Service de Physique Nucléaire

Séminaire

le vendredi 21 Septembre 2007 à 11H

CEA Saclay, Orme des Merisiers, Bât. 703, Salle 135

Selected results and future prospects of the COMPASS experiment at CERN

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The COMPASS experiment at the SPS accelerator complex at CERN is collecting data with an high-intensity muon beam and a large-acceptance polarized target. The analysis of the muon beam data collected since 2002 has already provided new and high-quality results on quark and gluon polarization inside nucleons, lambda polarization, inclusive and semi-inclusive Deep Inelastic Scattering, vector meson production, and more.
Several topics in the COMPASS physics program require hadron beams as probes, pion and kaon polarizabilities, search for glueballs and hybrids in the light meson spectrum, study of charmed and doubly charmed hadrons. In 2004, we performed a measurement the pion polarizabilities via the Primakoff scattering with an accuracy comparable to previous measurements. We also tested the performances of the apparatus with hadron beams. Light meson spectroscopy will be the first topic to be addressed during the next two years. In the first part of my talk I will give an overview of the COMPASS experiment and selected physics results, with particular emphasis on the projects in which I have been directly involved. The second part of the talk will be devoted to a short and pedagogical introduction to the quest of exotic mesons. Some details on the Partial Wave Analysis (PWA) techniques used to identify the resonances will be given. The PWA has been applied to Monte Carlo simulations of the COMPASS experimental setup, and the effects of the finite detector acceptance and experimental resolutions have been investigated in detail. A short summary of such studies will be given, and the potentials and unique features of the COMPASS setup will be discussed.

Le café sera servi 10 minutes avant

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