

T574: Test of the range counter for the E559 experiment at KEK-PS

S. Dairaku¹⁾, H. Fujioka²⁾, M. Hayata¹⁾, K. Imai¹⁾, T. Maruta²⁾, K. Miwa¹⁾, T. Nagae³⁾,
D. Nakajima²⁾, N. Saito¹⁾, Y. Sato³⁾, S. Sawada³⁾, Y. Seki¹⁾, M. Sekimoto³⁾, H. Takahashi³⁾,
T. Takahashi³⁾

¹⁾ *Department of Physics, Kyoto University, Kyoto 606-8502, Japan*

²⁾ *Department of Physics, University of Tokyo, Tokyo 113-0033, Japan*

³⁾ *High Energy Accelerator Research Organization (KEK), Ibaraki 305-0801, Japan*

The E559 experiment has been approved which tries to produce the Θ^+ pentaquarks through the reaction $K^+ p \rightarrow \Theta^+ \pi^+$. An important component of the detectors is the range counter telescope, which aims to identify K^+ and protons with its momentum. The primary purpose of the T574 experiment was to test a prototype of the range counter. In addition, a drift chamber with a large effective area was tested, which will be installed just in front of the range counter. An aerogel cherenkov counter is also an important counter to be used to identify kaons in the K6 beam line, and was checked by this test experiment. The experiment was performed at the $\pi 2$ beam line of the KEK-PS. A photograph of the experimental setup is shown in Fig. 1. The prototype of the range counter consisted of 10 layers of the scintillator hodoscopes and 9 layers of the brass absorbers between them. Pions of their momentum between 200 MeV/c and 320 MeV/c and protons between 500 MeV/c and 870 MeV/c were incident on the detectors. The stop positions of the incident particles inside the prototype range counter were almost the same as the results from simulations. Also, the efficiencies of the drift chamber and the aerogel counter were confirmed to be high enough.

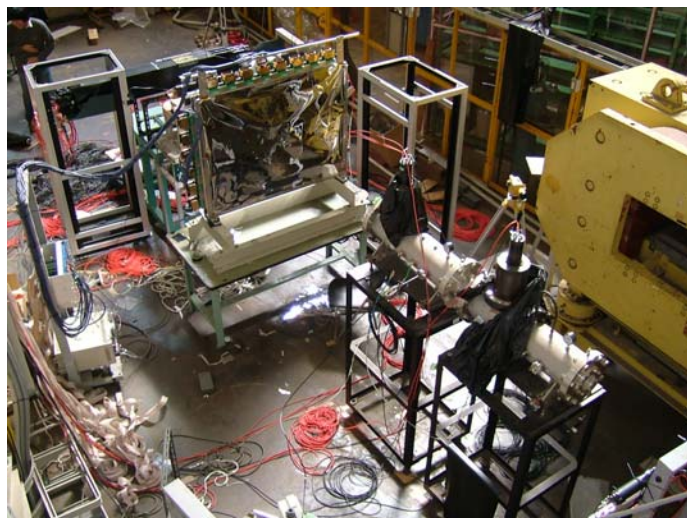


Fig.1: Experimental setup at the $\pi 2$ beam line.