

(Note: From Referees guidelines)

•Does the paper contain sufficient new physics that significantly advances the field to warrant publication in the Physical Review?

The data have already been published in Phys. Rev. Letters. But basically, yes. This report constitutes a full discussion of the JLAB E08-11, the only repeat measurement of parity violation in e-D scattering since the E122 result at SLAC in 1978 (giving a factor of ~ 5 improvement). Comparison between these two experiments is thoroughly discussed. Since 1978, the Standard Model has been firmly established largely by precision measurements at the Z-pole at CERN and SLAC. Electroweak couplings of the leptons and quarks are well established. So analysis of the data in terms of these couplings is not going to provide any new knowledge. What this experiment can do is provide insights into the weak hadronic effects inside a nucleus, in this case a simple neutron-proton system. It is conceivable that future models of the nucleus may arise, and which could be constrained by these data.

This report also includes nucleon resonances in addition to the deep inelastic. The comments about duality (Bloom-Gilman duality) are rather interesting. The authors analyze the data in the context of our current knowledge of the nucleon structure. They make minor adjustments to the E122 results to allow comparison between these two experiments.

•Is the paper scientifically sound and not misleading?

Yes. This report has reputable and experienced authors signing it. It comes from Jefferson Lab that routinely runs these type of experiments with precision control of systematics, particularly those coming from Hall A.

•Are there appropriate and adequate references to related and previous work?

Yes.

•Is the paper well organized and clearly written in good scientific English?

Yes.

•Are the figures and tables (if any) clear and useful with suitable captions, or is there unnecessary duplication from previous publications?

Yes, generally. However, the labels on both axes on two important figures, Figures 3 and 23, are puzzling. The horizontal axis reads " 2_{11} " and the vertical axis " 2_{22} " while the captions indicate " C_{1q} " and " C_{2q} " and the text refers in places to these as " $2C_{1u}-C_{1d}$ " and " $2C_{2u}-C_{2d}$ " as well as " C_{1q} " and " C_{2q} ". The numerals on the horizontal axis are missing the decimal points. Minus signs are missing on the vertical axes. All of this makes these figures confusing and hard to understand.

The authors should be more precise in the labelling and the captions should be clearer in what the plots are showing.

•Are the title and abstract informative, concise, and clear?

Yes.

•Does the content of the paper justify its length? Please be specific as to how and where the paper could be expanded or shortened.

Indeed this report is rather long. However it covers thoroughly the techniques, the detectors, and their systematics. Details of the analysis are described. These are all relevant to an archival article, which this report is.

•Should all the material in the manuscript be included in the published article, or would some of the material (for example, long tables) be better suited as online Supplemental Material (SM)? Please see Supplemental Material Instructions.

I think the material presented is relevant. Note that they do have other reports on some aspects of this work, which they reference.

•Is the section for which this is being considered (Regular Article, Rapid Communication, Brief Report, or Comment) the right venue for this work? Be aware that some sections have length limits.

Yes, it appears to be appropriate.

•If submitted as a Rapid Communication, does the quality and importance of the content of the paper justify the special handling associated with the section?

The data were taken in 2009. Hardly qualifies for any urgency in publishing.