

Proceedings of the Ringberg Workshop

**New Trends in
HERA PHYSICS
2007**

**Ringberg Castle
Tegernsee, Germany
5-10 Oct 2008**

edited by

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Foreword

The international workshop *New Trends in HERA Physics 2008* took place from 5 to 10 October 2008 at Ringberg Castle, which overlooks Lake Tegernsee in the foothills of the Bavarian Alps, one of the most picturesque locations to be found in the whole of Germany.

The castle was built during the first half of the twentieth century by Duke Luitpold in Bavaria (Herzog Luitpold in Bayern), a member of the Wittelsbach family which ruled Bavaria over 800 years, and his friend Friedrich Attenhuber, an all-round artist, architect, and interior decorator. The castle is entirely their creation, from the massive Renaissance-inspired exterior right down to the fittings and furniture, which, in every detail, were designed by Attenhuber himself and executed by native craftsmen. Attenhuber also painted every single picture exhibited in the castle. The models for his paintings he found in the farmhouses around Lake Tegernsee. The castle embodies all trends of art and styles which dominated the first half of last century, combined with local Alpine originality and the individual creative power of its constructors. According to the Duke's last will, the castle passed into the hands of the Max Planck Society after his death, in 1973. The castle was then transformed into a conference venue, where scientists can exchange their latest ideas and discuss problems with their colleagues from all over the world in beautiful surroundings and in a relaxed mountain atmosphere, high above the daily business activities.

This was the sixth event in a series of Ringberg workshops on HERA physics, which was started in 1997 and continued in 1999, 2001, 2003 and 2005. At the end of these workshops, many participants expressed the opinion that this was a successful endeavour to bring theorists and experimentalists together in order to interpret the latest HERA data, and that it would be useful to organize a follow-up workshop in a similar spirit.

On the occasion of the 2008 Ringberg workshop, nearly forty experts in elementary-particle physics, both theorists and experimentalists, from twenty-five universities and research institutions in nine countries congregated to present and discuss the latest results on the various aspects of HERA physics. Specifically, there were sixteen presentations each by theorists and experimentalists, the latter representing the H1, HERMES, and ZEUS collaborations at HERA.

The topics covered included: proton and nuclear structure; polarized ep scattering; final states in deep-inelastic scattering, with emphasis on jets ($\alpha_s(M_Z)$), substructure, jet algorithms for LHC), multi-parton interactions and particle production; heavy-flavour and J/ψ production and the charm and beauty structure functions; diffractive physics, with emphasis on structure functions, factorization breaking, leading baryons, vector mesons and DVCS at HERA and exclusive Higgs production at LHC; electroweak and beyond the standard model results from HERA; color glass condensate and HERA data; gauge gravity duality and high energy collisions; common HERA-LHC efforts and future deep inelastic physics at LHeC. We hope that the high-energy-physics community will benefit from these proceedings, in which the on-

going efforts in understanding the nature of the strong interactions, with particular emphasis on HERA physics, are documented.

We wish to thank all our friends and colleagues who have contributed to these proceedings. We are indebted to the workshop secretary, Mrs. Rosita Jurgeleit, for her assistance before, during, and after the workshop and to Kirsten Sachs for her technical assistance in the editorial work. The local costs at Ringberg Castle and the costs for the publication and dissemination of these proceedings were covered in equal parts by the Deutsches Elektronen-Synchrotron at Hamburg and the Max-Planck-Institut für Physik at Munich, which we gratefully acknowledge.

Hamburg, March 2009

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Proton and Nuclear Structure

Spin Physics

Jet Production, Jet Structure and Particle Production

Heavy Flavour Production

Diffraction

HERA Physics in Perspective

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