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Axion-Dark-Matter Search using Cold Neutrons

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The current best estimate for the universe's matter content consists of 84% dark matter, and the search for its composition remains of great interest. One possible candidate is a so far undetected ultra-low-mass axion. Various astronomical observations, and only one laboratory experiment, using ultra-cold neutrons, currently constrain the axion mass and its interaction strength in the allowed phase space of the axion-gluon coupling. Here we present the idea of a new complementary laboratory search for an axion-induced oscillating neutron electric dipole moment using a cold neutron beam Ramsey setup.

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