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Dark Photon search with PADME at LNF

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Dark Matter elusiveness could be explained by speculating that it lives in a separate sector with respect to the Standard Model (SM) and that interacts with it only by means of messengers. The simplest model foresees just one messenger: a, possibly massive, vector boson given by a new U(1) symmetry. This mediator can faintly mix with the photon and, hence, interact with SM charged particles, seeing an effective charge equal to εe, with e SM charge.
The PADME experiment, hosted at Laboratori Nazionali di Frascati, is designed to search for such kind of particle, looking for its production in $e^+ e^-$ annihilations. Exploiting the DAΦNE linac, the collaboration aims to collect 10^{13} positrons on target by the end of 2018, reaching a sensitivity of $\sim 10^{-3}$ for masses up to 23.7 MeV.

Presenter: Dr PIPERNO, Gabriele

Session Classification: Dark matter and cosmology