Ekaterina ILIN

astrophysicist specializing in star-planet interactions

Academic positions

2023 →ongoing — **Postdoc @ Netherlands Institute for Radio Astronomy (ASTRON), Netherlands**
Project STORMCHASER; PI: H. K. Vedantham

2022 →2023 — **Postdoc @ Leibniz Institute for Astrophysics Potsdam (AIP), Germany**
Funded by the German Aerospace Center (Deutsches Zentrum für Luft und Raumfahrt); PI: **E. Ilin**

Education

2018 →2022 — **PhD** in Astrophysics **@ Leibniz Institute for Astrophysics Potsdam (AIP), Germany**
Supervisor: Prof. Dr. Katja Poppenhäger
High lights: stellar flares as probes of magnetism in stars and star-planet systems
"summa cum laude"

→ I specialize in the magnetism of small stars, its origins, long-term evolution, and interaction with the planets in their orbit.

2016 →2018 — **Master** of Science in Astrophysics **@ University of Potsdam, Germany**
Supervisor: Prof. Dr. Klaus Strassmeier, mentor: Dr. Sarah J. Schmidt
Flares in clusters using K2 data
1,0 "with distinction"

2012 →2016 — **Bachelor** of Science in Physics **@ Karlsruhe Institute for Technology, Germany**
Specialization in biophysics, Supervisor: Prof. Dr. Ulrich Nienhaus
Uptake of TAT-coated gold nanoclusters in live HeLa cells
1,4 "very good"

First author refereed publications

3 key publications highlighted

Searching for planet-induced radio signal from the young close-in planet host star HIP 67522
Ilin, E.; Bloot, S.; Callingham, J. R.; Vedantham, H. K.
2025, Astronomy & Astrophysics, in review

Close-in planet induces flares on its host star
Ilin, E.; Vedantham, H. K.; Poppenhäger, K.; Bloot, S.; Callingham, J. R.; Brandeker, A.; Chakraborty, H.
2025, Nature, in press
Detected the first confident case of planet-induced flaring from time-domain observations with TESS and CHEOPS through Bayesian analysis of flare clustering near the innermost planet's transit.

The corona of a fully convective star with a near-polar flare
Ilin, E.; Poppenhäger, K.; Stelzer, B.; Dsouza D.
2024, Astronomy & Astrophysics, 687/A138 `doi:10.1051/0004-6361/202449541` `arXiv:2405.05580`

Planetary Perturbers: Flaring star-planet interactions in Kepler and TESS
Ilin, E.; Poppenhäger, K.; Chebly, J.; Ilić N.; Alvarado-Gómez, Julián D.
2023, Monthly Notices of the Royal Astronomical Society, 523/3, pp 4326–4339 `doi:10.1093/mnras/stad3398` `arXiv:2311.04316`

Flaring Latitudes in Ensembles of Low Mass Stars
Ilin, E.; Angus, R.; Luger, R.; Morris, B.; Jehn, F.U.
2023, Monthly Notices of the Royal Astronomical Society, 523/3, pp 4326–4339 `doi:10.1093/mnras/stad1690` `arXiv:2306.02007`

Searching for star-planet interactions in AU Mic TESS observations
Ilin, E.; Poppenhäger, K.
2022, Monthly Notices of the Royal Astronomical Society, 513/3, pp 4579-4586 `doi:10.1093/mnras/stac1232` `arXiv:2204.14090`

Localizing flares to understand stellar magnetic fields and space weather in exo-systems
Ilin, E.; Poppenhäger, K.; Alvarado-Gómez, J. D
2021, Astronomische Nachrichten, doi:10.1002/asna.20210111 arXiv:2112.09676

Giant white-light flares on fully convective stars occur at high latitudes
Ilin, E.; Poppenhäger, K.; Schmidt, S. J.; Järvinen, S. P.; Newton, E. R.; Alvarado-Gómez, J. D; Pineda, S. J.; Davenport, J. R. A.; Oshagh, M.; Ilyin, I.
2021, Monthly Notices of the Royal Astronomical Society, 507/2, pp 1723–1745 doi:10.1093/mnras/stab2159 arXiv:2108.01917
First determination of near-polar flaring in four rapidly rotating M dwarfs. Developed new method for localizing flare footpoints on low mass stars using optical time-domain observations and high-resolution optical spectroscopy.

