

Eva Laplace | Astrophysicist

🌐 evalaplace.github.io ✉ e.c.laplace@uva.nl 📍 Science Park 904, 1098XH Amsterdam, NL

Education and degrees

PhD candidate in astrophysics Anton Pannekoek Institute (API), University of Amsterdam	Amsterdam, The Netherlands (NL) <i>Nov. 2017 – Nov. 2021 (exp.)</i>
Master student in physics (achieved the max. grade of 1.0) University of Tübingen, <i>Degree: Master of Science</i>	Tübingen, Germany <i>Jan. 2016 – Apr. 2017</i>
Bachelor student in physics (av. grade: 1.8) University of Tübingen, <i>Degree: Bachelor of Science</i>	Tübingen, Germany <i>Oct. 2011 – Dec. 2015</i>
International high school student Lycée International des Pontonniers <i>Degrees: Baccalauréat (French diploma) and Abitur (German diploma)</i>	Strasbourg, France <i>2008–2011</i>

Research Experience

PhD research project at the Anton Pannekoek Institute <i>Advisors: Prof. Selma de Mink, Prof. Stephen Justham</i> Subject: Lives, deaths, and afterlives of binary-stripped stars	Amsterdam, NL <i>Nov. 2017 – present</i>
Invited research visit, National Astronomical Observatory of Japan <i>Advisor: Prof. Takashi Moriya</i> Subject: Bayesian inference of stripped-envelope supernovae light-curves	Tokyo, Japan <i>2 months, Sept. – Oct. 2019</i>
International Program Associate in the MAXI team lab at RIKEN <i>Advisors: Prof. Andrea Santangelo, Dr. Tatehiro Mihara</i> Subject: Spectral and timing properties of the Be X-ray binary EXO 2030+375	Wako, Japan <i>9 months, Jan.– Oct. 2016</i>
Traineeship at the European Space Astronomy Centre <i>Advisors: Dr. Peter Kretschmar, Emilio Salazar</i> Subject: Long-term timing variability of Be X-ray binaries.	Madrid, Spain <i>3 months, Aug. – Nov. 2015</i>
Traineeship at the European Space Astronomy Centre <i>Advisors: Dr. Peter Kretschmar, Emilio Salazar, Miguel Arregui</i> Subject: Developing The BeXRB monitor , a web-based tool for astronomical discovery	Madrid, Spain <i>3 months, July – Oct. 2014</i>
Student assistant at the Astronomy & Astrophysics Institute <i>Advisor: Dr. Dmitry Klochkov</i> Study of hardness-luminosity dependence in transient accreting X-ray pulsars	Tübingen, Germany <i>2 years, Oct. 2013 – Jul. 2015</i>

Grants, awards, and scholarships

Outreach award (5000 Euro) of the Royal Holland Society of Sciences and Humanities, through the de Zeeuw-van Dishoeck fund, for developing the TULIPS software to visualize the evolution of stars, 2020

Total of > 4000 Euro awarded for conferences and international research visits by the Leids Kerkhoven-Bosscha Fonds, the Space Telescope Science Institute, Baltimore, USA, and the Yukawa Institute in Kyoto, Japan, 2018 – present

Computing time on National Supercomputer Cartesius, of 500 000 CPU hours, PI: E. Laplace "Stripped-envelope supernovae from massive binaries", Amsterdam, NL, 2018

Short-term International Program Associate scholarship at RIKEN. Funded the majority of a nine months research visit at RIKEN, Japan, 2016

Teaching and advising experience

Advisor of Thomas Dodds, Bachelor student, at API, NL with Prof. Selma de Mink, 2018 (continued in the MSc program in Leiden, NL)

Co-advisor of Carla Alejandra Calle García, summer student through the ASPIRE program for student of challenged socio-economic background at API, NL, with Dr. Robert Farmer, 2019 (continued in the MSc program in Padova, Italy)

Teaching assistant for the MSc lecture "Structure and Evolution of Stars", University of Amsterdam, NL. (2019-2020 with Prof. Lamers, 2019 with Prof. de Mink, 2018 with Prof. Watts)

Teaching assistant at the summerschool "Stellar astrophysics with MESA" in Beijing, China, Summer 2018

Guest lecturer in the astrophysics course, Leibniz Kolleg, Tübingen, Germany, 2014

Scientific talks

Invited seminars.....

