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CERN EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH

2014 European School of High-Energy Physics

Garderen, the Netherlands
18 June – 1 July 2014

Proceedings

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Abstract

The European School of High-Energy Physics is intended to give young physicists an introduction to the theoretical aspects of recent advances in elementary particle physics. These proceedings contain lecture notes on the theory of quantum chromodynamics, Higgs physics, Flavour physics and CP violation, and Supersymmetry.

Preface

The twenty-second event in the series of the European School of High-Energy Physics took place in Garderen, the Netherlands, from 18 June to 1 July 2014. It was organized jointly by CERN, Geneva, Switzerland, and JINR, Dubna, Russia, with support from FOM and Nikhef in the Netherlands. The local organization team was chaired by Dr Olya Igonkina who was greatly assisted by Joan Berger on many practical and administrative matters. The other members of the local committee were: S. Caron, R. Fleischer, F. Linde, V. Mexner, A. Mischke, P. Pani, D. Samtleben and L. Wiggers.

A total of 100 students of 32 different nationalities attended the school, mainly from institutes in member states of CERN and/or JINR, but also a few from other regions. The participants were generally students in experimental High-Energy Physics in the final years of work towards their PhDs.

The School was hosted at the Bilderberg Hotel 't Speulderbos complex in Garderen, about 70 km from the centre of Amsterdam. According to the tradition of the school, the students shared twin rooms mixing participants of different nationalities.

A total of 32 lectures were complemented by daily discussion sessions led by six discussion leaders. The students displayed their own research work in the form of posters in an evening session in the first week, and the posters stayed on display until the end of the School. The full scientific programme was arranged in the on-site conference facilities.

A novel feature in the 2014 School was an element of outreach and media training, complementing the main scientific programme. This consisted of a course “Broadcasting your messages: Communicating clearly and concisely with non-specialist audiences” from the iOpener institute. The session was delivered by Nadia Marchant (facilitator) and Hugh Schofield (journalist and BBC correspondent in Paris). In an optional after-dinner session, students had the opportunity to act out interviews under realistic conditions based on two hypothetical scenarios. Another outreach-related activity was an entertaining after-dinner show, “HIGGS: Stand Up Physics” by Jan van den Berg.

Each discussion group subsequently carried out a collaborative project, preparing a talk on a physics-related topic at a level appropriate for a general audience. The talks were given by student representatives of each group in an evening session in the second week of the School. Feedback was provided by a jury composed of Jan van den Berg, Margriet van der Heijden, Gieljan de Vries and Ivo van Vulpen, organised by Vanessa Mexner. Many thanks are due to these people, all of whom are themselves involved in the communication of science in one way or another.

Our thanks go to the local-organization team and, in particular, to Olya Igonkina, for all of their work and assistance in preparing the School, on both scientific and practical matters, and for their presence throughout the event. Our thanks also go to the efficient and friendly hotel management and staff who assisted the School organizers and the participants in many ways.

Very great thanks are due to the lecturers and discussion leaders for their active participation in the School and for making the scientific programme so stimulating. The students, who in turn manifested their good spirits during two intense weeks, undoubtedly appreciated listening to and discussing with the teaching staff of world renown. We would like to express our appreciation to Professor Rolf Heuer, Director General of CERN, and Dr Alexander Olshevskiy representing Professor Victor Matveev, Director General of JINR, for their lectures on the scientific programmes of the two organizations and for discussing with the School participants.

In addition to the rich academic programme, the participants enjoyed numerous sports, leisure and cultural activities in and around the Bilderberg Hotel 't Speulderbos complex. Particularly noteworthy were the very nice excursions to the Dutch national park Hoge Veluwe and the Kröller-Müller museum, to Amsterdam with options to visit the Van Gogh museum or the Rijksmuseum, and to the beach and dunes near Zandvoort. Sports and leisure activities around the hotel, as well as the excursions, provided an excellent environment for informal interactions between staff and students.

We are very grateful to Kate Ross and Tatyana Donskova for their untiring efforts in the lengthy preparations for and the day-to-day operation of the School. Their continuous care of the participants and their needs during the School was highly appreciated.

The success of the School was to a large extent due to the students themselves. Their poster session was very well prepared and highly appreciated, their group projects were a great success, and throughout the School they participated actively during the lectures, in the discussion sessions and in the different activities and excursions.

Nick Ellis
(On behalf of the Organizing Committee)



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