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Academic Qualifications

2024	Habilitation, Full Professor in Astronomy & Astrophysics (ASN 02/C1 - I Fascia) Italian Ministry of Universities & Research
2022	Postgraduate Certificate in Academic Practice (PGCAP), University of Durham, UK
2010	Ph.D. in Physics and Astronomy, University of Southampton, UK
2007	M.Phil. in Astrophysics, University of Southampton, UK
2005	B.Sc. in Maths with Astronomy (First Class Hons), University of Southampton, UK

Positions held

2024–	Associate member, INAF-OACN, IT
2022–	Associate Professor, Durham University, UK
2020–2022	Assistant Professor, Durham University, UK
2018–2020	Assistant Professor, Texas Tech University, USA
2017–2018	Lecturer (Assistant Prof with tenure), University of Canterbury, NZ
2015–2016	Alexander von Humboldt Fellow, MPI for Extraterrestrial Physics, Garching, DE
2012–2014	FWO Pegasus Marie-Curie Fellow, KU Leuven, BE
2010–2012	Postdoctoral research assistant, Radboud University, Nijmegen, NL

Research interests

Accretion physics, Time-domain astrophysics, Populations of compact binaries, GW Galactic foreground noise modelling, Cataclysmic Variables, Survey astronomy, Machine learning & Pattern recognition.

Publication record (March 25, 2026)

350 entries on ADS, 3061 total citations, h-index of 29. 107 refereed publications, of which 30 as first author (or corresponding author). Seven papers in *Science*, *Nature*, *Science Advances* or *Nature Astronomy*, of which as first or corresponding author are 2 *Nature*, 2 in *Nature Astronomy* and 1 in *Science Advances*.

Successful funding proposals

PI: STFC: PATT linked Travel Grant (£17k, 2024-2026). NASA: Astrophysics Data Analysis Program (ADAP) ($400k, 2020); *TESS* Cycle 2 ($50k, 2019); *Kepler* Cycle 4 ($30k, 2016). Research Corporation for Science Advancement: Scialog Time Domain Astrophysics Award ($165k equally split between 3 co-PIs, 2019). NVIDIA: GPU Grant Program ($4k, 2019) Humboldt Foundation: Alexander von Humboldt Fellowship (€100k, 2014–2016). FWO: Pegasus Marie Curie Fellowship (€250k, 2012–2014); Long stay abroad grant (€20k, 2013–2014). **Co-I:** STFC: PATT linked Travel Grant (£20k, 2021-2023); Consolidated Grant (£7M, 2023-2027);

Observing Time Allocations (PI or Co-I along with my students/PDRAs/collaborators)

I am PI of one of the largest *TESS* Guest Investigator Programs on compact interacting binaries with over 2000 targets observed to date, PI of over 60 targets with *Kepler*/*K2*, PI of several runs (cumulative total 60+ nights) on the INT & WHT, PI of over 40 hours on Gemini North/South, and PI on 1 *XMM-Newton* DDT ToO. I am Co-I of 11 ESO proposals with MUSE/XSHOOTER/NTT including a 4MOST Community Survey Proposal (S11), Co-I of 16 *HST* orbits, Co-I of 60ks of *XMM-Newton* and Co-I of over 65 nights on the INT as part of the EGAPS survey.

National and international science advisory and policy roles

Time Domain Telescope (TDT) steering committee member since October 2024, *LISA* Council Member representative for AstroWG: Astrophysics Working Group (elected) since July 2025, Member of the time

allocation committee for NASA's *NuSTAR* (Cycle 5), Gemini telescopes (2018–2020) and ESO (Period 111/112/114). Referee for grant proposals to National Research Foundation (SA) and the Czech Science Foundation (CZ). Referee for MNRAS, ApJ, AJ, A&A and PASJ.

