

PREFACE

International Workshop

Shapes and Dynamics of Atomic Nuclei: Contemporary Aspects (SDANCA-17), 5-7 October 2017, Sofia, Bulgaria

This volume contains articles based on the presentations given at the International Workshop “Shapes and Dynamics of Atomic Nuclei: Contemporary Aspects” (SDANCA-17) held in the Hotel of the Bulgarian Academy of Sciences (BAS) in Sofia from 5-th to 7-th of October 2017. The Workshop was organized by the research group on “Models of complex deformed nuclei” in the Institute of Nuclear Research and Nuclear Energy (INRNE) in BAS with the financial support of the Bulgarian National Science Fund under contract No. DFNI-E02/6. It appears as the second issue of the workshop SDANCA-15, held in the same place in October 2015.

The aim of the Workshop was to provide an opportunity for highly motivated researchers in the field of nuclear shape dynamics and related phenomena to discuss advanced ideas, open problems and possible future directions for developments in the subject. The idea was to gather colleagues with a common interest and various expert skills who wish to emphasize different contemporary aspects of the theoretical or experimental approaches to the shape dynamics problem in atomic nuclei and other physical systems as well.

The SDANCA-17 Workshop covered the following main topics:

- Collective and microscopic models for nuclear deformations;
- Shapes and symmetries - geometric and algebraic aspects;
- Coexisting shapes and shape-phase transition phenomena;
- Exotic shapes;
- Shapes and dynamics at the limits of stability;
- New data on nuclear deformations and current experimental techniques;
- Interdisciplinary aspects: links to shape phenomena in other physical systems.

The Workshop was attended by 43 registered participants from 12 countries: France, Greece, India, Israel, Japan, Hungary, Romania, Russia, Turkey, United Kingdom, United States and Bulgaria. Additionally more than 10 not-registered colleagues from INRNE and University of Sofia were also interested and have attended the presentations. The scientific program contained in total 29 talks and

five 30 minutes discussions lead by conveners. Similarly to SDANCA-15 the discussions appeared to be really inspiring with many additional questions being raised and disputed. The talks and the discussions covered issues of microscopic and collective approaches and new experimental results as well, including: density functional theory, many-body/self-consistent theories, shell-model-based and ab-initio developments, group-theoretical (algebraic) models exploring different kinds of symmetries (unitary, symplectic, “partial-dynamical”, “proxy”, etc.) associated with shape-deformations and transitions, shell effects, pairing and multipole interactions, geometric models treating softness of the shape and effects of the complex deformations, isomeric states, systematic behavior of low-lying states, new experimental data etc. Further details about SDANCA-17, including the list of all participants and downloadable files of presentations (in pdf or ppt format) provided by some speakers, can be found in the Workshop web site: <http://ntl.inrne.bas.bg/events/sdanca17/>

Apart from the dense scientific program this time we were able to organize a small social event, namely an excursion to the National History Museum and Boyana Church near the city of Sofia.

The editor of the volume would like to thank colleagues who were involved in the organization of the SDANCA-17 Workshop: Plamen Yotov, Kalin Drumev and Orlin Yordanov for their work in the Organization Committee as well as Lili Atanasova and Elena Stefanova for their help during the workshop. Thanks to all colleagues from the International Program Committee for their help at different stages of organization and arrangement of the scientific program. I would like to express my special gratitude to Rick Casten, Dennis Bonatsos and Phil Walker for their continuous moral support before, during and after the Workshop.

Finally, I would like to express my thanks to all the participants of SDANCA-17 for their contribution to the nice scientific atmosphere, to all the authors who contributed to the present volume, as well as to all the referees who provided timely comments on the contributions making it possible to publish the volume within this year. The feedback received from many participants during and after the workshop as well as the referees’ reports unambiguously point to the high scientific level of the presentations given and the high quality of the papers included in this volume. This is an encouraging result which will keep the SDANCA Workshop organizers inspired and may stimulate them to continue this series of workshops in the future.

Sofia, November 2017

Nikolay Minkov



Rows from the bottom to the top (persons from left to right):

1st row: Vladimir Garistov, Lidya Amon Susam, R. Burcu Cakirli, Georgios Lazazisis, Stuart Pittel, Piet Van Isacker, Nikolay Minkov, Chavdar Velchev;
2nd row: Ana Georgieva, Dennis Bonatsos, Yesim Oktem, Galya Deyanova, Makito Oi, Milena Stoyanova, Ani Aprahamian, V. K. B. Kota;
3rd row: Ioannis Assimakis, Andriana Martinou, Smaragda Sarantopoulou, Baki Akkus, Dorel Bucurescu, Liliya Atanasova, Phil Walker, Diana Kocheva, Kristina Launey;
4th row: Plamen Yotov, Dimiter Balabanski, Kalin Drumev, Philippe Quentin, Georgy Kyrchev, Vesselin Gueorguiev, Rostislav Jolos, Pavel Detistov, Richard Casten, Amiram Leviatan, Stefan Lalkovski, Elena Stefanova, Radu Budaca

