

PREFACE

These Conference Proceedings contain the contributions and lectures presented at the XXIst International Conference on Geometry, Integrability and Quantization which took place at the Koral Hotel in the amazing geographical frame of the Saints Constantine and Elena resort in Varna, Bulgaria, between June 3-8, 2019.

After twenty consecutive and successful editions, it can be presumed that the series “Geometry, Integrability and Quantization” has established itself as one of the solidly reputed meetings in the interdisciplinary fields of mathematical physics and geometry. Following the conception of the organizers of the first edition, the size of the event has been kept to a modest number of about fifty participants, a limitation that has the gratifying advantage of enabling the participants to share their experience in scientific discussions beyond the official schedule, thus helping to create the basis for new collaborations. The outcome of the colloquium shows that this interaction principle has once more been faithfully maintained.

Mainly promoted by the Institute of Biophysics of the Bulgarian Academy of Sciences, this year the conference was organized in collaboration with the Technical University of Varna, the Tokyo University of Science and the Universidad Computense of Madrid. Participants from Europe, Asia and the Americas presented their research, the subject matter of which was wide-ranging. Results in Cosmology, noncommutative Field Theory, Quantum Gravity, classical Differential Geometry or (Super)integrable Systems were presented, among other topics, some of which referred to current applications like Color Imaging or acoustic modeling. Intended for a wide dissemination of the subjects discussed in the meeting, some of the original slides of the talks can be found at the internet site of the conference.

The Lecture Course delivered by highly reputed specialist covered some of the main topics of the conference:

1. Rafael López (University of Granada) on *Constant Mean Curvature Surfaces with Boundary*

In addition to these Lectures, the Plenary Talks dealt with more specialized problems and subjects, illustrating some recent advances and novel approaches to various matters:

1. Ildefonso Castro: *On a Problem of David A. Singer About Prescribing Curvature for Curves*
2. Laszlo Feher: *Recent Results in the Hamiltonian Reduction Approach to Integrable Many-Body Systems*

3. Valeri Frolov: *Complete Integrability and Separability in Black-Hole Space-times*
4. Magdalena Toda: *p-Willmore Energies*
5. Ismet Yurdusen: *N^{th} -Order Superintegrable Systems Separating in Polar Coordinates*

The contributed talks completed the conference schedule, where various new and enlightening interdisciplinary topics and applications were presented. In spite of the heavy schedule and the diversity of particular research subjects, the scientific program has once more been conceived, in connection with cultural and recreational activities, to promote informal discussions and prospective collaborations among the participants.

The organizers express their gratitude to all the participants for their oral and written contributions, which are the main indicators for the success of the conference, as well as for maintaining the settled tradition of interdisciplinary interaction.

A special acknowledgement is due to Dr. Mariana Hadzhilazova, who acted as the scientific secretary, decisively contributing to the smooth development of the meeting with her devoted assistance in the overall organization, as well as for the friendly atmosphere which dominated the conference.

We are also indebted to the Advisory and Standing Committees for their sound advice, as well as to the referees for their valuable and constructive reports that have helped to maintain the high standard of the submissions. The Bulgarian Academy of Sciences, the Technical University of Varna and the Tokyo University of Science deserve special mention, as the conference has been possible only through the disinterested endorsement of these institutions.

The organizers hope that every one will meet again at the Twenty-Second International Conference on Geometry, Integrability and Quantization that will be held in June 8-13, 2020 at the same location in Varna. It is also hoped that the new edition will be as interesting and enjoyable as all of its preceding occasions.

The Editors