

Preface

The 31st International Colloquium on Group Theoretical Methods in Physics (also shortened as “Group 31”) was held in Rio de Janeiro, Brazil, from June 19 to June 25, 2016. This was the first time that a colloquium of the prestigious and nowadays traditional ICGTMP series, which started in 1972 in Marseille, France, took place in South America.

The aim of the ICGTMP Colloquia is to provide a forum for physicists, mathematicians, and scientists of related disciplines who either develop or apply methods in group theory (further information on the history of the Colloquia and its recent development is found at the ICGTMP homepage <http://icgtmp.blogs.uva.es/>).

The Group 31 Colloquium was hosted by the *Centro Brasileiro de Pesquisas Físicas* (CBPF), a Federal Research Institute which, since its creation in 1949, has been essential for Brazilian science in promoting research and scientific interchange. The Group 31 Colloquium, consisted of three venues, was located in different areas of Rio de Janeiro. The main activity (registration, parallel and poster sessions) took place at CBPF in the Urca neighborhood, while plenary sessions were held at the Auditorium of the *Fundação Casa de Rui Barbosa* in Botafogo. The Award Ceremony for the Wigner Medal and the Weyl Prize was held on June 22 in the new landmark of Rio de Janeiro, the *Museu do Amanhã* science museum, next to the waterfront of Pier Mauá. The last day of the colloquium a general public event was also held at *Museu do Amanhã*.

In recent years Brazil experienced a scientific boost (measured, e.g., by the number of scientific publications and their impact) which has been unparalleled in its history. To be sure, the group theoretical community was both a beneficiary and a promoter of this scientific rise. One of the motivations to organize the Group Theoretical Colloquium in Brazil was indeed to offer a unique opportunity to the growing, although scattered on a vast subcontinental nation and not yet fully organized, community of researchers working in the country (and profiting, as well, researchers from other South American nations). In this respect the colloquium was a great success, with more than 140 participants, equally split into Brazilians and foreigners. It is particularly remarkable that all continents were represented, this is a sign of the relevance of this scientific topic and of the world-wide esteem that the colloquium is held by our colleagues. This success was made possible, in particular, by grants received by TWAS, supporting participation of scientists from developing countries, and ICTP, supporting participants from Latin American countries outside of Brazil. The main sponsor of the event has been the CAPES Federal Agency which offered a substantial contribution to the Local Organizing Committee. Important logistic sup-

port with free use of the facilities was provided by CBPF, Fundação Casa de Rui Barbosa, and Museu do Amanhã.

The scientific program of Group 31 was particularly rich, with eleven plenary talks, thirteen parallel sessions with both oral and poster presentations, two laudatio speeches in honor of, respectively, the Wigner Medalist and the Weyl Prize winner, and two memorial talks. The memorial talks were held to honor renowned colleagues Laurence Boyle and Syed Twareque Ali, members of the ICGTMP Standing Committee, who sadly passed away.

Before the Colloquium, as a parallel program, a two-day Satellite Workshop on Mathematical Physics was organized on June 16 and 17 in S. Paulo by ICTP-SAIFR (the International Center for Theoretical Physics-South American Institute for Fundamental Research).

At the Inauguration of the colloquium welcome speeches were given by Mariano del Olmo, Chairman of the ICGTMP Standing Committee, Ronald Shellard, Director of the CBPF and Luiz Davidovich, President of the Brazilian Academy of Science.

A distinctive innovation of Group 31, with respect to previous colloquia, was the creation of a special prize reserved for the most interesting posters presented by Master and Ph.D. students, with the aim of promoting active participation of the new generation.

The nowadays traditional Wigner Medal and Weyl Prize Award Ceremony, held in the splendid and prestigious frame of *Museu do Amanhã*, was the highlight of the Colloquium. The Wigner Medal, established in 1978 and administered by *The Group Theory and Fundamental Physics Foundation* located at the University of Texas at Austin and represented by Arno R. Bohm, recognizes and awards outstanding contributions through group theoretical and representation methods. The 2016 Wigner Medal was awarded to Bertram Kostant. Quoting Michio Jimbo of Rikkyo University, Tokyo, chair of the selection committee, *the lifelong achievements of Bertram Kostant have had profound impact in pure mathematics. At the same time his work miraculously has been finding his way to physics, suiting the spirit of Wigner who coined the famous phrase “the unreasonable effectiveness of mathematics in the physical sciences”*.

During his time as chairman (1994-2008), Heinz-Dietrich Döebner convinced the Standing Committee of the International Colloquium on Group Theoretical Methods in Physics that it would be necessary for the future development of our field to acknowledge young researchers who presented outstanding work and to motivate them to continue and diversify their activity. Hence, the Weyl prize, established in 2002 by the Standing Committee, is awarded to young scientists who have performed original work in understanding physics through symmetries. A Selection Committee, chaired by Edward Frenkel of the University of California, Berkeley, awarded the 2016 Hermann Weyl Prize to Vasily Pestun of l’Institut des Hautes Études Scientifiques for his groundbreaking results in the study of supersymmetric gauge theories.

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Chairman of the Local Organizing Committee

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