Tobias Frederico · Jean-Marc Richard

Critical Stability 2017

Preface

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This special issue contains articles devoted to various aspects of the structure and reactions of weakly-bound few-body quantum systems, with application to atomic, nuclear and hadron physics. These exotic quantum systems are common to various subfields of few-body physics which encompasses topics as universality, Efimov physics, finite-range corrections, dimensional crossover, dynamics of reactions involving weakly-bound systems, mathematical aspects, etc., and, on the experimental side, cold atoms, neutron rich nuclei, exotic hadrons, etc.

The idea of such a special issue grew during discussions at the 8th International and Interdisciplinary Workshop and School on the Dynamics of Critically Stable Quantum Few-Body Systems (Critical Stability 2017) held in Dresden, at the Max Planck Institute for Complex Systems, Germany, from October 9 to 20, 2017, organised by Alejandro Kievsky, Aksel S. Jensen, Jean-Marc Richard and Tobias Frederico. The workshop was preceded by a school for students and young researchers, where lectures were given as well as working sessions for exercises. A variety of new results were presented during the workshop by scientists from different fields with a common interest in quantum systems close to stability, which stimulated lively discussions and motivated us to spread out these vibrant physics with both experts and non-experts about these recent developments. A short version of the lectures at the school is also included in this special issue.

The lectures and articles of this volume express the vitality of few-body physics and indicate some of the new directions to be explored at the boundaries or within different subfields of physics. We would like to thank the authors, the referees, and the editors of Few-Body Systems for the opportunity to publish this special issue. All this was made possible by the generosity of the Max Planck Institute for Complex Systems in Dresden, which includes not only the financial aspects but also the well-functioning infrastructure and the efficient secretarial assistance, and, above all, the quiet and stimulating environment for the talks and discussions that motivated this enterprise.

This article belongs to the Topical Collection “Critical Stability of Quantum Few-Body Systems”.

T. Frederico
Instituto Tecnológico de Aeronáutica, 12.228-900 São José dos Campos, Brazil
E-mail: tobias@ita.br

J. Richard (✉)
Institut de Physique Nucléaire de Lyon, Université Claude Bernard, 4, rue Enrico Fermi, Villeurbanne, France
E-mail: j-m.richard@ipnl.in2p3.fr