

## Preface

This 32nd volume of the *Nuclear Theory* series contains contributions presented at the Thirty Second International Workshop on Nuclear Theory (IWNT-32) held from 24th to 29th of June 2013 in the Rila Mountains, Bulgaria. The annual organization of the Workshop by the Nuclear Theory Laboratory (NTL) of the Institute for Nuclear Research and Nuclear Energy (INRNE) of the Bulgarian Academy of Sciences is already an established tradition since 1980. The Organizing Committee and all the members of the Laboratory make continuous efforts to broaden the IWNT scope and to enlarge the circle of its participants not only in number but also in the variety and novelties in the nuclear physics studies.

The main topics of the 2013 Workshop were:

- 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.

Most of them are part of the NTL's program for basic nuclear physics research. However, they were kept open for participants from a much broader area of interests bridging with novel experimental developments, interdisciplinary topics related to nuclear structure and reactions, as well as, nuclear physics applications like nuclear safety. For the first time we had a participant from the Kozloduy Nuclear Power Plant as well as a lecturer giving a talk on nuclear reactor safety.

The Workshop was attended by 42 participants (including the organizers) from India, Italy, Germany, UK, Hungary, Poland, Spain, Russia, Kazakhstan, Uzbekistan, South Africa, USA and Bulgaria. The scientific program contained totally 30 oral talks and 1 poster.

Most of the collaborations established between NTL members and colleagues from various international institutions like JINR (Dubna), INFN (Pavia), JLU (Giessen), the Institute of Nuclear Research, (MTA Atomki, Hungary), and the University of Surrey (UK) were represented. At the same time the Workshop attracted a number of first-time coming visitors, which has open a promising possibility for the establishment of future new scientific co-operations.

The Workshop again proved 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

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young physicists. During IWNT-32 a number of young scientists and students were introduced to real scientific activities. Some of them gave their first presentations at international scientific forum. The covered topics and the presented talks provided them with a variety of ideas about the new trends both in experimental and theoretical nuclear physics as well as in the prospective fields of research or other possible careers related to their educational background.

The surrounding nature and the friendly atmosphere at the workshop provided not only an opportunity for direct communication between the participants, but also for an enjoyable social program with a number of excursions and informal events. We should remark the pleasant self-entertainment events during the official diner with the special poetry contributions which are also included in the book. The later proves that physicists are not only hard working, serious scientists, but also people enjoying the arts and music. We hope that all our guests had taken home nice memories from Bulgaria and the Workshop and also hope all of them will be happy to come again.

The Workshop was organized and the proceedings are published with the partial financial support of the Bulgarian National Science Fund under contract No. DID-02/16-2009. A number of international contracts and agreements of NTL members have also provided a valuable support for the organization of the Workshop.

The editors of the volume would like to express their gratitude to our colleagues from the Organizing Committee, Mitko Gaidarov, Dimitre Kadrev, Plamen Yotov 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-32 for their contribution to the nice scientific atmosphere as well as to the participants who contributed to the present volume. We believe 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 33rd issue of the International Workshop on Nuclear Theory will be held in the Rila Mountains, Bulgaria from 22nd to 28th of June 2014.

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Sofia, November 2013