

Abstract Submitted
for the DNP15 Meeting of
The American Physical Society

On the Equivalency of Experimental B(E2) Values Determined by Various Methods¹ BORIS PRITYCHENKO, Brookhaven National Laboratory, MICHAEL BIRCH, BALRAJ SINGH, McMaster University, BROOKHAVEN NATIONAL LABORATORY TEAM, MCMASTER UNIVERSITY TEAM — Over the last 60 years a variety of experimental methods have been employed to determine reduced transition probabilities in even-even nuclei. Different methods and data analysis techniques imply a strong need for consistency checks of the reported results. To investigate the equivalence of different measurements we have used a recently-developed B(E2) \uparrow database. For the first time transition probabilities for Doppler Shift Attenuation (DSA), Recoil Distance Doppler Shift (RDDS), Delayed Coincidences (DC), Nuclear Resonance Fluorescence (NRF) and Coulomb Excitation (CE) methods have been analyzed and compared in the Z=6-94 region. The analysis of B(E2; $0_1^+ \rightarrow 2_1^+$) values of the 100 frequently-studied even-even nuclei indicates these experimental methods produce equivalent results. Possible differences between the DSA and CE values near closed neutron and proton shells could be explained by the experimental deficiencies. Further comparisons of the present data with the inelastic electron scattering (EE') results also show agreement. These findings confirm equivalence of the major experimental methods for a wide range of nuclei.

¹This work was funded by the Office of Nuclear Physics, Office of Science of the U.S. Department of Energy, under Contract No. DE-AC02-98CH10886 with Brookhaven Science Associates, LC.

Boris Pritychenko
Brookhaven National Laboratory

Date submitted: 26 Jun 2015

Electronic form version 1.4