Predicting the axial structure of the proton using a quark-diquark model[1] TREVOR M. OXHOLM[2], Northeastern University, Boston, MA 02115, USA, TIMOTHY J. HOBBS, GERALD A. MILLER, Department of Physics, University of Washington, Seattle, WA 98195-1560, USA — The form factors of the proton typically measured via elastic electroweak scattering have long been a rich testing ground for models of nucleon structure. We explore the ability of a model based in a quark/spectator diquark picture to describe form factors in the electromagnetic sector, as well as to predict the form of the nucleon's axial current. Making use of a realistic spin decomposition and phenomenological vertex factors, we choose model parameters so as to fit experimental data on the electric and magnetic Sachs form factors, as well as the low-momentum isovector axial form factor. With the model we then predict the pseudoscalar form factor and extend axial form factor predictions to higher momenta, comparing our predictions to those of other frameworks and techniques.

Trevor Oxholm
Northeastern Univ

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