Status of a statistical approach to the parton distributions

Seminario a cura di

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The aim of the research presented is to give a precise formulation to the statement by Feynman and other scientists that, as a consequence of Pauli principle, in the proton sea $\bar{d}(x)$ is bigger than $\bar{u}(x)$), as confirmed by the defect in the Gottfried sum rule and by the study of Drell-Yan pairs in pp and pd scattering. Pauli principle implies the role of quantum statistical mechanics and suggests that parton distributions as a function of x are Fermi-Dirac for the fermions and Bose-Einstein for the gluons at the Q^2_0, which separates the non-perturbative and the perturbative regimes of the evolution. One obtains a description of the non-polarized and polarized distributions and of the spin asymmetries of the sea in terms of few parameters.

Short Biography:

Franco Buccella graduated in Theoretical Physics from Sapienza University of Rome in 1963 and got the Diplome at Scuola di Perfezionamento in Fisica of the University of Florence in 1966 with tutor Prof. R. Gatto. Enrolled as professor at the University of Florence from 1965 until 1968, from 1969 till 1971 he was fellow at the Theory Division in CERN and then assistant Professor at the University of Roma. From November 1980 to October 2011, he was full Professor of Theoretical Physics at the University on Naples.

Always interested in the particle physics, Prof. Buccella is currently studying the parton distributions, the non-leptonic decays of D mesons in two pseudoscalars and is performing calculation on the chromomagnetic contributions to the spectrum of six quark bound states.

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