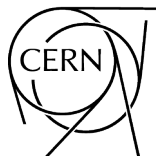


## **2016 European School of High-Energy Physics**

Skeikampen, Norway  
15 – 28 June 2016

Editors: M. Mulders  
G. Zanderighi



CERN Yellow Reports: School Proceedings  
Published by CERN, CH-1211 Geneva 23, Switzerland

ISBN 978-92-9083-476-2 (paperback)

ISBN 978-92-9083-477-9 (PDF)

ISSN 2519-8041 (Print)


ISSN 2519-805X (Online)

DOI <https://doi.org/10.23730/CYRSP-2017-005>

Accepted for publication by the CERN Report Editorial Board (CREB) on 14 December 2017

Available online at <http://publishing.cern.ch/> and <http://cds.cern.ch/>

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This volume is indexed in: CERN Document Server (CDS), INSPIRE, Scopus.

This volume should be cited as:

Proceedings of the 2016 European School of High-Energy Physics, Skeikampen, Norway, 15 – 28 June 2016, edited by M. Mulders and G. Zanderighi, CERN Yellow Reports: School Proceedings, Vol. 5/2017, CERN-2017-009-SP (CERN, Geneva, 2017), <https://doi.org/10.23730/CYRSP-2017-005>

A contribution in this volume should be cited as:

[Author name(s)], in Proceedings of the 2016 European School of High-Energy Physics, Skeikampen, Norway, 15 – 28 June 2016, edited by M. Mulders and G. Zanderighi, CERN Yellow Reports: School Proceedings, Vol. 5/2017, CERN-2017-009-SP (CERN, Geneva, 2017), pp. [first page]–[last page], <https://doi.org/10.23730/CYRSP-2017-005>. [first page]

## **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 the Weak interaction and Higgs physics, flavour physics and CP violation, neutrinos, theories beyond the Standard Model, physics at the LHC Run-2 and beyond, practical statistics for high-energy physicists, and cosmology and dark matter.





## Preface

The twenty-fourth event in the series of the European School of High-Energy Physics took place in Skeikampen, Norway, from 15 to 28 June 2016. It was organized jointly by CERN, Geneva, Switzerland, and JINR, Dubna, Russia, with support from the universities of Bergen and Oslo. The local organization team was chaired by Prof. Heidi Sandaker. The other members of the local committee were: Trygve Buanes, Gerald Eigen, Tomas Gonzalo, Eirik Gramstad, Børge Hovden, Abram Krislock, Anna Lipniacka, Bertrand Martin dit Latour, Farid Ould-Saada, Are Raklev and Alex Read.

A total of 98 students of 35 different nationalities attended the school, mainly from institutes in member states of CERN and/or JINR, but also some 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 Thon Hotel Skeikampen, about 40 km to the north of Lillehammer. According to the tradition of the school, the students shared twin rooms mixing participants of different nationalities.

A total of 30 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.

The School also included an element of outreach training, complementing the main scientific programme. This consisted of a two-part course from the Inside Edge media training company. Additionally, students had the opportunity to act out radio interviews under realistic conditions based on a hypothetical scenario.

The students from 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. A jury, chaired by Prof. Egil Lillestøl (a winner of the Norwegian Research Council award for communication of science), judged the presentations; other members of the jury were Gabriela Barenboim (lecturer at the School), Kate Ross (Schools Administrator), and Inga Hanne Dokka (a winner of the Norwegian Physical Society award excellence in teaching). We are very grateful to all of these people for their help.

Our thanks go to the local-organization team and, in particular, to Heidi Sandaker, 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, appreciated listening to and discussing with the teaching staff of world renown.