Scientific Consortia & Membership
Gamma-Ray INternational Transient Array Observatory (GRINTA; proposed F3 mission to ESA) collaboration member where I am responsible for planning the GRINTA Science Data Centre, Member of the BlackGEM consortium (PI-level), Co-Lead of the 4MOST Working Group IWG9–Object Classification (2022–2024), member 4MOST White Dwarf Binary Survey (S11), *PLATO* Complementary Science Working Group, LSST Collaboration (UK Affiliate PI), *LISA* consortium member, and member of the galactic plane surveys IPHAS, UVEX, and of the *Kepler*/INT Survey (KIS).

MSc & PhD students and postdoctoral research assistants (PDRAs)
I hope to have inspired many younger astronomers to pursue successful careers in research or to take on major responsibilities outside academia: *Siqi Zhang* (China Scholarship Council PDRA 2025–); *Jake Mendelsohn* (M.Sc. 2025), Ph.D., University of Oxford, UK; *Martina Veresvarska* (PhD 2025). PDRA, ICE-CSIC, ES; *John Paice* (PDRA 2023–2025); *Matteo Fratta* (PhD 2022), PDRA, University of Cagliari, IT; *Beth Westoby* (M.Sc. 2023), Ph.D., University of Leiden, NL; *Luke Parker* (M.Sc. 2022), Ph.D., University of Oxford, UK; *Krystian Ilkiewicz* (PDRA 2020–2021), Sonatina Fellow, Warsaw, PL; *Mairi O'Brien* (M.Sc. 2021), Ph.D., University of Warwick, UK; *Jamie Court* (PDRA 2019-2020), Research Software Engineer, University of Southampton, UK; *Claudio Schill* (M.Sc. 2018), Senior Software Engineer, University of Canterbury, NZ; *Nicholas Jobbitt* (M.Sc. 2018), PDRA, Karlsruher Institut fur Technologie, DE; *Ester Aranzana* (Ph.D. 2016), Project Manager, NOVA, NL; *Vincent Langouche* (M.Sc. 2014, KU Leuven), Festival director, Leuven International Short Film Festival, BE; *Marie van de Sande* (M.Sc. 2014, KU Leuven), Marie-Curie Fellow, University of Leeds, UK; *Robin de Roover* (M.Sc. 2013, KU Leuven), Medical Physicist, KZ Leuven. BE; *Jels Boulangier* (M.Sc. 2013, KU Leuven), Senior Cloud Engineer, Bird, BE.

Invited presentations at international meetings (selection)
2026: The many tones of accretion - to the memory of Tomaso Belloni (Cefalu', Italy). **2025:** The 50th Anniversary Workshop of the Disk Instability Model in Compact Binary Stars (Tomakomai, Japan). **2024:** National Astronomy Meeting, Keynote talk at Energetic Ballet Session (Hull, UK); European Astronomical Society, "The Role of Jets in Transients" (Padova, IT); ISSI Workshop "Accretion Disks: The First 50 Years" (Bern, CH). **2022:** Congresso Nazionale Oggetti Compatti XII (Cefalú, IT); Time Domain and Multi-Messenger Astrophysics (Annapolis, USA). **2019:** Building Astronomy in Texas Symposium (Dallas, USA); Compact White Dwarf Binaries (Yerevan, ARM). **2018:** Ninth Australasian Conference on General Relativity and Gravitation (Gingin, AUS); COSPAR, E1.7: Nova Eruptions, Cataclysmic Variables and Related Systems: Observational vs. Theoretical Challenges in the 2020 Era (Pasadena, USA); The Future of X-ray Timing (Amsterdam, NL). **2016:** Stellar Remnants at the Junction (Junction, USA). **2015:** The Golden Age of Cataclysmic Variables and related objects - III (Palermo, IT); Congresso Nazionale Oggetti Compatti IX (Rome, Italy). **2013:** The Golden Age of Cataclysmic Variables and related objects - II (Palermo, IT). **2011:** The Golden Age of Cataclysmic Variables and related objects - I (Palermo, IT).

