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A New Search for the Atomic EDM of ^{129}Xe at FRM-II (Munich Research Reactor) FLORIAN KUCHLER, PETER FIERLINGER, EVA KRAEGELOH, TOBIAS LINS, MIKE MARINO, JONAS MEINEL, BENJAMIN NIESSEN, STEFAN STUIBER, Technische Universitaet Muenchen, MARTIN BURGHOFF, ISAAC FAN, WOLFGANG KILIAN, SILVIA KNAPPE-GRUENEBERG, ALLARD SCHNABEL, FRANK SEIFERT, LUTZ TRAHMS, JENS VOIGT, Physikalisch-Technische Bundesanstalt, TIM CHUPP, SKYLER DEGENKOLB, FEI GONG, NATASHA SACHDEVA, University of Michigan, Ann Arbor, EARL BABCOCK, Juelich Center for Neutron Science, JAIDEEP SINGH, Michigan State University and NSCL — Electric dipole moments (EDMs) arise due to the breaking of time-reversal or, equivalently, CP-symmetry. Although all searches have so far only set upper limits on EDMs, the motivation for more sensitive searches is stronger than ever. The present limit of 6×10^{-27} e*cm (95% CL) for the ^{129}Xe EDM helps constrain CP-violating parameters within nuclei. A new effort at FRM-II incorporating a ^{3}He comagnetometer can potentially improve this limit by over three orders of magnitude. The noble gas mixture is polarized by spin-exchange optical pumping and then transferred into a high-performance magnetically shielded room. A SQUID magnetometer array measures the precession frequencies in the presence of applied electric- and magnetic-fields. Recent test runs indicate that the experiment is capable of an EDM sensitivity of 10^{-28} e*cm in one day.

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