Maxime Rey

PhD in Astrophysics

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gitlab *github*
ORCID ads

Employment

2023–now **Postdoctoral researcher**, *with Taysun Kimm*, Centre for Galaxy Evolution Research, Yonsei University (South Korea).

2025–now **Model**, MADDEN Musinsa.

2019–2022 **Ph.D. in Astrophysics**, *supervised by Jérémy Blaizot*, Centre de Recherche Astrophysique de Lyon, ENS de Lyon (France).

2021–2022 **Board of directors**, *Kayoo (climbing association)*.

2019–2021 **Popularizer**, Planétarium de Vaulx-en-Velin (France).

Education

2016–2019 **Magistère de Physique Fondamentale d'Orsay**, Université Paris Sud.

2018–2019 **Master 2 (M.sc.) - Astrophysics**, Université Lyon 1, *valedictorian*.

2017–2018 **Master 1 - School of Physics and Astronomy**, University of Manchester (UK).

2016–2017 **Licence 3 (B.Sc.) - Fundamental Physics**, Université Paris-Sud.

2014–2016 **CPGE MP**[W], Lycée Jean Perrin, *with honours*.

Grant

2019–2022 **PhD scholarship**.
École Doctorale de Physique et Astrophysique de Lyon (ED 52 PHAST)

Research interests

Understanding circumgalactic medium properties through simulations and observations.

Constraining the baryon cycle with numerical simulations of galaxy formation.

Improving star formation and feedback subgrid models.

Responsibilities

2026–now AAS reviewer

2025–now Invited lectures on the CGM (Yonsei University)

2023–now Author and active contributor to RAMSES-SNO, a structure supporting the development and use of the RAMSES code.

2026–now Galaxy Journal club organisation (Yonsei University's astrophysics department)

2023–2026 Astro-ph organisation (CASCADE team + University of Seoul)

Academic Engagement

Mentoring

2023–2025 Jiyoung Choe, Master student at Yonsei University
Uncertainties in high-z galaxy properties inferred from SED fitting using JWST NIRCam photometry.

2023–2024 Hyunwoo Song, Master student at Yonsei University
Finding the relation between O32 and LyC escape fraction using RAMSES-RTZ.

Supervision

2024 (3 mo.) Chiyu Huang, 2^{nd} year at Imperial College London)
Inferring mass outflow rates from simulated absorption spectra of idealised galaxies

Classroom Activities (194h)

Masters Invited lecture on the CGM (6h)

2^{nd} year Astrophysics (103.5h, tutorials), Electromagnetism (24h, khôlles[W])

1^{st} year Thermodynamics (45h, lab), Optics and electricity (15.5h, lab)

Outreach

2019–2022 Member of the outreach association DéMesures

2021–2022 Astrosymphonie (outreach conference with a philharmonic orchestra)

2019–2022 Congrès scientific des enfants (supervising junior high school students on a scientific project that they will present in a congress with other schools)

2022 Geek/Japan touch with the outreach association DéMesures

2021 Invited speaker for a 75 min outreach conference (Société Astronomique de Lyon)

2021 Regional finalist for the outreach contest MT180

2019 Déclics, speed dating with researchers in high schools.

2019 Outreach nights at the Observatory of Lyon

Projects

2025–2026 **ARCHITECTS III simulations**
Extension of the ARCHITECTS simulations at high CGM resolution, with additional physics and a new star formation model.

2024–2025 **CGxM simulations**
Suite of ≈ 30 idealised simulations with the SINK star formation model. Made to test and refine the SINK model (17 simulations), and to understand the effect of increased CGM resolution, down to 9 pc (10 simulations).

2021–2025 **ARCHITECTS simulations**
Cosmological zoom-in simulations (Rey et al. 2025, 2026).

2019–2021 **Gx idealised simulations suite**
≈ 70 galaxy simulations down to 9 pc made to test feedback models (Rey 2022).

Feb. 2019 to Jun. 2019 **Modelisation of slitless spectrographic observations from the Auxiliary Telescope within the framework of the Large Synaptic Survey Telescope**.
Master 2 - Magistère 3 internship supervised by Yannick Copin, Cosmos group, IPNL

Nov. 2018 to Jan. 2019 **Developpement of a 2D hydrodynamical code and application to the modelisation of a supernova**.
Master 2 project supervised by Jéremy Blaizot, CRAL

Oct. 2018 to Dec. 2019 **Photometric study of the open cluster NGC 1245**.
Study made after a week spent at the Haute-Provence Observatory (OHP)

Jan. 2018 to May 2018 **Effect of quasi-two-dimensional confinement on the dynamics of a plume thermal**.
MPhys Project supervised by Julien Landel, Manchester Centre for Nonlinear Dynamics

Sept. 2017 to Jan. 2018 **Collimation of the High Luminosity Large Hadron Collider using a Hollow Electron Lens**.
MPhys Project supervised by Rob Appleby, Particle Physics Group (Hilumi Project)

Skills

Simulation	RAMSES, MUSIC, KROME, RASCAS
Languages	Python, LaTeX, Git, Bash, Fortran, C/C++, Matlab, Leekscript, Arduino & SQL
Clusters	Tardis, LyoCCF (Tier-3), PSMN (Tier-2), Nurion, Olaf (Tier-1), IRENE/TGCC (Tier-0).

