

Jorge Pena, I. Niculescu, and G. Niculescu, James Madison University:

The Super Bigbite Spectrometer (SBS) to be used in Hall A at Jefferson National Accelerator Lab to carry out a number of seminal experiments, such as the measurements of the electric and magnetic form factors of the proton and neutron. The JMU Particle and Nuclear Physics group is working on preparation of the 1700+ channel electromagnetic calorimeter, including construction of the new voltage dividers that will be used to power and extract the signal from the Photomultiplier Tubes (PMTs). In the talk the design of new resistive base and the layout of its electronic circuit will be presented. The challenges and solutions of the design work and electrical measurements of the existing resistive bases will be shown.

Gabriel Niculescu, James Madison University:

For more than 50 years, elastic electron scattering has provided a wealth of information about the structure of protons and neutrons through the extraction of nucleon form factors. These, in turn, have been the subject of intense theoretical scrutiny using various techniques ranging from first principles QCD calculations to several phenomenological models. Moreover, as the first moments of the generalized parton distributions are related to the elastic Dirac form factors of the nucleon through model independent sum rules, elastic electron scattering studies help sharpen our 3D picture of a nucleon. Here we will give an update/status report on a Jefferson Lab experiment aiming extend, with good statistical and systematic precision, the measurements of the electric form factor of the proton to four momentum transfers up to $12 \text{ GeV}/c^2$ using the JLab 11 GeV electron beam and a super big bite spectrometer in Hall A in conjunction with a highly segmented electromagnetic calorimeter. The experimental technique as well as the potential impact of such measurement on the field will be discussed