

# Annual Report of IAU Commission G4 Pulsating Stars 2021

Budapest, April 2021

## Organizational news

This is the first report of the Commission with the recently elected leadership. The President of the Commission is Róbert Szabó. Jadwiga Daszynska-Daszkiewicz was elected as vice president, Maria Pia Di Mauro volunteered to be the Secretary of the Commission. The previous president, Jaymie Matthews acts as an Advisor. The Organizing Committee has five additional members: Victoria Antoci, Daniel Huber, Steve D. Kawaler, Marcella Marconi, and Konstanze Zwintz.

## Notable scientific results

Below we present an admittedly subjective and incomplete list of the latest, most important, and interesting results and papers on pulsating and oscillating stars:

Gaia Collaboration, A. G. A. Brown, A. Vallenari, T. Prusti et al (425 authors): [Gaia Early Data Release 3. Summary of the contents and survey properties](#), Astronomy & Astrophysics, Vol 649, Id. A1, 20pp (2021)

L. Molnár, A. Bódi, A. Pál et al.: [First Results on RR Lyrae Stars with the TESS Space Telescope: Untangling the Connections between Mode Content, Colors, and Distances](#), The Astrophysical Journal Supplement Series, Volume 259, Issue 1, id. 8., 44pp (2022)

A. Bhardwaj: [RR Lyrae and Type II Cepheid Variables in Globular Clusters: Optical and Infrared Properties](#), Universe, Vol 8., issue 2, p.122 (2022)

I. Soszynski, P. Pietrukowicz, J. Skowron et al.: [Over 24000 delta Scuti stars in the Galactic Bulge and Disk from the OGLE Survey](#), Acta Astronomica, Vol. 71, no. 3, p. 189-204 (2021)

H. Netzel & K. Kolenberg: [Non-radial modes in classical Cepheids. What to look for in spectroscopy?](#) Monthly Notices of the Royal Astronomical Society, Vol. 508, Issue 3, pp. 3508-3518 (2021)

S. Murphy, M. Joyce, T. R. Bedding, T. R. White, M. Kama: [A precise asteroseismic age and metallicity for HD 139614: a pre-main-sequence star with a protoplanetary disc in Upper Centaurus-Lupus](#), Monthly Notices of the Royal Astronomical Society, Volume 502, Issue, 2, pp. 1633-1646 (2021)

D. V. Cotton, D. L. Buzasi, C. Aerts et al: [Polarimetric detection of non-radial oscillation modes in the  \$\beta\$  Cephei star  \$\beta\$  Crucis](#), Nature Astronomy, Volume 6, pp. 154-164 (2022)

H. Saio, M. Takata, U. Lee, G. Li, T. Van Reeth: [Rotation of the convective core in  \$\gamma\$  Dor stars measured by dips in period spacings of g modes coupled with inertial modes](#), Monthly Notices of the Royal Astronomical Society, Volume 502, Issue 4, pp. 5856-5874 (2021)

O. Kochukov, V. Khalack, O. Kobzar et al: [TESS survey of rotational and pulsational variability of mercury-manganese stars](#), Monthly Notices of the Royal Astronomical Society, Volume 506, Issue 4, pp .5238-5344 (2021)

M. S. Cunha, I. W. Roxburgh, V. Aguirre Borsen-Koch et al: [PLATO hare-and-hounds exercise: asteroseismic model fitting of main-sequence solar-like pulsators](#), Monthly Notices of the Royal Astronomical Society, Volume 508, Issue 4, pp .5864-5885 (2021)

T. Steindl, K., Zwintz, T. G. Barnes, M. Müllner, E. Vorobyov: [Pulsational instability of pre-main sequence models from accreting protostars. I. Constraining the input physics for accretion with spectroscopic parameters and stellar pulsations](#), Astronomy & Astrophysics Volume 654, id. A36, 32pp. (2021)

G., De Somma, M. Marconi, S. Cassisi et al: [Period-age-metallicity and period-age-colour-metallicity relations for classical Cepheids: an application to the Gaia EDR3 sample](#), Monthly Notices of the Royal Astronomical Society Volume 508, Issue 1, pp. 1473–1488 (2021)

Also, the Frontiers research topic [Asteroseismology in the Kepler Era was published in 2021.](#)

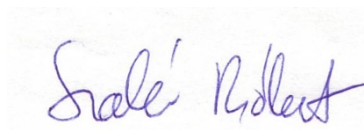
### Conferences/workshops

Due to the COVID situation many meetings focusing on pulsating variable stars were cancelled, postponed, or went online. The [IAU Symposium No. 376](#), *At the cross-roads of astrophysics and cosmology: Period–luminosity relations in the 2020s* and the related Spring School both to be held in Budapest was postponed second time, now the target date is April 2023. The [TESS Science Conference II](#) was held online in Aug 2021. The annual meeting of the European Astronomical Society was held again online (28 Jun – 2 Jul, 2021). The [2021 MESA School](#) was held between 9-20 August with a significant pulsation curriculum. In October-December 2021 we had the KITP institute program, [Probes of Transport in Stars](#) and an associated conference in November.

### Awards and Prizes

The 2020 IAU PhD Prize of Division G was awarded to Lisa Bugnet for her PhD thesis titled *‘Characterization of solar-type stars and study of their internal magnetic fields along the evolution’*.

The great photometrist, long time Comm. G4 member, Arlo Landolt passed away in January 2022.



Róbert Szabó  
president

on behalf of the Commission G4 Organizing Committee