

Photometric and spectroscopic investigation of variable stars

Marek Skarka

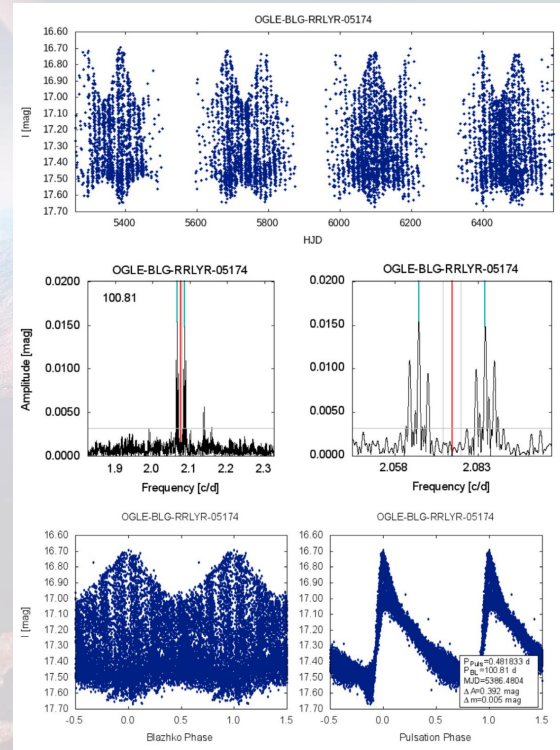
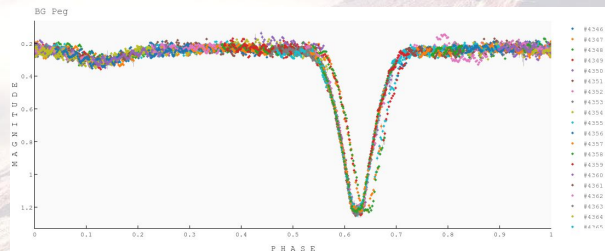
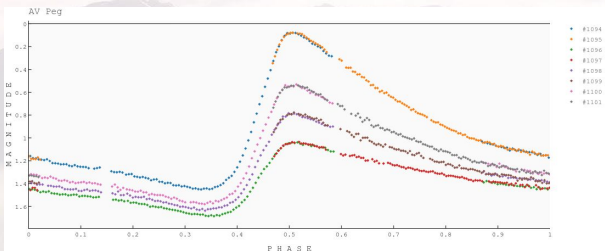
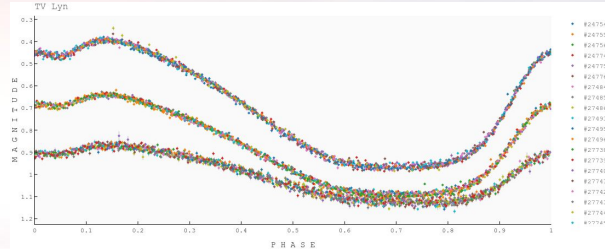
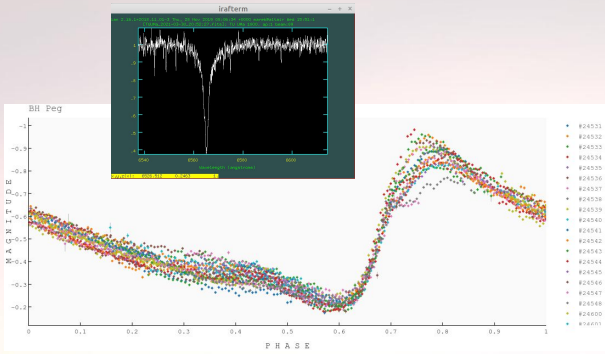
maska@physics.muni.cz

