

## Zdeněk Prudil - curriculum vitae

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<b>PROFESSIONAL EXPERIENCE</b>	<b>Postdoctoral researcher</b> Astronomisches Rechen-Institut, Heidelberg, Germany <b>since Jul 2020</b> <b>Graduate researcher</b> Astronomisches Rechen-Institut, Heidelberg, Germany <b>Sept 2016 – Jun 2020</b>
<b>EDUCATION</b>	<b>Astronomisches Rechen-Institut, Heidelberg University, Heidelberg, Germany</b> <i>Ph.D.</i> , Astronomy, 2016 – 2020 <i>Supervisor:</i> Prof. Dr. Eva K. Grebel <i>Thesis:</i> RR Lyrae stars as tracers of substructure and Galactic archaeology <b>Faculty of Science, Masaryk University, Brno, Czech Republic</b> <i>MSc.</i> , Theoretical Physics and Astrophysics, 2014 – 2016 <i>Supervisor:</i> Mgr. Marek Skarka, Ph.D. <i>Thesis:</i> Blazhko Effect in Galactic Bulge RR Lyrae Stars <b>Faculty of Science, Masaryk University, Brno, Czech Republic</b> <i>BSc.</i> , Astrophysics, 2011 – 2014 <i>Supervisor:</i> doc. RNDr. Miloslav Zejda, Ph.D. <i>Thesis:</i> Analysis of Light Curve of RR Lyrae Type Star
<b>RESEARCH INTERESTS</b>	<ul style="list-style-type: none"><li>• Galactic archaeology in the Milky Way and its neighborhood</li><li>• The Milky Way structure and dynamics using stellar tracers</li><li>• Data analysis and machine learning</li><li>• Radial stellar pulsations</li></ul>
<b>FELLOWSHIPS PRIZES</b>	<b>Hector Fellowship: Hector Fellow Academy</b> <b>April 2017 - April 2020</b> <i>Benefits:</i> 3 years of full Ph.D. funding, including a research fund of 45 000 € <b>The International Max Planck Reserach School for Astronomy and Cosmic Physics: Fellow of the IMPRS-HD,</b> <b>September 2016 - April 2020</b> <b>Masaryk University: Deans' award for the best Master thesis</b> <b>June 2017</b> <i>Thesis:</i> <b>Blazhko Effect in Galactic Bulge RR Lyrae Stars</b>
<b>TECHNICAL SKILLS</b>	<b>Programming languages:</b> Python (numpy, scipy, scikit-learn, emcee), SQL, ADQL <b>Software:</b> galpy, iSpec, Period04, L <sup>A</sup> T <sub>E</sub> X, CERES <b>Observing experince:</b> <ul style="list-style-type: none"><li>• Masaryk University Observatory and Observatory and Planetarium Brno - 0.35 m telescope, CCD photometry, Brno, Czech Republic (9 nights)</li><li>• Akdeniz University observatory - 0.25 m telescope, CCD photometry, Antalya, Turkey (4 nights)</li></ul>
<b>SUCCESSFUL PROPOSALS as a PI and Co-I</b>	<b>Gemini South &amp; North, Zorro &amp; Alopeke inst., PI: M. Catelan – 8.7 hours</b> <b>2021</b> <i>Program:</i> GS-2021A-Q-220, Searching the elusive RR Lyrae companions <b>Gemini North, Alopeke instrument, PI: R. Salinas – 2.1 hours</b> <b>2020</b> <i>Program:</i> GN-2020B-FT-15, A speckle search for RR Lyrae companions

