

# “Stellar variability, stellar multiplicity: periodicity in time & motion”

## June 6-8, 2023, Sofia, Bulgaria

### Final program with talks of invited and contributed speakers, and posters

Invited talks: 25+5min  
Contributed talks: 15+5 min  
Poster presentations: 2-3 min

#### Day 1 - June 6, 2023: 3 sessions

8:45-9:15 Registration  
9:15-9:30 Welcome+Infos

#### Chair G. Clementini

9:30-10:00 Session 1: Setting the scene

9:30-10:00 *“Gaia-DR3 papers on variable star classifications and light curves in the Gaia-DR3 Special Issue of A&A”*

**Invited talk, Berry Holl**, University of Geneva - **Remote**

10:00-14:20 Session 2: Classical pulsating stars (Cepheids, RR Lyrae stars)

10:00-10:30 *“Theoretical efforts in the modelling of Cepheid and RR Lyrae properties in the Gaia bands: from Gaia distances to stellar physics in pulsating stars”*

**Invited talk, Marcella Marconi**, INAF - OACN, Naples, Italy - **In presence**

10:30-11:00 **Coffee break**

11:00-11:20 *“Stellar pulsation modeling of Classical Cepheids: new determinations of structural parameters and individual distance”*

Contributed talk, **Roberto Molinaro**, INAF - OACN, Naples, Italy - **In presence**

11:20-11:40 *“Constraints on evolutionary status of Cepheid variables from cluster membership”*

Contributed talk, **Ignacio Negueruela**, Universidad de Alicante, Spain – **Remote**

11:40-12:10 *“Metallicities of Gaia DR3 RR Lyrae stars”*

**Invited talk, Alessia Garofalo**, INAF – OAS, Bologna, Italy - **In presence**

12:10-12:30 *“MULTiepoch Disparity Examination of H-Alpha and infraRed (MUDEHaR)”*

Contributed talk, **Gonzalo Holgado**, Instituto de Astrofísica de Canarias (IAC), Spain – **In presence**

12:30-14:00 **Lunch Break**

**Chair L. Eyer (TBC)**

14:00-14:20 *"Classification of variable stars observed in multiple filters with MeerLICHT and BlackGEM"*  
Contributed talk, **Ranaivomanana Tahina Princy**, PhD student, Radboud University,  
The Netherlands - **In presence**

14:20-17:10 **Session 3: Structure of our Galaxy with RR Lyrae stars and Cepheids**

14:20-14:50 *"RR Lyrae stars as tracers of the structure and formation of the Milky Way halo"*  
**Invited** talk, **Vasily Belokurov**, University of Cambridge - **Remote**

14:50-15:20 *"Cepheids to trace the disc and the spiral arms of the Milky Way"*  
**Invited** talk, **Vincenzo Ripepi**, INAF - OACN, Naples, Italy - **In presence**

15:20-15:40 *"The distance scale of Type II Cepheids in the Magellanic Clouds"*  
Contributed talk, **Teresa Sicignano**, MS student, INAF - OACN Naples, Italy - **In presence**

15:40-16:00 *"Are the Ultra Long Period Cepheids standard candles?"*  
Contributed talk, **Ilaria Musella**, INAF - OACN Naples, Italy - **In presence**

16:00-16:30 **Coffee Break**

16:30-16:50 *"Stellar variability for 145 million Gaia DR3 sources from photometric dispersions"*  
Contributed talk, **Jesús Maíz Apellániz**, Centro de Astrobiología, Spain - **In presence**

16:50-17:10 *"Young, (metal-)rich ad not alone: formation of thin-disc RR Lyrae stars through binary evolution"*  
Contributed talk, **Giuliano Iorio**, University of Padova, Italy - **Remote**

**End of the Day**

**Day 2 - June 7, 2023: 3 sessions**

**Chair S. Tsvetkova**

9:00 -10:10 **Session 1: Classical pulsating stars (delta Scuti, Long Period Variables)**

9:00 - 9:30 *"Long Period Variables in the Gaia era"*  
**Invited** talk, **Thomas Lebzelter**, University of Vienna - **In presence**

9:30 - 9:50 *"Variability study of galactic AGB stars with Gaia data"*  
Contributed talk, **Fran Jiménez-Esteban**, CAB (INTA-CSIC), Spain - **In presence**

