

Study of timing performance of Silicon Photomultiplier and application for a Cherenkov detector

Thursday 18 February 2010 16:35 (25 minutes)

A novel and still rapidly evolving device, Silicon Photomultiplier (SiPM) is opening a new possibility of particle detection in the field of nuclear/particle physics, material science and medicine. We have been working on an evaluation of basic characteristics of Hamamatsu MPPCs, Photonique SSPMs, Zecotek MAPDs, as well as an application for a scintillating fiber detector and Cherenkov detector [1-2]. A beam profile monitor composed by two layers of 16 1x1 mm² scintillating fibers in x-y configuration was successfully operated at the FOPI at GSI, Darmstadt in search for a kaonic nuclear state [3]. One of our recent focuses is an application for a Cherenkov detector as cheap, compact timing counter in a magnetic field.

We would like to report on a characteristics study of SiPMs in terms of timing performance and a result of the test beam time of a prototype detector which was performed at the Beam Test Facility at LNF/INFN in Frascati.

References:

- [1] G.S.M. Ahmed, J. Marton, K. Suzuki, and P. Bühler, Journal of instrumentation, September 9, 2009.
- [2] K. Suzuki, P. Bühler, S. Fossati, J. Marton, M. Schafhauser, J. Zmeskal, Nucl. Instr. and Meth. A 610 (2009) 75.
- [3] K. Suzuki et al., Nucl. Phys. A 827 (2009) 312c

Summary (Additional text describing your work. Can be pasted here or give an URL to a PDF document):

This work is partly supported by Hadronphysics2 (project 227431), and the Ministry of higher education, Egypt government.

Author: Mr AHMED, Gamal (Stefan Meyer Institute of the Austrian Academy of Sciences, Boltzmanngasse 3, 1090 Vienna, Austria., Al-Azhar University, Faculty of Science, Physics Department, 11884, Cairo, Egypt.)

Co-authors: Dr MARTON, Johann (Stefan Meyer Institute of the Austrian Academy of Sciences, Boltzmanngasse 3, 1090 Vienna, Austria.); Dr SUZUKI, Ken (Stefan Meyer Institute of the Austrian Academy of Sciences, Boltzmanngasse 3, 1090 Vienna, Austria.); Dr BÜHLER, Paul (Stefan Meyer Institute of the Austrian Academy of Sciences, Boltzmanngasse 3, 1090 Vienna, Austria.)

Presenter: Mr AHMED, Gamal (Stefan Meyer Institute of the Austrian Academy of Sciences, Boltzmanngasse 3, 1090 Vienna, Austria., Al-Azhar University, Faculty of Science, Physics Department, 11884, Cairo, Egypt.)

Session Classification: Particle ID 4