

Development of high rate capable and ultra-low mass Resistive Plate Chamber with Diamond-Like Carbon

Tuesday, May 25, 2021 10:24 AM (18 minutes)

A novel background identification detector is under development for the MEG II experiment, aiming for further sensitivity improvement in the $\mu \rightarrow e\gamma$ search. This detector needs to detect MIP positrons in a high-intensity low-momentum muon beam up to $10^8 \mu/s$. Hence, ultra-low material budget and high rate capability are required.

The detector under development is a new type of Resistive Plate Chamber (RPC) with thin-film resistive electrodes based on Diamond-Like Carbon coating instead of glasses which are widely used in the conventional RPCs. A high efficiency (>90%) and a good timing resolution (~250 ps) for MIP particles are shown to be achievable with a multi-layer configuration. The performance measured with prototypes including the high rate capability for low momentum muon beam will be presented.

TIPP2020 abstract resubmission?

Funding information

Primary author: OYA, Atsushi (University Of Tokyo)

Co-authors: IEKI, Kei (University of Tokyo (JP)); OCHI, Atsuhiko (Kobe University (JP)); ONDA, Rina (University of Tokyo); OOTANI, Wataru (ICEPP, University of Tokyo); YAMAMOTO, Kensuke (The University of Tokyo)

Presenter: OYA, Atsushi (University Of Tokyo)

Session Classification: Sensors: Gaseous Detectors

Track Classification: Sensors: Sensors: Gaseous Detectors