

# *Kent State University*

## *Physics Colloquium*

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### **Determination of the Charge Radii of Several Light Nuclei from Precision, High-Energy Electron Elastic-Scattering**

#### **Abstract**

I will review the new cross section and charge radius results from the Jefferson Lab "LEDEX" experiment. This experiment includes measurements on several light nuclei, proton, deuteron, carbon, lithium and boron, with beam energies down to 360 MeV and spectrometer angles down to 12.5 degrees. To test our ability to measure absolute cross sections, as well as our ability to extract the charge radius, we first tested our technique against the extremely well measured  $^{12}\text{C}$  case and found excellent agreement using the Fourier-Bessel parameterization. Our new results on boron ( $2.42 \pm 0.12$  fm) and lithium ( $2.52 \pm 0.05$  fm) are in nice agreement with model independent variational monte carlo calculations. For the lightest nuclei, we clearly see the limits of this technique and will show why for those nuclei the radius is traditionally determined by using extrapolations to  $Q^2=0$ .

**WEDNESDAY, OCTOBER 21, 2015**

**1:00 PM**

**SMITH HALL 111**

**REFRESHMENTS: 1:15 PM – SMITH HALL LOBBY**