

Abstract Submitted
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Level-1 Trigger and DAQ system of the GlueX experiment

ALEXANDER SOMOV, Jefferson Lab, GLUEX COLLABORATION — The goal of the GlueX detector at Jefferson Lab is to study fundamental questions of the quantum chromodynamics, i.e., the nature of confinement of gluons and quarks. The detector's design is optimized to measure the spectrum of exotic mesons that are expected to be produced in interactions of 8.4 - 9.0 GeV linearly polarized photons with a liquid hydrogen target. The GlueX trigger and DAQ electronics is based on pipelined TDC boards and FADC boards running at a 250 MHz clock. The trigger logic is implemented on special purpose programmable electronics boards with Field-Programmable Gate Array chips. Two types of boards are used: Crate Trigger Processors and Global Trigger Processors. All trigger electronics is hosted in VXS crates. The Level-1 trigger should reduce the 200 MHz electromagnetic rate and the 400 kHz hadronic rate to 200 kHz total rate. The trigger algorithm makes use of a measurement of the energy deposition in two electromagnetic calorimeters and hit counts in the time-of-flight detector and the trigger hodoscopes. We will present the trigger and DAQ design of the GlueX experiment and describe the Level-1 trigger algorithm in detail.

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