



Contribution ID: 53

Type: **Talk**

## Search for feebly interactive particles: the PADME experiment

*Wednesday, 1 September 2021 12:00 (30 minutes)*

The evidence for the existence of dark matter, so far is based on its gravitational effects. Nevertheless, many theoretical models assume other non-gravitational very-weak interactions between dark matter and ordinary matter, and to test this hypothesis, different experiments are trying to directly detect dark matter signals at particle accelerators.

This elusiveness of dark matter has triggered innovative and open-minded approaches spanning a wide range of energies with high-sensitivity detectors. In this scenario is inserted the Positron Annihilation into Dark Matter Experiment (PADME) ongoing at the Frascati National Laboratory of INFN. PADME is searching a Dark Photon signal [1] by studying the missing mass spectrum of single photon final states resulting from positron annihilation events on the electrons of a fixed target. After commissioning and beam-line optimization, PADME collected in 2020 about  $5 \times 10^{12}$  positrons on target.

Actually, the PADME approach allows to look for any new particle produced in  $e+e-$  collisions through a virtual off-shell photon such as long lived Axion-Like-Particles (ALPs), proto-phobic X bosons, Dark Higgs ... In the talk, the scientific program of the experiment, and its current status will be illustrated.

### References

[1] B. Holdom, Phys. Lett B 166, 196 (1986).

### Is this abstract from experiment?

Yes

### Name of experiment and experimental site

PADME Frascati National Laboratory of INFN

### Is the speaker for that presentation defined?

No

### Details

I'm submitting this abstract on behalf of the PADME collaboration. The actual speaker will be appointed upon acceptance.

### Internet talk

Maybe

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**Session Classification:** A High Energy Particle Physics