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Search for the X17 particle with the PADME detector

The PADME experiment at the Frascati National Laboratory of INFN has performed a search for the hypothetical X17 particle, by observing the product of the collisions of the positron beam from the DAΦNE LINAC on a diamond fixed target. The beam energy has been varied in the range 265–300 MeV, corresponding to values of √s between 16.4 and 17.5 MeV, completely covering the the CoM region identified by the ATOMKI collaboration as significant for observing the postulated X17 particle. The result of the analysis shows an about 2-sigma excess corresponding to the mass indicated by the ATOMKI experiment. A new data taking campaign, with an improved detector is planned to start in the summer of 2025, with the aim of pushing forward the sensitivity of the search.

Secondary track

T02 - Dark Matter

Author: COLLABORATION, PADME

Session Classification: T09

Track Classification: T09 - Beyond the Standard Model