Abstract Submitted
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The CASPEr-e Search for Axion-like Dark Matter Using Solid-state Nuclear Magnetic Resonance[1] DENIZ AYBAS, J. ADAM, E. BLUMENTHAL, A. V. GRAMOLIN, D. JOHNSON, A. KLEYHEEG, Boston University, S. AFACH, J. W. BLANCHARD, G. P. CENTERS, A. GARCON, M. ENGLER, N. L. FIGUEROA, M. G. SENDRA, A. WICKENBROCK, Helmholtz-Institut Mainz, M. LAWSON, Stockholm University, T. WANG, Princeton University, T. WU, Peking University, H. LUO, Chinese Academy of Sciences, H. MANI, P. MAUSKOPF, Arizona State University, P. W. GRAHAM, Stanford University, S. RAJENDRAN, The Johns Hopkins University, D. F. JACKSON KIMBALL, California State University - East Bay, D. BUDKER, Helmholtz-Institut Mainz, A. O. SUSHKOV, Boston University, CASPER COLLABORATION — We present the results of an experimental search for axion-like dark matter in the mass range 162 neV to 166 neV. The detection scheme of our Cosmic Axion Spin Precession Experiment (CASPEr) is based on a precision measurement of ^{207}Pb nuclear magnetic resonance in a polarized ferroelectric crystal [D. Budker, et al., Phys. Rev. X 4, 021030] at 4.4 T field with a resonant circuit coupled to a low-noise amplifier. Our measurements place upper bounds on the electric-dipole moment coupling $|g_d| < 7.0 \times 10^{-4}\mathrm{GeV}^{-2}$ and the gradient coupling $|g_{\mathrm{aNN}}| < 2.1 \times 10^{-1}\mathrm{GeV}^{-1}$ of axion-like dark matter with 95% confidence level in the searched mass range [D. Aybas, et al., arXiv:2101.01241].

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Deniz Aybas
Boston University

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