

Status report of KEK-PS T494,T500
(Performance Test of the Čerenkov Counters for the Jlab E01-011 Experiment)

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Jlab E01-011 Collaboration is developing new spectrometer and detectors for $(e,e'K^+)$ Λ -hypernuclei spectroscopy and all detectors which developed in Japan will be shipped to US by the end of year 2002.

The design works of the detectors were finished and performance of the proto/mass-production types of the counters were tested at the T1 beamline of the KEK-PS in December 2001 and May 2002 (T494, T500).

We tested following counters: 1) TOF scintillation counters for electron spectrometer, 2) TOF scintillation counters for kaon spectrometer, 3) aerogel Čerenkov counters for π^+/K^+ separation, 4) Lucite Čerenkov counters for p/ K^+ separation, and 5) water Čerenkov counters for p/ K^+ separation. For TOF counters and Aerogel Čerenkov counters, the expected performance was achieved. Though Lucite Čerenkov counter has an advantage of the easy handling, the water Čerenkov gave better performance for p/ K^+ separation. We learned from the T494 experiment that the effect of the δ -ray is important for Čerenkov counters and we took various data to study the effect in T500. Detailed analysis is in progress.

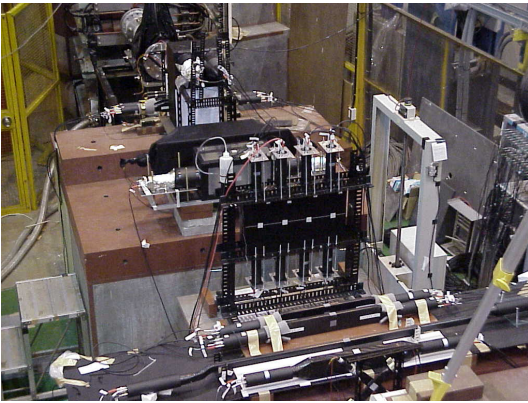


Fig. 1 Setup of T500. After the gas Čerenkov counter, the TOF scintillation counters, three sets of silica-aerogel counters, water Čerenkov counter, Lucite Čerenkov counters and TOF counters can be seen.

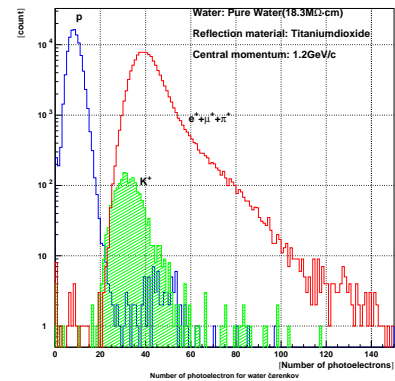


Fig. 2 Number of photo-electrons of the pure-water Čerenkov counter. More than 99% protons can be separated without serious loss of K^+ s.