AltaiPony – Flare science in Kepler, K2 and TESS light curves
Ilin, E.
2021, Journal of Open Source Software, 6(62), 2845 10.21105/joss.02845
Peer-reviewed open source python toolbox for statistical flare analysis in time-domain photometry.
Used in > 20 refereed publications (2025).

Flares in Open Clusters with K2. II. Pleiades, Hyades, Praesepe, Ruprecht 147, and M67
Ilin, E.; Schmidt, S. J.; Poppenhäger, K.; Davenport, J. R. A.; Kristiansen, M. H.; Omohundro, M.
2021, Astronomy & Astrophysics, 645, A42, 25 pp. doi:10.1051/0004-6361/202039198 arXiv:2010.05576

Flares in Open Clusters with K2. I. M45 (Pleiades), M44 (Praesepe) and M67
Ilin, E.; Schmidt, S. J.; Davenport, J. R. A.; Strassmeier, K. G.
2019, Astronomy & Astrophysics, 622, A133/16. doi:10.1051/0004-6361/201834400 arXiv:1812.06725

Refereed publications with significant contribution, or as supervisor

Searching for gamma-ray emission from stellar flares
Song Yuzhe; Paglione Timothy A. D., **Ilin E.**
2024, Monthly Notices of the Royal Astronomical Society, 531/3, 3215-3221 doi:10.1093/mnras/stae1347 arXiv:2405.15435

Lower than expected flare temperatures for TRAPPIST-1
Maas A. J.; **Ilin E.**; et al.
2022, Astronomy & Astrophysics, 928/2, 147. doi:10.1051/0004-6361/202243869 arXiv:2210.11103

Refereed publications with minor contributions

Hints of auroral and magnetospheric polarized radio emission from the scallop-shell star 2MASS J05082729-2101444
Kaur, S.; ...; **Ilin, E.**; ...; et al.
2024, Astronomy & Astrophysics Letters, 691/L17 9 pp. doi:10.1051/0004-6361/202452037 arXiv:2410.22449

Seaweed as a resilient food solution in nuclear winter
Jehn F. U.; Jasmine Dingal, F.; Mill, A.; **Ilin, E.**; Harrison, C.; Roleda, M. Y. ; Denkenberger, D.
2024, Earth's Future, 12/1 doi:10.1029/2023EF003710

Three young planets around the K-dwarf K2-198: high-energy environment, evaporation history, and expected future
Ketzer, L.; Poppenhaeger, K.; Baratella, M.; **Ilin, E.**
2024, Monthly Notices of the Royal Astronomical Society, 527/1, pp. 374-385 doi:10.1093/mnras/stad3197 arXiv:2311.06897

Focus of the IPCC Assessment Reports has shifted to lower temperatures
Jehn F. U.; Kemp L.; **Ilin E.**; Funk C.; Wang J. R.; Breuer L.
2022, Earth's Future, 5/10 doi:10.1029/2022EF002876

Simulating the Space Weather in the AU Mic System: Stellar Winds and Extreme Coronal Mass Ejections
Alvarado-Gómez, J. D; Cohen O.; Drake J. J.; Fraschetti F.; Poppenhäger, K.; Garraffo C.; Chebly J.; **Ilin, E.**; Harbach L.; Kochukhov O.
2022, The Astrophysical Journal, 928/2, 147. doi:10.3847/1538-4357/ac54b8 arXiv:2202.07949