- 9:50-10:10 *"Magnetic field study in semi-regular pulsating giants"*  
Contributed talk, **Renada Konstantinova-Antova**, Institute of Astronomy and NAO, BAS, Bulgaria – **In presence**
- 10:10-15:10 **Session 2: Binaries, pulsating stars in eclipsing binary stars (e.g. binarity of Cepheids and RR Lyrae stars), disentangling methods, binaries in clusters, use of binary stars in astrophysics**
- 10:10-10:40 *"Binary stars, eclipses and pulsations"*  
**Invited** talk, **John Southworth**, Keele University - **In presence**
- 10:40-11:10 **Coffee Break**
- 11:10-11:40 *"Massive binaries in the Gaia era"*  
**Invited** talk, **Laurent Mahy**, Royal Observatory of Belgium - **In presence**
- 11:40-12:00 *"The multiplicity fraction in 202 open clusters from Gaia"*  
Contributed talk, **Judit Donada Oliu**, PhD student, Departament de Física Quàntica i Astrofísica, University of Barcelona, Spain - **Remote**
- 12:00-12:20 *"The binary fraction in star clusters"*  
Contributed talk, **Priya Shah**, Maulana Azad National Urdu University, Hyderabad, India – **Remote**
- 12:20-14:00 **Group photo + Lunch Break**
- Chair I. Stateva**
- 14:00-14:30 *"Long-Baseline interferometry of binary stars"*  
**Invited** talk, **Alexandre Gallenne**, CNRS UMI - **In presence**
- 14:30-14:50 *"The new 1.5-meter robotic telescope for the Rozhen Observatory"*  
Contributed talk, **Evgeni Semkov**, Institute of Astronomy and NAO, BAS, Bulgaria – **In presence**
- 14:50-15:10 *"Low-mass and sub-stellar eclipsing binaries in stellar clusters"*  
Contributed talk, **Nicolas Lodieu**, Instituto de Astrofísica de Canarias, Spain - **Remote**
- 15:10-17:00 **Session 3: Chemically peculiar stars - Early and late stages of evolution (magnetic CP stars, using BP/RP Gaia spectra; T Tau, FU Ori etc.)**
- 15:10-15:40 *"CP stars using BP/RP Gaia spectra"*  
**Invited** talk, **Ernst Paunzen**, Masaryk University - **Remote**
- 15:40-16:10 **Coffee break**

16:10-16:30 *"The problem of variability of chemically peculiar Am stars"*  
Contributed talk, **Natalia Posiłek**, PhD student, University of Wrocław, Poland - **In presence**

16:30-17:00 *"Early and late stages of evolution"*  
**Invited** talk, **Zsófia Nagy**, Konkoly Observatory - **In presence**

**17:00 City tour**

**20:00 Social dinner**

### **Day 3 - June 8, 2023: 2 sessions**

#### **Chair F. Jimenez-Esteban (TBC)**

9:00- 9:40 **Session 1: Chemically peculiar stars - Early and late stages of evolution (magnetic CP stars, using BP/RP Gaia spectra; T Tau, FU Ori etc.)**

9:00- 9:20 *"Broadening of Ga II spectral lines by collision with charged particles for research of variable stars"*  
Contributed talk, **Dimitrijević Milan**, Astronomical Observatory, Belgrade, Serbia - **In Presence**

9:20- 9:40 *"Mercury-manganese stars in the observations of TESS satellite"*  
Contributed talk, **Niemczura Ewa**, University of Wrocław, Poland - **In presence**

9:40-12:20 **Session 2: Synergies and connections between Gaia and other surveys of variable stars – OGLE, LSST, ZTF**

9:40-10:10 *"Synergies and connection between the Gaia and OGLE catalogs of variable stars"*  
**Invited** talk, **Igor Soszynski**, University of Warsaw - **In presence**

10:10-10:40 *"Rubin's LSST as a large-scale time-domain photometric survey"*  
**Invited** talk, **Zeliko Ivezić**, University of Washington - **In presence**

10:40-11:10 **Coffee Break**

11:10-11:30 *"Generating LSST synthetic photometry from Gaia XP spectra"*  
Contributed talk, **Lovro Palaversa**, Ruđer Bošković Institute, Croatia - **In presence**

11:30-11:50 *"Supercomputer 'Bura' as a computing facility for time-domain astrophysics"*  
Contributed talk, **Tomislav Jurkic**, University of Rijeka, Faculty of Physics, Croatia – **In Presence**

