Dr. Gaylor Wafflard-Fernandez | CV

- Post-doctoral researcher in protoplanetary disks, specializing in planet-disk interactions and numerical simulations
- E-mail **gwf.connect@gmail.com**
- ORCID https://orcid.org/0000-0002-3468-9577
- GitHub GitHub/volodia99
- Website https://volodia99.github.io

Research experience

2025 - **Postdoctorate — Institut de Planétologie et d'Astrophysique de Grenoble (IPAG)** Grenoble, France

- Analysis and modeling of edge-on circumstellar disks in the Large Program ALMA DiskStrat (Romane Le Gal)

2021 - 2024 **Postdoctorate — Institut de Planétologie et d'Astrophysique de Grenoble (IPAG)** Grenoble, France

- Interactions between protoplanetary disks, magnetic winds and planets (Geoffroy Lesur)

2018 - 2021 **PhD — Institut de Recherche en Astrophysique et Planétologie (IRAP)** Toulouse, France

- Observational predictions of planetary migration in the dust content of protoplanetary disks (Clément Baruteau)

2017 (3 months) **Master's thesis — Institut d'Astrophysique de Paris (IAP)** Paris, France

- The life cycle of black holes in galaxies (Marta Volonteri, Alexander Y. Wagner)

2016 (3 months) **Internship — McGill Space Institute (MSI)** Montreal, Canada

- Comparison of two black hole spin estimators for active galactic nuclei (Daryl Haggard, Daniel Capellupo)

2015 (1.5 months) **Internship — Institut Astrophysique Spatiale (IAS)** Orsay, France

- Magnetic activity of the Sun, in visible and in extreme UV regions (Frédéric Baudin)

Main refereed publications

[7] Gone with the wind: the outward migration of eccentric giant planets in windy disks
Wafflard-Fernandez G. & Lesur G.
2025, A&A, 696, A8
https://ui.adsabs.harvard.edu/abs/2025A%26A...696A...8W/abstract

[6] exoALMA VII. Benchmarking Hydrodynamics and Radiative Transfer Codes
Bae J., Flock M., Izquierdo A., Kanagawa K., Ono T., Pinte C., Price D. J., Rosotti G. P., **Wafflard-Fernandez G.**, Lesur G., Masset F., Andrews S. M., Barraza-Alfaro M., Benisty M., Cataldi G., Cuello N., Curone P., Czekala I., Facchini S., Fasano D., Galloway-Sprietsma M., Hall C., Hammond I., Huang J., Lodato G., Stadler J., Teague R., Wilner D., Winter A., Wölfer L. & Yoshida T. C.
2025, ApJ, 984L, 12B
https://ui.adsabs.harvard.edu/abs/2025ApJ...984L..12B/abstract

[5] Planet-disk-wind interaction: The magnetized fate of protoplanets
Wafflard-Fernandez G. & Lesur G.
2023, A&A, 677, A70
https://ui.adsabs.harvard.edu/abs/2023A%26A...677A..70W/abstract

[4] IDEFIX: A versatile performance-portable Godunov code for astrophysical flows
Lesur G., Baghdadi S., **Wafflard-Fernandez G.**, Mauxion J., Robert C. & Van den Bossche M.
2023, A&A, 677, A9
https://ui.adsabs.harvard.edu/abs/2023A%26A...677A...9L/abstract

[3] Observational signatures of eccentric Jupiters inside gas cavities in protoplanetary discs
Baruteau C., **Wafflard-Fernandez G.**, Le Gal R., Debras F., Carmona A., Fuente A. & Rivière-Marichalar P.
2021, MNRAS, 505, 359-376
https://ui.adsabs.harvard.edu/abs/2021MNRAS.505..359B

[2] Intermittent planet migration and the formation of multiple dust rings and gaps in protoplanetary disks
Wafflard-Fernandez G. & Baruteau C.
2020, MNRAS, 493, 5892–5912
https://ui.adsabs.harvard.edu/abs/2020MNRAS.493.5892W

[1] A Comparison of Two Methods for Estimating Black Hole Spin in Active Galactic Nuclei
Capellupo D., **Wafflard-Fernandez G.** & Haggard D.
2017, ApJ Letters, 836, L8
https://ui.adsabs.harvard.edu/abs/2017ApJ...836L...8C

