

H²⁰²⁰-SPACE

6th INTERNATIONAL CONFERENCE
ON RESEARCH, TECHNOLOGY AND EDUCATION OF SPACE

February 26-27, 2020, Budapest, Hungary
space.bme.hu

In this program, the affiliation of the presenter author is listed.

February 26, Wednesday

Location: Building I, ground floor, IB.027 (and IB.019)
Magyar tudósok krt. 2., Budapest, H-1117

13:00 Greetings (in Hungarian)

László Bacsárdi, Vice President of MANT, co-chair of the Organizing Committee

13:05 Discussion (in Hungarian):

Paradigmaváltás az űrhajózásban: a magánűrhajók; A kereskedelmi űrhajózás fejlődése
(Changing trends in space flights: development of the private sector)

Participants:

András Ferenc Horváth, Honorary Member, Hungarian Astronautical Society
Gábor Zsombor, Galileowebcast

Moderator:

Előd Both, President, Hungarian Astronautical Society

Session Chair: László Bacsárdi

14:00 Opening ceremony

Orsolya Ferencz, Ministerial Commissioner, Ministry of Foreign Affairs and Trade
Hassan Charaf, Dean, Faculty of Electrical Engineering and Informatics, BME
Előd Both, President, Hungarian Astronautical Society
Kálmán Kovács, President, BME Space Forum

14:15 Keynote presentation

Outcome of World Radiocommunication Conference 2019 (WRC-19) from space perspective
Mehtap Dufour, ITU Radiocommunication Bureau, Switzerland

14:50 Poster flash talks (Session Science and Technology III and Education and Outreach II)

Poster authors presents their work in 1 minute

15:10 Poster session with coffee break

PARALLEL SESSIONS

Session Chair: Zsófia Bodó

15:40-18:00: Technical presentations – Session Science and Technology I

Room IB.027

Invited presentation:

Hungarian perspectives in Earth Observation

Dániel Kristóf, Lechner Non-Profit Ltd.

Complete 3D Coseismic Deformation Field Reconstruction of 2019 Ridgecrest Earthquakes based on Sentinel-1 TOPS data

Bálint Magyar and Ambrus Kenyeres, Lechner Non-Profit Ltd., Hungary

The GNSS stream gauge

Ágnes Ács and Szabolcs Rózsa, BME Department of Geodesy and Surveying, Hungary

Shielding optimization for the RM-RAD-S Radiation Monitor

Boglárka Erdős, Attila Hirn and Balázs Zábori, Centre for Energy Research, Hungary

Visualization and simulation of ion thrusters possibly usable by small satellites

Árpád Makara, András Reichardt and László Csurgai-Horváth, BME Department of Broadband Infocommunications and Electromagnetic Theory, Hungary

Pneumo planet Mars habitat and Moonbase

Thomas Herzig and Gábor Bihari, pneumocell, Austria

ESA perspective on lunar surface exploration and resource utilization

Mátyás Hazadi, European Space Agency, Netherlands

Antarctic Winterovering in Terrestrial Space Analogues: Cultural Differences in Emotional Expression

Bea Ehmann, Attila István Kiss, Eliza Kollerits, Barbara Matulai, Borbála Tölgyesi and László Balázs Research Centre for Natural Sciences, Institute of Cognitive Neuroscience and Psychology, Hungary

Area classification and change detection from a time series of remote sensing images by using fusion Markov Random Field model

Tamás Szirányi, SZTAKI, Hungary

Session Chair: Dorottya Milánkovich

15:40-18:00: Technical presentations – Session Education and Outreach I

Room IB.019

Invited presentation:

Space Academy: A Journey from Hospital to Mars

Rachael Dixon, Edinburgh Children's Hospital Charity, United Kingdom

Education and outreach activities in Bükk Starry Sky Park

Richárd Novák, Anna Apró and István Gyarmathy, Eszterházy Károly University, Hungary

Martian Climate Database – an online tool to model the Red Planet

Bernadett Pál, Konkoly Observatory, Research Centre for Astronomy and Earth Sciences, Hungary

