Dr. Aurélien Stcherbinine

Institut de Recherche en Astrophysique et Planétologie
9 avenue du Colonel Roche
31 028 Toulouse Cedex 4, France

@: Aurelien.Stcherbinine@irap.omp.eu
☎: +33 6 07 32 85 18
: aurelien.stcherbinine.net
: 0000-0002-7086-5443

Postdoctoral research scholar in Astrophysics / Planetary Sciences

Orbital observations of the Martian surface and atmosphere

Experience

Dec. 2023 – present: **CNES Postdoctoral Research Fellow**, *IRAP, (Toulouse, France)*
Study of Martian aerosols through IR spectroscopy with the SuperCam instrument onboard the *Perseverance* rover.

Jan. 2022 – Nov. 2023: **Postdoctoral Research Scholar**, *NAU, Dept. of Astronomy and Planetary Science (Flagstaff, USA)*
Analysis of orbital observations of Mars provided by the "Hope" probe of the EMM mission.

Oct. 2021 – Dec. 2021: **Postdoctoral researcher**, *LATMOS (Guyancourt, France)*
Analysis of IR observations provided by the ACS instrument to study the Martian water ice clouds.

Oct. 2018 – Sept. 2021: **PhD student in astrophysics**, *Université Paris-Saclay, IAS (Orsay) / LATMOS (Guyancourt, France)*
Infrared spectroscopy of the Martian atmosphere and surface from orbital observations. Handling of larges datasets, of hundreds (ACS) to thousands (OMEGA) spectra.

Junior lecturer, *Université Paris-Saclay, Département de Physique (Orsay, France)*
Physics class / tutorials & practical class to Bachelors and Masters students.
Co-manager of the observational astrophysics practical class for Masters students in 2020.

Education

Oct. 2018 – Sept. 2021 : PhD thesis in Astrophysics "Study of Martian aqueous signatures by infrared spectroscopy: from clouds to polar regions alteration"
Paris-Saclay University, IAS / LATMOS, France

Sept. 2015 – June 2018 : 3rd year of BSC – 1st year of MSC in Fundamental Physics, with honours
2nd year of MSC in Astronomy, Astrophysics and Space Engineering - section Astronomy & Astrophysics
Magistère of Fundamental Physics, with honours
Paris-Sud XI University, Orsay, France / Paris Observatory, Paris, France

Sept. 2013 – June 2015 : Preparatory classes: two-year undergraduate intensive and highly selective course in mathematics and physics to prepare national competitive exams for admission to French Engineering Schools, section MPSI / MP (Computer science)
Lycée Joffre, Montpellier, France

Skills

- French: mother tongue
- English: fluent
- German and Latin: moderate
- Mastered OS: Linux, Windows
- Mastered programming languages: Python, LaTeX
- Known programming languages: C, C++, CamlLight, SQL, Fortran, IDL, HTML, CSS

Interests & Hobbies

Taekwondo

4th Dan black belt, 1st class National referee and qualified Federal Instructor.
Member of the board of the club Taekwondo Teyran (France) from the 2011/2012 to the 2016/2017 sports season. Then Taekwondo teacher at the University sport association from September 2016 to June 2021.

Amateur Astronomy

Observation supervisor at the University astronomy association in 2016 and 2017, and secretary of the association in 2017.

Associative activities

Member of the local organizing committee of the city summer festivities at Saint-Léons (France) since 2011.

Publications & Communications

- **12** publications in peer-referred journals (6 as first author).
  Stcherbinine et al., Icarus, 425, 116335 (2025)
  Stcherbinine et al., JOSS, 9(99), 6566 (2024)
  Stcherbinine et al., GRL, 50, e2023GL103629 (2023)
  Stcherbinine et al., JGR: Planets, 127, e2022JE007502 (2022)
  Stcherbinine et al., Icarus, 369, 114627 (2021)
  Stcherbinine et al., JGR: Planets, 125, e2019JE006300 (2020)
  Valantinas et al., Nat Comm, 16, 1712 (2025)
  Smith et al., Icarus, 425, 116313 (2025)
  Toledo et al., Comm Earth & Env, 7, 717 (2024)
  Clavé et al., Scientific Reports, 14, 11284 (2024)
  Määttänen et al., SSR, 220, 63 (2024)
  Vincendon et al., Icarus, 325, 115-127 (2019)
- **21** talks in international conferences (9 as first author*).
  LPSC 2025* EPSC 2024* EPSC 2024 (2) 10th Mars Conference 2024 (2) COSPAR 2024 LPSC 2024 PDW 2023* PDW 2023 EGU 2023* EGU 2023 AGU 2022* AGU 2022 MAMO 2022* EPSC 2022 EGU 2022* EPSC 2021 EPSC 2020 9th Mars Conference 2019* EGU 2019*
- **17** posters in international conferences (9 as first author*).
  EPSC 2024 10th Mars Conference 2024* (2) 10th Mars Conference 2024 AGU 2023* AGU 2023 PDW 2023* EGU 2023 AGU 2022 MAMO 2022* MAMO 2022 LPSC 2022* LPSC 2021* LPSC 2021 EPSC 2020* LPSC 2020* 9th Mars Conference 2019
- **19** talks in international science team meetings related to active spatial missions.
  8 ACS Science Working Team
  2 OMEGA Science Team Meeting
  1 THEMIS Science Team Meeting
  5 EMM Science Team Meeting
  2 MEX/TGO Science Working Team
  1 IUVS Science Team Meeting
- **3** invited colloquiums.
  Lowell Observatory, Flagstaff, USA (2023)
  University of New Hampshire, USA (2022)
  IPAG, Université Grenoble-Alpes, France (2020)
- **5** outreach lectures: public & schools.

Responsibilities & community commitment

- Organizer of an international Workshop on Martian dust aerosols in September 2024.
- Co-manager of the observational astrophysics practical class for Master students at the Paris-Saclay University in 2020–2021.
- Reviewer for a NASA MDAP panel in February 2025.
- Reviewer for the *JGR-Planets* and *Icarus* journals since 2022, and *Nature Communications* since 2024.
- Member of the LOC of the *Elbereth Conference* from 2020 to 2022.
- Member of the LOC of the *Journées SF2A* 2025.
- Co-chair of the session *The Inner Solar System I – Oral* at AGU 2022.
- Judge for the *Outstanding Student Presentation Awards* at AGU 2022.

Mentoring

- Gaëlle Le Bail (M2) in 2025: Preparation of MIRS aerosols retrievals using DISORT.
- Lola Fourgeaud (M1) in 2024: Preparation of MIRS aerosols retrievals using DISORT.
- Zachary Hallemeyer (NAU undergrad) in 2023–2024: Automatic identification of mesospheric clouds with EMUS.
- Noora Al Mheiri (EMM apprentice, undergrad) in 2022–2023: Identifying mesospheric clouds with EMUS & EXI.
- Eman Al Tunaiji (EMM apprentice, undergrad) in 2022: Mapping Martian ices with EXI.

Teaching

- **Northern Arizona University**, *Department of Astronomy and Planetary Science*
  Guest lecture on spectroscopy of planetary atmospheres for the *AST 550 – Spectroscopy* class intended to the grad students of the department.
- **Paris-Saclay University**, *Physics department*
  Physics class / tutorials & practical class to Bachelor and Master students: 174.5-hr in 2018–2021.
  Co-manager of the observational astrophysics practical class for Masters students in 2020–2021, and for Bachelor students in 2019 and 2020.