Teaching and supervision

total supervised: 2 Master level, 2 Bachelor level

2025	**Supervising BSc student @ Kapteyn Institute** Supervising the three-month BSc project of Andrei Danila.	Groningen, NL
2024	**Supervising summer student @ ASTRON** Supervising a 10-week summer student project with undergraduate student Necdet Canim (Pomona College, CA, USA).	Dwingeloo, NL
2024	**Invited lecturer at summer school @ ICE-CSIC Institute of Space Sciences** On the role of flares in star-planet interactions	Barcelona, Spain
2023	**Lecturer at summer school @ German National Scholarship Foundation** Teaching undergraduates about exoplanets in an interdisciplinary context	Vienna, Austria
2023	**Invited lecturer @ Tag der Schulastronomie Sachsen** Lecture about exoplanets for high school physics teachers in Saxonia.	Meißen, Germany
2022 –▸2025	**Mentoring graduate student Cinta Vidante @ University of Potsdam ()** Graduated with distinction; publication in prep.	Potsdam, Germany
2020 –▸2022	**Mentoring graduate student Aaron Maas @ University of Heidelberg** Maas, Ilin et al. (2022)	remote
2020	**Teaching assistant @ University of Potsdam** Galaxies and Cosmology undergraduate course	Potsdam, Germany
2016 –▸2018	**Teaching assistant @ University of Potsdam** Introduction to mathematical methods in physics	Potsdam, Germany

External funding

total ca. 270,000€

2022 –▸2023	**PI of DLR Grant "XrayLoops"** Two years of postdoctoral funding, ca. 140,000€	Deutsches Zentrum für Luft- und Raumfahrt (DLR)
2021 –▸2022	**Fulbright Scholarship @ American Museum of Natural History** Awarded to doctoral candidates. Includes a stipend, travel grant, and academic support throughout a six month research stay in the USA, ca. 12,000€	Fulbright Commission
2020 –▸2022	**Doctoral Scholarship** Includes a stipend, travel grants, and academic support throughout the doctoral studies, ca. 55,000€	German Academic Scholarship Foundation
2012 –▸2018	**Full Scholarship** Includes a stipend, travel grants, and academic support throughout the undergraduate and graduate studies, ca. 60,000€	German Academic Scholarship Foundation

Awards and prizes

2024	**Stargazer Award 2024** 5k€ awarded to outstanding PhD theses in astronomy in German speaking countries.
2024	**Publication Prize @ Leibniz-Kolleg Potsdam** 2.5k€ awarded to outstanding PhD theses in the natural science in Berlin and Brandenburg.
2019	**Graduation Award @ Physikalische Gesellschaft zu Berlin, Berlin, Germany** 1.5k€ awarded to excellent master theses in physics earned at universities in Berlin and Potsdam.
2018	**Visiting Scientist @ NASA Ames Research Center, Mountain View, CA, USA** Awarded funding for a research visit at the Kepler mission headquarters.
2014	**Erasmus+ Scholarship @ Universitet i Oslo, Norway** Awarded funding for six months of undergraduate studies. Focus: space physics, computational physics

Observing grants as Principal Investigator

2024 **VLT/UVES, 6.4 hours**
PI: **E. Ilin**, Co-Is: H. K. Vedantham, S. Järvinen

2024 **Australian Telescope Compact Array, 144 hours**
PI: **E. Ilin**, Co-Is: S. Bloot, J. Callingham

2023 **CHEOPS, 128 orbits, Priority 1**
PI: **E. Ilin**, Co-Is: K. Poppenhäger

2021 **XMM-Newton, 36ks priority A**
PI: **E. Ilin**, Co-Is: K. Poppenhäger, B. Stelzer

Observing grants as Co-Investigator

2025 **GMRT, 32 hours**
PI: S. Kaur, Co-Is: D. Vigano, **E. Ilin** and 14 others

2020 **SALT HRS, 2.8 hours DDT**
PI: K. Poppenhäger, Co-Is: **E. Ilin**, S. J. Schmidt

