Abstract Submitted
for the HAW14 Meeting of
The American Physical Society

Study of space-charge dependence on IBF for GEM and Micromegas detectors KENTARO YUKAWA, HIDEKI HAMAGAKI, TAKU GUNJI, University of Tokyo, YORITO YAMAGUCHI, Stony Brook University, KOHEI TERASAKI, University of Tokyo — The MWPC is widely used in a Time Projection Chamber (TPC). To prevent ions created around amplification region from back drifting into the drift space, gating grid system is widely used in the TPC. However, the data taking rate is limited by the operation of the gating grid and the TPC with gating grid system cannot be suitable for the high rate experiments. Micor-Pattern Gaseous Detectors (MPGD) are the possible solutions to overcome the high rate limitations. GEM and Micromegas can absorb positive ions on its electrode or mesh and can reduce the ion backflow into the drift space. In this study, we aim to evaluate performance of ion back flow suppression of GEM and Micromegas detector as a function of space-charge density. We also did the simulation studies using Garfield++ to assess the reproducibility of the space-charge density dependence of the ion back flow obtained in the measurement. In this talk, we will report the overall performances (space-charge density and field dependences of the ion backflow) of GEM and micromegas detectors studied in the measurements and simulations.

Kentaro Yukawa
University of Tokyo

Date submitted: 30 Jun 2014 Electronic form version 1.4