HK 47: Hauptvorträge IV

Time: Thursday 9:30–10:30 Location: HS1

Invited Talk HK 47.1 Thu 9:30 HS1

QCD Studies in the Charm Region — •Marc Pelizäus — Univ. of Hawaii, Honolulu, HI 96822, USA

Charmed hadron systems provide an excellent environment to study the non-perturbative regime of QCD. Confronting theoretical predictions with more and more precise experimental data on charm spectroscopy, transitions, and decays allows to distinguish between the various theoretical concepts and to determine the relevant parameters of QCD. Decays of charmed hadrons are also a good source to study light hadrons and may provide access to gluonic hadrons and other exotics predicted by QCD.

Although the driving experiments of the past decade like CLEOc or the B-factories, which have led to numerous and partly surprisingly discoveries in this field, stopped their operation, exciting times with new experiments with unprecedented luminosity and precision like Panda at FAIR and Belle II at KEKB –just to name two budgeted projects– are ahead. But the future has already began. In July 2008 the BESIII experiment in Beijing recorded the first hadronic e^+e^- collision at the BEPCII storage ring. Since then over 100 million $\psi(2S)$ and over 200 million J/ψ events, as well as a data sample corresponding to an integrated luminosity of approximately $1fb^{-1}$ at the $\psi(3770)$ resonance have been accumulated. This provides the opportunity to improve the precision on many existing measurements in the charmonium region and has led to striking new results. The talk reviews recent results focusing on the key results of the first two years of BESIII operation and previews future expectations.

Invited Talk HK 47.2 Thu 10:00 HS1

Glueball spectrum from the lattice with exponentially improved statistical precision — •Michele Della Morte — Institut fuer Kernphysik, Becherweg 45, Mainz

We briefly review the computational strategy we have recently introduced for computing glueball masses and matrix elements, which achieves an exponential reduction of statistical errors compared to standard techniques. The global symmetries of the theory play a crucial role in the approach. We show how our previous work on parity can be generalized to other symmetries. In particular we discuss how to extract the mass of the 0++, 2++ and 0-+ lightest glueballs avoiding the exponential degradation of the signal to noise ratio. We present new numerical results including a numerical proof of the existence of a mass gap in the pure gauge theory.