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Searching for dark photons with the PADME experiment at the DAFNE Linac

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Summary

Recently, the idea of the existence of a hidden sector of particles, connected with the SM only through a vector mediator - dark photon - was revived. The PADME experiment aims to search for dark photon, A', in positron-on-target annihilation (e+e− ->A') exploiting the 550 MeV positron beam from the DAFNE Linac. The reconstruction of the missing mass through the detection of the recoil photon allows to probe invisible A'final states. The experiment aims to collect 10^13 positrons on target by the end of 2018, allowing to probe for dark photon with mass up to 24MeV and a relative coupling down to epsilon 10^−3. PADME was formally approved by the INFN at the end of 2015 and is in its construction phase.

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