

Antoine MARCHAL | Postdoctoral Fellow

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RESEARCH INTEREST	Interstellar-medium Turbulence Magneto-fluid dynamics High-velocity clouds	
PROFESSIONAL EXPERIENCE	Postdoctoral Fellowship, CITA, Univ. of Toronto, Canada Supervisor : Peter G. Martin	2019-2022
	Ph.D. in Astrophysics, CEA/IAS, France Advisor : Marc-Antoine Miville-Deschênes On the multiphase structure of the turbulent neutral ISM	2016-2019
	Intern within the Commissariat à l'énergie atomique, CEA Advisor : Monique Arnaud & Amandine Le-Brun Understanding departure from self-similarity in adiabatic simulations of galaxy clusters	2016
	Intern within the Institut d'Astrophysique de Paris Advisor : Raphaël Gavazzi Probing the density profile of galaxies using galaxy-galaxy lensing	2015
OBSERVING EXPERIENCE	IRAM 30m telescope, 150h Program : Resolved molecular gas at the interface of the Draco nebula	2017
SUCCEFULL PROPOSALS	OH and CH in a Pristine High-Latitude Cloud Parkes telescope, co-Investigator, 14h	2018
	Resolved molecular gas at the interface of the Draco nebula IRAM 30m telescope, co-Investigator, 163.5h	2017
EDUCATION	Ph.D. in Astrophysics, Université Paris-Saclay, France Advisor : Marc-Antoine Miville-Deschênes On the multiphase structure of the turbulent neutral ISM	2019
	Master of science in Astrophysics (2nd year), with high honors Section "Astronomie, Astrophysique et Ingénierie Spatiale" Observatoire de Paris, France	2016
	Master of science in Astrophysics (1st year), with high honors Section "Sciences de l'Univers et Technologies Spatiales" Observatoire de Paris, France	2015
	Bachelor of science in Physics and Chemistry, with honors University of Reims Champagne-Ardenne, France	2014

PUBLICATIONS *First author*

Marchal & Miville-Deschênes, to be submitted	2020
Thermal and turbulent properties of the Warm Neutral Medium	
Marchal & Martin, to be submitted	2020
Resolving the formation of cold HI filaments in the high velocity cloud Complex C	
Marchal et al. 2019, A&A, Volume 626, id.A101, 19 pp.	2019
ROHSA : Regularized Optimization for Hyper-Spectral Analysis - Application to phase separation of 21 cm data	

Collaboration

Roueff et al., accepted	2020
C18O, 13CO, and 12CO abundances and excitation temperatures in the Orion B molecular cloud	
Boutéraon et al., submitted	2019
Spatial distribution of the aromatic and aliphatic carbonaceous nano-grains features in the protoplanetary disk around HD 100546	

Work in progress

Marchal et al., in preparation	2020
Exploring the use of regularized optimization for the GASKAP absorption line survey	
Daddi et al., in preparation	2020
A massive galaxy group fed by cold gas infall at $z=2.91$	
Miville-Deschênes & Marchal, in preparation	2020
Coming soon	

CONFERENCES	AAS 2020 (virtual) meeting U.S.A	Invited, Jun. 2020
WORKSHOPS	Boskovic Institute (virtual) seminar Zagreb, Croatia	Invited, Apr. 2020
SEMINARS	CITA seminar Toronto, Canada	Invited, Dec. 2019
	AstroDat IPa Saclay, France	Invited, Nov. 2019
	So-star workshop IPa Saclay, France	Invited, Sept. 2019
	Seminar/Workshop ENS Paris, France	Invited, Mar. 2019
	Seminar IAS Orsay, France	Invited, Dec. 2018
	Heidelberg-Harvard workshop Heidelberg, Germany	Talk, Dec. 2018
	GdR-ISIS meeting Paris, France	Nov. 2018
	The Milky Way in the Age of Gaia Orsay, France	Invited, Oct. 2018
	Olympian Symposium Paralia Katerini, Greece	Poster, Jun. 2018
	Cosmo21 - Statistical challenges in cosmology Valencia, Spain	Poster, May. 2018
	LMPA seminar CEA, Saclay, France	Talk, May. 2018
	Elbereth 2017 Paris, France	Nov. 2017
	The interstellar medium beyond 3D, Orsay, France	Jul. 2017
	The physics of the ISM - ISM-SSP Köln, Germany	Feb. 2017

	Elbereth 2016 Paris, France	Nov, 2016
	Astrolille - The Next biennial PCMI conference Lille, France	Oct. 2016
INSTITUTE	The Interstellar Institute (member) International research network devoted to studies of the ISM physics	since 2019
RESEARCH PROJECT	Hyperstars collaboration (member) Software development : ROHSA	2016-2019
	GASKAP collaboration (member) Science and Software development	Since 2019
SOFTWARE	ROHSA - Regularized Optimization for Hyper-Spectral Analysis Source : Fortran 90 Wrapper : python 3.8 (ROHSApy)	2019
	SPARK - Regularized Optimization for absorption line survey Source : python 3.8	2020
TEACHING ACTIVITIES	Students	
	Mark Lamorena (Master, CITA) co-Advisor with Peter G. Martin Kinematic and thermal properties of compact HVCs near the MW galaxy	2020
	Jérémy Besson (Licence, L2S) co-Advisor with Nicolas Gac Parallel programming of ROHSA using GPUs	2019
	Lectures	
	Data analysis for astrophysicists	Master 1, 2016-2019
	Special relativity for physicists	Licence 2, 2016-2019
	Geometrical optics and kinematics for biologists	Licence 1, 2016-2018
SERVICES	Referee for peer-reviewed journal	
	Astronomy & Astrophysics (A&A) Monthly Notices of the Royal Astronomical Society (MNRAS)	
	Seminar	
	CITA Blackboard Seminar (Co-Organizer)	Since 2019
SPECIALIZED TRAINING	Doctoral Training Artificial intelligence for astrophysics in the big-data area, Paris, France	2018
	Doctoral Training Magneto-fluid dynamics in astrophysics, Paris, France	2018
	Astrosim summer school	2017

Numerical school for astrophysics, Lyon, France

GPU2017 winter school

2017

Signal image : Architecture et programmation GPU, Gnenoble, France

**COMPUTER
SKILLS**

Programming languages : Fortran 90 | C | Python 2.7/3.8 | IDL | Bash | L^AT_EX

Operating Systems : MacOS | Linux-Ubuntu | Windows

Office suites : Keynote | Pages | Libre office | Microsoft office

REFERENCES

Marc-Antoine Miville-Deschênes

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François Orieux

Assistant professor

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Peter G. Martin, OC, FRSC, PhD

Professor, Canadian Institute for Theoretical Astrophysics

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