

Abstract Submitted  
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**Commissioning and Calibrating Bucking Coil System for HKS Water Cerenkov Detector** VICTOR MAXWELL, JOERG REINHOLD, Florida International University — Experiment E05-115, in Hall C at Jefferson Lab (JLab), will perform a spectroscopic study of lambda hypernuclei for a wide mass region using the  $(e, e'K^+)$  reaction. Accurate detection of coincident kaons and electrons guarantees that a lambda hyperon has been produced within the nucleus. The High Resolution Kaon Spectrometer, whose instrumentation is composed of, among other devices, a water Cerenkov detector (WC), will be employed towards this end. The detector use a series of photomultiplier tubes (PMT) to generate signals associated with particular events. This research focuses on studying the effects of external magnetic fields on the collection efficiency of the PMT. Upon introducing an external magnetic field near the PMT, the observed single photo-electron (SPE) emission rate decreases. Magnetic fields of equal strength and opposite orientation to the external field are created by applying current to bucking coils (BC) placed around the individual PMT. Data indicates a relationship between SPE emission rates, and collection efficiency distributions. Upon being placed in Hall C, this relationship is used to set the appropriate current for each BC. The correct calibration of the PMT yields a large collection efficiency, thereby allowing particles detected by the WC to be categorized accurately and smooth operation of experiment E05-115.

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