Contribution ID: **37** Type: **Parallel**

Study of In-Medium ϕ Meson Modification via $\phi \to K^+K^-$ Measurement at J-PARC E88/SAΦRE

Friday, 26 June 2026 15:45 (20 minutes)

The J-PARC E88/SAΦRE experiment aims to investigate the properties of the ϕ meson inside the nucleus, to study in-medium modification associated with partial restoration of chiral symmetry in nuclear matter. The ϕ meson is measured via the hadronic decay channel $\phi \to K^+K^-$ in proton–nucleus collisions using a 30 GeV/c proton beam. Compared to previous measurements, E88 is expected to collect one million $\phi \to K^+K^-$ events, corresponding to several hundred times higher statistics, enabling precise studies of the ϕ meson spectral shape and its possible modification in nuclear matter. The measurement is complementary to the $\phi \to e^+e^-$ channel studied in the J-PARC E16 experiment, allowing a systematic comparison of hadronic and dilepton decay modes.

The experiment uses the E16 spectrometer, where additional detectors are installed for kaon identification. A dedicated kaon identification system has been developed, consisting of Start Timing Counters (SC), segmented plastic scintillation counters with MPPC readout, together with Multi-gap Resistive Plate Chambers (MRPC) providing time-of-flight measurements, and Aerogel Cherenkov Counters (AC) to suppress pion backgrounds at the trigger level. Combined with tracking detectors, the system enables particle identification, including K/π separation, in a high-rate hadronic environment.

A commissioning beam time is scheduled in April 2026 at J-PARC with a 1/6-scale detector setup. In this talk, we present an overview of the E88 experiment, the detector development, and results from the commissioning beam time.

Collaboration

J-PARC E88

Primary author: JUNG, WooSeung (JAEA)

Presenter: JUNG, WooSeung (JAEA)

Session Classification: Parallel session C3

Track Classification: New facilities/perspectives