Astronomy Clubs for extracurricular Activities in Schools

Oancea Carmen-Adina and Ilesan Daniela Florentina, Colegiul National Octavian Goga Sibiu, Romania

From the Torsion Balance to Space Gravimetry

Annamária Komáromi, Balassi Bálint Secondary School, Budapest, Hungary

We Touched Space Twice in 2019

Florián Vámosi and László Vámosi, Mihály Tancsics Grammar School of Kaposvár, Hungary

Rocket technology for secondary school students

András Illyés, Budapest University of Technology and Economics, Hungary

Mouse-on-the-Mars and other developments with secondary school students

Balázs Újvári, University of Debrecen Hungary

Official H-SPACE 2020 event

19:30-22:00 AstroQuizNight (in English)

Organized by András Ordasi (MANT)

Location: KEG Sörművház, Orlay u. 1., 1114, Budapest

February 27, 2020, Thursday

Location: Building I, ground floor, IB.027
Magyar tudósok krt. 2., Budapest, H-1117

9:00 Welcome coffee

Session Chair: Andrea Strádi

9:45-11:30: Technical presentations – Session Science and Technology II

Radio Frequency Interference Monitoring at locations in Nógrád County

L. Viktor Tóth, Krisztián Bodzsár, Orsolya Ferencz, András Jánosik and Péter Vári, Eötvös Loránd University, Hungary

Deployment of the Hungarian E-GNSS Network and the results of its first year of operation

Bence Takács, Rita Markovits-Somogyi and Mercedes Reche Hungarocontrol, Hungary

Pioneer chemical formulation experiments on ISS

Gergő Mezőhegyi, Ferenc Darvas, Ibolya Leveles and Beáta Vértessy, InnoStudio Inc., Hungary

Evaluation of the space debris environment and active removal options based on drag-sails and electrodynamic tethers

Niklas Wendel, Louisa Gerhard and Tilman Hofbauer, DEBRIS project group of German network of young scientists - juFORUM e.V., Germany

Invited presentation:

Developing European capabilities: the push for next generation optical telecommunication technologies

Christopher A. Vasko, European Space Agency, Netherlands

Invited presentation (via web):

Future of cubesats

Chantal Cappelletti, University of Nottingham, United Kingdom

11:30- 12:00 Poster session with coffee break

12:00-12:05: Opening of Session Education and Outreach II

János Józsa, Rector, Budapest University of Technology and Economics

12:05-13:20: Technical presentations – Session Education and Outreach II

Invited presentation

SMOG-P and ATL-1 PocketQube Class Satellites at BME

Levente Dudás and András Gschwindt, BME Department of Broadband Infocommunications and Electromagnetic Theory, Hungary

The importance of educating students about careers in the space sector: a student perspective

Jacob Smith, Sophia Lee Roberts and Laura Martin, UK Students for the Exploration and Development of Space, United Kingdom

Establishment of the Hungarian Space Engineering Curriculum

László Baczárdi and László Csurgai-Horváth, BME Department of Networked Systems and Services, Hungary

Investigation of new methods in the education on the field of space communications and space research

Péter Vári and Elek Sántha, Széchenyi István University, Győr, Hungary

Doctoral School in Geospatial Science in Uzbekistan

Lóránt Földváry, Valéria Balázsik, Béla Márkus, Andrea Pődör, Malgorzata Verőné Wojtaszek, Ilhom Abdurahmanov and Mamanbek Reimov, Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, Uzbekistan

13:20 Closing remarks. Best presentation award ceremony

Official H-SPACE 2020 event

18:00-20:00: HTE Telecommunications Club (in Hungarian)

Outcome of the WRC-19 from Hungarian point of view

Organized by the Scientific Association for *Infocommunications*, Hungary (HTE)

Location: Building I, ground floor, I.B.019

Poster presentations (Session Science and Technology III; Session Education and Outreach II)

Adapting Telescopes for Optical Communication

Máté Galambos, Lili Létei, Zsolt Papp, Sándor Imre and László Bacszárdi
BME Department of Networked Systems and Services, Hungary

