FABIAN GITTINS

CONTACT INFORMATION

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EDUCATION

PhD Mathematics, University of Southampton, UK — Sep. 2021

- *Thesis title*: Gravitational waves from deformed neutron stars: mountains and tides
- *Advisor*: Prof Nils Andersson

MSci Physics, University of Birmingham, UK — Jul. 2017

- *Grade*: First class honours
- Undergraduate Master's degree with focus on theoretical physics.

RESEARCH EXPERIENCE

Marie Skłodowska-Curie Postdoctoral Fellow — Oct. 2024 – Present
Institute for Gravitational and Subatomic Physics, Utrecht University, NL

- PI of Marie Skłodowska-Curie Postdoctoral Fellowship grant, *DynTideEOS*
- Studying constraints on dense nuclear matter from dynamical tides of neutron stars
- *Advisor*: Prof Chris van den Broeck

Research Fellow — Oct. 2021 – Sep. 2024
STAG Research Centre, University of Southampton, UK

- Research focused on seismology and dynamical tides of neutron stars.
- *Advisor*: Prof Nils Andersson

PhD Researcher — Sep. 2017 – Sep. 2021
STAG Research Centre, University of Southampton, UK

- PhD research focused on neutron stars as gravitational-wave sources.
- *Advisor*: Prof Nils Andersson

Undergraduate Researcher — Sep. 2016 – Mar. 2017
Astrophysics & Space Research Group, University of Birmingham, UK

- Project developed data-analysis tools for population-synthesis code COMPAS.
- *Advisor*: Prof Ilya Mandel

Undergraduate Researcher — Jan. – May. 2016
Solar & Stellar Physics Group, University of Birmingham, UK

- Group research project on science impact of NASA-MIT mission TESS. Led sub-group of peers on asteroseismology science.
- *Advisor*: Prof Andrea Miglio

Undergraduate Research Intern Jun. – Sep. 2015
Astrophysics & Space Research Group, University of Birmingham, UK

- Summer project on binary evolution into compact binaries of interest for gravitational-wave astronomy. Focused on modelling Roche-lobe overflow.
- *Advisor*: Prof Ilya Mandel

GRANTS

- **Oct. 2024 – Sep. 2026**: *Marie Skłodowska-Curie Postdoctoral Fellowship*, EU; €203,464 (PI).

AWARDS

- **2021**: *Gravitational Physics Group Thesis Prize* for excellence in physics research and communication, Institute of Physics, UK; £500, invited to submit *Class. Quantum Gravity* article and to deliver talk at 22nd BritGrav Conference.
- **2021**: *STAG best publication in gravitational physics*, STAG Research Centre, University of Southampton, UK.

TALKS

Invited

10. **30 Sep. 2025**: *High Energy Particle Physics and Cosmology Theory Seminar*, The Johns Hopkins University, US
9. **17 Sep. 2025**: *Institute for Nuclear Theory Program*, University of Washington, US
8. **18 Jun. 2025**: *Gravitational Wave Meeting*, National Institute for Subatomic Physics (Nikhef), NL (online)
7. **30 May 2024**: *Astrophysics Seminar*, Mullard Space Science Laboratory, University College London, UK
6. **14 Dec. 2023**: *Gravitational Wave Group*, Institute of Cosmology and Gravitation, University of Portsmouth, UK
5. **7 Jun. 2023**: *Science Possibilities Investigating Neutron Stars in the UK Seminar* (online)
4. **28 Apr. 2022**: Plenary talk at *Symposium on Gravitational Wave Physics and Astronomy: Genesis*, Kyoto University, JP (online)
3. **5 Apr. 2022**: Keynote talk at *22nd BritGrav Conference*, University of Glasgow, UK (online)
2. **6 Oct. 2020**: *Colloquium*, Albert Einstein Institute, Hannover, DE (online)
1. **5 Dec. 2018**: *LIGO-Virgo Collaboration Continuous Waves Working Group* (online)

Contributed

23 contributed talks at 21 separate conferences and meetings.

Teaching Experience

Instructor, University of Southampton, UK — Feb. – May 2024

- *Course*: MATH1007/1009 Mathematical Methods for Physical Scientists
- *Students*: 30 (BSc level); *teaching hours*: 8
- *Responsibilities*: Coordinated problem classes; answered student questions; demonstrated problem solutions.

Guest lecturer, University of Southampton, UK — Oct. 2022, Oct. 2023

- *Course*: MATH3072 Advanced Fluid Dynamics
- *Students*: 20 (BSc level); *teaching hours*: 10
- *Responsibilities*: Delivered lectures on vector calculus for fluid dynamics.

Guest lecturer, University of Southampton, UK — Apr. 2022

- *Course*: MATH3006 Relativity, Black Holes & Cosmology
- *Students*: 30 (BSc level); *teaching hours*: 1
- *Responsibilities*: Delivered lecture on Tolman-Oppenheimer-Volkoff equations.

Teaching Assistant, University of Southampton, UK — Oct. 2017 – May 2021

- *Courses*: MATH1054/1055 Mathematics for Engineering & the Environment, MATH1057 Dynamics & Relativity, MATH1058 Operational Research I & Mathematical Computing, MATH2045 Vector Calculus & Complex Variable Theory, MATH3018 Numerical Methods, MATH3087 Maths & Your Future
- *Students*: 125 per year (BSc level); *teaching hours*: 350
- *Responsibilities*: Ran weekly problem classes, computing labs and workshops; marked coursework, tests and presentations.

