

# Dr. Aurélien STCHERBININE

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## 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 : 3<sup>rd</sup> year of BSC – 1<sup>st</sup> year of MSC in Fundamental Physics, with honours  
2<sup>nd</sup> 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*

## EXPERIENCE

- Jan. 2022 – present: **Postdoctoral Research Scholar**, NAU, Dept. of Astronomy and Planetary Science (Flagstaff, USA)
- Analysis of orbital observations provided by the EMM "Hope" probe to study the Martian surface and atmosphere.
- 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
- Spectral identification and characterization of the Martian water-related mineralogy using IR hyperspectral data from the OMEGA instrument, and Martian water ice clouds with IR Solar Occultation observations from the ACS instrument, over large datasets of hundreds (ACS) to thousands (OMEGA) of observations.
  - Development of OMEGA-Py, a Python module including a reimplementation of the SOFT10 IDL routines, along with additional tools for data correction and interactive display (<https://github.com/AStcherbinine/omegapy>).
  - Member of the local organizing committee of the Elbereth Conference 2020 & 2021: French Astrophysicist PhD students conference with ~100 participants.
- 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.
- Apr. 2018 – June 2018 **Research internship**, IAS (Orsay, France)
- Study of stellar magnetism and implementation of an automatized *spot modeling* algorithm on stellar light curves using a MCMC method.
- May 2017 – July 2017 **Research internship**, MPS (Göttingen, Germany)
- Study of the combined effect of tidal dissipation and stellar winds in exoplanetary systems, with comparison of observations to the results of a simulation code.
- June 2016 – July 2016 **Research internship**, IAS (Orsay, France)
- Analysis of imaging and spectroscopy data of Mars and implementation of a statistical study.

## 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

3<sup>rd</sup> Dan black belt, 1<sup>st</sup> 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

### Peer-referred journals

- **A. Stcherbinine**, M. Vincendon, F. Montmessin, P. Beck (2021). Identification of a new spectral signature at 3  $\mu\text{m}$  over Martian northern high latitudes: implications for surface composition. *Icarus*, 369, 114627. <https://doi.org/10.1016/j.icarus.2021.114627>
- **A. Stcherbinine**, M. Vincendon, F. Montmessin, M. J. Wolff, O. Korablev, A. Fedorova, et al. (2020). Martian water ice clouds during the 2018 global dust storm as observed by the ACS-MIR channel onboard the Trace Gas Orbiter. *Journal of Geophysical Research: Planets*, 125, e2019JE006300. <https://doi.org/10.1029/2019JE006300>
- M. Vincendon, C. Pilorget, J. Carter, **A. Stcherbinine** (2019). Observational evidence for a dry dust-wind origin of Mars seasonal dark flows. *Icarus*, 325, 115-127. <https://doi.org/10.1016/j.icarus.2019.02.024>

### Oral communications in international conferences (1<sup>st</sup> author)

- Monitoring of Martian water ice clouds over one Martian Year with TGO/ACS-MIR. 24<sup>th</sup> EGU General Assembly, Vienna, 23–27 April 2022, abstract EGU22-1114.
- Martian Aerosols in the 3  $\mu\text{m}$  Spectral Range, During and Outside the 2018 Global Dust Event Based on the TGO/ACS-MIR Channel. 9<sup>th</sup> International Conference on Mars, Pasadena, 22–25 July 2019, abstract 6097.
- The behaviour of Martian Aerosols in the 3  $\mu\text{m}$  spectral range, during and outside the 2018 global dust event based on the TGO/ACS-MIR channel. 21<sup>st</sup> EGU General Assembly, Vienna, 7–12 April 2019, abstract 13656.

### Poster communications in international conferences (1<sup>st</sup> author)

- The Martian 3 Micrometers Northern Ring: a Spectral Witness of Recent Surface Alteration Processes under Polar Latitudes. 53<sup>rd</sup> LPSC, Houston, 7–11 March 2022. abstract 1479.
- Evidence of an Additional North Polar Component in the Martian 3 Microns Water Band Observed by OMEGA. 52<sup>nd</sup> LPSC, Virtual Conference, 15–19 March 2021. abstract 1423.
- Martian surface aqueous alteration from the study of the combined evolution of the 1.9 and 3 microns band with OMEGA. EPSC Virtual Meeting, 21 September – 9 October 2020, EPSC2020-738.
- On the Origin of the Increase of the Surface Aqueous Alteration in the Martian Polar Regions. 51<sup>st</sup> LPSC, Houston, 16–20 March 2020. abstract 1969.

## REFERENCES

References available upon request.