

Géza Csörnyei – Curriculum Vitae



Email: Geza.Csoernyei@eso.org



Webpage: <https://csogeza.github.io/>

Nationality: Hungarian

Residence: München, Germany



About me

I am an astrophysicist specializing mainly in supernovae and variable stars, currently in the subfield of extragalactic distance estimations. The primary objective of my current research is to examine the consistency of various methods used to estimate the Hubble constant, the Universe's expansion velocity, and to update its value and associated uncertainty. I am a member of multiple international collaborations and have extensive observational experience with multiple recent or ongoing programs.

Employment history

- 2024 – today **ESO Fellow**
European Southern Observatory, Garching, Germany
 - **(75%) Independent research fellow:** specializing in distance estimations, mainly through radiative transfer modeling of Type II supernovae
 - **(25%) “SOXS fellow”:** assisting the commissioning of the SOXS (Son Of XSHOOTER) instrument on ESO NTT by testing the reduction pipeline and devising on-sky tests on instrument performance
 - 2024 **Postdoctoral researcher**
Max Planck Institute for Astrophysics, Garching, Germany
 - 2020 – 2024 **PhD student**
Max Planck Institute for Astrophysics, Garching, Germany
 - 2018 – 2020 **Research Assistant**
Eötvös Loránd University, Budapest, Hungary
 - 2017 – 2020 **Observatory Assistant**
Konkoly Observatory, Budapest, Hungary
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Education

- 2020 – 2024 **Ph.D. in Astrophysics**
IMPRS Garching, Max Planck Institut für Astrophysik
& Technische Universität München
Thesis title: “Measuring distances in the near-Universe: systematic effects and observational tests for Type II supernovae and Cepheid variables”

- 2018 – 2020 *M.Sc. in Physics*
 Eötvös Loránd University
 Thesis title: Generalized multi-wavelength classification of galaxies based on emission lines
 - 2015 – 2018 *B.Sc. in Physics*
 Eötvös Loránd University
 Thesis title: Empirical improvements of photometric redshift estimations
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Visitorships

- May 2023 *Observatory of Geneva, Versoix, Switzerland,*
 Visitor of Dr. Richard Anderson
 - Aug 2019 – Sep 2019 *Johns Hopkins University, Baltimore, MD, US*
 Visitor of Prof. Dr. Alexander Szalay and Dr. László Dobos
 - Jul 2018 – Aug 2018 *Nicolaus Copernicus University, Torun, Poland*
 Summer school intern
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Publication record

My ADS library of refereed and accepted publications:

<https://ui.adsabs.harvard.edu/public-libraries/XuRPxGQASRaSdGEZVlUr6A>

Number of citations: 62 (601 including co-author)

H-index: 4 (11 as co-author)

(as of 2025 Sept 11)

Total number of refereed works: 5 (21 including co-author)

Number of unrefereed reports and notes: 127 (mainly AstroNotes of SN classifications)

First authored works:

1. **Csörnyei, G.**, R. I. Anderson, C. Vogl, et al., “*Reeling in the Whirlpool galaxy: Distance to M 51 clarified through Cepheids and the type IIP supernova 2005cs*” *Astronomy & Astrophysics*, vol. 678, A44, A44, Oct. 2023. doi: 10.1051/0004-6361/202346971. arXiv: 2305.13943 [[astro-ph.GA](#)]
 2. **Csörnyei, G.**, S. Taubenberger, A. Flörs, et al., “*Consistency of Type IIP supernova sibling distances*” *Astronomy & Astrophysics*, vol. 672, A129, A129, Apr. 2023. doi: 10.1051/0004-6361/202245379. arXiv: 2302.03112 [[astro-ph.SR](#)]
 3. **Csörnyei, G.**, L. Szabados, L. Molnár, et al., “*Study of changes in the pulsation period of 148 Galactic Cepheid variables*” *Monthly Notices of the Royal Astronomical Society*, vol. 511, no. 2, pp. 2125–2146, Apr. 2022. doi: 10.1093/mnras/stac115. arXiv: 2201.04748 [[astro-ph.SR](#)].
 4. **Csörnyei, G.**, L. Dobos, and I. Csabai, “*The effect of emission lines on the performance of photometric redshift estimation algorithms*” *Monthly Notices of the Royal Astronomical Society*, vol. 502, no. 4, pp. 5762–5778, Apr. 2021. doi: 10.1093/mnras/stab261. arXiv: 2101.11368 [[astro-ph.GA](#)].
 5. **Csörnyei, G.** and L. Szabados, “*AU Pegasi revisited: period evolution and orbital elements of a peculiar Type II Cepheid*” *Astrophysics & Space Sciences*, vol. 364, no. 9, 151, p. 151, Sep. 2019. doi: 10.1007/s10509-019-3641-x. arXiv: 1909.01255 [[astro-ph.SR](#)].
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Observing experience:

2025-	SOXS Fellow – active member of the commissioning team for the SOXS instrument onboard NTT, with multiple on-site visits to ESO La Silla Obs.
2025	3 nights on ESO NTT EFOSC2 (joint-PI): Lead an observation training for participants of the ESO Summer Research Programme 2025 (116.28
2024-2025	42h on ESO VLT UT1 FORS2 (PI) in a three-semester Monitoring Programme (in service mode), to observe Type II supernovae in previous SN II and SN Ia hosts (111.271J)
2023-2024	21h on ESO VLT UT1 FORS2 (PI) in a three-semester Monitoring Programme (in service mode), to observe Type II sibling supernovae (111.24TJ)
2021	7 nights in visitor at Konkoly Observatory/Piszkéstető Mountain Station, RCC/1m – ACE spectrograph (Co-I), to obtain Cepheid radial velocities, 2021/T3 21 nights in visitor at Konkoly Observatory/Piszkéstető Mountain Station, RCC/1m – ACE spectrograph (Co-I), to obtain Cepheid radial velocities, 2021/T2 14 nights in visitor at Konkoly Observatory/Piszkéstető Mountain Station, RCC/1m – ACE spectrograph (Co-I), to obtain Cepheid radial velocities, 2021/T1
2020	21 nights in visitor at Konkoly Observatory/Piszkéstető Mountain Station, RCC/1m – ACE spectrograph (Co-I), to obtain Cepheid radial velocities, 2020/T3 14 nights in visitor at Konkoly Observatory/Piszkéstető Mountain Station, RCC/1m – ACE spectrograph (Co-I), to obtain Cepheid radial velocities, 2020/T2 4 nights in service mode at Konkoly Observatory/Piszkéstető Mountain Station, Schmidt-60/90cm (Co-I), to obtain photometric observations of Cepheids, 2020/T1
2019	14 nights in visitor at Konkoly Observatory/Piszkéstető Mountain Station, Schmidt-60/90cm (Co-I), to obtain photometric observations of Cepheids, 2019/T3

Conferences and talks:

Total: 11 conference presentations, 8 posters

Highest relevance conference presentations:

May 2025	<u>COSMOVERSE Workshop</u> , Naples, Italy Invited colloquium: The ladder-free path to H0: an overview of existing techniques and the perspective from a Type II supernova angle
Apr 2025	<u>Bruno@65 conference</u> at ESO, Garching, Germany Contributed talk: SNe II the rescue: Sibling supernovae as a path to test systematics in SN II cosmology
Jul 2024	<u>EAS 2024</u> , Padova, Italy Contributed talk: "Explosions do not fall far from their galaxy: investigating the connection of SN II spectral time series and host galaxy parameters"

Colloquia and presentations (most relevant):

Jul 2024	<u>INAF Padova Astro Semina</u> , Padova, Italy Presentation: "Bypassing the Cosmic Distance Ladder: Testing Type II Supernovae as Independent Distance Indicators"
Feb 2023	<u>Astromerique seminar series</u> , University of Montréal Presentation: "Type II supernovae as cosmological distance indicators"

Collaboration memberships

- adH0cc accurate determination of H0 from core-collapse supernovae: main analysis member of a collaboration working Type II

- ePESSTO supernova-based method for Hubble constant estimation
- GSP Public ESO Spectroscopic Survey of Transient Objects
- GSP Global Supernova Project
- SOXS team Son Of X-SHOOTER spectrograph; member of the commissioning team through ESO, the main task is to test the reduction pipeline and instrument performance

Grants and Fellowships

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| 2024 | 2100 eur – ESO SSDF Grant for hiring an intern for a research stay |
| 2024 | ESO Fellowship (fully funded 3-year position at ESO Garching) |

Community work

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| 2025 – ... | ESO Fellow internal representative |
| 2025 | Chair of the Selection Committee for the ESO Summer Research Programme 2025 |
| 2024 – ... | Organiser of the ESO Informal Discussion series |
| 2022 – ... | Organiser of the Garching Supernova Meeting seminar series |

Skills

Languages

English – proficient user

Hungarian – native

German – intermediate

Spanish – beginner

Coding

Python, R, C/C++

Scientific programmes

Period04, IRAF/pyRAF, TARDIS

Teaching and Supervisory Experience

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| 2025 | Observation session tutor during the ESO Summer Research Programme 2025 |
| 2023 – 2023 | Summer Semester: Tutoring Extragalactic Astrophysics Master's course at Technische Universität München |
| 2022 – 2023 | Winter Semester: Tutoring Experimental Physics I in English course at Technische Universität München |
| 2015 – 2020 | Participating in coaching high school students for the International Olympiad on Astronomy and Astrophysics |

Supervision of students (as of September 2025)

- Co-supervision of 1 master student
 - Supervision of 1 research internship
 - Supervisor of a currently ongoing Bachelor's Thesis
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Awards and Achievements

- 2021 Pro Scientia Award of the Hungarian Academy of Sciences
 - 2020 Award of Excellence, at Eötvös Loránd University.
 - 2019 Certificate of Merit from the Hungarian Ministry of Human Capacities for participating in the coaching of the Hungarian team for the International Olympiad on Astronomy and Astrophysics
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Other

- 2025 Panelist at the Meeting of Hungarian astronomers, in the Forum of Early Career Astronomers
- 2021 Short interview about the National Council of Student Research Societies by ELTE Communication Offices
- 2019 Official scorer at the 13th International Olympiad on Astronomy and Astrophysics
- 2013 – 2020 Member of the Hungarian Astronomical Association, with observations regularly appearing in the 'Meteor' monthly journal