Teaching Assistant, King Edward's School, Birmingham, UK — Jan. – Apr. 2016

- *Course*: Secondary-school physics
- *Students*: 75 (11–16 yr); *teaching hours*: 96
- *Responsibilities*: Supported physics teacher during lessons, helped with demonstrations and answered questions. Delivered class and devised questionnaire to assess learning styles.

Supervision

PhD student mentoring

- Thibeau Wouters, Utrecht University, NL (Oct. 2024 – Present)
- Rahime Matur, University of Southampton, UK (Jan. 2023 – Sep. 2024)
- Rhys Counsell, University of Southampton, UK (Sep. 2021 – Sep. 2024)
- Shanshan Yin, University of Southampton, UK (Sep. 2021 – Sep. 2024)
- Thomas Celora, University of Southampton, UK (Sep. 2021 – Sep.2023)

Master's student supervision

- Tobie Walraven, Utrecht University, NL (Sep. 2025 – Present)

Outreach

- **7 May 2022, 18 Mar. 2023**: Organised neutron-star exhibit for *Southampton Science and Engineering Festival* and coordinated team of about 10 volunteers, University of Southampton, UK.
- **Mar. – Apr. 2020**: Marked over 200 pupil entries for *Mathematical Challenge*, UK Maths Trust.
- **8 Nov. 2017**: Demonstrated in *Maths & Physics Workshop* by helping secondary-school pupils with fun and challenging problems, University of Southampton, UK.

Selected Press

- **1 Oct. 2025**: *Sporen van quarkmaterie in zwaartekrachtgolven?* Nederlands Tijdschrift voor Natuurkunde
- **24 Oct. 2022**: *Lightest neutron star ever found could contain compressed quarks*, New Scientist
- **21 Jul. 2021**: *Neutron star 'mountains' may be blocking our view of mysterious gravitational waves*, Live Science
- **21 Jul. 2021**: *Mountains on neutron stars are not even a millimetre tall due to extreme gravity*, The Register
- **19 Jul. 2021**: *Scientists find tiny mountains on neutron stars that are a fraction of a millimetre tall*, The Independent
- **18 Jul. 2021**: *Neutron Stars Have Mountains That Are Less Than a Millimeter Tall*, Gizmodo
- **24 May 2021**: *Neutron stars are remarkably smooth thanks to their intense gravity*, New Scientist
- **16 Nov. 2018**: *Why don't they just break up?* Astrobites

Membership

Large collaborations

- **Oct. 2024 – Present**: *Virgo Collaboration*
- **May 2024 – Present**: *Cosmic Explorer Consortium*
- **Sep. 2023 – Present**: *Einstein Telescope Collaboration*

Scientific societies

- **May 2023 – Present**: *Junior member*, International Astronomical Union
- **Nov. 2021 – Present**: *Member*, European Astronomical Society
- **Jul. 2021 – Present**: *Elected fellow*, Royal Astronomical Society
- **May 2021 – Present**: *Lifetime member*, The International Society on General Relativity and Gravitation
- **Apr. 2021 – Present**: *Member*, Institute of Physics
- **Oct. 2021 – Sep. 2025**: *Committee member* of Gravitational Physics Group, Institute of Physics

Reviewing

- **Sep. 2025**: *External reviewer* for postdoctoral project, University of Namur, BE.
- **May 2024**: *Reviewer* for Open Fellowship, Engineering and Physical Sciences Research Council, UK.
- **Jul. 2021 – Present**: *Reviewer* for scientific journals (*Astron. Astrophys.*, *Astrophys. J.*, *J. Cosmol. Astropart. Phys.*, *Mon. Not. R. Astron. Soc.*, *Nature Astron.*, *Phys. Rev. D*, *Phys. Rev. Lett.*).

Scientific Meeting Organisation

- **10–12 Sep. 2024**: *Local organising committee*, SPINS-UK 2024 meeting, University of Southampton, UK
- **17–20 Jun. 2024**: *Scientific organising committee*, Continuous gravitational waves and neutron stars workshop, Albert Einstein Institute, Hannover, DE
- **18 Jan. 2024**, *Scientific organising committee*, Gravitational Physics Annual Meeting, Institute of Physics, UK
- **13–14 Apr. 2023**: *Scientific and local organising committee*, 23rd BritGrav Conference, University of Southampton, UK

Departmental Activities

- **Oct. 2021 – Sep. 2024**: *Organiser* of weekly Gravity Seminar series, University of Southampton, UK
- **Jan. – Jul. 2021**: *Organiser* of weekly reading group on neutron-star seismology, University of Southampton, UK

Skills

- **Scientific**: Wolfram Mathematica, LaTeX
- **Programming**:
  - Advanced: Julia, Python
  - Intermediate: C++, MATLAB

Additional Training

Introduction to cluster computing 13 Sep. 2019
University of Southampton, UK

- Training day on high-performance computing facilities, with demonstrations on supercomputer Iridis. Involved training on accessing and using high-performance computing.

Orientation to teaching & demonstrating 13 Oct. 2017
University of Southampton, UK

- Training day on teaching and demonstrating. Involved discussions on how to design good lesson plans and tutorials that are engaging to undergraduate students.

Public engagement training 3 Oct. 2017
School of Physics & Astronomy, University of Southampton, UK

- Training session on how to engage public with science. Involved presentations on how to organise appealing and engaging science activities, as well as practical information on health and safety considerations.