

OUTLOOK IN ASTRONOMY, ASTROPHYSICS, SPACE AND PLANETARY SCIENCES

International Conference, 17-19 May 2018, Cluj-Napoca

Programme



ROMANIAN ACADEMY
ASTRONOMICAL INSTITUTE
CLUJ-NAPOCA BRANCH - ASTRONOMICAL OBSERVATORY
ROMANIAN ASTRONOMICAL NATIONAL COMMITTEE



"BABEŞ-BOLYAI" UNIVERSITY CLUJ-NAPOCA
FACULTY OF MATHEMATICS AND COMPUTER SCIENCE
FACULTY OF PHYSICS



ROMANIAN SPACE AGENCY

in the framework of Cluj Academic Days 2018,
ASTRES – Centre of Competence for Planetary Sciences,
and ARGOS – MCI Contract No. 11 PS/2017.



Thursday, May 17th 2018

Astronomical Observatory Cluj-Napoca
Str. Cireșilor nr. 19

9:30

Registration

10:00

Plenary session 1

Chairman: Alin NEDELCO

Tiberiu HARKO^(1,2)

⁽¹⁾ Department of Mathematics, University College London, Gower Street, London WC1E 6BT, United Kingdom

⁽²⁾ School of Physics, Sun Yat-Sen University, Guangzhou 510275, People's Republic of China
Astrophysical implications of hybrid metric Palatini gravity

Paul BLAGA and Cristina BLAGA

Faculty of Mathematics and Computer Science, Babeș-Bolyai University, Cluj-Napoca, Romania

Phase-plane analysis of the timelike geodesics around a spherically symmetric static dilaton black hole

**Diana R. CONSTANTIN⁽¹⁾, Valentin I. R. NICULESCU⁽²⁾, Agneta A. MOCANU⁽³⁾,
Erika VARGA-VEREBELYI⁽⁴⁾**

⁽¹⁾ Astronomical Institute of the Romanian Academy, 5, Cușitul de Argint, Bucharest, Romania

⁽²⁾ National Institute for Laser, Plasma and Radiation Physics, Str. Atomistilor, Măgurele, Romania

⁽³⁾ Hyperion University, Bucharest, Romania

⁽⁴⁾ Konkoly Observatory – Budapest, Hungary

Post-Newtonian potential in the Schrödinger equation via Laplace transform

Coffee & tea break

12:00

Plenary session 2

Chairman: Tiberiu HARKO

Crișan DEMETRESCU, Venera DOBRICĂ

Institute of Geodynamics, Romanian Academy, Bucharest, Romania

*Space weather and space climate research by the Institute of Geodynamics,
Romanian Academy*

Diana BEȘLIU-IONESCU^(1,2), **Venera DOBRICĂ**⁽²⁾

⁽¹⁾ Astronomical Institute of the Romanian Academy, 5, Cușitul de Argint, Bucharest, Romania, 040557, Phone: +(4021) 3356892 / 31

⁽²⁾ Institute of Geodynamics "Sabba S. Stefanescu", 19-21 Jean-Louis Calderon St., Bucharest, Romania, R-020032, Phone: +0421 317 2120

CME association with flares: pro or con?

István BALLAI⁽¹⁾, **Alexandru MARCU**⁽²⁾, **Emese FORGÁCS-DAJKA**⁽¹⁾

⁽¹⁾ Plasma Dynamics Group, University of Sheffield, Hounsfield Road, Hicks Building, Sheffield, S3 7RH, United Kingdom

⁽²⁾ Babeș-Bolyai University Cluj-Napoca, str. Mihail Kogalniceanu nr. 1, 3400, Cluj-Napoca, Romania

The problem of shock waves in partially ionized plasmas

Venera DOBRICĂ, **Crișan DEMETRESCU**

Institute of Geodynamics, Romanian Academy, Bucharest, Romania

The external geomagnetic field: key factor in space weather studies

Lunch Break

16:00

Plenary session 3

Chairman: Vlad TURCU

Vlad C. MANEA^(1,2), **Marina MANEA**^(1,2) and **Alin NEDELICU**⁽²⁾

⁽¹⁾ Computational Geodynamics Laboratory, Centro de Geociencias, Universidad Nacional Autónoma de México, Campus Juriquilla, Querétaro, 76230, Mexico

⁽²⁾ Astronomical Institute of the Romanian Academy, 040557, Bucharest, Romania

Numerical modeling of Europa accretion and core, mantle and external water-ice shell formation processes

Mihail BĂRBOSU

Rochester Institute of Technology (RIT), Rochester, NY, USA

Theory of Influence in Space Exploration

Tamás BORKOVITS

Baja Astronomical Observatory, University of Szeged, Hungary

A Comprehensive Study of the Kepler Triples via Eclipse Timing Variation Analyses

