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**Efficient Amplification of Photomultiplier Signals**[1] SERGIO RIBEIRO, George Mason University, ALEX MALESKI, University of Alabama — Understanding hadron structure is an important goal of modern nuclear physics. Exclusive reactions with neutral final states play an important role, for instance, allowing one to probe universal features of GPDs and to verify their formalism in thus far unexplored regimes. The Jefferson Lab 12 GeV upgrade provides the energies needed for precision neutral particle cross section measurements in Hall C. A new PbWO4 spectrometer provides a simple and economical option for neutral particle ID. As particles traverse the calorimeter's 1116 PbWO4 blocks, scintillation will occur, which can be detected by 19-mm PMTs. The resulting signals are processed in a DAQ system. Depending on module resolution processing signals from these relatively small PMTs can be challenging. PMTs are sensitive enough to count single photons. However, the pulses height for single photons and double photons are often indistinguishable. The best way to conquer this problem was to amplify the PMT signal by using a solid-state amplifier. We designed and constructed an amplifier prototype comparing the amplification provided by a typical 741 op amp to a 595-THS3202D fast op amp. While both amplifiers are capable of adequate gain the 741 would be inadequate for the amplification of fast pulses from the PMTs.

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