

Annual Report 2024

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CAMK Toruń

Publications - DEBs

- **Hełminiak K. G., et al. 2024, A&A, 691, A170**
"High-resolution spectroscopy of detached eclipsing binaries during total eclipses"
- Pawar T. B., et al. 2024, A&A, 691, A101
"A comprehensive study of five candidate δ Scuti-type pulsators in detached eclipsing binaries"
- Moharana A., et al. 2024, A&A, 690, A153
"Spectroscopy of eclipsing compact hierarchical triples: I. Low-mass double-lined and triple-lined systems"
- Moharana A., et al. 2024, MNRAS, 527, 53
"Solaris photometric survey: Search for circumbinary companions using eclipse timing variations"

Publications - Other

- da Silva R., et al. 2024, A&A, 688, A193
"Ariel stellar characterisation. II. Chemical abundances of carbon, nitrogen, and oxygen for 181 planet-host FGK dwarf stars"
(Ariel Mission consortium)
- Hord B. J., et al. 2024, AJ, 167, 233
"Identification of the Top TESS Objects of Interest for Atmospheric Characterization of Transiting Exoplanets with JWST"
(TESS Mission consortium)
- Kumar R., et al. 2024, A&A, 685, L6
"Discovery of a hot post-AGB star in Galactic globular cluster E3"

Observations

- VLT/SPHERE Normal proposal (9h), PI: Hełminiak
- Subaru/SCEXAO+CHARIS (2n), PI: Uyama
- SALT/HRS Long-Term (6 x 20h), PI: Hełminiak
- SALT/HRS Long-Term (4 x 21h), PI: A. Moharana
- SALT/HRS Normal (19.5 h), PI: Pawar G.
- 30 hours of observing time on the SMARTS-1.5m/CHIRON (funded by A. Moharana)
- TESS Guest Investigator Program in Cycle 7

The screenshot displays a VNC session titled "TightVNC: charis.sum.subaru.nao.ac.jp:1 (mrclean)". The interface includes a menu bar with "Applications", "SAOImage quick...", "Cube", "SAOImage quick...", "VNC config", "Terminal", and "Terminal". The main window is "SAOImage quicklook_cube", which shows a file named "CRSA00152781_cube.fits[1]". The software interface includes a menu bar (File, Edit, View, Frame, Bin, Zoom, Scale, Color, Region, WCS, Analysis, Help) and a toolbar with options like "linear", "log", "power", "sqrt", "squared", "asinh", "sinh", "histogram", "min max", and "zscale". A small thumbnail image of a star field is visible in the top right. Below the thumbnail is a large image of a star field, showing several bright stars against a dark background. The "Cube" window is also visible, showing a "Slice" of the image with a range from 1 to 22, and buttons for "First", "Previous", "Stop", "Play", "Next", and "Last". A terminal window in the background shows the following text:

```
File Edit View Frame Bin Zoom Scale Color Region WCS Analysis Help
Terminal Tabs Help
Full frame 5924 1758 428 41469 12311
Masked frame 5924 1782 411 41469 12477
within 10 2083
Color coding:
Blue <10k | 10k < Green < 50k | 50k < Yellow < 100k | 100k < Red
Ramp displayed is already multiplied by Nreads
Processing file...
```

Presentations

- Conferences:
 - Binary and Multiple stars in the Era of Large Sky Surveys, Litomyšl, Czech Rep.
 - *"Adding TESS to CRÉME. Light curves and masses of 300+ eclipsing binaries"* – oral presentation
 - *"ADEBBDs: Accelerating Detached Eclipsing Binaries with Brown Dwarfs"* – poster
- Seminars:
 - CAMK Toruń Seminar
 - *"Direct imaging of (not only) exoplanets around accelerating stars"*

Students

- A. Moharana (CAMK → Keele) **27.09.2024**
- T. Pawar (CAMK → Villanova) 05.2025
- G. Pawar (CAMK)
- J. Olszewska (AO AMU)

- Eda Celik (Erasmus+, summer 2024)

