

Maxime Trebitsch

POSTDOCTORAL RESEARCHER AT THE INSTITUT D'ASTROPHYSIQUE DE PARIS (IAP)

98bis, boulevard Arago, 75014 Paris, FRANCE

☎ 01 44 32 81 04 | ✉ firstname.surname@iap.fr | 🏠 www.maximetrebitsch.fr | 📧 mtrebitsch | 🐦 [@maximetrebitsch](https://twitter.com/maximetrebitsch) | 📧 firstname.surname@iap.fr
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Scientific interests

Galaxy formation • Epoch of Reionization • High-redshift galaxies • Massive black holes in galaxies • Numerical simulations

Experience

Postdoctoral fellow “ERC BLACK”

INSTITUT D'ASTROPHYSIQUE DE PARIS

Paris

2016 – 2019

I work the growth of supermassive black holes in high redshift galaxies, within the BLACK ERC project led by Marta Volonteri, with the goal of studying the impact of AGN on the radiative properties of galaxies during the Epoch of Reionization. I simulate galaxies ranging from very low mass systems to bright Lyman- α Emitters. I recently started a large project, OBELISK, to study the formation of a high- z protocluster with full radiative transfer cosmological high resolution simulation.

PhD in astrophysics

OBSERVATOIRE DE LYON, UNDER THE SUPERVISION OF JÉRÉMY BLAIZOT

Lyon

2013 – 2016

Radiative transfer in high redshift galaxies: the goal of my thesis was to study the formation of dwarf galaxies at high redshift and their interaction with the surrounding intergalactic medium. I focused on the contribution of these galaxies to the reionization of the Universe, using radiation-hydrodynamics cosmological simulations.

Education

DEGREES

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| 2017 | Lecturer qualification exam , Section CNU 34, “astronomy, astrophysics” | Paris, France |
| 2016 | PhD in astrophysics , Université Claude Bernard Lyon 1 | Lyon, France |
| 2012 | Master in Physique , École Normale Supérieure de Lyon | Lyon, France |
| 2010 | Bachelor in Physique , École Normale Supérieure de Lyon | Lyon, France |

PREVIOUS RESEARCH EXPERIENCE

Extended master thesis

OBSERVATOIRE DE LYON

Lyon, France

2012 – 2013

- *Simulation the polarization properties of Lyman- α blobs*, with Jérémy Blaizot and Anne Verhamme.

Short Master thesis

UNIVERSITY OF OXFORD

Oxford, UK

2011

- *Forecasting Cosmological Constraints with Weak-Lensing*, with Pedro Ferreira.

RESEARCH SCHOOLS

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| 2018 | 48th Saas-Fee Winter School , Black hole formation and growth | Switzerland |
| 2013 | CosmoComp/Charm School , Radiative transfer treatments for astrophysical applications | Leiden, Netherland |
| 2013 | 43rd Saas-Fee Winter School , Star formation in galaxy evolution: connecting numerical models to reality | Switzerland |

Teaching

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| 2013 – 2016 | Université Lyon 1 <i>Optics and Spectroscopy</i> problems and labs for 2 nd year students (40h / year) |
| 2013 – 2016 | Université Lyon 1 <i>Bibliography</i> , lectures to 1 st year students (9h / year) |
| 2013 – 2016 | École Normale Supérieure de Lyon General physics labs for future high school teachers (18h / year) |

Outreach

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| 2016 | Contribution to the art & science project PLATONIUM from CNRS for the “Fête des Lumières” 2016 in Lyon. |
| 2013 | Astronomy festival “Oufs d’astro” at the Vaulx-en-Velin planetarium |
| 2012–2018 | Frequent talks to school students on optics and astronomy at the Observatoire de Lyon (until 2016), then at the IAP. |
| 2012–2015 | Regular contributions to the Science Fair and Open Days at the Observatoire de Lyon |

Honors

2016 **Balzan Fellowship**, *Junior Research Fellow* invited for 8 weeks to work with A. Slyz and J. Devriendt

Oxford, UK

Duties

ADMINISTRATIVE

2014–2016 **PhD students representatives**, “Physics and Astrophysics” graduate school (PHAST) in Lyon

2012–2013 **Student representative at the Scientific Council**, École Normale Supérieure de Lyon

2011–2012 **Student representative at the Executive Council**, École Normale Supérieure de Lyon

CONFERENCES

2018 **LOC member**, 34th IAP colloquium, *Massive black holes in evolving galaxies: from quasars to quiescence*

2018 **Co-chair**, Postdocs colloquium at the Institut d’Astrophysique de Paris

2014 **Co-chair**, PhD students colloquium at the Observatoire de Lyon

OTHER

Referee *Astronomy & Astrophysics, Monthly Notices of the Royal Astronomical Society* (1 or 2 articles per year since 2016)

Projects

OBELISK PRACE project

IAP, Paris

PI OF THE PROJECT

2018–2019

- 20,000,000 CPU-hours awarded on the IRENE supercomputer at TGCC/CEA
- RHD simulation of the formation of a proto-cluster down to $z = 2$

DARI time allocation

IAP, Paris

LED BY M. VOLONTERI

2017–2019

- Total of 11 700 000 cpu-hours in 2017 on OCCIGEN, 2 000 000 hours dedicated to personal projects
- Total of 19 600 000 cpu-hours in 2018 between OCCIGEN and CURIE, 7 000 000 hours dedicated to personal projects

“ORAGE” ANR project

CRAL, Lyon

COLLABORATION DURING THE PHD

2014–2016

- Project led by B. Semelin (LERMA), J. Blaizot (CRAL) and P. Ocvirk (Observatoire de Strasbourg)

Co-I of a FORS2@VLT program

CRAL, Lyon

PI PIERRE NORTH

2014

- 2.5 nights to observe quasar SDSS J124020.91+145535.6

Skills

LANGUAGES

French Mother tongue

English Fluent

German Notions

NUMERICAL TOOLS

Languages Fortran, C/C++, Python, IDL, bash, LaTeX

Simulation codes RAMSES-RT (radiation-hydrodynamics cosmological simulations), RASCAS (Lyman- α radiative transfer)

Simulation processing MUSIC and DICE (initial conditions), HALOMAKER (halo analysis tools for cosmological simulations)

Analysis tools PYMSES, yt, astropy