skarka@asu.cas.cz

RR Lyrae stars

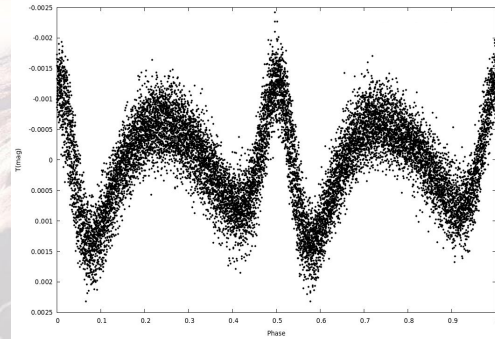
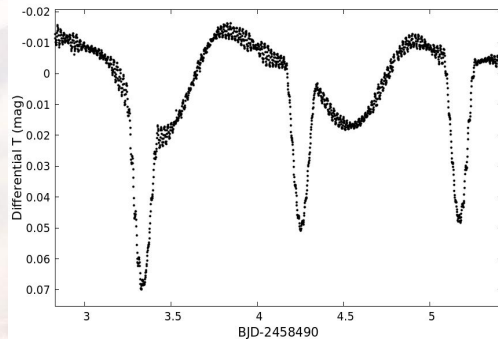
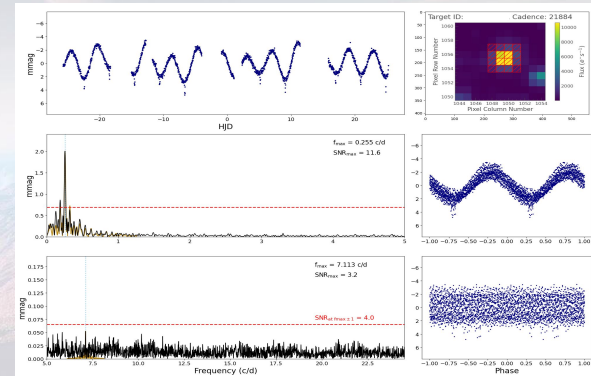
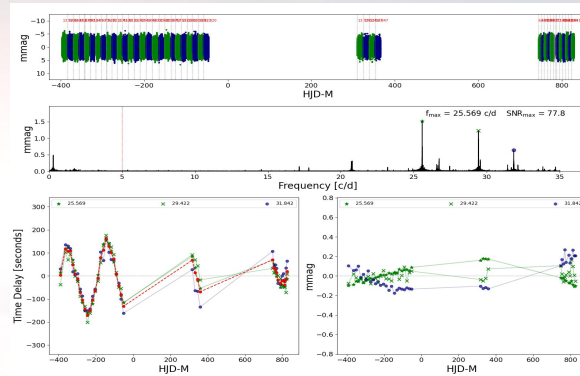
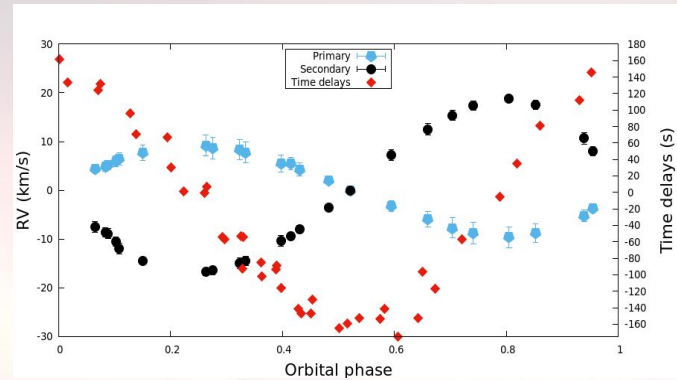
RR Lyrae stars

- Blazhko effect (spectroscopic analysis - INT+Mercator, detectability, OGLE LMC+SMC)
- Morphology of the light curves (multicolour data)



