
KOLOKVIJ FIZIČKOG ODSJEKA

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A view inside the proton

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With the Stanford Linear Accelerator a new era in particle physics started in 1966 yielding a new view of the world of elementary particles. It was realized soon that the proton with a radius of about 10^{-15} m is not elementary rather it is made of so-called partons. These constituents were identified as quarks, hypothetically introduced by Gell-Mann and Zweig. The dynamics of quarks is described by Quantum Chromodynamics, which allows to analyze experimental measurements in terms of partonic degrees of freedom. In the last four decades both experimental and theoretical efforts lead to an impressive quantitative improvement of measurements, e.g., providing a precise knowledge of the longitudinal distribution of partons. More recently, the concept of generalized parton distribution has been introduced and developed. In this framework the proton can be explored from a new perspective and the problem of the proton spin decomposition and the three dimensional distribution of partons in the proton can be addressed.

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