

## **CMOS Pixel Sensors – A Novel Detection Technology for Particle Physics**

Dr. Luciano Musa

*CERN, Genf, Schweiz*

Over the past 25 years, extensive R&D has been carried out on Monolithic Active Pixel Sensors based on CMOS technology. This has brought the technology to the level where it is now, a viable option for vertexing and tracking detection systems in particle and nuclear physics experiments exposed to radiation fluencies of up to  $10^{15}$  1MeV neutron equivalent per square centimeter, reaching impressive performance in terms of signal/noise ratio, spatial resolution, material budget and readout speed. Owing to their high granularity and intrinsic high time resolution, CMOS sensors are also being considered recently for the development of digital calorimeters and 4-D tracking with the measurement of the time-of-flight.

I will first review the recent developments in the field of CMOS sensors, their use in particle and nuclear physics experiments as well as some application in the field of medical imaging. I will then discuss the prospects for future applications and novel detection systems with some examples on the measurement of charmed hadrons.