

# PHYSIKALISCHES KOLLOQUIUM

SOMMERSEMESTER 2023

Montag, 05.06, 12 Uhr c.t.

## **PARTONIC IMAGING OF HADRONS: STATUS AND PERSPECTIVES - IN MEMORY OF PROF. DR. MAXIM POLYAKOV**

Marc Vanderhaeghen, Johannes Gutenberg University, Mainz, Germany

The proton is the nucleus of the most abundant atom in the visible Universe, i.e. hydrogen. It is composite and has a quark and gluon substructure, as revealed in the second part of the previous century by elastic and deep inelastic electron-proton scattering experiments. Around 50 years after the establishment of Quantum Chromo Dynamics as the quantum field theory describing the strong interaction within the Standard Model of particle physics, the precise way in which the quarks and gluons compose the proton and build up its global properties, i.e. its mass, momentum, charge, or spin distributions, as well as give rise to its excitation spectrum are still not well-known and understood. The past two decades have seen an important progress both theoretically and experimentally in exploring proton structure through hard exclusive processes. With the deeply virtual Compton process, it nowadays became possible to perform Compton Scattering directly at the quark level.



In this colloquium, an overview will be given of the resulting experimentally-based three-dimensional momentum-space imaging and tomography of the proton as well as of nucleon resonances. It will be shown how such information is connected to low-energy structure quantities such as charge radii and polarizabilities which are crucial inputs in the interpretation of precision atomic spectroscopy experiments.

Die Einführung erfolgt durch Evgeny Epelbaum

**Die Fakultät lädt alle Interessierten herzlich ein. Die Veranstaltung findet im Hörsaal HNB und hybrid via Zoom (Link online oder per QR-Code) statt.**