Research colloquia and seminars (selection)
2026: University of Tuebingen (DE). **2023:** University of Oxford (UK). **2022:** University of Warwick (UK). **2020:** University of Texas (Austin, USA); Texas A&M University (College Station, USA). **2019:** CIERA/Northwestern University (Evanston, USA). **2016:** Osservatorio Astronomico di Trieste (Trieste, IT); ESO (Santiago, Chile). **2015:** Sapienza University, (Rome, Italy); Osservatorio Astronomico di Roma (Rome, Italy); ESO-Star & Planet Formation seminar (Garching, DE); University of Leicester (UK) **2014:** ESO-Wine & Cheese seminar (Garching, DE); Texas Tech University (Lubbock, USA). **2013:** University of Southampton (UK). **2012:** KU Leuven (BE).

Top 10 publications as senior author
I am first author on approximately one-third of my publications, demonstrating the novelty and originality of my research. My second-authorship on 10 publications highlights my supervisory role with students and PDRAs. My work spans a wide range of topics related to accretion physics in compact interacting binaries and their evolution. Full author lists of these papers are available via ADS.

1. **Ilkiewicz, K., Scaringi, S., de Martino, D. et al. 2026**: "A persistent bow shock in a diskless magnetised accreting white dwarf", *Nature Astronomy*.
   doi: 10.1038/s41550-025-02748-8
2. **Veresvarska, M., Scaringi, S., Knigge, C. et al. 2024**: "Discovery of persistent Quasi-Periodic Oscillations in Accreting White Dwarfs: A new link to X-ray Binaries", *MNRAS*, 532, pp.3087-3130.
   doi: 10.1093/mnras/stae2279
3. **Scaringi, S., Breivik, K., Littenberg, T.B., et al. 2023**: "Cataclysmic variables are a key population of gravitational wave sources for LISA", *MNRAS*, 525, p. L50-L55
   doi: 10.1093/mnrasl/slad093
4. **Scaringi, S., Groot, P.J., Knigge C., et al. 2023**: "Triggering micronovae through magnetically confined accretion flows in accreting white dwarfs", *MNRAS*, 514, p. L11-L15
   doi: 10.1093/mnrasl/slac042
5. **Scaringi, S., Groot, P.J., Knigge C., et al. 2022**: "Localized thermonuclear bursts from accreting magnetic white dwarfs", *Nature*, 604, p. 447-
   doi: 10.1038/s41586-022-04495-6
6. **Scaringi, S., de Martino, D., Buckley, D.A.H, et al. 2022**: "An accreting white dwarf displaying fast transitional mode switching", *Nature Astronomy*, 6, p. 498-
   doi: 10.1038/s41550-021-01494-x
7. **Scaringi, S., Maccarone T.J., D'Angelo, C., et al. 2017**: "Magnetically gated accretion in an accreting 'non-magnetic' white dwarf", *Nature*, 552, p. 210-
   doi: 10.1038/nature24653
8. **Scaringi, S., Maccarone T.J., Koerding, E., et al. 2015**: "Accretion-induced variability links young stellar objects, white dwarfs, and black holes", *Science Advances*, 1
   doi: 10.1126/sciadv.1500686
9. **Scaringi, S. 2014**: "A physical model for the flickering variability in cataclysmic variables", *MNRAS*, 438, p. 1233-1241
   doi: 10.1093/mnras/stt2270
10. **Scaringi, S., Koerding, E., Uttley, P., et al. 2012**: "The universal nature of accretion-induced variability: the rms-flux relation in an accreting white dwarf", *MNRAS*, 421, p. 2854-2860
    doi: 10.1111/j.1365-2966.2012.20512.x

I have led influential and novel studies on accretion-driven variability in accreting white dwarfs, focusing on testing scale-invariant accretion physics. Notably, I initiated the largest and ongoing *TESS* Guest Investigator program on compact interacting binaries, collecting precise, long-term, high-cadence time-series photometry on over 2000 accreting white dwarfs. This work began with the *Kepler* mission, where I demonstrated a linear relationship between aperiodic flickering variability amplitude and flux in accreting white dwarfs, providing strong evidence of self-similar, scale-invariant accretion disk variability in white dwarfs, comparable to accreting neutron stars and black holes (10). This led to the discovery that specific characteristic frequencies in power spectra across multiple scales and different accretors correlate with mass transfer rates and inversely with inner disc size, regardless of accretor type (8).