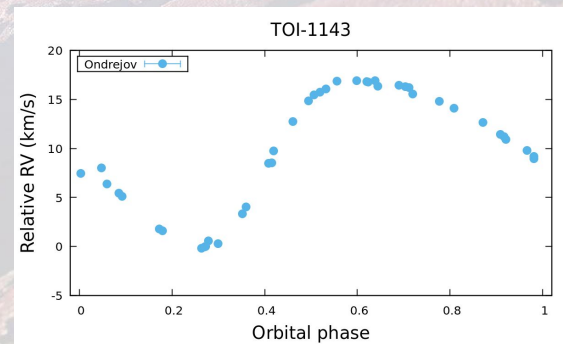
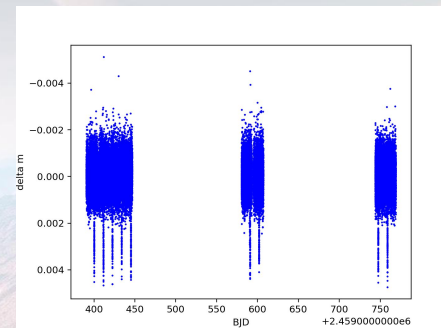
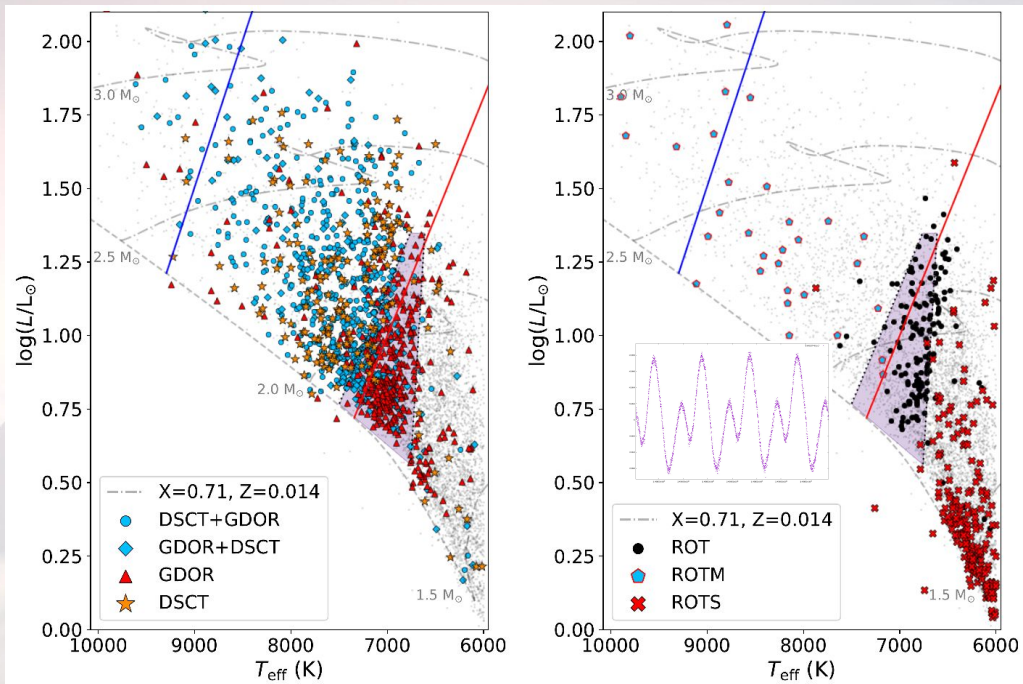
Variable stars and exoplanets

- Binaries with pulsating components (TESS+other photometry, spectroscopy, period analysis)
- Binaries with CP-star candidates (TESS+other photometry, spectroscopy, period analysis)
- Identification and study of peculiar objects (mainly from TESS)
- Investigation of samples of variable stars from TESS (light-curve analysis, period analysis, spectroscopy)
- Exoplanetary candidates vetting (spectroscopic follow-up observations)



Variable stars and exoplanets

- Binaries with pulsating components (TESS+other photometry, spectroscopy, period analysis)
- Binaries with CP-star candidates (TESS+other photometry, spectroscopy, period analysis)
- Identification and study of peculiar objects (mainly from TESS)
- Investigation of samples of variable stars from TESS (light-curve analysis, period analysis, spectroscopy)
- Exoplanetary candidates vetting (spectroscopic follow-up observations)



The trade

1 enthusiastic student (preferably MSc)

Offer

Thesis with high publication potential

Supervisor concerned with the project

Good accessibility of the supervisor

New skills & contacts

Work with other students

Friendly and open relationship

Expectations

Deep involvement in the project

Good attitude to hard and systematic work

Autonomy

Linux & Python friend

Why MaSka

H-index 20, 126 publications (90 refereed, 25 first-author), ~1100 citations (~750 independent)
Referee (journals, projects), editor in chief OEJV (2015-2019), member of observing proposal committees
Wide range of skills in practical astronomy & software
Access to Perek 2m and E152 telescopes

References

Active: Magdalena Špoková (CP stars in globular clusters, PhD),
Michaela Vítková (Multiplanetary systems, PhD)
Ema Šipková (Study of a peculiar object, BSc, 2023)

MSc: Michaela Vítková (Radial velocities of exoplanets, MSc, 2022)
Jiří Žák (Exoplanetary atmospheres, MSc, 2020, **Award of the dean**, PhD study in Germany, **ESO student since 2020**)
Zdeněk Prudil (RR Lyraes, BSc 2014, MSc 2016, **Award of the dean**, PhD in Heidelberg, **ESO fellow since 2022**)

BSc: Martin Max (RR Lyraes, 2022), Kateřina Neumannová (Variables in globular clusters, 2021), David Stoklásek (Exoplanet RVs, 2021), Marko Mesarč (Exoplanetary transits, 2020, **BSC at VSES conference 2022**), Vendula Slavíková (Exoplanet transits, 2020), David Štegrner (Spectroscopy, 2020), Michaela Vítková (Exoplanetary transits, 2020, **BSC at VSES conference 2020**), Jiří Žák (Cepheids, 2018), Jakub Dolinský (RR Lyraes, 2017), Zdeněk Prudil (RR Lyraes, 2014)

maska@physics.muni.cz, office no. 3011