

Timing Detectors



Speaker: Prof. Imad Laktineh
Host: Prof. Sen Qian
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Abstract:

A new generation of detectors is emerging in the field of subatomic physics. The new detectors are 4D ones, aiming at adding precise time information to the existing spatial performances the detectors already have. Tracking, calorimetry and photo-detection are among the ones where the timing is being the most developed. Several societal applications like muon tomography of medical applications are also benefiting from the new activities. In this seminar we will go through the different developments that are being followed in the different fields of detection emphasising the improvement this new feature will bring to the detection fields and the expected evolution in the near and far future.

About the speaker:

Imad Laktineh is a distinguished professor at the University of Lyon. After a PhD in theoretical physics, he joined the LEP experiments (DELPHI and L3) working on b-quark physics and SUSY searches respectively. After LEP, he joined OPERA collaboration to study neutrino oscillations. Since 2006, his main activities are on detector R&D for the experiments of future high-energy colliders (HL-LHC, ILC, CEPC and FCCee). He developed the concept of the Semi-Digital Hadronic Calorimeter SDHCAL and led the construction of the first technological prototype of the CALICE collaboration using this concept. He is currently working on T-SDHCAL with timing information to improve on the Particle Flow Algorithms (PFA) techniques. He initiated the CMS-iRPC project proposing a new RPC readout concept. He developed a new technique for muon tomography using (M)RPC detectors. He recently invented the PICMIC concept that intends to fully exploit both the excellent spatial and time resolutions of the MCP devices. In parallel, he is developing similar devices with much better performances named NCP for Nano Channel Plates. Pr. Laktineh is very active in the new DRD collaborations with leading roles in DRD1 (gaseous detectors), DRD4 (photo-detection) and DRD6 (calorimetry). He served as a scientific adviser of the CNRS-IN2P3 for innovative detectors and quantum technologies. He was named a CNRS Ambassador for Innovation in 2025, a visiting professor at Tsinghua University, a 200-talent at Shandong University and a CAS distinguished scientist.