Vrije Universiteit Brussel

Lectures on Muon Detection & Reconstruction 8-9th of April 2014
Vrije Universiteit Brussel

Dr. Piet Verwilligen (INFN – Sezione di Bari)

"Muon detection and reconstruction at colliders"

Muons are very important for experimental studies in particle physics. At colliders they are produced in the decay of W, Z, H bosons as well as in the hadronization of b-quarks. They appear in the most prominent collider signatures of predicted new physics phenomena like supersymmetry. At the same time muons are crucial for the study of B and D mesons, touching concepts as CP violation. Therefore the continuous development of novel muon detection and reconstruction techniques is an active research field.

Location: Vrije Universiteit Brussel – Campus Oefenplein – 1.G.003 (1st level of building G, room 003; large seminar room of the IIHE)

Lecture 1: **Introduction to the muon object** (9th of April; 10-12h)
Muons in collider physics, key properties of muons to be used in physics studies, …

Lecture 2: **Muon detectors and performance** (9th of April; 13-16h)
Design parameters, Drift Tubes, RPC, Cathode Strip Chambers, GEMs, simulation, performance studies, backgrounds, …

Lecture 3: **Muon reconstruction and triggering** (10th of April; 10h-13h)
Standalone reconstruction using muon detectors, global reconstruction using also tracking detectors, …

Lecture 4: **Muons in data analysis** (10th of April; 14h-16h)
Muon identification, muon isolation, performance measurements, resolution, muons in H-boson analyses, …

For more information please contact Prof. J. D'Hondt (jodhondt@vub.ac.be)