Building on these insights, I adapted a physical model originally developed for active galactic nuclei, neutron stars, and black holes to explain accretion-induced variability in white dwarfs (9). PhD student Martina Veresvarska, working with me, demonstrated how quasi-periodic oscillations observed in accreting neutron stars and black holes find close analogies in accreting white dwarfs, and how these features can be reconciled with models of precessing inner accretion disks (2). Using nearly 4-years of *Kepler* time-series revealed previously undetected accretion-induced bursts in a white dwarf during a low mass-transfer episode. Inspired by similar neutron star bursts, we interpreted these as magnetically gated bursts, constraining the white dwarf's weak magnetic field (7). A second similar system displaying both magnetically gated bursts and mode switches akin to transitional millisecond pulsars suggested self-similar disc-magnetosphere interactions in both neutron stars and white dwarfs (6). In my ongoing *TESS* program, I also uncovered a new class of fast, low-luminosity transients from accreting WDs with intermediate magnetic fields (5). Analogous to thermonuclear Type-I X-ray bursts in neutron stars, we identified these as magnetically localised thermonuclear runaway explosions, dubbed "micronovae" (4). Since discovering the first three

micronova systems, my team and I have found four more to date, with PDRA Krystian Ilkiewicz and I showing how burst energy, luminosity, and temporal properties can differentiate between various white dwarf burst types, clearly distinguishing dwarf nova outbursts, stellar flares, magnetic gating bursts, and micronovae. More recently, my team and I discovered (1; corresponding author) a highly magnetised accreting white dwarf inflating a large bow-shock as it sweeps through the Galaxy; interestingly, all known mechanisms fail to explain the required power.

My work also quantifies gravitational wave emission predictions from the Galactic population of cataclysmic variables (a subset of accreting white dwarfs), highlighting the potential to constrain secular mass-transfer rates and angular momentum loss mechanisms through future *LISA* observations, bypassing current electromagnetic biases (3).

Research expeditions

Over the past decade my students, PDRAs, and myself have been consistently successful in winning observing time across a wide range of world-leading facilities. In total, we have been awarded over 200 nights on ground-based facilities (i.e. more than 20 nights per year on average), including 28 nights on 4 m telescopes and 15 nights on 8 m telescopes. As part of my BlackGEM involvement, my students and PDRAs have also participated in telescope commissioning work on La Silla. I am among the most active authors to have exploited *Kepler* data. I have also carried out programs on *XMM-Newton*, *Swift*, *INTEGRAL*, *Hubble*, and *TESS*.

Organisation of international conferences.

- *Observation and Theory of Classical Nova Transients* (Sexten, IT, 2026, SOC)
- *Vasto Accretion Meeting 2025* (Vasto, IT, 2025, SOC co-Chair & LOC co-Chair)
- *The X-ray mysteries of Neutron stars and White dwarfs* (Madrid, ES, 2024, SOC)
- *COSPAR 2024: Cataclysmic Variables and Related Systems as Probes of Accretion, Binary Evolution and Thermo-nuclear Explosions* (Busan, KR, 2024, SOC)
- *The first Vasto Accretion Meeting* (Vasto, IT, 2023, SOC co-Chair & LOC co-Chair)
- *Compact White Dwarf Binaries* (Yerevan, ARM, 2019, SOC)
- *Stellar Remnants at the Junction* (Junction, USA, 2016, SOC)

Teaching & Pedagogy

I have been actively teaching both undergraduate and postgraduate students since 2017. My teaching philosophy is grounded in the belief that students learn best when exposed to the full life-cycle of hypothesis testing—from raw data analysis to statistical testing of state-of-the-art physics models—underpinned by a solid foundation in mathematical modelling.

