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Search for ultra-light dark matter with the Shuket experiment

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P. Brun, L. Chevalier, C. Flouzat, A. Hees, P. Polovodov, E. Savalle, P. Wolf

The Shuket experiment aims at detecting light scalar dark matter in the form of hidden photons. Shuket stands for SearchH for U(1) dark matter with an Electromagnetic Telescope, it is designed as a metallic spherical cap with a radiometer at its center. We present the results of a re-analysis of a dataset presented in [P. Brun et al, PRL 122, 201801, 2019]. A new method is used, which takes into account the stochastic character of the signal and a realistic dark matter velocity distribution. The new analysis leads to improved constraints on scalar dark matter in a 7.5 eV mass range around 24.6 eV, corresponding to an oscillation frequency centered on 5.9 GHz. We discuss also near and medium term plans for the experiment, including new runs for hidden photons and upgrades for axion detection.

Presenter: BRUN, Pierre

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