



Contribution ID: 68

Type: Oral presentation

A new design of Micro Pixel Chamber using DLC electrodes

Monday, 22 May 2017 10:50 (20 minutes)

The new design concept of the Micro Pixel Chamber (μ -PIC) has been developed and tested for charged particles tracking. The μ -PIC is a 2D gaseous imaging detector made by the PCB technique. One of the most important property is that the μ -PIC does not require any floating structures and stretching processes.

For protecting the μ -PIC from discharges, the resistive electrode layer is formed on the top substrate. Recently, Diamond Like Carbon (DLC), made by the carbon sputtering and the lift-off process, has been developed for resistive electrodes. This novel material has excellent properties that fine patterning ($<10 \mu\text{m}$), strong adhesion on the polyimide, wide range resistivity setting (100k /sq. - 1G /sq.), uniform resistivity at large detection area, and so on. High gas gains (>10000) were observed with the prototype of the μ -PIC with DLC cathodes. This prototype was operated stably in the high rate fast neutrons environment more than $1\text{MHz}/\text{cm}^2$. Also, two dimensional tracking performances of charged particles have been measured using SRS.

Primary author: YAMANE, Fumiya (Kobe Univ.)

Co-authors: Dr OCHI, Atsuhiko (Kobe Univ.); Dr HOMMA, Yasuhiro (Kobe Univ.); Dr KAWAMOTO, Tatsuo (Tokyo ICEPP); Dr MASUBUCHI, Tatsuya (Tokyo ICEPP); Dr KATAOKA, Yousuke (Tokyo ICEPP); Mr HASEGAWA, Hiroaki (Kobe Univ.); Ms NAGASAKA, Noriko (Kobe Univ.); Mr MATAYOSHI, Kouhei (Kobe Univ.); Mr OGAWA, Keisuke (Kobe Univ.)

Presenter: YAMANE, Fumiya (Kobe Univ.)

Session Classification: MPGD detector technologies - 2 (Chair: Klaus Dehmelt)