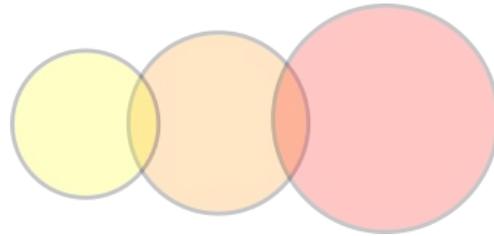


# Period-luminosity relations, projection factor and radii of Anomalous Cepheids



**Piotr Wielgórski**

CAMK annual meeting  
Warszawa, Feb 5th, 2026



## Research in 2024:

- Anomalous Cepheids Period-Luminosity relations and Baade-Wesselink analysis (paper ready to submit)
- Period-Radius relations of Classical, Type II and Anomalous Cepheids and RR Lyrae type stars in the Magellanic Clouds (manuscript advanced, to be published in 2026)
- CoI of GHOST@Gemini proposal for observing Cepheids in IC1613 (BW distance to IC1613)
- (PI of UVES proposal for Cepheids in IC1613, highly ranked but rejected...)

## Published papers:

- Breuval et al., “Converging on the Cepheid Metallicity Dependence: Implications of Nonstandard Gaia Parallax Recalibration on Distance Measures”, 2025, ApJ
- Graczyk et al., “Surface brightness-colour relations of dwarf stars from detached eclipsing binaries: II. Extension of the calibrating sample”, 2025, A&A
- Narloch et al., “Period–luminosity relations for Galactic Type II Cepheids in the Sloan bands“, 2025, A&A
- Hocde et al., “Circumstellar emission of Cepheids across the instability strip: Mid-infrared observations with VLTI/MATISSE”, 2025, A&A

## Accepted papers:

- Mandal et al., “HALO I: Photometric continuum reverberation mapping of Fairall 9”, 2026, A&A
- Zgirski et al., “Distance to the Globular Cluster M 3 from the Infrared Surface Brightness Technique applied to RR Lyrae stars”, 2025, A&A
- Górski et al., “Secondary Standards in the UKIRT Faint Standard Fields, 2026, ApJ

## Conferences:

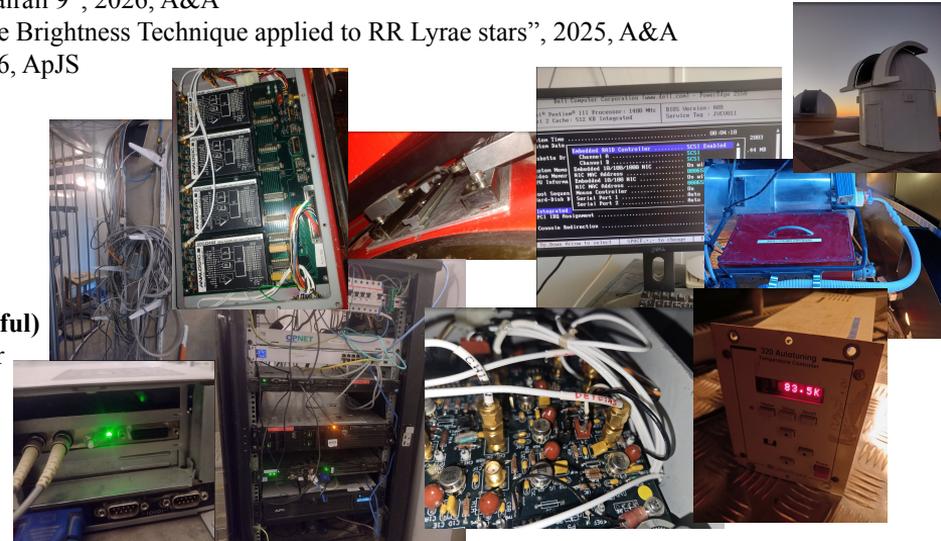
- talk during PTA meeting, Warszawa, September 2025

## Rolf Chini Cerro Murphy Observatory:

- 3 trips to OCM (x3 weeks)
- **Resurrection of an old IRIS 0.8m infrared telescope and camera (successful)**
- Purchase of the dome, mount and optical telescopes for TMMT and a new car

## Popularisation:

- Popular talk during Seminarium dla nauczycieli fizyki
- Participation in Scientific Picnic



## Research in 2024:

- Anomalous Cepheids Period-Luminosity relations and Baade-Wesselink analysis (paper ready to submit)
- Period-Radius relations of Classical, Type II and Anomalous Cepheids and RR Lyrae type stars in the Magellanic Clouds (manuscript advanced, to be published in 2026)
- CoI of GHOST@Gemini proposal for observing Cepheids in IC1613 (BW distance to IC1613)
- (PI of UVES proposal for Cepheids in IC1613, highly ranked but rejected...)

