



Preface

Few-Body 21 (FB21), the Twenty-first International Conference on Few-Body Problems in Physics, was held from 18-22 May 2015 in the West Loop of downtown Chicago, Illinois, USA. It was jointly organized by Ohio University and Argonne National Laboratory.

The study of few-body systems has a long and rich history. Traditionally the three-body system was a testing ground for two-body potentials. From the 1960s through to the 1990s few-body physics emerged as a field where precision comparisons between theory and experiment were carried out in order to tease out subtle details of the inter-particle dynamics.

Few-body systems are a key milepost on the road from two-body to many-body dynamics. They are the first place that genuine three-body forces can be observed, and their dynamics displays unique features, e.g. the Efimov effect and associated universal physics. The advent of tunable interactions in cold atomic gases has opened up the possibility to explore all these aspects of the few-body problem in a new realm.

Few-body physics now stretches from this domain of neV energies to investigations of hadron properties at GeV energies – and encompasses significant swaths of contemporary nuclear physics in between. The meetings in this series have marked our progress to this point, the first being held in London in 1959, with subsequent meetings in Brela (1967), Birmingham (1969), Budapest (1971), Los Angeles (1972), Quebec (1974), Dehli (1976), Graz (1978), Eugene (1980), Karlsruhe (1983), Sendai (1986), Vancouver (1989), Adelaide (1992), Williamsburg (1994), Groningen (1997), Taipei (2000), Durham (2003), Santos (2006), Bonn (2009), and Fukuoka (2012).

FB21 presented progress since the Fukuoka meeting on problems that can be understood in terms of a few effective degrees of freedom. This included experimental and theoretical investigations pertaining to atomic and molecular physics, the role of clustering in the structure and reactions of light nuclei, few-nucleon systems and their interactions, the physics of hadrons, and hypernuclei.

Over 240 participants from 29 countries around the world attended the conference. FB21 featured 31 invited plenary talks, 32 invited lead parallel session talks and 127 contributed talks, resulting in a total of 190 oral presentations. In addition, there were more than 30 poster presentations in a separate poster session on Tuesday afternoon. The week in Chicago provided a snapshot of our vigorous and diverse field.

A unique highlight of this Chicago meeting was the conference banquet, held in Bruce Wayne's Penthouse, aka the *Penthouse* at Wyndham Grand Chicago Riverfront Hotel. Fickle May weather saw 25°C at the conference opening turn into 5°C on banquet evening; but this did not deter 112 conference participants from enjoying sweeping views of the Chicago River and skyline from the open-air patio, followed by a three-course meal inside the Penthouse, whose floor-to-ceiling windows offered 360° views of Chicago at dusk, sunset, and lighting-up of the Windy City. Many of the diners went on afterwards to complete the evening with visits to some of Chicago's numerous music bars and clubs, featuring blues, jazz, rock and reggae.

The meeting was only possible because of generous sponsorship from Ohio University's Institute of Nuclear and Particle Physics, Argonne National Laboratory's Theory Group, Argonne National Laboratory's Physics Division, The Department of Physics and Astronomy at Ohio University, The National Superconducting Cyclotron Laboratory at Michigan State University, The Triangle Universities Nuclear Laboratory, Jefferson Laboratory, and the International Union of Pure and Applied Physics. The APS Topical Group on Few-body Systems sponsored a reception in conjunction with the Tuesday poster session.

The meeting was conducted in accordance with the principles passed by IUPAP's General Assembly in 2008. In particular, no bona fide scientist was excluded from participation on the grounds of national origin, nationality, or political considerations unrelated to science.

That the meeting went smoothly is attributable to the excellent work of Ms. Debra Beres, who managed myriad administrative details with calm efficiency. Ms. Beres was ably assisted by Ms. Tracey Stamcik. At Ohio University, Mr. Wayne Chiasson and Ms. Julie Goettge worked out a number of financial aspects, and assisted us with the construction of the conference packets. Ohio University graduate students Nick Compton, Linda Hlophe, Cody Parker, Andrea Richard, and Arbin Thapaliya acted as conference helpers throughout the week and did a very professional job.

The publication of these proceedings was enabled by the meeting's sponsors and additional financial support from Ohio University's Office of Research. We also thank the many scientists who refereed the contributions, and the Scientific Committee who helped co-ordinate that process. The contributions in this volume reflect the impressive breadth and excellent quality of the contributions to the meeting. That – combined with the strong presence of younger scientists in Chicago – augurs well for the next conference in this series, which will take place in Caen, France in July 2018.