The Forward Calorimeter of the GlueX Experiment

Daniel Bennett
Indiana University, Bloomington, IN USA

Abstract

The Forward Calorimeter (FCAL) of the GlueX experiment is a 2800 element lead glass bar electromagnetic calorimeter currently being built in Hall D of Jefferson Lab. The GlueX experiment is a future photoproduction experiment that will utilize coherent bremsstrahlung radiation to map out the light meson spectrum, including a search for hybrid mesons with exotic quantum numbers (J^{PC}). The FCAL will detect photons between 1° and 10.8° downstream from the target. Each element consists of a lead glass block, an FEU 84-3 PMT, and a custom Cockcroft-Walton electronic base. In the Fall of 2011, a 25 element prototype detector was installed in Hall B of Jefferson Lab to measure the energy and timing resolution of the calorimeter using electrons between 100 and 250 MeV. The design and construction of FCAL and the results from the prototype test will be discussed.