## Published papers:

- Breuval et al., “Converging on the Cepheid Metallicity Dependence: Implications of Nonstandard Gaia Parallax Recalibration on Distance Measures”, 2025, ApJ
- Graczyk et al., “Surface brightness-colour relations of dwarf stars from detached eclipsing binaries: II. Extension of the calibrating sample”, 2025, A&A
- Narloch et al., “Period–luminosity relations for Galactic Type II Cepheids in the Sloan bands“, 2025, A&A
- Hocde et al., “Circumstellar emission of Cepheids across the instability strip: Mid-infrared observations with VLTI/MATISSE”, 2025, A&A

## Accepted papers:

- Mandal et al., “HALO I: Photometric continuum reverberation mapping of Fairall 9”, 2026, A&A
- Zgirski et al., “Distance to the Globular Cluster M 3 from the Infrared Surface Brightness Technique applied to RR Lyrae stars”, 2025, A&A
- Górski et al., “Secondary Standards in the UKIRT Faint Standard Fields, 2026, ApJS

## Conferences:

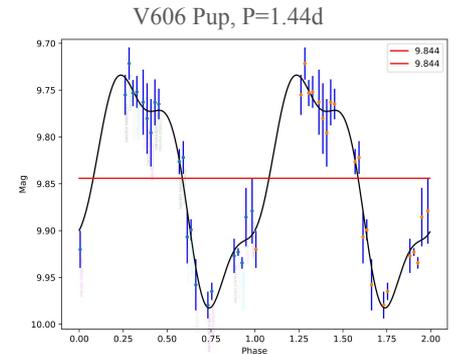
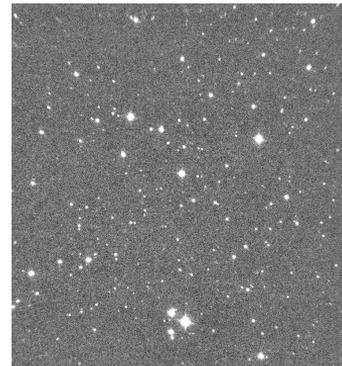
- talk during PTA meeting, Warszawa, September 2025

## Rolf Chini Cerro Murphy Observatory:

- 3 trips to OCM (x3 weeks)
- **Resurrection of an old IRIS 0.8m infrared telescope and camera (successful)**
- Purchase of the dome, mount and optical telescopes for TMNT and a new car

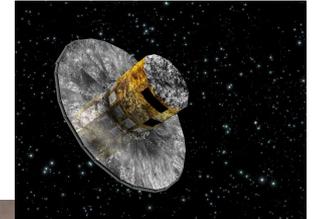
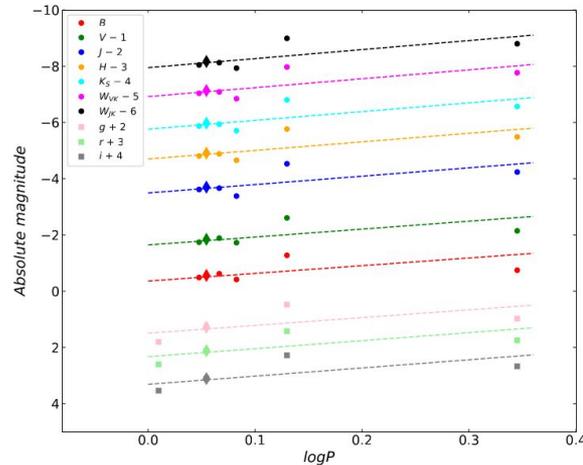
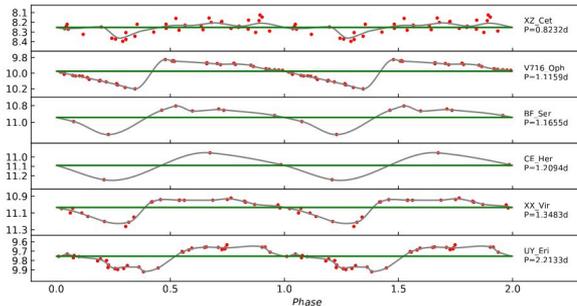
## Popularisation:

- Popular talk during Seminarium dla nauczycieli fizyki
- Participation in Scientific Picnic



# Period-Luminosity Relations of Anomalous Cepheids

- Pre-pandemic optical photometry in B, V from VYSOS 16 (OCM) and near-infrared photometry in J, H, Ks from IRIS (OCM), and post-pandemic g, r, i from the network of Las Cumbres Observatory 0.4m telescopes
- Distances from Gaia DR3 parallaxes
- Bigger sample currently observed with new OCM telescopes and IRIS



# Projection factor and radii of Anomalous Cepheids (The Baade-Wesselink technique)

- Optical photometry in V from VYSOS 16, near-infrared photometry in Ks from IRIS
- Radial velocities measured from FEROS, CORALIE, HARPS and UVES spectra
- Distances from Gaia DR3 parallaxes
- Values of projection factors:  $1.35 \pm 0.17$ ,  $1.38 \pm 0.13$  and  $1.59 \pm 0.21$  for UY Eri, V716 Oph and XX Vir, respectively
- Radii of UY Eri and V716 Oph in good agreement with LMC Anomalous Cepheids
- The sample will be expanded in the future (observations ongoing)

Radii of LMC and SMC Classical, Type II and Anomalous Cepheids and RR Lyrae type stars, estimated from archival photometry and surface brightness color relation and DEB distances, will be published in a separate paper in 2026.

