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Instrumentation for a Precise Measurement of $\Gamma(\pi^o \to \gamma\gamma)$ from pion photoproduction via the Primakoff effect at TJNAF DAVID LAWRENCE, Univ. of Massachussetts[1], TJNAF, PRIMEX COLLABORATION — The $\pi^o \to \gamma\gamma$ decay proceeds primarily through the chiral anomaly and is a definitive test of confinement scale QCD. This decay width can be measured through the π^o photoproduction cross section via the Primakoff effect ($\gamma\gamma \to \pi^o$). A new, high precision measurement($\sim$1.5%) of the decay width $\Gamma(\pi^o \to \gamma\gamma)$ will be performed at Jefferson Lab using a new hybrid electromagnetic calorimeter (HYCAL) currently under construction. The calorimeter will contain approximately 480 lead-tungstate crystals in the central region surrounded by approximately 500 lead-glass detectors. Monitoring of the photon beam luminosity at the 1% level is required to achieve the overall precision goals of the experiment. A description of the experiment will be given with particular emphasis on the design of the detector. Preliminary results from beam tests of lead-tungstate crystals to be used in the calorimeter will also be presented.

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