

Abstract Submitted
for the HAW14 Meeting of
The American Physical Society

The Kalman Filter for J-PARC E15 QI ZHANG, Nishina Center, RIKEN, J-PARC E15 EXPERIMENT COLLABORATION — The E15 experiment at the J-PARC K1.8br beam line is dedicated to search of the K^-pp deeply bound state via the ${}^3\text{He}(K^-, n)K^-pp$ reaction at the kaon beam momentum of 1 GeV/c. For detecting the expected decay, $K^-pp \rightarrow \Lambda p \rightarrow \pi^-pp$, a spectrometer system composed of a beam spectrometer, a large acceptance cylindrical detector system (CDS) surrounding the target, and a forward neutron detection system, has been constructed and successfully operated during first physics run in May 2013. This presentation will report the performance of a newly developed Kalman filter tracking algorithm for the E15 data analysis. Kalman filter as a particle tracking method has been widely adopted in high energy experiments due to its advantages such as automatic compensation of energy loss, fast compute and so on. Our result will be the first trial to use Kalman filter for the data analysis in a meson beam based hadron physics experiment at J-PARC. In this presentation, the performance of Kalman filter tracking method will be evaluated by comparison with the traditional minimum χ^2 method in both resolution and computing time respect.

Qi Zhang
Nishina center, RIKEN

Date submitted: 29 Jun 2014

Electronic form version 1.4