We would like to express our strong appreciation to Professor Fabiola Gianotti, Director General of CERN, and Professor Victor Matveev, Director 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 Skeikampen. There was a half-day excursion to Lillehammer, with its Olympic museum and Maihaugen open-air museum on the first Saturday afternoon. Then, during the full-day excursion to the impressive Jotunheimen Mountains, participants had the option to hike over the Besseggen mountain, to follow an alternative route along the lakeshore, or to just relax and enjoy the spectacular scenery. Sports and leisure activities in and 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 huge 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)









## People in the photograph

1	Artem Maevskiy	36	Moritz Habermehl	71	Nicoletta Belloli
2	Alfredo Urbano	37	Baptiste Abeloos	72	Renat Sadykov
3	Igor Tkachev	38	Gionata Luisoni	73	Viacheslav Kaminskiy
4	Denis Korablev	39	Nedaa-Alexandra Asbah	74	Suzanne Klaver
5	Tatiana Antoshkina	40	Angela Burger	75	Callum Kilby
6	Aliaksandr Antoshkin	41	Carla Marin Benito	76	Thor Taylor
7	Tatiana Ovsiannikova	42	Andrea Mogini	77	Mai El Sawy
8	Kate Ross	43	Arthur Lesage	78	Margherita Spalla
9	Konstantin Treskov	44	Noemi Calace	79	Roberto Franceschini
10	Daniel Gonzalez	45	Katarina Gajdosova	80	Radim Slovak
11	Francesco Cirotto	46	Luigi Longo	81	Giulio Dujany
12	Marek Walczak	47	Giorgia Rauco	82	Juraj Smiesko
13	Myriam Schoenenberger	48	Viktar Kireyeu	83	Jaime Norman
14	Xavier Coubez	49	David Hohn	84	Ismet Siral
15	Steffen Maeland	50	Marilea Reale	85	Simon Corrodi
16	Ruiqi Zhang	51	Giuseppe Lerner	86	John Anders
17	Alberto Escalante del Valle	52	Chiara Rizzi	87	Michael Pitt
18	Lucien Lo	53	Gabriela Barenboim	88	Karlis Dreimanis
19	Monika Blanke	54	Hadi Hassan	89	Luke Vinton
20	Marton Bartok	55	Emanuele Michielin	90	Miroslva Simko
21	Yi-Ting Duh	56	Ksenia Gasnikova	91	Ayse Bat
22	Dominik Krauss	57	Mariana Shopova	92	Alessandra Baas
23	Radoslav Marchevski	58	Alessio Boletti	93	Rafal Sikora
24	Vit Kucera	59	Julian Garcia Pardinias	94	Boris Teyssier
25	Marco A. Harrendorf	60	Tao Huang	95	Clement Camincher
26	Abram Krislock	61	Lukasz Fulek	96	Mareike Meyer
27	Alina Vishneva	62	Oleksiy Fedorchuk	97	Eloi Le Quilleuc
28	Pirmin Berger	63	Maria Vieites Diaz	98	Mariya Ilieva
29	Denys Denysiuk	64	Danijela Bogavac	99	Borge Hovden
30	Meera Vieira Machado	65	Andrey Sapronov	100	Rizki Syarif
31	Nicolas Lurkin	66	Igor Shandrov	101	Svende Braun
32	Dirk Sammel	67	Andy Wharton	102	Nick Ellis
33	Tatyana Donskova	68	Cora Fischer	103	Martijn Mulders
34	Ryne Carbone	69	Rhys Owen	104	Trygve Buanes
35	Aurelie Bonhomme	70	Alexander Olshevskiy		



# Photographs (montage)



## The 2016 European School of High-Energy Physics

Skeikampen, Norway 15 – 28 June 2016











# Contents

Preface	
<i>N. Ellis</i> .....	v
Photograph of participants .....	vii
Photographs (montage) .....	x
Lectures on the Theory of the Weak Interaction	
<i>M.E. Peskin</i> .....	1
Introduction to Flavour Physics and CP Violation	
<i>M. Blanke</i> .....	71
Neutrinos: Fast & Curious	
<i>G. Barenboim</i> .....	101
Beyond the Standard Model	
<i>B.C. Allanach</i> .....	123
Physics at the LHC Run-2 and Beyond	
<i>A. Hoecker</i> .....	153
Practical Statistics for High Energy Physicists	
<i>L. Lista</i> .....	213
Cosmology and Dark Matter	
<i>I. Tkachev</i> .....	259
Organizing Committee .....	295
Local Organizing Committee .....	295
List of Lecturers .....	295
List of Discussion Leaders .....	295
List of Students .....	296
List of Posters .....	297