Département de Physique Nucléaire

Séminaires du DPhN

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Bat 703, p 45, CEA Saclay, Orme des Merisiers

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Charged Pion Polarizability measured at COMPASS

For more than a decade, the COMPASS experiment at the CERN Super Proton Synchrotron has been tackling the measurement of the electromagnetic polarizability of the charged pion, which describes the stiffness of the pion against deformation in electromagnetic fields. Previous experiments date back to the 1980's in Serpukhov (Russia), where the Primakoff method to study charged-pion interactions with quasi-real photons was first employed. Later also other techniques in photon-nucleon and photon-photon collisions were carried out at different machines. The COMPASS measurement demonstrates that the charged-pion polarizability is significantly smaller than the previous dedicated measurements, roughly by a factor two, with the smallest uncertainties realized so far. The pion polarisability is of fundamental interest in the low-energy sector of quantum chromodynamics. It is directly linked to the quark-gluon substructure and its dynamics in the lightest bound system of strong interaction.

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