- Invited talk at monthly seminar, **European Space Astronomy Centre**, Madrid, Spain – Oct. 2020 (online)
- Invited talk at high energy astrophysics seminar, **Hebrew University of Jerusalem**, Israel – Aug. 2020 (online).
- Invited talk at high energy astrophysics lunch seminar, **Center for Astrophysics, Harvard University**, Cambridge, USA – Mar. 2020
- Invited talk at monthly seminar, **RIKEN**, Saitama, Japan – Sep. 2019

Contributed talks at conferences and international meetings.....

- Talk at conference (postponed): **IAU symposium Massive Stars Near and Far** – Ballyconnell, Ireland (*initially May 2020, awarded talk postponed to May 2021*)
- Talk at the **VFTS collaboration annual meeting** – Oct. 2020 (online).
- Talk at conference: **German astronomical society meeting** – Sep. 2020 (online)
- Talk at conference: Joint **European Astronomical Society meeting** and **Netherlands Astronomy Conference** – Jul. 2020 (online)
- Talk at conference: **14th Bonn neutron star workshop** Bonn, Germany – Feb. 2020
- Talk at conference: **Spring symposium of the Space Telescope Science Institute** *The death and afterlives of stars*, Baltimore, USA– Apr. 2019
- Talk at conference: **Fifty-one ergs conference** University of North Carolina, Raleigh, USA – May 2019
- Talk at conference: **Massive stars and supernovae conference**, Bariloche, Argentina – Nov. 2018
- Talk at the **Bonn-Amsterdam-Leuven massive stars meeting**, Leuven, Belgium – Oct. 2018
- Talk at conference: **Fall meeting of the Astronomical Society of Japan**, Ehime University, Matsuyama, Japan – Sep. 2016

Further seminars.....

- Invited informal talk in the research group of Prof. Mandel, **Monash University**, Melbourne, Australia – Aug. 2020 (online)
- Talk at API lunch seminar, **University of Amsterdam**, Amsterdam, NL – Apr. 2020 (online)
- Talk at lunch seminar, **National Astronomical Observatory of Japan**, Tokyo, Japan – Sep. 2019
- Talk at galaxy coffee seminar, **MPIA Heidelberg**, Heidelberg, Germany – Aug. 2018
- Talk at monthly astrophysics seminar at **RIKEN**, Saitama, Japan – Mar. 2016
- Talk at Tech Talk seminar, **European Space Astronomy Centre** Madrid, Spain – Aug. 2015
- Talk at High Energy Astrophysics seminar, **University of Tübingen**, Tübingen, Germany – Oct. 2014

Conferences, workshops, and research visits

Research visits.....

- **Invited** two weeks research visit at the **Center for Astrophysics, Harvard University**, Cambridge, USA – Mar. 2020 (host: Prof. de Mink. Originally three weeks, cut short due to pandemic)
- Five days visit of Prof. Yoon at **Seoul National University**, Seoul, South Korea – Oct. 2019
- One week at the **Max Planck Institute for Astrophysics**, Heidelberg, Germany (host: Prof. Modjaz) – Aug. 2018

Conferences.....

- *Shocking Supernovae*, Stockholm, Sweden (**poster**: Self-consistent full evolutionary binary models of stripped-envelope supernova progenitors) – May 2018
- Netherlands Astronomy Conference, Groningen, NL – May 2018
- *European Week of Astronomy and Space Science 2018*, Liverpool, England – Apr. 2018
- *Impact of binaries on stellar evolution*, ESO Garching, Germany (**poster**: Are long-term periodicities and giant outbursts in BeXRBs driven by Kozai-Lidov oscillations?) – Jul. 2017
- *7 years of MAXI*, RIKEN, Saitama, Japan (**poster**: Long-term periodicities in the Be X-ray binary EXO 2030+375?) – Dec. 2016
- *INTEGRAL: The New High Energy Sky after a Decade of Discoveries*, Rome, Italy – Oct. 2015

Workshops.....