As faculty at the University of Canterbury (NZ) I led third and fourth year astrophysics courses, as well as leading first year large cohort (about 320 students) physics modules. I also led the development of a new second year course which saw students undertake a field trip at Mt. John Observatory in Lake Tekapo (NZ). This course has seen students go through the life-cycle observational astronomers go through, including proposal preparation, scheduling and taking observations, and disseminating their results through reports and posters. The success of this initiative is evidenced by the course's continuation six years after its inception. During my faculty years at Texas Tech University I taught both high-level small cohort classes in astrophysics and larger (about 360 students) first year cohorts. I also actively engaged in the STEM Teaching, Engagement and Pedagogy (STEP) Program, where I learned and applied, among other practices, the "think-pair-share" technique in class, which were positively assessed by the STEP program faculty demonstrating the efficacy in triggering and reinforcing learning through student misconceptions. Since joining Durham University (UK) I have also engaged in teaching astrophysics classes at the second year level, as well teaching Postgraduate courses in stellar structure & evolution and data analysis. I have led the (re-)development of year 2 astronomy laboratories that focus on hypothesis testing through data acquisition and analysis, where students gather observations using the suite of telescopes owned and operated by Durham University.

In 2022 I obtained my Postgraduate Certificate in Academic Practice (PGCAP), and was appointed Advanced Higher Education Fellow. Below the courses I have been involved with during my faculty appointments.

Durham University: *Introduction to Astronomy*, Year 1 leader for "User's Guide to the Night Sky" (2025–) section for PHYS1081 with class sizes of ≈170 students; *Stellar Structure & Evolution*, Year 1 Ph.D. course (2021-2026) with class sizes of ≈20 students; *Data Reduction Techniques*, Year 1 Ph.D. workshop (2021-2024) with class sizes of ≈20 students; *Computing Project*, Year 3 project supervisor for PHYS3561 (2023-2026) with class sizes of ≈5 students; *Laboratory Skills and Electronics*, Year 2 supervisor for PHYS2641 (2020-2026) with class sizes of ≈30 students; *Stars and Galaxies*, Year 2 leader for the "Stars" section of PHYS2621 (2020-2026) with class sizes of ≈180 students; *Discovery Skills in Physics*, Year 1 lab supervisor for PHYS1101 (2021-2022) with class sizes of ≈30 students.
Texas Tech University: *Stellar Astronomy*, Year 1 course leader for ASTR1401 (2018-2019) with class sizes of ≈200 students; *Stellar Structure and Evolution*, Year 3-4 course leader for ASTR4301 2018-2020 with class sizes of ≈30 students; *Solar System Astronomy*, Year 1 course leader for ASTR1400 (2019-2020) with class sizes of ≈360 students.
University of Canterbury: *Introductory Physics for Physical Science and Engineering*, Year 1 leader for the "Classical Mechanics" module of PHYS111 (2017-2018) with class sizes of ≈250 students; *Stellar Structure and Evolution*, Year 3-4 course leader for ASTR326/ASTR426 (2017-2020) with class sizes of ≈30 students; *Observational Astrophysics*, Year 2 course leader for ASTR211. Responsible for designing the course, including lectures, workshops, and dedicated observing 2-week field trip at the University of Canterbury operated Mt. John Observatory in Lake Tekapo (NZ). Course sizes of ≈40 students;

Public outreach

I have written for popular science magazines (both in-print and online, e.g. *Le Scienze*, *The Science Breaker*) and have given several talks to astronomical societies. In New Zealand, I actively engaged with Ngāi Tahu, the principal Māori iwi (tribe) of the South Island, including consulting for the Dark Sky Project (formerly Earth & Sky), and participated in several national radio interviews related to my *Nature* publication. While in Texas I actively engaged with the local Lubbock school district yearly School Science Fairs. Since joining Durham I have given several talks to the various student societies, and have been involved in several press releases related to my high-impact publications, which have been picked up by national and international press and have featured me in several podcasts (audio/video). I further lead the organisation of public lectures given as part of the Vasto Accretion Meeting. My research has been featured in about a hundred web sites around the world.

International Academic Mobility

My career path has led me to work at eight different universities and institutes across three continents over 16 years. My last three appointments have been at the faculty level, highlighting a rapid upward trajectory. While this level of mobility was driven by the dual-career nature of my family life, it has been a significant asset, allowing me to build a vast network of strong, long-lasting collaborators and experience diverse academic cultures.

Signed on March 25, 2026 in Durham (UK),



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