the Laboratori Nazionali di Frascati of INFN is designed to search for the gauge boson, A' , of a $U(1)$ symmetry holding in a hidden sector of particles neutral under the Standard Model interactions.

The design performance of the experimental apparatus allows exploring the A' mass range $m < 23.7$ MeV for values of the effective coupling between A' and the photon $\epsilon > 10^{-3}$ using a positron beam impacting on a thin diamond target.

The PADME experiment has been in operation from October 2018 to February 2019 for a first detector and beam commissioning run. The statistics of the data sample collected could also allow the extraction of preliminary physics results.

The talk will review the experience gained with the detector and beam operation. In addition, the status of the understanding of the data in terms of detector performance, beam induced and physics background and, finally, the physics potential of PADME will be discussed.

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