CAMILLE LANDRI

They/them

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I am a stellar astrophysicist interested in binary interactions and stellar winds. I mainly work using 3D hydrodynamics codes to simulate interactions in massive binary stars, such as common envelope evolution, and winds of evolved stars in binaries. I previously worked on the analysis of observations of cataclysmic variables and supernovae. My current focus is on implementing chemistry emulation in hydrodynamics simulations of stellar winds.

EDUCATION

Ph.D. in Astrophysics,   *2020 - 2024*
Charles University, Prague, Czechia

M.Sc. in Astrophysics   *2017 - 2019*
Uppsala Universitet, Uppsala, Sweden

B.Sc. in Physics   *2014 - 2017*
Université Grenoble Alpes, Grenoble, France
Final year at Umeå Universitet, Umeå, Sweden

PUBLICATIONS

FIRST AUTHOR:

- The effect of donor star rejuvenation on common envelope evolution, *Camille Landri, Paul Ricker, Mathieu Renzo, Shau-Jie Ra, Alejandro Vigna-Gómez*, 2025, ApJ, Volume 979, Issue 1, id.57, 15 pp.

- Driving asymmetric red supergiant winds with binary interaction, *Camille Landri, Ondřej Pejcha, 2024, MNRAS, Volume 531, Issue 3, pp.3391-3405*

- OGLE-BLG504.12.201843: A possible extreme dwarf nova, *Camille Landri, Ondřej Pejcha, Michał Pawlak, Andrzej Udalski, Jose L. Prieto, Manuel Barrientos, Jay Strader and Subo Dong, 2022, MNRAS, Volume 517, Issue 2, pp.2746-2756*

CONTRIBUTED:

- The complex dynamical past and future of double eclipsing binary CzeV343: misaligned orbits and period resonance, *Ondřej Pejcha, Pavel Cagaš,* **Camille Landri**, *Michael M. Fausnaugh, Gisella De Rosa, Jose L. Prieto, Zbyněk Henzl, Milan Pešta, 2022, A&A, Volume 667, id.A53, 29 pp.*

RESEARCH

Emulating chemistry in 3D hydrodynamical simulations,   *2024 - present*
KU Leuven, Leuven, Belgium
- Coupling of the chemistry emulator MACE with the 3D hydrodynamics code PHANTOM to study AGB outflows.
- Development and maintenance of a database storing the AGB wind models developed within the group of Pr. Decin
PIs: Prof. Leen Decin, Prof. Huges Sana, Prof. Jon Sundqvist, and Dr. Pablo Marchant, KU Leuven

Theory and observation of two stars undergoing strong interactions   *October 2020 - present*
Institute of theoretical physics, Charles University, Prague, Czechia
- Simulation of red supergiant envelope grazed by a compact companion star with the SPH code PHANTOM to investigate the formation of dust and asymmetric winds.
- Analysis of photometric and spectroscopic analysis of a candidate cataclysmic variable showing unusually long outbursts recurring every 3 years.
Advisor: Dr. Ondřej Pejcha, Charles University

Impact of donor rejuvenation on common envelope evolution *July 2023*
MPA Kavli Summer Program 2023, MPA, Garching, Germany
- Study of the effect of previous mass transfer in a system undergoing common envelope evolution through 3D hydrodynamics simulations run with the AMR grid-based code Flash4.
Advisors: Prof. Paul Ricker, University of Illinois; Dr. Mathieu Renzo, Flatiron Institute; and Dr. Alejandro Vigna-Gómez, MPA

The Peculiar IR Emission of SN2014dt (Master thesis) *January 2018 - June 2019*
Uppsala Universitet, Uppsala, Sweden
- Study of late time optical to mid-infrared photometry of the Type Iax supernova 2014dt, which are successfully reproduced by warm dust models.
Advisor: Dr. Joel Johansson, Stockholm Universitet

Constraining the warm dark matter mass using high-redshift galaxies *January 2018 - June 2019*
Uppsala Universitet, Uppsala, Sweden
- Forecast of the constraints on warm dark matter masses that will be obtained using JWST observations of high-redshift galaxies.
Advisor: Dr. Martin Sahlén, Uppsala Universitet

SCIENTIFIC CONTRIBUTIONS

TALKS:
- **Symbiotic Stars 2024**, Charles University, Prague, Czechia *June 2024*
Driving asymmetric red supergiant winds with binary interaction
- **MPA Kavli Summer Program 2023**, MPA, Garching, Germany *August 2023*
The Effect of Donor Star Rejuvenation on Common Envelope Evolution
- **Week of Doctoral Students**, Charles University, Prague, Czechia *June 2021*
OGLE-BLG504.12.201843: A possible extreme dwarf nova

SEMINARS:
- **Institute of Astronomy, KU Leuven** Leuven, Belgium, available online *April 2024*
Exploring the evolution of massive stars in binaries with 3D simulations
- **Department of Theoretical Physics and Astrophysics, Mazarikova Univerzita** Brno, Czechia *April 2024*
Stellar interactions and their impact on stellar evolution
- **Max Planck Institute for Astrophysic**, Garching, Germany *September 2023*
Driving asymmetric winds in RSG with binary interaction
- **Institute of theoretical physics, Charles University**, Prague, Czechia *February 2020*

POSTERS:
- **360° approach to common envelope evolution**, University of Barcelona, Barcelona, Spain *June 2024*
Accounting for previous phases of binary evolution in common envelope simulations
- **The Impact of Binaries on Stellar Evolution**, MPA, Garching, Germany *November 2022*
OGLE-BLG504.12.201843: A possible extreme dwarf nova

DEVELOPMENT:
- **Database developer and maintainer**, AGB wind models within the ATOMIUM collaboration *2024 - present*

TEACHING:
- **Teaching assistant**, Stellar Atmosphere and Stellar Winds, KU Leuven, Belgium *Spring 2025*
- **Informal Teaching sessions in doctoral program**, Stellar evolution, Charles University, Czechia *2021-2022*

OUTREACH:
- **MACE: Machine-accelerated Chemistry Emulation**, *February 2025*
video tutorials for the DiRAC online learning platform, accessible here
- **Scientific Game Jam**, Grenoble, France *March 2019*
48-hour-long contest to design a game explaining a topic of scientific research to the general public. Game designer/co-developer of two games themed around supernovae and tunnel magneto-resistance.

REFEREE:
- **The Astrophysical Journal Letters** (1)
- **Natural Sciences and Engineering Research Council of Canada**, Discovery Grant (1)

FUNDING AND AWARDS

2024 - **Charles University Grant agency, Czechia**, The impact of binary evolution on common envelope evolution, approx. EUR 10 000.
2024 - **IT4Innovations National Supercomputing Center, Czechia**, 4 million CPU hours

SKILLS

Languages:	French (native), English (C1), Swedish (A2), German (A2)
Programming:	Python, Fortran, C/C++, Java, Matlab, HTML/CSS
Scientific codes:	PHANTOM, FLASH4, MESA, PHOEBE, IRAF
Other:	git, SQL, Elasticsearch, Streamlit, LaTeX

REFERENCES

1. Dr. Ondřej Pejcha
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2. Prof. Dr. Leen Decin
Institute of Astronomy,
KU Leuven, Belgium,
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3. Prof. Paul Ricker
Department of Astronomy
University of Illinois, USA
pmricker@illinois.edu