Guillaume AULANIER

Astrophysicist
&
Administrator in research and higher education

G. Aulanier is an astronomer from Observatoire de Paris, which is a school of Université Paris Sciences & Lettres (PSL). For his research, he works mainly in the Laboratory for Plasma Physics (LPP) in the campus of Sorbonne Université (SU). He also works at the Rosseland Centre for Solar Physics (RoCS) at University of Olso (UiO) where he holds a part-time professor position. His research focuses on the solar origins of space weather. More specifically, he is specialized in developing 3D numerical models coupled with multi-wavelength observations, for the study of solar flares, prominences, eruptions, and of magnetic reconnection in complex topologies. In practice, he is the original developer of the Observationally-driven High-order Magneto-hydrodynamics code (OHM). He is a member of the science teams of several observing instruments, on NASA's Solar Dynamics Observatory (SDO) and ESA's Solar Orbiter (SolO) spacecrafts. And he is the chief scientist of the Meudon Spectroheliograph. He is the deputy director of PSL's astrophysics graduate program, and he teaches hydrodynamics at the master SUTS of PSL, as well as numerical projects at the master PPF of SU. He is also a regular contributor to several national and foreign funding agencies, either as a panel member or as an external reviewer. He has held a number of appointments in the administration of research and education, in particular policy officer for high-performance computing at the French Ministry of Higher Education and Research (MESR), president of the national solar terrestrial program of CNRS/INSU, director of the department of education (UFE) at Observatoire de Paris, coordinator of the LESIA laboratory's solar physics group in Meudon, and national manager for two European consortia.

• *Where to find me:*

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• *Scientific publications:*

139 peer-reviewed publications (according to *NASA ADS*)

- more than 10k citations all together (*NASA ADS*)
- publishing since 1996, for 30 years
- ORCID: 0000-0001-5810-1566

h-index = 61 (*Google scholar*), 57 (*NASA ADS*),
57 (*ResearchGate*), 54 (*Web of Science*)

Other bibliometric indices available on *NASA ADS*

• *Employments & affiliations:*

2021-*present*	Observatoire de Paris	Astronomer	*at* Lab. Phys. Plasmas (Paris)
2021-*present*	Universitetet i Oslo	Professor	*at* ITA/RoCS (Oslo)
2021-2024	Ministry of education & research	Policy officer	*at* DGRI/SSRI/A7 (Paris)
2012-2021	Observatoire de Paris	Astronomer	*at* LESIA (Meudon)
2001-2012	Observatoire de Paris	Assistant astronomer	*at* LESIA (Meudon)
2000-2001	CNES	Postdoctoral contractor	*at* DASOP (Meudon)
1999-2000	George Mason university	VSNE & Research associate	*at* Naval Res. Lab (Washington)
1996-1998	Ministry of education & research	Research grant beneficiary	*at* DASOP (Meudon)
1996	CEA	MSc intern	*at* SAp (Saclay) & PTN (Bruyères)

• *Education & awards:*

2017	Order of academic palms	rank: knight	
2015	National order of merit	rank: knight	
2010	Habilitation *(HDR)*	Université Paris Diderot	attached to the doctoral school AAIF (ED 127)
1998	PhD *(Doctorat)*	Université Pierre & Marie Curie	prepared at Observatoire de Paris (Meudon)
1996	MSc *(DEA)*	Université Pierre & Marie Curie	attended at Inst. d'Astrophysique de Paris (IAP)
1994	BSc *(Licence)*	Université Denis Diderot	in fundamental physics

- ***Responsibilities:***

2023-*present*	Chief scientist	Meudon spectroheliograph within SNO 3SOLEIL	Observatoire de Paris
2019-*present*	Deputy director	Astrophysics graduate program (AStroParis)	University PSL
2022-2024	Project manager	Characterizing mesocenters for HPC and HPDA	MESR / DGRI / SP-SIN
2019-2024	President	National Sun-Earth program (PNST)	CNRS / INSU
2013-2019	Director	Department of education (UFE) *[elected]*	Observatoire de Paris
2014	Chair	Selection committee for an assist. prof.	Observatoire de Paris
2007-2011	Node leader	Collaborating contract EST-DS	EU / FP7
2008-2010	Head of group	Solar physics group *[elected]*	LESIA
2007-2011	Node leader	Research & Training Network SOLAIRE	EU / FP6
2005-2008	Vice chair	Selection committee for assist. profs. *[elected]*	Observatoire de Paris

- ***Reviewing & expertise:***

Panel member :	FWO (W&T8, Belgium, 2019-22), Academy of Finland (Space Science, 2021), NASA (USA, 2018), PNST (France, 2020-2024, 2005-14), Doctoral school AAIF ED 127 (France, 2014-20), PhD track admission (PSL, France, 2022-25), PSL (Starting Grants, 2024), PSL (Student Initiatives, 2015-18), PSL (Pedagogical initiatives, 2015), Full Professor selection panels (Sorbonne Univ: 2024; UVSQ: 2024), Assist. Professor selection panels (Obs de Paris: 2014, 2005-08)
External reviewer:	UKRI/STFC (UK, 2024, 2017-2019), NASA (USA, 2024, 2014), SNF (Switzerland, 2022), ERC (EU, 2021), FWF (Austria, 2018), FWO (Belgium, 2015), NSERC (Canada, 2012), ANR (France, 2011-2013), AXA (private foundation, 2008), NSF (USA, 2006)
Journal referee:	A&A, ApJ, ApJL, Annales Geo, Adv Space Res, JASTP, JGR, LRSP, MNRAS, Nature Astro, Nature Com, Nature Phys, PASJ, PEPS, PPCF, Science, Sol Phys

