Aktuelle Veranstaltungen

Kolloquium

Thema: **The mystery of the proton mass, and what J/Psi can tell us about it**

Datum: 31.05.21

Uhrzeit: 16:15

Ort: cyberspace

Vortragender: Dima Kharzeev

Stony Brook University

Inhalt: The way in which the proton - a state made of massless gluons and almost massless quarks - acquires its large mass is still mysterious. The radius of the proton's mass distribution can shed light on this mystery - yet, so far it has not been determined from experiment. I will first discuss how the mass radius of the proton can be rigorously defined through the formfactor of the trace of the energy-momentum tensor (EMT) of QCD in the weak gravitational field approximation. I will then demonstrate that the scale anomaly of QCD enables the extraction of the formfactor of the trace of the EMT from the data on threshold photoproduction of J/? and ? quarkonia, and use the recent data of GlueX Collaboration to extract the r.m.s. mass radius of the proton R_m = 0.55 ± 0.03 fm. The extracted mass radius is significantly smaller than the r.m.s. charge radius of the proton R_C = 0.8409 ± 0.0004 fm. I will discuss the possible origin of this striking difference.

Ansprechpartner: F. Karsch/TR211

Kolloquium Mathematische Physik

Thema: **20210723 - Jon Keating - TBC**

Datum: 23.07.21

Uhrzeit: 16:15

Ort: ZOOM/Konferenzschaltung

Vortragender: Jon Keating

Oxford University

Inhalt: TBC

Ansprechpartner: G. Akemann

Seminar Hochenergiephysik

Thema: **Is Our Universe the Remnant of Chiral Anomaly in Inflation?**

Datum: 27.04.21

Uhrzeit: 14:15

Ort: Online, via ZOOM

Vortragender: Azadeh Maleknejad

CERN, Geneva

Inhalt: Modern cosmology has been remarkably successful in describing the Universe from a second after the Big Bang until today. However, its physics before that time is still much less certain. It profoundly involves particle theory beyond the Standard Model to explain long-standing puzzles: the origin of the observed matter asymmetry, nature of dark matter, massive neutrinos, and cosmic inflation. In this talk, I will explain that a new framework based on embedding axion-inflation in left-right symmetric gauge extensions of the SM can possibly solve and relate these seemingly unrelated mysteries of modern cosmology. The baryon asymmetry and dark matter today are remnants of a pure quantum effect (chiral anomaly) in inflation which is the source of CP violation in inflation. As a smoking gun, this setup has robust observable signatures for the GW background to be probed by future CMB missions and laser interferometer detectors.

Ansprechpartner: D. Bödeker

Seminar Kondensierte Materie

Thema: **tba**

Datum: 20.05.21

Uhrzeit: 16:00

Ort: ZOOM / Konferenzschaltung

Vortragender: Mark Pederson

University of Texas at El Paso

Inhalt:

Ansprechpartner: Jürgen Schnack

Seminar Mathematische Physik

Thema: **The Character Expansion in effective Theories for chiral Symmetry Breaking**

Datum: 03.12.20

Uhrzeit: 16:30

Ort: ZOOM / Konferenzschaltung

Vortragender: Noah Aygün

Universität Bielefeld

Inhalt:

Ansprechpartner: Gernot Akemann

Seminar Bielefeld-Melbourne Zufallsmatrizen

Thema: **Large deviations for the largest eigenvalues for some random matrix models**

Datum: 19.05.21

Uhrzeit: 09:00

Ort: ZOOM / Konferenzschaltung

Vortragender: Jonatan Husson

UMPA, ENS de Lyon

Inhalt: In random matrix theory, the question of large deviations of spectral quantities (that is: how does the probability that these quantities take atypical values decay?) remains mysterious outside of some specific models. However, recent advances on this question make use of HCIZ integrals (also known as spherical integrals) as proxy for the largest eigenvalues. In this talk I will expose how to determine the asymptotics of these spherical integrals when the rank is constant and I will explain how to use these integrals to estimate the large deviations of the largest eigenvalues. This talk is mainly based on two joint works with A. Guionnet and a joint work with F. Augeri and A. Guionnet.

Ansprechpartner: Anas Rahman