

Abstract Submitted  
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**Nucleon Structure from Lattice QCD Using a Nearly Physical Pion Mass** SERGEY SYRITSYN, Lawrence Berkeley National Laboratory, California, USA, JEREMY GREEN, ANDREW POCHINSKY, JOHN NEGELE, Massachusetts Institute of Technology, Cambridge, MA, USA, MICHAEL ENGELHARDT, New Mexico State University, Las Cruces, NM, USA, STEFAN KRIEG, Bergische Universitat Wuppertal, Wuppertal, Germany; Julich Supercomputing Centre, Julich, Germany — We report the first lattice QCD calculation using the almost physical pion mass  $m_\pi=149$  MeV that agrees with experiment for four fundamental isovector observables characterizing the gross structure of the nucleon: the Dirac and Pauli radii, the magnetic moment, and the quark momentum fraction. The key to this success is excluding the contributions of excited states. An analogous calculation of the nucleon axial charge governing beta decay fails to agree with experiment, and we discuss possible sources of error.

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