detector seminar

SPEAKER: PANCHERI, L. (University of Trento)

TITLE: **State of the art and perspectives of CMOS avalanche detectors**

DATE: Fri 20/01/2017 11:00

PLACE: 40-S2-A01 - Salle Anderson

ABSTRACT

Impact ionization has been exploited for decades to enhance the Signal-to-Noise Ratio in Avalanche Photodiodes and has more recently enabled successful high-sensitivity photon detectors such as EM-CCDs and analog Silicon Photomultipliers. The fast evolution of CMOS imaging processes and 3D integration technologies is now paving the way to a new generation of detectors based on avalanche multiplication that can fully exploit the power of integrated electronics. These detectors can provide the unique combination of picosecond timing resolution and photon counting capability in a pixelated solid-state device. An increasing number of research institutions and commercial foundries are now developing the technologies needed to obtain efficient single-photon time-resolved imaging instruments, driven by scientific and consumer applications.
This seminar will review the state of the art of integrated avalanche detectors for photonic applications and discuss the opportunities to exploit these technologies in particle counting and tracking applications. The first prototype of a 2-tier pixelated Geiger-mode avalanche sensor realized in the framework of INFN project APiX2 will be presented.

Organised by: Alessandro Marchioro (EP-ESE)