	<b>MPG/ESO 2.2m telescope, FEROS, PI: Z. Prudil</b> – DDT 10 hours	<b>2019</b>
	<i>Program: 0103.A-9029(A), Spectroscopic study of shock waves in RR Lyrae stars</i>	
	<b>VLT/ESPRESSO, PI: Z. Prudil</b> – SV 1 hour	<b>2019</b>
	<i>Program: 60.A-9511(A), Spectroscopic study of shock waves in RR Lyrae stars</i>	
<b>RESEARCH VISITS</b>	<ul style="list-style-type: none"> <li>• Faculty of Science, Masaryk University, Brno</li> <li>• Nicolaus Copernicus Astronomical Center of the Polish Academy of Sciences, Warsaw</li> <li>• Nicolaus Copernicus Astronomical Center of the Polish Academy of Sciences, Warsaw</li> </ul>	<p style="text-align: right;"><b>October 2018</b></p> <p style="text-align: right;"><b>March 2018</b></p> <p style="text-align: right;"><b>February 2016</b></p>
<b>CONFERENCE TALKS SEMINARS &amp; COLLOQUIA</b>	<p><b>Galaxy Coffee MPIA</b>, Heidelberg – online, <i>Seminar: The Orphan stream in 7D using RR Lyrae stars</i></p> <p><b>Streams 21: Constraints on Dark Matter</b>, New York – online, <i>Talk: The Orphan stream in 7D using RR Lyrae stars</i></p> <p><b>Gemini-South &amp; CTIO Science coffee</b>, La Serena – online, <i>Seminar: RR Lyrae stars in the Galactic disk</i></p> <p><b>RRL/Cep 2019 - Frontiers of Classical Pulsators: Theory and Observations</b>, Cloudcroft, <i>Talk: Main and early shocks in RR Lyrae photometric light curves (contributed talk)</i></p> <p><b>A Synoptic View of the Magellanic Clouds - VMC, Gaia and Beyond</b>, Garching, <i>Poster: Photometric study of the stellar overdensity north from the Small Magellanic Cloud</i></p> <p><b>Hector Fellow Symposium</b>, Heidelberg, <i>Talk: Final Ph.D. presentation</i></p> <p><b>MOSAIC 2019 Science and Surveys with the ELT Multi-Object Spectrograph</b>, Heidelberg University</p> <p><b>Astronomical seminar</b>, Faculty of Science, Masaryk University, Brno, <i>Seminar: Research and studies at the Heidelberg University</i></p> <p><b>RRL2017 Revival of the classical pulsators: from galactic structure to stellar interior diagnostics</b>, Niepołomice, <i>Talk: The Oosterhoff Dichotomy in the Galactic Bulge (contributed talk)</i></p> <p><b>ARI Institute Colloquium</b>, Astronomisches Rechen-Institut, Heidelberg University, <i>Seminar: The Blazhko effect and additional periodicity among RR Lyrae stars in the Galactic bulge</i></p> <p><b>The 48th Conference on Variable Stars Research</b>, Prague, <i>Talk: Multiple variability in RR Lyrae stars (contributed talk)</i></p> <p><b>Meeting of Young CAMK</b>, Centrum Astronomiczne im. Mikołaja Kopernika, Warsaw, <i>Talk: Blazhko effect in Galactic bulge RR Lyrae stars</i></p> <p><b>RRL2015 High-Precision Studies of RR Lyrae Stars</b>, Visegrád, <i>Poster: Analysis of light curve of LP Camelopardalis</i></p>	<p style="text-align: right;"><b>March 2021</b></p> <p style="text-align: right;"><b>February 2021</b></p> <p style="text-align: right;"><b>October 2020</b></p> <p style="text-align: right;"><b>October 2019</b></p> <p style="text-align: right;"><b>September 2019</b></p> <p style="text-align: right;"><b>July 2019</b></p> <p style="text-align: right;"><b>March 2019</b></p> <p style="text-align: right;"><b>October 2018</b></p> <p style="text-align: right;"><b>September 2017</b></p> <p style="text-align: right;"><b>January 2017</b></p> <p style="text-align: right;"><b>November 2016</b></p> <p style="text-align: right;"><b>February 2016</b></p> <p style="text-align: right;"><b>October 2015</b></p>
<b>WORKSHOPS</b>	<p><b>2019 MESA Summer School</b>, University of California, Santa Barbara</p> <p><b>IMPRS Summer school: Gaia Data &amp; Science</b>, Heidelberg University</p> <p><b>Workshop: Near-Field Cosmology with the Dark Energy survey's DR1 and beyond</b>, Chicago</p> <p><b>Gaia Data Workshop</b>, Heidelberg</p>	<p style="text-align: right;"><b>August 2019</b></p> <p style="text-align: right;"><b>September 2018</b></p> <p style="text-align: right;"><b>June 2018</b></p> <p style="text-align: right;"><b>November 2016</b></p>

