JAVIER MORÁN FRAILE

Nationality: Spanish ⋄ Pronouns: He/Him
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EDUCATION

PhD in physics, University of Heidelberg *Oct. 2019 - Feb. 2024 (exp.)*
Dissertation: *Simulating the dynamical interaction of white dwarf stars in binaries*
Main advisors: Prof. F. Roepke & Dr. F. Schneider

MSc in Physics and Astronomy, University of Amsterdam *Aug. 2017 - Aug. 2019*
Dissertation: *Effects of accretion induced Chemically Homogeneous Evolution on the binary black hole Population*
Main advisors: Dr. S. E. de Mink & S. Justham

BSc in Physics, University of Valladolid *Sep. 2012 - Jul. 2017*
Dissertation: *Simulating charge diffusion in materials of extremely low electrical conductivity*
Main advisors: J. M. Muñoz, O. Alejos

COMPUTING SKILLS

Astrophysics codes	AREPO, Athena++, SNEC, COMPAS, MESA
Computer Languages	Python/C/C++ (proficient), MATLAB/Fortran
Machine Learning	TensorFlow
GPU Programming	CUDA-Python
Parallel Programming	OpenMPI, OpenMP

RESEARCH EXPERIENCE

PhD project 1: 3DMHD simulations of Neutron Star - White Dwarf mergers
Advisors: Friedrich Roepke, Ruediger Pakmor *Oct. 2019 - Present*

PhD project 2: GW emission from common-envelopes using 3D simulations
Advisors: Fabian Schneider, Andreas Bauswein *Feb. 2021 - Nov. 2022*

PhD project 3: Type Ia-like explosions from low-mass WD mergers
Advisors: Friedrich Roepke, Ruediger Pakmor *Jul. 2022 - Present*

PhD project 4: Modelling low-mach flows in RG stars with AREPO
Advisors: Friedrich Roepke, Robert Andrassy, Giovanni Leidi *Jan. 2023 - Present*

MSc project 1: Effects of acretion-induced Chemically Homogeneous Evolution on the binary black hole population
Supervisors: S.E de Mink, S. Justham *Nov. 2018 - Aug. 2019*

MSc project 2: 1D Hydrodynamical simulations of the lightcurves of Pair Instability Supernovae
Supervisors: R. Farmer, S.E. de Mink, E. Laplace *Jul. 2018 - Oct. 2018*

GRANTS, FELLOWSHIPS AND AWARDS

International Max Planck Research School fellowship Max Planck institute for astronomy & cosmic physics at the University of Heidelberg. *Oct. 2019- Dec. 2023*

Awarded: 12 000 000 CPU hours "Hydrodynamical simulations of stellar binary interaction", Baden-Württemberg High Performance Computing center, BinAC cluster.
Project Bw20B011. *Feb. 2020- Feb. 2024*

Award: Best MSc Thesis presentation, University of Amsterdam *Jul. 2019*

SELECTED TALKS

International conferences and meetings

- Common Envelope Physics and Outcomes (CEPO) Sep. 2021. Haifa, Israel
- Gravitational Wave Physics and Astronomy Workshop Dec. 2022. Melbourne, Australia
- Anton Pannenkoek Institute: 100 years of research Jun. 2022. Amsterdam, The Netherlands
- European Astronomical Society (EAS) annual meeting Jul 2023. Krakow, Poland

Invited seminars

- Joint seminar in the groups of Dr. Seitenzahl and Dr. Ruiter, **UNSW** - Canberra, Australia, Dec. 2022
- Seminar in the research group of Dr. Lopez-Camara, **UNAM** - Mexico City, Mexico, Mar. 2023
- Seminar in the research group of Dr. Toonen, **University of Amsterdam** - Amsterdam, The Netherlands, Apr. 2023
- SuperNova Explosions Meeting, **Technion** - Haifa, Israel, Sep. 2023

TEACHING EXPERIENCE

TA for the MSc lecture "Computational Astrophysics", University of Heidelberg, (2020 & 2022)

Co-supervisor for MSc thesis at the University of Heidelberg, 2022

LANGUAGES

Spanish: Native speaker
English: Fluent
German: Good command
French: Basic communication skills

REFERENCES

Prof. Dr. Friedrich Röpke	HITS, PhD advisor	friedrich.roepke@h-its.org
Dr. Ruediger Pakmor	MPA, collaborator	rpakmor@mpa-garching.mpg.de
Dr. Fabian Schneider	HITS, PhD advisor	fabian.schneider@h-its.org
Dr. Selma E. de Mink	MPA, MSc supervisor	sedemink@mpa-garching.mpg.de
Prof. S. Justham	CAS, MSc supervisor	s.justham@uva.nl

Publication List

- 2023: **Morán-Fraile, J.**; Holas, A.; F. K. Röpke; R. Pakmor; F. R. N. Schneider; **Submitted**; *Faint calcium-rich transient from a double-detonation of a 0.6 $M_\odot$ carbon-oxygen white dwarf star*
  Main author.
- 2023: **Morán-Fraile, J.**; F. K. Röpke; R. Pakmor; M. A. Aloy; S. T. Ohlmann; F. R. N. Schneider; G. Leidi; **Accepted for publication in A&A**; *Self-consistent MHD simulation of jet launching in a neutron star - white dwarf merger*
  Main author.
- 2023: **Morán-Fraile, J.**; F. R. N. Schneider; F. K. Röpke; S. T. Ohlmann; R. Pakmor; T. Soultanis; A. Bauswein; **A&A, 672 A9**; *Gravitational Wave emission from dynamical stellar interactions*
  Main author.
- 2023: A. Kozyreva; **Morán-Fraile, J.**; A. Holas; V. A. Bronner; F. K. Röpke; N. Pavlyuk; D. Tsvetkov; **Submitted**; *Thermonuclear explosions as Type II supernovae*
  Contribution: Author of the hydro simulation, gravitational waves and neutrino computation.
- 2020: Van Son, L. A. C.; De Mink, S. E.; Broekgaarden, F. S.; Renzo, M.; Justham, S.; Laplace, E.; **Morán-Fraile, J.**; Hendriks, D. D.; Farmer, R.;**ApJ 897, 100V**; *Polluting the pair-instability mass gap for binary black holes through super-Eddington accretion in isolated binaries*
  Contribution: Helped developing the code implementation.