Senat und Präsident der
Johannes Gutenberg-Universität Mainz
laden ein zum

DIES ACADEMICUS 2015

Ehrung der Preisträgerinnen und Preisträger
des Studienjahres 2014/2015

Mittwoch, 24. Juni 2015, 17 Uhr c. t.
Atrium der Alten Mensa, Forum universitatis

Dr. Vladyslav Pauk
geb. 1988

Studium	National Taras Shevchenko University of Kiev
Promotion	Institut für Kernphysik, JGU Abschluss im Juli 2014

Während meines Studiums war mir besonders wichtig …

… international character of the research group, connection with experimental and other theoretical groups, possibility to participate at international meetings, good working environment.

Weitere Pläne

Postdoctoral research position at Thomas Jefferson National Laboratory, USA

Titel der Dissertation

Light-by-light scattering and the anomalous magnetic moment of the muon

Betreuer der Dissertation

Univ.-Prof. Dr. rer. nat. Marc Vanderhaeghen

Inhalt der Dissertation

The process of two-photon production of hadrons has been playing a vital role in studying the strong interaction physics during the past few decades. Since the process is essentially non-perturbative in nature, the general constraints based on analyticity and unitarily become highly important for the interpretation of the phenomenon.
A new approach based on sum rules for light-by-light scattering was developed and applications for a number of problems related to both perturbative field theory and hadronic physics were explored in detail.

The keen interest to the anomalous magnetic moment of muon is motivated by its high potential for probing physics beyond Standard Model. However, the interpretation of the quantity is undermined by large hadronic uncertainties. In view of the new muon (g-2) experiments at Fermi lab and at J-PARC, a new dispersive formalism for evaluating the hadronic light-by-light (HLbL) scattering contribution to the muon's anomalous magnetic moment was presented.

Vladyslav Pauk provided a first realistic application of the proposed formalism to the case of pseudo scalar meson pole exchanges. "Moreover, it allows for a more straightforward implementation of the experimental data", he explains. "The ongoing measurements by the BES-III Collaboration will be a crucial input into the presented dispersive formalism."