FIAS Colloquium

Thursday, November 22, 2012, 14:30
FIAS, Ruth-Moufang-Str. 1, 60438 Frankfurt am Main
Lecture hall 0.100

Speaker: Prof. Dr. Mark Strikman, Penn State University, University Park, PA, USA
Title: Colorful physics of hadrons in high-energy (anti)proton-nucleus collisions

The progress in understanding Quantum Chromodynamics (QCD) - the theory of strong interactions led to a dramatic progress in our understanding of the dynamics of high energy interactions and ability to use these interactions for probing the structure of bound states in QCD. In the recent decade the focus started to shift from investigations of the one-dimensional structure of the nucleon (parton distributions) to the nucleon tomography - the investigation of the three-dimensional structure of nucleon and study of correlations between constituents of the nucleon. Interactions with nuclei play a key role in these investigations. In particular, collisions with nuclei allow to probe color fluctuations in nucleons - the presence in the nucleons and other hadrons of configurations interacting with very different strength which are responsible for a wide range of phenomena from color transparency (already observed in a number of experiments) to color opacity. Role of color fluctuation in changing the dynamics of (anti)proton - nucleus interactions with increase of energy is explains and perspectives of studies of related novel phenomena at (anti)proton - nucleus colliders are outlined with a special emphasis on the forthcoming proton-nucleus run at the LHC.