Abstract Submitted
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Exploring the Emergence of Deformation Dominance in Nuclear Structure from Strong QCD[1] JERRY DRAAYER, DAVID KEKEJIAN, KRISTINA LAUNEY, Louisiana State University, Baton Rouge, LA 70803, VIKTOR MOKEEV, Thomas Jeerson National Accelerator Laboratory, Newport News, VA 23606, CRAIG ROBERTS, School of Physics, Nanjing University, Nanjing, Jiangsu 210093, China; and Institute for Nonperturbative Physics, Nanjing University, Nanjing, Jiangsu — The dominance of deformation across the chart of the nuclides is traced back to a (non-compact) symmetry of a generalized three-dimensional harmonic oscillator structure that emerges directly from quantum field theory considerations. This suggests one should look more deeply into the structure of nucleons to see, first if they are deformed, and if so how that deformation arises from the quark-gluon substructure of nucleons (and other hadrons) and how it is emerges in realistic nucleon-nucleon interactions. The goal is to probe more deeply into the ab initio features that lead to a major simplicity, where deformation dominates, found within the complexity of nuclear structure. Analyses of the experimental results on pion and nucleon elastic as well as N —¿ N* transition form factors within a continuum QCD framework will facilitate this effort.

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