Coffee & tea break

18:00

Plenary session 4

Chairman: Mihail BĂRBOSU

Adrian ŞONKA, Andreea GORNEA, Simon ANGHEL

Astronomical Institute of the Romanian Academy, 040557, Bucharest, Romania

Recent results from T04

Alexandru POP⁽¹⁾, Maria CRĂCIUN⁽²⁾, Calin VAMOŞ^{(2) †}

⁽¹⁾ Romanian Academy – Cluj-Napoca Branch, Astronomical Institute, Astronomical Observatory Cluj-Napoca, Cluj-Napoca, Romania

⁽²⁾ Romanian Academy – Cluj-Napoca Branch, "T. Popoviciu" Institute of Numerical Analysis, Cluj-Napoca, Romania

Deciphering the Orbital Period Variability of U CrB using Differential Diagnosis

Zoltán JÁGER

Szeged University, Szeged, Hungary

Inferring physical parameters of supernova explosions via light curve modeling

Dumitru PRICOPI, Marian Doru ŞURAN, Diana R. CONSTANTIN

Astronomical Institute of the Romanian Academy, 5, Cuşitul de Argint, Bucharest, Romania

Modeling red giants stars observed by Kepler

19:30

Poster session

20:00

Dine Around

Friday, May 18th 2018

09:30 – 13:30

Trip to Turda Salt Mine

14:00

Lunch

Astronomical Observatory Cluj-Napoca
Str. Cireşilor nr. 19

16:00

Plenary session 5

Chairman: Alexandru POP

Mirel BÎRLAN ^(1,2), **Francois COLAS** ⁽¹⁾, **Brigitte ZANDA** ⁽³⁾, **Jeremie VAUBAILLON** ⁽¹⁾,
Sylvain BOULEY ⁽⁴⁾, **Pierre VERNAZZA** ⁽⁵⁾, **Jean-Louis RAULT** ⁽⁶⁾

⁽¹⁾ IMCCE, CNRS UMR8028, Observatoire de Paris, PSL Research University

⁽²⁾ Astronomical Institute of the Romanian Academy

⁽³⁾ Muséum National d'Histoire Naturelle, Paris

⁽⁴⁾ Géosciences Paris Sud, Université de Paris-Saclay

⁽⁵⁾ Laboratoire d'Astrophysique de Marseille, Université d'Aix-Marseille

⁽⁶⁾ International Meteor Organization, radio commission

Records and status of FRIPON network

Cătălin GALEŞ

"Al. I. Cuza" University of Iaşi, Faculty of Mathematics, Bd. Carol I, 11, 700506 Iaşi,
Romania

On the dynamics of space debris

Mircea CERNAT ⁽¹⁾, **Alin NEDELCU** ⁽²⁾, **Ulpia BOTEZATU** ⁽¹⁾, **Violeta POENARU** ⁽¹⁾,
Vlad TURCU ⁽³⁾, **Octavian CRISTEA** ⁽⁴⁾, **Dan ISTRITÈANU** ⁽⁵⁾

⁽¹⁾ Romanian Space Agency, Str. D.I. Mendeleev 21-25, Bucharest, Romania

⁽²⁾ Astronomical Institute of the Romanian Academy, 5, Cuşitul de Argint, Bucharest, Romania

⁽³⁾ Romanian Academy, Astronomical Institute, Astronomical Observatory Cluj-Napoca, Cluj-Napoca, Romania

⁽⁴⁾ BITNET CCSS Cluj-Napoca, Str. Madach Imre, Nr. 6, Cluj-Napoca, Romania.

⁽⁵⁾ RARTEL SA, Str. Dr. I. Felix, Nr. 70, Bucharest, Romania

Romania's efforts for joining the European Consortium for Space Surveillance and Tracking (EU SST)

Tibor HEGEDÜS

Baja Astronomical Observatory, University of Szeged, Hungary

New blowing bolide in 2018 April - possible fall calculations and a comparison with "2015 Easter Bolide"

Coffee & tea break

18:00

Plenary session 6

Chairman: Mirel BÎRLAN

Marina MANEA ^(1,2), **Vlad C. MANEA** ^(1,2), **Alin NEDELICU** ⁽²⁾

⁽¹⁾ Computational Geodynamics Laboratory, Centro de Geociencias, Universidad Nacional Autónoma de México, Campus Juriquilla, Querétaro, 76230, Mexico

⁽²⁾ Astronomical Institute of the Romanian Academy, 040557, Bucharest, Romania

Numerical modeling of thermal evolution and thermally induces stresses in asteroids

Cristiana DUMITRACHE, Nedelia A. POPESCU

Astronomical Institute of the Romanian Academy, 5, Cușitul de Argint, Bucharest, Romania

Automatic detection of the space weather features in the heliosphere

Alin D. NEDELICU ⁽¹⁾, **Mirel BÎRLAN** ^(1,2), **Vlad TURCU** ⁽³⁾, **Octavian BĂDESCU** ⁽¹⁾, **Ioana BOACĂ** ⁽¹⁾, **Andreea GORNEA** ⁽¹⁾, **Octavian BLĂGOI** ⁽¹⁾, **Cristian DĂNESCU** ⁽¹⁾, **Petre PARASCHIV** ⁽¹⁾