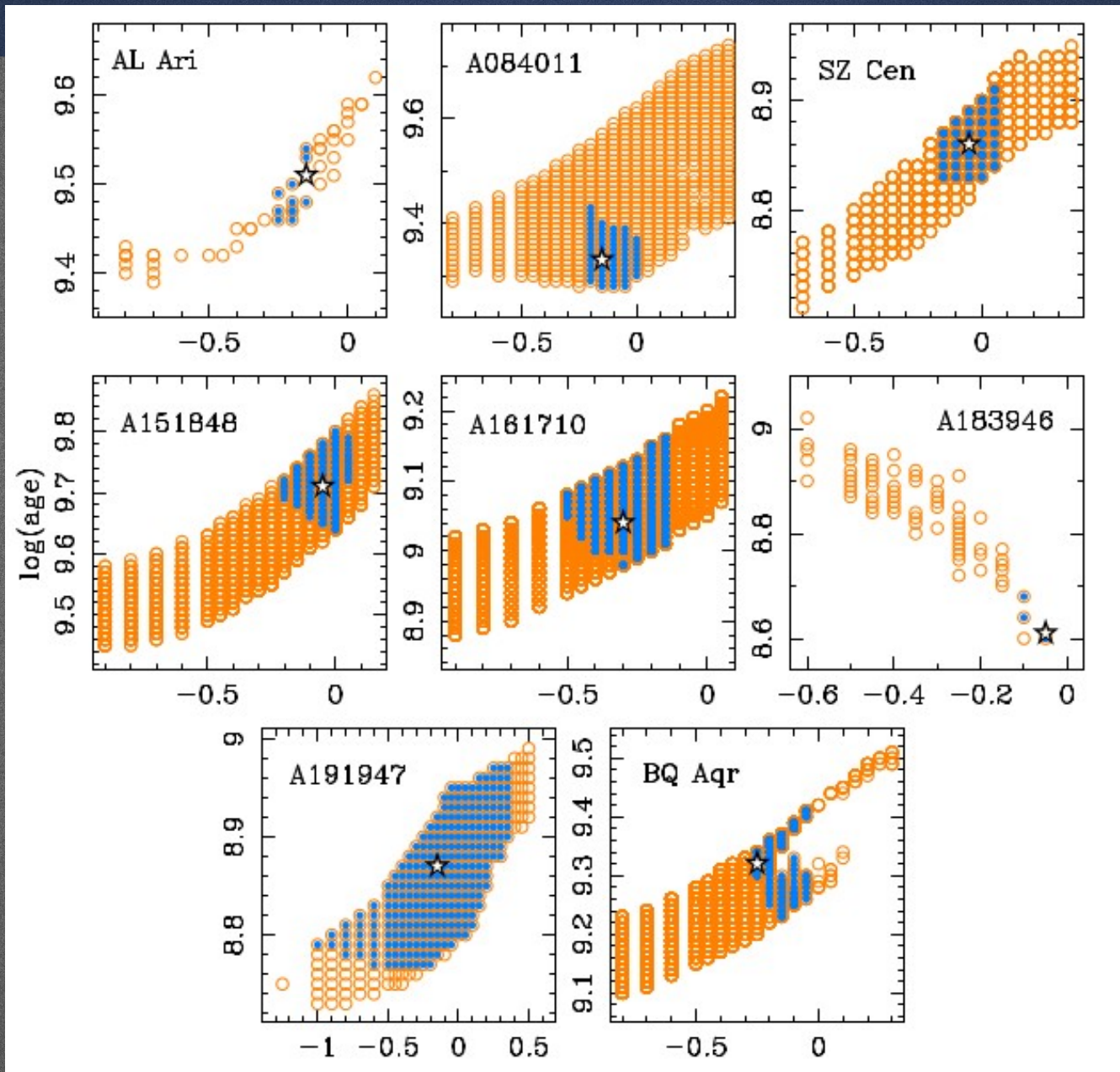
- New Ph.D. position to be opened soon.
Start date: 10.2025



Other

- SALT:
 - Board of Directors (member)
 - Science and Technical Committee (chair)
- Space missions:
 - ARIEL Mission Consortium (SC-Obs sWG coordinator)
 - PLATO Mission Consortium (Benchmark Stars WG)
- OPUS grant 2023/49/B/ST9/01671
- Reviews:
 - PhD thesis of M. Wrona (OA UW)
 - Publications: A&A, MNRAS, ApJS
 - Proposals: SALT PL TAC, Fizeau 2024A