Affordable statistical testing for quantum random number generators in space applications

Balázs Solymos and László Bacszárdi
BME Department of Networked Systems and Services, Hungary

An overview of the usage of artificial intelligence-based algorithms in satellite operations

Barnabás Futó, Mátyás Papp, Bálint Petró, István Arnócz and Radim Basdi, Space Apps Ltd., Hungary

Asteroid deflection with solar sail and laser-based techniques

Dávid Farkas and László Bacszárdi
BME Department of Networked Systems and Services, Hungary

Astrophotography in physics class

Maria Peto, Székely Mikó Theoretical High School; ELTE-MTA Content Pedagogy Research Group, Romania

AstroQuizNight - An event where space doesn't part us but connects us

András Ordasi, Konkoly Observatory, Hungary

Automated and Remote Controlled Satellite tracking station

Elek Sántha and Péter Vári, Széchenyi István University, Győr, Hungary

Current State of the Free-Space Quantum Key Distribution

Laith Al-Soub and László Bacszárdi
BME Department of Networked Systems and Services, Hungary

Deformation monitoring using persistent scatterer interferometry and open-source software

Bence Ambrus and Szabolcs Rózsa
BME Department of Geodesy and Surveying, Hungary

Demonstrational Remote Sensing Payload Development for High Altitude Platforms

Zsófia Bodó and Bence Dávid Góczán, Budapest University of Technology and Economics, Hungary

IRSEL: Innovation on Remote Sensing Education and Learning

Malgorzata Veróné Wojtaszek, Valéria Balázsik, Lóránt Földváry and Béla Márkus
Inst. of Geoinformatics, Óbuda University, Hungary

Local Ionosphere Modelling with GPS in Hungary

Balázs Lupsic and Bence Takács, BME Department of Geodesy and Surveying, Hungary

Planetology Aspects in University Education of Geography and Environment
Csaba Patkos, János Mika and Arnold Gucsik
Eszterhazy Karoly University, Eger, Hungary

Precise Orbit Determination and Prediction using GNSS and SLR observations
Szabolcs Rózsa and Bence Turák
BME Department of Geodesy and Surveying, Hungary

Radiation test facilities at Atomki and their space research applications
András Fenyvesi, József Molnár and István Rajta, Atomki, Hungary

Satellite Images to Support Contribution of Meteorology to the UN Sustainable Development Goals (2016-2030)
János Mika, Eszterhazy Karoly University, Eger, Hungary

Shoot an asteroid – linking laboratory based meteorite mineralogy to European space mission by university support
Ákos Kereszturi, Ildikó Gyollai, Sándor Józsa, Ágnes Skultéti, Bernadett Pál, Dániel Rezes and Máté Szabó, Research Centre for Astronomy and Earth Sciences, Hungary

SiPM based detection of cosmogenic production of radioisotopes in spacecraft substances
Bence Godó, Dávid Baranyai and András Fenyvesi, University of Debrecen, Hungary

Space weathering-related evolution of fine-grained asteroidal and cometary materials: sample return planetary missions
Arnold Gucsik, Eszterhazy Karoly University, Eger, Hungary

Testing the visualization I of the Martian surface with GIS and SIMWE modelling tools
Vilmos Steinmann and Ákos Kereszturi, Konkoly Thege Miklós Astronomical Institute, Research Centre for Astronomy and Earth Sciences, Hungary

The importance of self-education through the method of citizen science -from the basic experiments to the serious emergencies
Péter Pusztai and Judit Turi, Hungarian Astronautical Society, Hungary

The Technology Transfer Program of the European Space Agency from the Perspective of Budapest University of Technology
Bernard Adjei-Frimpong and László Csurgai-Horváth, BME Department of Broadband Infocommunications and Electromagnetic Theory, Hungary

The work of Cosmos Society on introducing the importance of space to the general public
Ákos Gyenge, BME Cosmos Society, Budapest University of Technology and Economics, Hungary

Thermal Thorium Rocket (THOR) – a new concept for a radioactive decay heated thermal rocket engine
Gábor Bihari, University of Debrecen, Hungary