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The MOROI network. Meteorites Orbits Reconstruction by Optical Imaging

Cristiana DUMITRACHE, Nedelia A. POPESCU

Astronomical Institute of the Romanian Academy, 5, Cușitul de Argint, Bucharest, Romania

Romanian Astronomical Journal - past, present and perspectives

19:30

Dine Around

Saturday, May 19th 2018

Astronomical Observatory Cluj-Napoca
Str. Cireșilor nr. 19

10:00

Masa Rotundă

Romanian Astronomical Journal - trecut, prezent și perspective

Moderatori: Cristiana Dumitrache, Mirel Bîrlan

Coffee & tea break

11:30

Masa Rotundă

**Centru de Competențe în științe Planetare ASTRES – sinteza activității în perioada
2016-2018. Prezent și perspective**

Moderator: Octavian Bădescu

Sinteza va cuprinde o trecere în revistă a temelor de cercetare științifică dezvoltate în cadrul centrului, a situației economico-financiare precum și concluzii cu privire la rezultatele obținute. Prezentarea se va încheia cu o dezbatere între participanți privind perspectivele de continuare a activității centrului și dezvoltare și diversificare a competențelor în domeniul științelor planetare.

13:00

Lunch

14:00

Conference concluding remarks

Alin NEDELCU, Vlad TURCU

POSTER PRESENTATIONS

Iharka SZÜCS-CSILLIK⁽¹⁾, Muhammad SHOAIB⁽²⁾

⁽¹⁾ Romanian Academy, Cluj-Napoca Branch, Astronomical Institute of the Romanian Academy, Astronomical Observatory Cluj-Napoca, Cluj-Napoca, Romania

⁽²⁾ Abu Dhabi Mens College, Higher Colleges of Technology, P.O. Box 25035, Abu Dhabi, United Arab Emirates

Numerical analysis of the Caledonian Symmetric Four Body problem using efficient fourth order symplectic integrator

Doina IONESCU

Astronomical Institute of the Romanian Academy, Str. Cuțitul de Argint 5, 040557 Bucharest, Romania

Galileo Galilei and his daughter Maria Celeste

Doina IONESCU

Astronomical Institute of the Romanian Academy, Str. Cuțitul de Argint 5, 040557 Bucharest, Romania

The Get-Dacians, their astronomy and astrology

Michael BEREZNY, Victor BRAESCU, Andrew LEWIS, Eric PAREIS

Rochester Institute of Technology (RIT), USA

CubeSat Unfolding Solar Sail

Evan PUTNAM

Rochester Institute of Technology (RIT), USA

Virtual Reality and Planetarium Simulation for Celestial Objects

Sorin MARIN

Astronomical Institute of the Romanian Academy, Str. Cuțitul de Argint 5, 040557 Bucharest, Romania

The Bucharest Astronomical Observatory in the blaze of World War Two

Emil POPESCU^(1,2)

⁽¹⁾ Astronomical Institute of the Romanian Academy, Str. Cutitul de Argint 5, 040557 Bucharest, Romania

⁽²⁾ Technical University of Civil Engineering, Lacul Tei, Bvd. 122 - 124, 020396, Sector 2, Bucharest, Romania

Stability of relative equilibria in a Buckingham type problem

Dana FICUȚ –VICĂȘ

Romanian Academy, Cluj-Napoca Branch, Astronomical Institute of the Romanian Academy, Astronomical Observatory Cluj-Napoca, Cluj-Napoca, Romania

Aspects of the role existing stars play in star formation (SF)

D. BEȘLIU-IONESCU^(1,2), **D. A. NEDELICU**⁽¹⁾

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Study of Orbital Decay for Vanguard 1 during high solar activity

Tiberiu OPROIU⁽¹⁾, **Mihail BĂRBOSU**⁽²⁾, **Vlad TURCU**⁽¹⁾, **Liviu MIRCEA**⁽¹⁾

⁽¹⁾ Romanian Academy, Cluj-Napoca Branch, Astronomical Institute of the Romanian Academy, Astronomical Observatory Cluj-Napoca, Cluj-Napoca, Romania

⁽²⁾ Rochester Institute of Technology, School of Mathematical Sciences, Rochester, NY, USA, E-mail: mxbsma@rit.edu

Orbit Analysis of Goliat CubeSat

Remus BOATĂ

Romanian Academy Timișoara Branch, Astronomical Observatory Timișoara, A. Sever Sq. 1, 300210 Timișoara, Romania

Forecasting the solar radiation at one day ahead using the Takagi-Sugeno fuzzy systems

D. R. CONSTANTIN⁽¹⁾, **D. PRICOPI**⁽¹⁾, **A. A. MOCANU**⁽²⁾, **E. VEREBELI**⁽³⁾,
V. NICULESCU⁽⁴⁾

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Barbosu-Constantin potential