CRÉME: new recent results

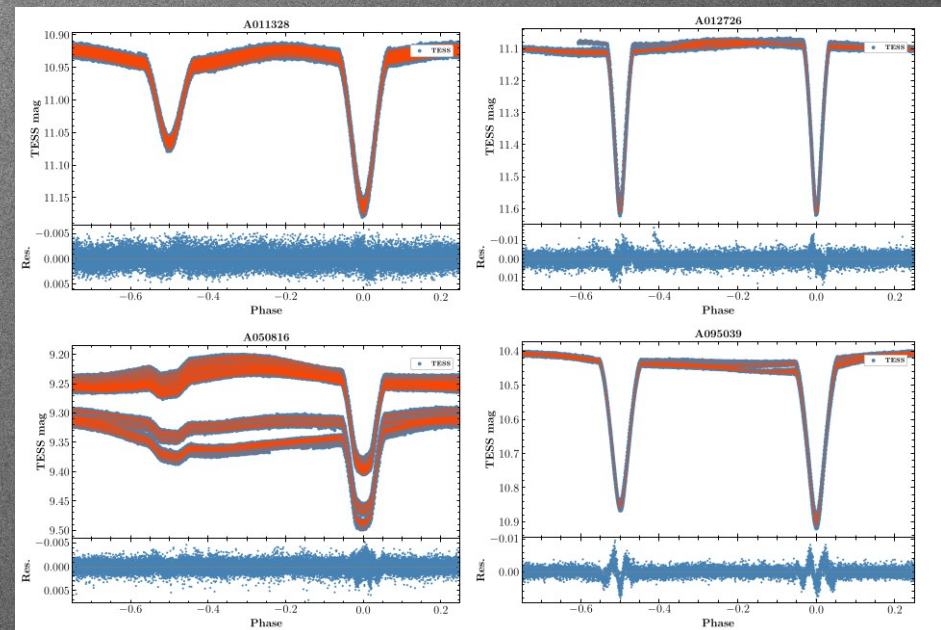
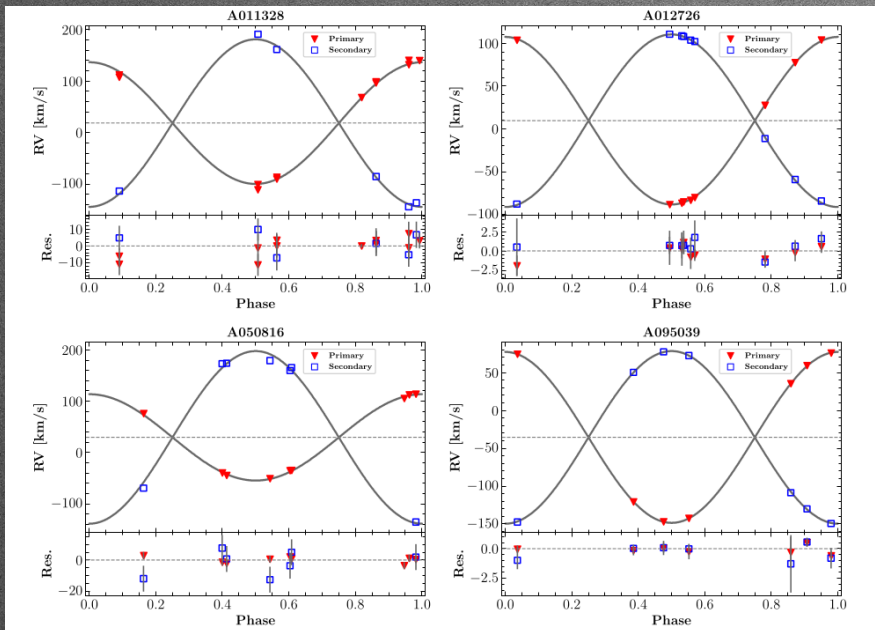


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et al. 2024

CRÉME: ~~new~~ recent results

- Analysis of 19 low-mass ($< 0.9 M_{\text{SUN}}$) DEBs:
 - RV modelling: finished
 - LC modelling: finished
 - Spectral analysis: ongoing
 - Isochrone fitting: pending

New data in 2024



THANK YOU



ECLIPSING BINARIES AS TOILET FLUSH BUTTONS