11:50-12:20 *"Synergies and connections between Gaia and other surveys of variable stars"*  
**Invited talk, Ashish Mahabal, Caltech - In presence**

**Chair C. Jordi**

**12:20-12:40 Poster session**

(Short presentations, 2-3 min per poster)

*"Distance - Luminosity discrepancy for binaries with the B[e] phenomenon"*

**Anatoly Miroshnichenko**, University of North Carolina, Greensboro, USA

*"Searching for photometric variability of massive star candidates in IC342"*

**Antoniya Valcheva**<sup>[1]</sup>, Petko Nedialkov<sup>[1]</sup>, Nikolay Tikhonov<sup>[2]</sup>, Olga Galazutdinova<sup>[2]</sup>, Olga Sholukhova<sup>[2]</sup>

[1] Department of Astronomy, Sofia University, Bulgaria

[2] Special astrophysical observatory, Northern Caucasus, Russia

*"Cepheid Metallicity in the Leavitt Law (C- MetaLL) survey: II.High-resolution spectroscopy of the most metal poor Galactic Cepheids"*

**Erasmus Trentin**<sup>[1,2,3]</sup>, Vincenzo Ripepi<sup>[3]</sup>, Gianni Catanzaro<sup>[4]</sup>, Jesper Storm<sup>[1]</sup>, Marcella Marconi<sup>[3]</sup>, Giulia De Somma<sup>[3,5]</sup>, Vincenzo Testa<sup>[6]</sup>, Ilaria Musella<sup>[3]</sup>

[1] Leibniz-Institut für Astrophysik Potsdam (AIP), Potsdam, Germany; [2] Institut für Physik und Astronomie, Universität, Potsdam, Germany; [3] INAF-Osservatorio Astronomico di Capodimonte, Naples, Italy; [4] INAF-Osservatorio Astrofisico di Catania, Catania, Italy; [5] Istituto Nazionale di Fisica Nucleare (INFN)-Sez. di Napoli, Napoli, Italy; [6] INAF – Osservatorio Astronomico di Roma, Rome, Italy

*"Evidence of H $\alpha$  periodicity in the Be/black hole binary MWC 656"*

**Kiril Stoyanov**<sup>[1]</sup>, Radoslav Zamanov<sup>[1]</sup>, Stefan Stefanov<sup>[1]</sup>, Vladislav Marchev<sup>[1]</sup>, Dragomir Marchev<sup>[2]</sup>, Uwe Wolter<sup>[3]</sup>, Michael Bode<sup>[4]</sup>

[1] Institute of Astronomy and NAO, Bulgarian Academy of Sciences, Bulgaria; [2] Shumen University "Episkop Konstantin Preslavski", Bulgaria; [3] Hamburger Sternwarte, Universität Hamburg, Germany; [4] Astrophysics Research Institute, Liverpool, UK

*"Photometric observations of the Dwarf Novae stars - DX And, AR And and RX And"*

**Luba Dankova**, Radoslav Zamanov, Andon Kostov, Milen Minev, Institute of Astronomy and NAO, Bulgarian Academy of Sciences, Bulgaria

*"Variation of emission profile parameters, connected with the binarity of Pleione"*

**Lubomir Iliev**<sup>[1]</sup>, Anatoly Miroshnichenko<sup>[2]</sup>

[1] Institute of Astronomy and NAO, Bulgarian Academy of Sciences, Bulgaria; [2] University of North Carolina, Greensboro, USA

*"The classification intricacy of different type of Cepheid variable stars and the case of RU Camelopardalis"*

**Monika I. Jurkovic**, Ana Lalović and Milan Stojanović

Astronomical Observatory of Belgrade, Belgrade, Serbia

*“Reactive collisions between electrons  $H^+$  2 and  $HD^+$  molecular cations in the Early Universe : Rotational transitions and dissociative recombination”*

**Nicolina Pop** , Politehnica University of Timisoara, Romania

*“Identification and characterization of detached white dwarf red dwarf pairs using Gaia and ZTF”*

**Stefan Stefanov**, Miroslav Moyseev , Institute of Astronomy and NAO, BAS; Sofia University, Bulgaria

12:40-12:55 *“MWGaia, the Action and Doctoral Network with an update on next steps”*

**Nic Walton**, IOA, Cambridge, UK - **In presence**

12:55-13:25 **Concluding Remarks**

**Laurent Eyer**, University of Geneva, Switzerland - **In presence**

13:30-14:30 **Lunch break**