Abstract Submitted
for the APR16 Meeting of
The American Physical Society

Applying Statistical Methods To The Proton Radius Puzzle DOU-
GLAS HIGINBOTHAM, Jefferson Lab — In recent nuclear physics publications, one
can find many examples where chi2 and reduced chi2 are the only tools used for the
selection of models even though a chi2 difference test is only meaningful for nested
models. With this in mind, we reanalyze electron scattering data, being careful to
clearly define our selection criteria as well as using a co-variance matrix and confi-
dence levels as per the statistics section of the particle data book. We will show that
when applying such techniques to hydrogen elastic scattering data, the nested mod-
els often require fewer parameters than typically used and that non-nested models
are often rejected inappropriately.

Douglas Higinbotham
Jefferson Lab

Date submitted: 08 Jan 2016   Electronic form version 1.4