- Yukawa International workshop *Neutron stars and black holes with gravitational waves* at the Yukawa Institute for Theoretical Physics, Kyoto, Japan (**poster**: The size of stars stripped in massive binaries and its impact on gravitational wave events) – Oct. 2019
- *Triple Evolution and Dynamics Trendy-2*, Lorentz Centre, Leiden, NL – Sep. 2018
- *Transients in New Surveys: the Undiscovered Country*, Lorentz Centre, Leiden, NL – Jul. 2018
- *BlackGEM* in Nijmegen, NL – Mar. 2018
- *11th Bonn workshop on neutron stars*, Bonn, Germany – Dec. 2017

Leadership skills

Founder and main organizer of weekly meetings: BinCosmos group, API, NL; since 2018

Chair of the PhD/Postdoc council: API, NL; 2018 – 2019

Certified youth leader: summer camps for youth of challenged background, France and Germany; Summers 2012 – 2017 (French BAFA diploma since 2012)

Scientific services and other academic activities

PhD representative in the Equity and Inclusion Committee of API, NL, since July 2020

Referee for Monthly Notices of the Royal Astronomical Society and Astronomy & Astrophysics since 2019

Large international collaborations

ChETEC: Chemical Elements as Tracers of the Evolution of the Cosmos; funded by the COST action program of the European Union. Member since 2020

BlackGEM: Optical robotic telescope array. Member since 2018

VFTS collaboration VLT-FLAMES Tarantula Survey of Massive Stars based on data from ESO/Very Large Telescope. Member since 2017

MAGNET: Collaboration for studying accreting X-ray pulsars. Member from 2014 to 2017

Outreach

Leading an award-winning outreach project based on the TULIPS software for making the structure and evolution of stars more accessible at API, NL, Nov. 2020 – present

Volunteer for public stargazing events at API, NL, 2017 – present

Co-organiser of outreach events, including stargazing events, school visits and "Kinder-Uni" (Children's day) at the IAAT, Tübingen, Germany, 2014 – 2017

Computing skills

Web development: HTML, CSS, JavaScript, PHP

Software development: PYTHON, FORTRAN, C, C++, SCHEME (Racket), QML

Graphics: Inkscape, Blender 3D

Astrophysics codes: Modules for Experiments in Stellar Astrophysics (MESA), SuperNova Explosion Code (SNEC), Modular Open Source Fitter for Transients (MOSFiT)

Observational skills

X-ray spectral analysis: Monitor of All-sky X-ray Image (ISS Experiment) / Gas Slit Camera (MAXI/GSC) data, with the XSPEC software

X-ray timing analysis: Data from MAXI/GSC, the Neil Gehrels Swift Observatory/Burst Alert Telescope, the Fermi Gamma-Ray Space Telescope/Gamma-ray Burst Monitor, and the Rossi X-ray Timing Explorer/All Sky Monitor

Languages

French: Bilingual native speaker

German: Bilingual native speaker

English: Fluent, [Duolingo Test Center, 2015](#)

Spanish: Good command

Dutch: Good command

Japanese: Basic communication skills

References

Prof. Selma de Mink

Max Planck Institute Director
SEdeMink@MPA-Garching.MPG.de
Max Planck Institute for Astrophysics
Garching (Germany)

Prof. Takashi Moriya

Assistant professor in astrophysics
takashi.moriya@nao.ac.jp
National Institutes of Natural Sciences
National Astronomical Observatory of Japan (Japan)

Dr. Peter Kretschmar

Mission manager of XMM Newton
peter.kretschmar@esa.int
European Space Astronomy Centre (Spain)