Conferences

September 2024	**Talk** — Idefix User Days 2024	Grenoble, France
June 2024	**Poster** — Société française d'astronomie et d'astrophysique SF2A	Marseille, France
January 2024	**Talk** — ExoSystèmes IV	Lyon, France
November 2023	**Talk** — TCAN Disk Hydro & Planet Formation	online
October 2023	**Talk** — Core2Disk III	Orsay, France
July 2023	**Talks** — Idefix User Days 2023	Grenoble, France
April 2023	**Poster** — Protostars & Planets PPVII	Kyoto, Japon
January 2023	**Talk** — ExoSystèmes III	Marseille, France
December 2022	**Talk** — exoALMA workshop	Boston, USA
June 2022	**Poster** — Société française d'astronomie et d'astrophysique SF2A	Besançon, France
April 2021	**Talk** — IPAG/IRAM Seminar	Grenoble, France
April 2020	**Talk** — Building Blocks of Planets 2020	En ligne
January 2020	**Talk** — ExoSystèmes I	Paris, France
July 2019	**Poster** — Waves, Instabilities and Turbulence in Geophysical and Astrophysical Flows (WITGAF Summer School)	Cargèse, France
June 2019	**Poster** — European Week of Astronomy and Space Science (EWASS)	Lyon, France
July 2018	**Poster** — Planets, Stars and Discs : A Golden Age for Particle and Gas Dynamics, celebrating the 70th birthday of John Papaloizou	Oxford, UK

Organization

September 2024	Idefix User Days II (SLOC)	Grenoble, France
2023 - 2024	IPAG/IRAM Seminars	Grenoble, France
July 2023	Idefix User Days (SLOC)	Grenoble, France
June 2019	PhD days at IRAP	Toulouse, France

Time proposal

2021 - 2024 — Co-PI of GENCI proposals for computation hours (granted)

- A10 : 475 000 hGPU (Jean Zay V100, IDRIS)
- A12 : 145 000 hGPU (Jean Zay V100, IDRIS)
- A14 : 210 000 hGPU (Jean Zay V100, IDRIS)

International collaborations

DiskStrat 2025 -	ALMA program of high spatial and spectral resolution observations of 27 emission lines for 9 edge-on cirumstellar disks, likely to reveal the gas kinematics, vertical chemical structure, and dust-chemistry relationships; Image analysis, numerical simulations and thermo-chemical modeling
exoALMA 2022 -	ALMA program of high spatial and spectral resolution observations of 3 emission lines for 15 protoplanetary disks likely to reveal forming planets in the gas **kinematics**; Comparison of hydrodynamic and radiative transfer codes
UNAM 2021 -	Hydrodynamic **code comparison** project for 3D disk-planet interaction problems

Education

2017 - 2018	**PSL - Innovation and Technology Institute**	Paris Sciences et Lettres
	❱ Pre-doctoral year: introduction to entrepreneurship and start-up creation with scientific talks in emerging fields such as cognitive sciences, environment and energy	
2016 - 2017	**Master 2, Astronomy and Astrophysics / Magistère 3, Fundamental physics**	OBSPM / Univ. Paris-Sud
2015 - 2016	**Master 1 / Magistère 2, Physique Fondamentale**	Univ. Paris-Sud
2014 - 2015	**Licence 3 / Magistère 1, Physique Fondamentale**	Univ. Paris-Sud
2012 - 2014	**Classes préparatoires**	Lycée Blaise Pascal

Skills

Codes	Development of python packages like **nonos**, **lick**, **cblind** for data analysis and visualization ; development of a module, use of **Idefix** ; use of **RADMC3D**, **FARGO3D**, **Dusty Fargo-ADSG** ; basic use of **Pluto**, **Paraview**
Programming	**Python** modules (development, collaboration, versioning, maintenance) ; use of **C**, **C++**
Miscellaneous	**Linux**, **Git**, LaTeX, **Blender** fundamentals, online collaboration/organization tools such as **GitHub**, **Trello**, **Google Slides**
Languages	**French** : native ; **English** : advanced