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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 laboratory experiments constrain the axion mass and its interaction strength in the allowed phase space. In this talk, we present the idea of a complementary laboratory search for an axion-induced oscillating neutron electric dipole moment using a cold neutron beam Ramsey setup. We show results from recent measurements with the Beam EDM setup at the Institut Laue-Langevin that resulted in further constraints of the axion-gluon coupling.

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