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Development of a cryogenic low threshold detector using perovskite nanocrystals

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The LEMING (LEptons in Muonium INteracting with Gravity) experiment aims to measure the gravitational acceleration of Muonium ($M = e^- + \mu^+$) in the gravitational field of the earth. An essential part of this experiment is the reliable detection of M's decay products, i.e. e^+ and e^-, at temperatures below 1 K. The electron, referred to as atomic electron, can be accelerated to energies of $\mathcal{O}$(keV), thus requiring a sensitive detector. This work considers perovskite nanocrystals for the detection of the atomic electron. Preliminary tests at room and cryogenic temperatures are presented.

Author: WEGMANN, Paul (ETH Zurich)

Co-authors: Dr SOTER, Anna (ETH Zürich); GOELDI, Damian; ZHANG, Jesse (ETH Zürich); WADDY, Robert

Presenter: WEGMANN, Paul (ETH Zurich)

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