Languages

French: Native

English: Proficient (EF SET C2, TOEIC 98%)

Spanish: Intermediary (B2)

Korean: Beginner

Academic presentations

Organisation

[1] **2026 RAMSES user meeting**, LOC, Yonsei University, Seoul, South Korea, April 2026

[2] **8th Yonsei Astro Poster Jamboree**, Yonsei University, Seoul, South Korea, February 2024

[3] **Congrès des Doctorants de l'Observatoire des Sciences de l'Univers**, SOC & LOC, École Normale Supérieure de Lyon, Lyon, France, Nov. 2021 (cdd2021)

[4] **BlueMUSE Science workshop**, LOC, online, Nov. 2020 (bluemuse-sw)

[5] **European Week of Astronomy and Space Science**, volunteer, Université Jean Moulin Lyon 3, Lyon, France, June 2019 (ewass2019)

Seminars

[1] **KDESci group meetings**, KIAS, Seoul, South Korea, February 2026

[2] **CGER Galaxy Forum**, Yonsei University, Seoul, South Korea, November 2023

[3] **Astrolunch**, Yonsei University, Seoul, South Korea, March 2023

[4] **Séminaire Galaxies**, Institut d'Astrophysique de Paris, Paris, France,/online, January 2023 (galsem)

[5] **Astrolunch**, Hebrew University of Jerusalem, Jerusalem, Israel/online, January 2022

Invited talks

[1] **3DGasFlows: A comprehensive view of the CGM/IGM with background Quasars**, Centre de Recherche Astrophysique de Lyon, Lyon, France/online, May 2023 (3dgasflows)

[2] **Recent Advances in Galaxy Formation and Reionization**, Yonsei University, Seoul, South Korea/online, November 2022 (galrei22)

Conference talks

[1] **Simulations GEARS**, Kavli IPMU, Kashiwa, Chiba, Japan, November 2026 (gears)

[2] **BUGS 2026**, KIP, Heidelberg, Germany, September 2026 (bugs2026)

[3] **RAMSES User Meeting 2026**, Yonsei University, Seoul, South Korea, April 2026 (rum26)

[4] **International Workshop on Galaxy Formation + AGORA in Asia 2025**, the University of Osaka, Japan, May 2025 (agora25)

[5] **2024 NewCluster workshop**, Gangneung, South Korea, August 2024 (nc24)

[6] **10th GALAXY EVOLUTION WORKSHOP**, Taipei, Taiwan, August 2024 (gew10)

[7] **Journées 2024 of the French Society of Astronomy & Astrophysics**, Marseille, France, June 2024 (sf2a24)

[8] **109th Korean Astronomical Society Spring Meeting**, Yeosu, South Korea, April 2024

[9] **RAMSES SNO kick-off meeting**, École Normale Supérieure de Lyon, Lyon, France, December 2023 (RAMSES-sno-ko)

[10] **2023 IAP colloquium: New simulations for new problems in galaxy formation**, Institut d'Astrophysique de Paris, Paris, France, December 2023 (iapsymposium2023)

[11] **RAMSES User Meeting 2023**, Oxford University, Oxford, United Kingdom, April 2023 (rum2023)

[12] **GALPAC day**, Hermitage de Moly, Lyon, France, December 2022

[13] **Journées scientifiques "Galaxies" du PNCG 2022**, Observatoire astronomique de Strasbourg, Strasbourg, France, June 2022 (jpncg22)

[14] **3DGasFlows consortium**, Commissariat à l'énergie atomique et aux énergies alternatives (CEA), Paris, France/online, December 2021 (3DGasFlows)

[15] **SPHINX-RASCAS-TRIPLE meeting**, Villa Clythia, Fréjus, France, October 2021

[16] **RAMSES User Meeting 2021**, online, September 2021 (rum2021)

[17] **MEGAFLOW consortium**, online, September 2021

[18] **SPHINX-RASCAS-TRIPLE meeting**, online, February 2021 (rascas21)

[19] **SPHINX-RASCAS-TRIPLE meeting**, online, June 2020

[20] **3DGasFlow consortium**, online, April 2020

[21] **SPHINX-RASCAS-TRIPLE meeting**, Geneva Observatory, Geneva, Switzerland, December 2019

[22] **GALPAC day**, Hermitage de Moly, Lyon, France, December 2019

[23] **Congrès des Doctorants de l'Observatoire des Sciences de l'Univers**, Université Claude Bernard Lyon 1, Lyon, France, November 2019 (cdd2019)

Posters

[1] **10th Yonsei Astro Poster Jamboree**, Yonsei University, Seoul, South Korea, November 2025 (jam10).

[2] **18th Potsdam Thinkshop in 2025**, Leibniz Institute for Astrophysics Potsdam, Potsdam, Potsdam, July 2025 (thinkshop25).

[3] **8th Yonsei Astro Poster Jamboree**, Yonsei University, Seoul, South Korea, February 2024 (jam8), best poster (selected by participants).

[4] **7th Yonsei Astro Poster Jamboree**, Yonsei University, Seoul, South Korea, May 2023 (jam7)

[5] **107th Korean Astronomical Society Spring Meeting**, Jeonju, South Korea, April 2023 (kas107)

Academic referees

Jérémy Blaizot	Astronomer (CNAP, CRAL)	e-mail: jeremy.blaizot@univ-lyon1.fr
Taysun Kimm	Associate Professor (Yonsei University)	e-mail: tkimm@yonsei.ac.kr
Joakim Rosdahl	Astronomer (CNAP, CRAL)	e-mail: karl-joakim.rosdahl@univ-lyon1.fr