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Online Analysis of Spin Precession for a New Search of the Atomic EDM of Xe-129 at FRM-II[1] JAKE HUNEAU, Michigan State Univ, EXCELLENCE CLUSTER UNIVERSE AND TECHNISCHE UNIVERSITT MNCHEN COLLABORATION, PHYSIKALISCH-TECHNISCHE BUNDESANSTALT COLLABORATION, UNIVERSITY OF MICHIGAN COLLABORATION, JUELICH CENTER FOR NEUTRON SCIENCE COLLABORATION — The existence of a permanent electric dipole moment (EDM) would be a clear signature of time-reversal symmetry violation. Such an observation, at planned levels of sensitivity, would be unambiguous evidence for physics beyond the Standard Model. A search for a permanent EDM in ^{129}Xe is being conducted at FRM-II, which utilizes ^{3}He as a co-magnetometer to improve on the current limits of EDM searches. The experiment is conducted in a magnetically shielded room, which has an ultra-low magnetic field with high stability. The gas mixture of ^{129}Xe and ^{3}He are polarized by spin-exchange optical pumping. In the room, the noble gases precess in a cell with a magnetic and electric field applied where the precession is detected using LTc SQUID sensors. Spin lifetimes have been detected to be more than 2700 seconds for both of the gases. Online analysis of spin precession data taken during test runs will be discussed.

[1]DFG cluster of excellence Origin and Structure of the Universe

Jake Huneau
Michigan State Univ

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