Invited talks at conferences

2024 **NOVA Symposium** — Den Haag, NL
Magnetic winds and plasma seas: Interactions in star-planet systems

2023 **All-hands-on-deck meeting –**
German Exoplanet Diversity Group group @ TU München — Munich, Germany
How close-in planets manipulate their host stars

2023 **From the Heliosphere to Astrospheres -**
Lessons for Exoplanets and their Habitability — Bad Honnef, Germany
Magnetic star-planet interactions

Invited colloquia and seminar talks

2025 **Leiden Observatory** — Leiden, NL
Self-roast: Close-in planet induces flares on its host star

2025 **Anton Pannekoek Institute** — Amsterdam, NL
Channeling sparks through interplanetary space: Magnetic star-planet interaction

2025 **Vienna University** — Austrua
Channeling sparks through interplanetary space: Magnetic star-planet interaction

2022 **Institute for Astronomy and Astrophysics Tübingen** — Germany
Flares on low mass stars: from detection to characterization, and beyond

2022 **American Museum of Natural History** — New York City, USA
Flare observations: probing the magnetism of low-mass stars and star-planet systems

2021 **Harvard Smithsonian Center for Astrophysics Exoplanet Pizza Lunch** — virtual
Magnetic worlds: What flares tell us about small stars and their planets

Contributed talks (selection)

2024	**CoolStars 22** Hot Jupiters and stellar eruptions: Planet-induced flares in young exoplanetary systems	San Diego, CA, USA
2024	**BCool** A fully convective rapid rotator with a high latitude flare and a dim corona	ASTRON, NL
2024	**ESA's Holland-Area Exoplanet Science Meeting** Hot Jupiters and stellar eruptions: planet-induced flares in young exoplanetary systems	Nordwijk, NL
2023	**European Astronomical Society Meeting** Planet-induced flares in Kepler and TESS observations	Krakow, Poland
2023	**The X-ray Universe** High-latitude flares on rapidly rotating M dwarfs - a special corona?	Athens, Greece
2019	**Planet-Star Connections in the Era of TESS and Gaia** Stellar magnetic evolution: flaring activity in K2 open clusters	Santa Barbara, CA, USA
2018	**Dwarf Stars and Clusters with K2** In search of the flaring-age relation.	Boston, MA, USA

Academic service, outreach and civic involvement

2025	**LOC @ Beyond Earth (ASTRON)** Conference with 70 participants. Main tasks: Speaker liaison.
2021 →ongoing	**Collaboration with various popular science magazines and blogs** PM Magazin, Newsweek, New Scientist, Leibniz Magazin, Ulrike Boehm's Women in Research blog
2021 →ongoing	**Referee @ various astronomical journals** Astronomy & Astrophysics, AAS Journals, Astronomy and Computing, Journal for Open Source Software, Astronomische Nachrichten
2024	**Weekend workshop @ Sternwarte Berlin** Planned a weekend long workshop on exoplanets for a small group of interested undergraduate students of all fields.
2023	**Lecturer @ Vienna Summer School of the German Academic Scholarship Foundation** Week-long interdisciplinary summer school for 20 undergraduate scholars focused on exoplanets, and the relations between exoplanet reseach, ethics and culture.
2023	**Lecturer @ Astronomy Day Saxonia** Advanced training for physics and astronomy teachers on recent developments in exoplanet research.
2021 →2024	**Mentor @ Magnify Mentoring** Career mentoring for women, non-binary and trans people of all genders.
2021 →2022	**Student representative @ Internal Scientific Committee at AIP** Social events, well-being of students at the institute, on-boarding of new students.
2021	**Public talks @ YouTube channel "Urknall, Weltall und das Leben"** `30-min YouTube video` and `follow-up 12-min YouTube video` (in German), > 37k views total.

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languages **Russian, German (bilingual), English (C2), Dutch (B1)**

skills **Python, Unix, LaTeX, Git(Hub), CASA, XMM-Newton SAS, XSPEC**

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