Abstract Submitted
for the APR18 Meeting of
The American Physical Society

The Slope of the Nucleon Electromagnetic Form Factors from Coordinate-Space Moments of Matrix Elements. DAVID RICHARDS, Jefferson Lab, CHRIS BOUCHARD[1], University of Glasgow, CHIA CHANG, Lawrence Berkeley National Laboratory, KOSTAS ORGINOS, Jefferson Lab and College of William and Mary — The charge radius of the nucleon can be related to the slope of the electromagnetic form factors at zero momentum transfer. Calculations of the form factors using lattice QCD are typically obtained for a discrete set of momenta Q^2, from which the charge radius can be inferred. We present a method to compute the slope of electromagnetic form factors directly, including at $Q^2 = 0$, by computing the coordinate-space moments of current matrix elements. We begin by describing the formalism, which we then apply to the calculation of the isovector form factor of the nucleon. In particular, we examine the dependence of our results on the volume of the box in which the calculation is performed, thereby controlling one of the principle systematic uncertainties in the method. We conclude by proposing other applications of the technique.

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Date submitted: 12 Jan 2018 Electronic form version 1.4