A search for deeply bound kaonic nuclear states at J-PARC


First results from a production run of the J-PARC E15 experiment planned in May/June will be presented. Recently, many studies of deeply bound kaonic nuclear states have been performed both theoretically and experimentally. However, no conclusive evidence for such bound states is observed yet. In order to clarify this controversial issue, the J-PARC E15 experiment aims to search for the simplest kaonic nuclear bound state, $K^-\pi^+\pi^-$, via the in-flight $^3$He ($K^-, n$) reaction using a 1.0 GeV/c $K^-$ beam [1]. The advantage of the experiment is that we will measure the missing-mass spectra using the forward going neutrons and invariant-mass spectra via the expected decay of $K^-\pi^+\pi^-$ to $\Lambda p$ and to $p\pi^-\pi^-$. We have constructed the forward Neutron ToF Wall in a position with a flight length of about 15 m from the center of the liquid $^3$He target and the Cylindrical Detector System (CDS) surrounding the target. In this contribution, an overview of the experiment and the preliminary result will be presented.