- ***Teaching:***

2020-*present*	M1 space sciences & technologies	Université PSL	Hydrodynamics
2016-*present*	M2 physics of plasmas and fusion	SU - UPSaclay – IPParis	Solar numerical projects
2019	M1 earth sciences & environment	Université PSL	CFD for geophysics
2011-16	M2 environment and lab plasmas	UPSud, UPMC, UVSQ, X	Space plasmas - Numerical projects
2004-09	M2 astronomy & astrophysics	Observatoire de Paris	Solar MHD - CFD practical works
2002-05	M1 fundamental physics	Université Paris Diderot	Numerical experiments in fluids

- ***Supervision:*** PhDs : 4 (+7 non official co-supervisions) – Postdocs: 7 – Master interns: 10 – Bachelor interns: 7 – Bachelor student projects: 13 – Tutoring school classes: 26

- ***Member of committees:***

2025-*présent*	College for research data	MESR / Open Science Com.
2024-*présent*	PSL board for the Paris-area Space Academy	Observatoire de Paris
2022-*present*	Administrative council (CA) *[elected]*	Observatoire de Paris
2022-*present*	Digital committee (CNO) & strategy working group	Observatoire de Paris
2015-*present*	Academic senate (SA) *[elected]*	University PSL
2022-2024	Mesocenter national committee *[chair]*	MESR / SP-SIN
2021-2024	Strategic committee (CSD) for the Nançay radioastronomy station	Observatoire de Paris
2021-2024	Member of the digital infrastructures & services committee (SP-SIN)	MESR
2021-2024	Member of the board & evaluation, attribution, technical committees	GENCI
2021-2023	Expert from France at the EuroHPC governing board *[invited]*	EuroHPC-JU
2020-2024	Committee of specialists in astronomy & astrophysics (CSAA) *[invited]*	CNRS / INSU
2020-2024	Solar heliosphere magnetosphere thematic group (SHM) *[invited]*	CNES

2020-2024	Scientific council (CS) of the National Sun-Earth program (PNST) *[chair]*	CNRS / INSU
2018-2019	Research & graduate-education committee	University PSL
2015-2019	HPC & HPDA working group of CSAA	CNRS / INSU
2014-2021	Advisory editorial board *[elected]*	Solar Physics journal
2014-2019	Council of the doctoral school AAIF (ED 127)	Region IdF universities
2014-2015	Teaching roster (TdS) working group	Observatoire de Paris
2013-2019	Board of directors (directoire)	Observatoire de Paris
2013-2019	Council of of the department of education (UFE) *[chair]*	Observatoire de Paris
2013-2019	Scientific council (CS)	Observatoire de Paris
2013-2017	Education council	University PSL
2008-2010	Board of the European solar physics division (ESPD) *[elected]*	European Astro Society
2007-2019	Administrative council (CA) *[elected]*	Observatoire de Paris
2007-2010	Scientific council (CS)	Observatoire de Paris
2005-2014	Scientific council (CS) of the National Sun-Earth program (PNST)	CNRS / INSU
2005-2008	Selection committee (CSE) for teaching assist. & assist. profs. *[elected]*	Observatoire de Paris
2004-2010	Board of the plasma physics division *[elected]*	French Physics Society (SFP)

- ***Involvement in research infrastructures & consortiums:***

  - Currently Co-I of requests for CPU-time allocation by GENCI (Tier-1)
  - Formerly PI of requests for CPU-time allocation on MesoPSL (Tier-2)

  - Member of the design-study consortium (2008-11) and science team (2021-*present*) for the European Solar Telescope
  - PI and Co-I of several former observing campaigns with THEMIS (Tenerife)
  - Analyses of Meudon spectroheliograph historical data

  - Science Co-I of the EUI and STIX instruments on Solar Orbiter (2011-*present*)
  - Member of the science team of the AIA instrument on SDO (2006-*present*)
  - Member of the modeling and data analysis working group (MADAWG) of Solar Orbiter (2015-2020)
  - Analyses of satellite data from Solar Orbiter (launched in 2020), Solar Dynamics Observatory (2010), and formerly from Hinode (2006), TRACE (1998), SoHO (1995), Yohkoh (1991)

  - Member of other research teams:
    Slow-rise phase of CMEs (ISSI, 2025-26); Solar eruptions (PHC China, 2024-25); Flux ropes (ISEE, 2023); Chromospheric surges (ISSI, 2021-2024); Flare reconnection (Czech Academy of Sciences, 2012-2020); CCT/ENV (CNES, France, 2016); Pre-eruptive flux ropes vs. sheared arcades (ISSI, 2015-16); Solar forum (ISSI, 2012); SOLAIRE (EU FP6, 2007-11); NLFFF (International, 2007-09); Prominences (ISSI, 2007-09); PROM team (US, 2000 & 2011)

  - Initiator of a MoU for graduate education & research between Observatoire de Paris & NJU (2023-*present*)

- ***Main scientific results:*** *(through local & international collaborations with colleagues & students)*

  - Development of 3D extensions to the standard flare model.
  - Validation of the torus instability for coronal mass ejections (CME) originated from flux ropes previously and gradually formed by flux cancellation.
  - Discovery of slip-running reconnection, in quasi-separatrix layers in 3D and in chromospheric flare ribbons.
  - Identification of the ar-rf geometry for magnetic reconnection during eruptions, accounting for the deformation flare ribbon-hooks, and predicting the drifting of CME footpoints at the Sun's surface.
  - Estimation of the maximum energy for solar flare, about 5-10 times the Carrington event.
  - Devising the magnetic dip model for prominence lateral feet, and its application to the hemispheric chirality rules.
  - Bringing out rarefaction waves accelerating coronal outflows feeding the slow solar wind, at the periphery of active regions, and associating them with radio noise storms.