## TEACHING & EXPERIENCE

### Teaching and organizational experience:

- LOC AT THE MOSAIC 2019 MEETING at Heidelberg University, **March 2019**
- GALAXY EVOLUTION at Heidelberg University  
Convener in winter and summer semester 2018, 2019 (weekly seminar)
- GALACTIC AND EXTRAGALACTIC ASTRONOMY at Heidelberg University  
Teaching assistant in summer semester 2017, 2018 (weekly exercises for master and graduate students)
- ASTRO-LAB at Heidelberg University (block course)  
Teaching assistant in winter semester 2017 (lab course for undergraduate and graduate students)

### Public outreach:

- VYSKOV OBSERVATORY at Vyskov **Summer 2013, 2014**  
Astronomer - public observations of the night sky and Sun using the telescopes
- BRNO OBSERVATORY AND PLANETARIUM at Brno **FY 2015**  
Night Sky Guide - public observations of the night sky using the telescopes

**MBA courses:** Three courses as a part of the Hector Fellow Academy, focused on the soft skills and project management: PROJECTS, PEOPLE, VALUES at the Karlsruhe Institute of Technology **2018 – 2019**

## References

Prof. Dr. E. K. Grebel  
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## Zdeněk Prudil - publication list

Astronomisches Rechen-Institut,  
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Total number of papers: 26 from which 9 as a first author. Total number of citations: 158 with h-index: 8 (2021-04-20). The full publication list can be found here: [ADS](#).

### PUBLICATIONS Peer-reviewed

17. Crestani, J. et al., including **Prudil, Z.**: On the Use of Field RR Lyrae as Galactic Probes. III. The  $\alpha$ -element abundances, 2021, [Accepted for publication in ApJ arXiv:2104.08113](#)
16. **Prudil, Z.** et al.,: Milky Way archaeology using RR Lyrae and type II Cepheids I. The Orphan stream in 7D using RR Lyrae stars, 2021, [A&A, 648, A78](#)
15. Crestani, J. et al., including **Prudil, Z.**: On the Use of Field RR Lyrae as Galactic Probes. II. A New  $\Delta S$  Calibration to Estimate Their Metallicity, 2021, [ApJ, 908, 20](#)
14. Savino, A., Koch, A., **Prudil, Z.**, Kunder, A., Smolec, R.: The age of the Milky Way inner stellar spheroid from RR Lyrae population synthesis, 2020, [A&A, 641, A96](#)
13. Bono, G. et al., including **Prudil, Z.**: On the Metamorphosis of the Bailey diagram for RR Lyrae stars, 2020, [ApJ, 896, L15](#)
12. Hanke, M., Koch, A., **Prudil, Z.**, Grebel, E. K., Bastian, U.: Purveyors of fine halos. II. Chemodynamical association of halo stars with Milky Way globular clusters, 2020, [A&A, 637, A98](#)
11. Skarka, M., **Prudil, Z.**, Jurcsik, J.: Blazhko effect in the Galactic bulge fundamental mode RR Lyrae stars II: Modulation shapes, amplitudes and periods, 2020, [MNRAS, 494, 1237](#)
10. **Prudil, Z.**, Dékány, I., Grebel, E. K., Kunder, A.: Evidence for Galactic disk RR Lyrae stars in the Solar neighborhood, 2020, [MNRAS, 492, 3408](#)
9. **Prudil, Z.**, Dékány, I., Smolec, R., Catelan, M., Grebel, E. K., Kunder, A.: Humps and bumps: The effects of shocks on the optical light curves of fundamental-mode RR Lyrae stars, 2020, [A&A, 635, A66](#)
8. **Prudil, Z.**, Dékány, I., Grebel, E. K., Catelan, M., Skarka, M., Smolec, R.: On the Oosterhoff dichotomy in the Galactic bulge: II. kinematical distribution, 2019, [MNRAS, 487, 3270](#)
7. **Prudil, Z.**, Skarka, M., Liška, J., Grebel, E. K., Lee, C.-U.: Candidates for RR Lyrae in binary systems from the OGLE Galactic bulge survey, 2019, [MNRAS, 487, L1](#)
6. **Prudil, Z.**, Dékány, I., Catelan, M., Smolec, R., Grebel, E. K., Skarka, M.: On the Oosterhoff dichotomy in the Galactic bulge: I. Spatial distribution, 2019, [MNRAS, 484, 4833](#)
5. **Prudil, Z.**, Grebel, E. K., Dékány, I., Smolec, R.,: Photometric study of the SMC-NOD using variable stars from the OGLE-IV survey, 2018, [MNRAS, 480, 669](#)
4. **Prudil, Z.**, Skarka, M.: Blazhko effect in the Galactic bulge fundamental mode RR Lyrae stars I: Incidence rate and differences between modulated and non-modulated stars, 2017, [MNRAS, 466, 2602](#)

