



Thomas Vuillaume

High-energy Astrophysicist & Data Scientist



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languages

French native
English fluent
Spanish basics

programming

Collaborative project
management
Python, C, C++
Code optimization
Machine Learning
Deep Learning
Parallel programming
(OpenMP/MPI)
Matlab, Maple

skills

Communication ●●●●●
Programming ●●●●○
Creativity ●●●●●
Adaptability ●●●●○
Management ●●●●○
Team player ●●●●●

experience

- 2016–Now **Post-doctoral position** under the H2020 project ASTERICS LAPP, Annecy, France
Development of high performance data analysis algorithms • Principal investigator of the GammaLearn project leveraging deep learning techniques to analyse data from the Cherenkov Telescope Array - Mentoring of a PhD student since October 2017 • Task leader on data systems integration for the ASTERICS project • Scientific coordination of several international events on computing in the astronomy and astroparticle domains
- 2016–Now **Member** of the Cherenkov Telescope Array consortium
- 2013–Now **Member** of the H.E.S.S. collaboration
Participation to observation shifts in Namibia
- 2012–2016 **Research project** in high-energy astrophysics UJF, Grenoble, France
Under the supervision of Pr G. Henri & Dr P-O. Petrucci
Modeling of active galactic nuclei emission at Fermi's era
Development of a stratified jet model to reproduce the emission from AGN
Development of an optimization algorithm based on genetic algorithms
- 2012–2015 **Teaching** in Mathematics UJF, Grenoble, France
Teaching mathematics to undergraduate students at University
- 2015 **Mentoring** of a master student IPAG, Grenoble, France
Mentoring of a 6 months intern on optimization problems
- 2012–2016 **Animation** of observation nights IPAG, Grenoble, France
Popularization of astrophysics and astronomy to general public and students with the help of a 400mm telescope
- 2010 **Research assistant** (summer intern) University of Exeter, England
Under the supervision of Dr F. Pont
Development of a python code based on genetic algorithms applied to exoplanets detection
- 2009–2011 **Student jobs** in restaurants and bars
- 2007–2009 **Coaching teacher** in mathematics, physics & chemistry
Private tuitions to students from middle school to university

education

- 2015 **PhD** in Astrophysics UJF, Grenoble, France
Specialization in high-energy astrophysics
- 2012 **Master degree** in engineering (w/ honors) Grenoble INP, France
Specialization in Nanosciences
- 2009 **Bachelor degree** in physics (w/ honors) Grenoble INP, France

interests

Photography Registered as photography artist. Work displayed in several public exhibitions and magazines. www.thomasvuillaume.com

Sports Alpine skiing, ski touring, paragliding, rock climbing
Former player of a national level competitive water-polo team

Travels Solo trip around the world in 2010-2011
Hosting of foreign travelers

Scientific communication

Contributed talk and proceeding - *An inhomogeneous jet model for the broad band emission of radio loud AGNs*, ICRC, July 2017

Proceeding - *High Performance Computing algorithms for Imaging Atmospheric Cherenkov Telescopes*, ICRC, July 2017

Proceeding - *ps²chitt! - A Python package for the modelling of atmoSpheric Showers and CHerenkov Imaging Terrestrial Telescopes*, ICRC, July 2017

Invited talk - *When High Performance Computing meets Astronomy - A concrete case*, HEP Software Foundation Workshop, June 2017

Contributed talk - *On the impossibility to make a reconstruction from pixel-to-pixel comparison - and ways to overcome the issue*, CTA consortium meeting, June 2017

Contributed talk - *High performance reconstruction algorithms for CTA*, CTA consortium meeting, June 2017

Contributed talk - *PKS 2155-304 multi-wavelength campaign*, H.E.S.S. collaboration meeting, April 2017

Contributed talk - *High Performance Computing and vectorisation applied to Hillas reconstruction allowing very fast analysis of the data*, CTA consortium meeting, October 2016

Proceedings - *Application of High Performance Computing and vectorisation solutions to data analysis for Imaging Atmospheric Cherenkov Telescopes*, ADASS XXVI, October 2016

Vuillaume 2015 - PhD thesis *Modeling the emission of active galactic nuclei at Fermi's era*, Archives ouvertes <https://tel.archives-ouvertes.fr/tel-01254723v2>

Vuillaume et al 2015 - *Variation of bulk Lorentz factor in AGNs jets due to Compton rocket in a complex photon field*, A&A, V. 581, September 2015

Contributed talk - *An inhomogeneous jet model for the broad band emission of radio loud AGNs*, Journées de la SF2A, June 2015

Contributed talk - *An inhomogeneous jet model for the broad band emission of radio loud AGNs*, Relativistic Jets: Creation, Dynamics and Internal Physics, April 2015

Contributed talk - *Variation of AGNs jets celerity due to Compton rocket effect in a complex photon field*, Accretion and Outflows throughout the scales: from young stellar objects to AGNs, October 2014

Proceedings - *Influence of an AGN complex photon field on the jet bulk Lorentz factor through Compton rocket effect*, IAU Symposium: Extragalactic jets from every angles, September 2014

Contributed talk - *Broadband emission from stratified jet model in the two-flow paradigm*, From Black Holes to Cosmic Rays: when plasmas go wild, October 2013