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# The PADME experiment at LNF

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Among the theoretical models addressing the dark matter problem, the category based on a secluded sector is attracting increasing interest. The PADME experiment, at the Laboratori Nazionali di Frascati (LNF) of INFN, is designed to be sensitive to the production of a low mass gauge boson A'of a new U(1) symmetry holding for dark particles. This 'dark photon'is weakly coupled to the photon of the Standard Model, and it provides an experimental signature for one of the simplest implementations of the dark sector paradigm. The DAΦNE Beam-Test Facility of LNF provides a high intensity, mono-energetic positron beam impacting on a low Z target. The PADME detectors are designed to measure with high precision the momentum of a photon, produced along with A'boson in e+e- annihilation in the target, thus allowing to measure the A'mass as the missing mass in the final state. This technique, particularly useful in case of invisible decays of the A' boson, is adopted for the first time in a fixed target experiment. Simulation studies predict a sensitivity on the interaction strength ($\varepsilon$^2 parameter) down to 10−6, in the mass region 1 MeV<$M\_A'$<22.5 MeV, for one year of data taking with a 550 MeV beam. In Winter 2018-2019 the first run took place, providing useful data to study the detector performance, along with the beam and background conditions. Intense activity is taking place to deliver preliminary results on the PADME data quality. This talk will review the status of the experiment and the prospects.

## Summary

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