

Preface

The present 37-th volume of the *Nuclear Theory* series contains articles based on the presentations given at the Thirty Seventh International Workshop on Nuclear Theory (IWNT-37) held from 24-th to 30-th of June 2018 in the Rila Mountains, Bulgaria. For a second year the venue of the Workshop was Hotel Lion in Borovetz Resort. The Workshop is annually organized by the Nuclear Theory Laboratory (NTL) of the Institute for Nuclear Research and Nuclear Energy (INRNE) of the Bulgarian Academy of Sciences (BAS) since 1980. The Organizing Committee with the help of the Advisory Committee and the members of the Laboratory make continuous efforts to enlarge the scientific field covered by the Workshop. Our aim is to sustain the interest of the participants in the contemporary developments and problems in the fundamental theory and experiment in nuclear physics study, as well as, in applications which are of utmost importance for the whole society.

The main topics of the 2018 Workshop

- nuclear structure and reactions;
- symmetries and dynamics;
- collective and intrinsic motions of nuclei;
- exotic nuclei;
- few-body and many-fermion systems;
- nuclear astrophysics and related topics

are part of the NTLs program for basic nuclear physics research. This broad range of subjects gives a space for the participants to cover the most actual points of view relating the theory with experiment, providing interpretation and predictions, bridging interdisciplinary topics related to nuclear structure and reactions.

The Workshop was attended by 46 participants (including the organizers) from 14 countries: Algeria, Bulgaria, Czech Republic, France, Germany, Greece, Israel, Italy, Morocco, Poland, Russia, Spain, Turkey, USA. The scientific program contained totally 29 oral talks and 1 poster presentation.

The Workshop proved once more time itself as a fruitful ground for exchanging ideas not only between nuclear physics scientists from different fields and institutions, but also between the experienced scientists and the new coming generation of young physicists. During IWNT-37 a number of young scientists and students were introduced to real scientific activities including the newest trends in the experimental and theoretical nuclear physics as well as in the prospective related fields of research providing them a variety of ideas for possible career development.

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The beautiful mountain nature and the friendly atmosphere at the Workshop provided a nice opportunity for direct communication between participants. We were able to realize our full social program with an excursion to the city of Kyustendil and local hiking tours in the Moussala region.

The Workshop was organized and the proceedings are published with the partial financial support of the Bulgarian National Science Fund under contracts No. DPMNF 01/22, DFNI-E02/6 and DFNI-T02/19 and with the donation of the Kozloduy Nuclear Power Plant. A number of international contracts and agreements of NTL members have also provided a valuable support for the organization of the Workshop. With this support we were able to help the participation of a number of international young and first-time visitors, as well as of our retired colleagues - prominent specialists in the subject of the Workshop.

The editors of the volume would like to express their gratitude to our colleagues from the Organizing Committee, Martin Ivanov, Dimitre Kadrev and Kalin Drumev, as well as to all members of the of Nuclear Theory Laboratory for their help and invariable support during the organization of the Workshop. We are also grateful to the members of the International Advisory Committee for the valuable suggestions and ideas about the organization of the Workshop.

Finally, we would like to thank all the participants of IWNT-37 for their contribution to the nice scientific atmosphere as well as to the participants who contributed to the present volume. We hope that the scientific level and the quality of the papers included prove the vitality and the future perspectives of the nuclear physics and its related areas.

The next 38-th issue of the International Workshop on Nuclear Theory will be held in Borovetz, Rila Mountains, Bulgaria from 23-th to 29-th of June 2019.

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Sofia, November 2018