

PREFACE to the Proceedings of the First National Forum on Contemporary Space Research, 21-22 October 2020, Sofia, Bulgaria

The idea on organizing the Forum arose from the work on National Space Research Program project elaborated in the late 2018 and early 2019 year. Working on the project made it clear that the space research in Bulgaria is scattered among several universities and institutes with several research groups, thus being poorly connected on national level. Perhaps this is not specific only to the space sector, but what affected the work mostly was that the performance of some of the institutions was not recognized, and often diminished, by the peers in other. The hostile attitude was not based on healthy research competition and figures of merit but fueled by mid- and late- twentieth century approaches. As a result, the Program, that was otherwise considered by the state education administration as amongst the good examples, has been now on hold for two years due to lack of willingness for cooperation throughout the academia.

To address the problem, the “Cosmos” initiative was set up as a branch to the Union of Physicists in Bulgaria (UPB) earlier this year by a group of enthusiastic researchers from several Bulgarian institutions. The aim of the organization is to promote research networking both on national and international levels, to facilitate discussions with the business in Bulgaria and to connect research groups with state administration, to enhance competition, and create a healthy environment that would boost the Space sector development in Bulgaria. The ultimate goal of “Cosmos” branch is to create a vibrant society of researchers, entrepreneurs, teachers, administration, and everyone who is interested in having Bulgaria into the international space elite once again. It is now clear that the space advancements will shape the future economies. The countries that will not respond timely on the new challenges will be left behind. Therefore, now more than ever, organization of platforms where the Bulgarian researchers meet, discuss, and collaborate is of utmost importance.

The [First National Forum on Contemporary Space Research \(1st NFCSR\)](#) held on 21st and 2nd of October 2020 was intended to be such a platform. The event took place at the “John Atanasoff” Forum of the Sofia Tech Park. It was organized by the Union of Physicists in Bulgaria, branch “Cosmos”, through collaboration with the Sofia Tech Park, the financial support from Evrika Foundation, Sofia University Science Fund (Grant number: 80-10-102) and the Bulgarian National Science Fund (Grants numbers: DN18/17 and KP-06-H-38/12).

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Mrs. Karina Angelieva, Deputy Minister of Science and Education, Mrs. Boriana Kadmonova, CEO of Evrika Foundation, and the CEO Tech Park, Mr. Todor Mladenov, were special guests of the event. It was well attended with 81 registered and more than 50 on-site participants from 38 Bulgarian organizations. This is a remarkable success given the current pandemic situation and related difficulties in gathering many people together. Nine plenary talks were given on the first day, followed by thirteen young researchers' presentations. The plenary talks and reports for Ph.D. students were presented in four modules held on the first day of the event.

Various science topics were covered in four dedicated sessions:

- Fundamental space research
- Aerospace technologies
- Applied space research
- PhD session

On the second day discussion panels were focused on

- Science and Cosmos
- Business and Cosmos
- Education and Cosmos

The Forum started with welcoming speeches by Mrs. Angelieva, Mrs. Kadmonova and Mr. Mladenov. Deputy Minister Angelieva presented the Ministry perspective on the problems researchers face and about future government initiatives. The scientific session was then opened by Prof. Stoytcho Yazadjiev with a talk on the 2020 Nobel Prize in Physics. The morning session continued with a talk by Prof. Daniela Kirilova from the Institute of Astronomy with NAO Rozhen at the Bulgarian Academy of Sciences (BAS), on the cosmic neutrino and oscillations, followed by Prof. Natalia Kilifarska's report on space weather. After a short coffee break the research session continued with three talks on nanosatellites, scientific payload and swarm communications delivered by Assoc. Prof. Plamen Dankov (Sofia University), Assoc. Prof. Stefan Lalkovski (Sofia University) and Dr. Hristomir Yordanov (Technical University, Sofia). After lunch, Dr. Vasil Vasilev (Geopolymorphic-cloud), Dr. Anastasia Stoycheva (NIMH) and Assoc. Prof. Keranka Vassileva (Sofia University) discussed various aspects of Earth observations from space. The plenary talks were followed by 13 reports from young researcher which were very well received. Indeed, the young colleagues impressed the audience with a variety of topics covered, from the origin of life and astrobiology to cosmology and dark matter. The presentations covered also physics of rapidly rotating neutron stars, blazars, gamma astronomy and novel concepts for scientific nanosatellite payloads, a novel telescope for NAO Rozhen, flights in the Jovian atmosphere, and Earth observation from space amongst others.

In the second day of the event the researchers met Bulgarian space business representatives. Success stories were shared by Mr. Raycho Raychev (EnduroSat

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founder and CEO) and Mr. Zdravko Dimitrov (CEO and founder of Sphera technologies). Mr. Mladenov (CEO of Sofia Tech Park) presented collaboration opportunities and the Tech park infrastructure. The Ministry of Economy representatives presented the main results on their research on the Bulgarian space sector. Mr. Ivo Jokin, Director of the Municipal Center for Extracurricular Activities at the Municipality of Dolna Mitropoliya, spoke about the problems and the future of the space education in school. Assoc. Prof. Kamen Kozarev from the Institute of Astronomy, BAS, outlined the main problems that the higher education and research face and presented a vision for addressing them. The forum was closed with a historical overview presented by Prof. Ivan Kutiev remembering the events that had led to the Bulgaria-1300 mission at the apogee of the Bulgarian space research.

This volume of the Bulgarian Journal of Physics presents some of the contributions. Others were published elsewhere. Prof. Kutiev's talk was published in World of Physics, an UPB journal. Further information, the program of the Forum and the presentations can be found on <http://bulgarianspace.online>, the official web site of branch "Cosmos" at UPB.

Given the success of the Forum, the Organizing committee is already planning its second edition in 2021. Following the participants' feedback, next year's edition will have the same format but extended Doctoral session and more discussions with the business on the second day. The Committee highly appreciates the effort everyone made for this event to happen.

We are thankful to all participants, sponsors, and guests, who contributed to the Forum and helped us to fulfill one of the most recognized events in the area this year - without you this would never have happened.

Last, but not least, the "Cosmos" branch team wishes to all of you a fruitful new 2021 year. We are looking forward to welcoming you again in 2021.

Assoc. Prof. Dr. Stefan Lalkovski,
President of branch "Cosmos" at UPB,

On behalf of the Organizing committee of
the First National Forum on Contemporary Space Research

Sofia, November 11, 2020