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A New Search for the Atomic EDM of ^{129}Xe at FRM-II (Munich Research Reactor) JAIDEEP SINGH, PETER FIERLINGER, EVA KRAEGELOH, FLORIAN KUCHLER, TOBIAS LINS, MIKE MARINO, JONAS MEINEL, BENJAMIN NEISSEN, 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 — 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- & 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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