3. **Prudil, Z.**, Smolec, R., Skarka, M., Netzel, H.: Peculiar double-periodic pulsation in RR Lyrae stars of the OGLE collection - II. Short-period stars with a dominant radial fundamental mode, 2017, *MNRAS*, **465**, 4074
2. Smolec, R., **Prudil, Z.**, Skarka, M., Bakowska, K.: Peculiar double-periodic pulsation in RR Lyrae stars of the OGLE collection - I. Long-period stars with dominant radial fundamental mode, 2016, *MNRAS*, **461**, 2934
1. Skarka, M., Liška, J., Auer, R. F., **Prudil, Z.**, Juráňová, A. Sódor, Á.: The SERMON project: 48 new field Blazhko stars and an investigation of modulation-period distribution, 2016, *A&A*, **592**, A144

#### Non-Peer-reviewed

9. Salinas ,R., Hajdu ,G., **Prudil, Z.**, Howell ,S., Catelan, M.,: A Speckle Interferometric Search for a Companion to the RR Lyrae Star UV Oct, 2020, *RNAAS*, **4**, 143
8. Skarka, M., **Prudil, Z.**, Liška, J.,: Binary stars with RR Lyrae components - new candidates in the Galactic bulge, 2020, in Contributions of the Astronomical Observatory Skalnaté Pleso, *Vol. 50*, 442-445
7. Skarka, M., **Prudil, Z.**,: Photometric Differences Between Modulated and Non-Blazhko ab-type RR Lyrae Stars in the Galactic Bulge, 2018, in The RR Lyrae 2017 Conference. Revival of the Classical Pulsators: from Galactic Structure to Stellar Interior Diagnostics, ed. R. Smolec, K. Kinemuchi, & R. I. Anderson, *Vol. 6*, 319-320
6. **Prudil, Z.**, Grebel, E. K., Dékány, I. Smolec, R., Skarka, M.: The Oosterhoff Dichotomy in the Galactic Bulge, 2018, in The RR Lyrae 2017 Conference. Revival of the Classical Pulsators: from Galactic Structure to Stellar Interior Diagnostics, ed. R. Smolec, K. Kinemuchi, & R. I. Anderson, *Vol. 6*, 37-41
5. Skarka M., et al., including **Prudil, Z.**: CzeV - The Czech Variable Star Catalogue, 2017, *OEJV*, **185**, 1
4. Smolec, R. et al., including **Prudil, Z.**: Petersen diagram revolution, 2017, in Wide-Field Variability Surveys: A 21st Century Perspective - 22nd Los Alamos Stellar Pulsation - Conference Series Meeting, San Pedro de Atacama, Chile, Edited by Catelan, M.; Gieren, W.; *EPJ Web of Conferences*, *Volume 152*, id.06003
3. **Prudil, Z.**: Multiple variability in RR Lyrae stars, 2017, in proceedings of the 48th conference on Variable Stars Research, *Open European Journal on Variable Stars*, **180**, 47
2. **Prudil, Z.**, Skarka, M., Zejda, M.: Analysis of light curve of LP Camelopardalis, 2016, *Communcations of the Konkoly Observatory Hungary*, **105**, 213
1. Liška, J., Skarka, M., Auer, R. F., **Prudil, Z.** & Juráňová, A.,: Possible candidates for multiple occurrence of variable stars in the VSX catalogue, 2015, *OEJV*, **170**, 1