Prof. Stephen Justham

Senior research associate
S.Justham@uva.nl
Anton Pannekoek Institute of Astronomy,
University of Amsterdam (The Netherlands)

Prof. Maryam Modjaz

Associate professor in astrophysics
mmodjaz@gmail.com
Center for Cosmology and Particle Physics
New York University (USA)

Prof. Andrea Santangelo

Head of the high energy astrophysics group
andrea.santangelo@uni-tuebingen.de
Institute for Astronomy and Astrophysics
University of Tübingen (Germany)

PUBLICATION LIST

To be submitted shortly and included in my PhD thesis

[2020]: **E. Laplace**; S. Justham; M. Renzo; Y. Götberg; R. Farmer; D. Vartanyan & S. E. de Mink
Different to the core: the pre-supernova structures of massive single and binary-stripped stars

– To be submitted to A&A in < 1 month

[2020]: D. Vartanyan; **E. Laplace**; M. Renzo; Y. Götberg; A. Burrows & S. E. de Mink
Stripped binary stars as core-collapse supernova progenitors

– To be submitted to ApJL in < 1 month

[2021]: R. Farmer; **E. Laplace** et al.

The differences in supernova nucleosynthesis from single and binary-stripped star progenitors

– To be submitted to ApJL in < 3 months

Refereed publications

[2020]: L. A. C. van Son; S. E. de Mink; F. S. Broekgaarden; M. Renzo; S. Justham; **E. Laplace**; J. Moran-Fraile; D. D. Hendriks; R. Farmer; [ApJ 897, 100V](#); *Polluting the pair-instability mass gap for binary black holes through super-Eddington accretion in isolated binaries*

[2020]: **E. Laplace**, Y. Götberg, S. de Mink, S. Justham, and R. Farmer; [A&A, 637, A6](#); *The expansion of stripped-envelope stars: Consequences for supernovae and gravitational-wave progenitors*

[2019]: M. Renzo; S. E. de Mink; D. J. Lennon; I. Platais; R. P. van der Marel; **E. Laplace**; J. M. Bestenlehner; C. J. Evans; V. Hénault-Brunet; S. Justham; A. de Koter; N. Langer; F. Najarro; F. R. N. Schneider; J. S. Vink; [MNRASL, 482 \(1\): L102-L106](#); *Space astrometry of the very massive $\sim 150M_{\odot}$ candidate runaway star VFTS682*

[2017]: **E. Laplace**; T. Mihara; Y. Moritani; M. Nakajima; T. Takagi; K. Makishima; A. Santangelo; [A&A, 597, A124](#); *Possible regular phenomena in EXO 2030+375*

[2015]: K. A. Postnov; M. I. Gornostaev; D. Klochkov; **E. Laplace**; V. V. Lukin; N. I. Shakura; [MNRAS 452 \(2\): 1601-1611](#); *On the dependence of the X-ray continuum variations with luminosity in accreting X-ray pulsars*

Astronomer's Telegrams

[2016]: [#10616](#); **E. Laplace**; M. Nakajima; T. Mihara; Y. Moritani; A. Santangelo *MAXI/GSC detection of a brightening of GRO J1008-57*

[2016]: [#9263](#); **E. Laplace**; T. Mihara; T. Takagi; Y. Moritani; M. Nakajima; K. Makishima; A. Santangelo *Orbital phase shift in a new type I outburst of the Be/X-ray binary EXO 2030+375*

[2015]: [#6917](#); P. Kretschmar; E. Salazar; **E. Laplace**; C. A. Wilson-Hodge; R. E. Rothschild; I. Kreykenbohm; M. Kuehnel; T. Mihara and M. Nakajima; *Bright apastron outburst of GRO J1008-57*

[2014]: [#6656](#); M. Kuehnel et al. (with **E. Laplace**) *Swift-XRT spectrum of the first detected double-peaked outburst of GRO J1008-57*