Vincent Picouet

Project scientist, systems engineer

Pasadena, California, USA
+33 (0)7 83 61 66 55
vincent@picouet.fr
All publications

Education

2018-2021 **Ph.D. in astrophysics**, *AMU (Marseille, France), Graduated in Dec. 2021*
Supervisors: S. Arnouts (LAM), D. Schiminovich (Columbia University)
Subject: CLAUDS, FIREBall: a UV driven approach to understand what is darkening the shiny destiny of galaxies,

2013-2017 **Ecole Centrale**, *Marseille, France*, Engineering school - Third year at Centrale Paris, Program: Current models in physics, research and applications

Professional Experience

2023–Now **Postdoctoral Scholar Research Associate**, Caltech (California Institute of Technology), under the supervision of Pr. Christopher Martin

- **FIREBall-2:** Project scientist / systems engineer (Project funding: $\sim$ 10M$)
- **SCWI:** Systems engineer. In charge of requirements, instrument modeling & obs predictions, trade studies, risks & mitigation strategies, AIT planning...

2022–2023 **Postdoctoral research scientist**, Columbia University, Columbia Astrophysics Lab, under supervision of Pr. David Schiminovich

- **FIREBall-2**: Science lead, main data analyst, in charge of trade studies, performance characterization, test implementation/analysis, processing pipeline development. Design of FIREBall exposure time calculator

2019–2022 **Graduate Student** , Laboratoire d'Astrophysique de Marseille, Galaxy Evolution, under supervision of Stéphane Arnouts and David Schiminovich.

- **CLAUDS:** Big data analysis, data reduction pipeline, catalog generation, SFR functions analysis & comparison with state-of-the-art simulations
- **FIREBall-2:** Scientific analysis of flight data. First space characterization of electron-multiplying CCDs

2017–2018 **Research Engineer**, Laboratoire d'Astrophysique de Marseille, **CeSAM**, Under the supervision of Bruno Milliard

- **FIREBall-2:** In charge of evaluating the instrument's scientific performances. Instrument model's improvement & target selection strategy definition.

2016–2017 **Internship**, Columbia University, Columbia Astrophysics Lab, under supervision of David Schiminovich

- **BINGO:** Work on AMR hydro-dynamical simulation (RAMSES, ENZO) coupled to CLOUDY-based emission model for observations' predictions

2014–2015 **Academic Project**, SCHLUMBERGER, Paris / Cambridge

- **Whirling Test Bench Project Manager** (team of 6): Offshore drill pipe whirling effect study (comparison theoretical model vs experimentation bench)

Skills

Systems Engineering	Science to technical requirements - trade studies - risk assessment & mitigation strategy - test prioritization, implementation & analysis - performance evaluation
Instrumentation	Alignment/AIT strategies definition, calibrations, detector characterization, calibration system, coatings, thermal system, baffling/straylight
Data Science	Statistics - data collection & reduction - analysis, modeling & interactive visualization - correlations & clustering - FAIR mgmt - big data & parallel computing
Computing languages	Python (object-oriented), Linux (on computing clusters), MatLab, Git, SQL, Fortan, HTML/CSS, LaTex
Software	+: DS9, TOPCAT, SExtractor, Aladin LePhare ∼: ZEMAX, FARO, Cloudy
Technology	Telescope use, Clean room (ISO5), 3D printer, surface metrology, laser cutting
Soft skills	Team management, planning, rapid learner, idea synthesis, Adaptability

Other Professional Activities

2025	Scientific reviewer for NASA APRA/SAT programs
2023	Mentoring & advising of graduate students (A. Saillard, X. Deng & Z. Lin)
2022	Multiple observing runs at MDM (Kitt Peak, CHαS) and Keck (Hawaii, KCWI) Observatories
Since 2022	Scientific reviewer for the Journal of Astro. Telescopes, Instruments, and Systems
Since 2018	Participation to 3 flight campaigns and 3 integration campaigns of FIREBall-2

Data analysis and visualization developments

Since 2020	**pyds9plugin** , Development of an interactive image processing software scalable into a multi-processing pipeline : $\sim$ 20 clones/month, 30$\star$
Since 2023	**generic-etc** , Development of a generic instrument model, exposure time calculator and image simulator: used for $>$ 20 astronomical instruments

Languages

- **French:** Mother tongue
- **English:** Fluent (Toeic: 920/990 + 6 years abroad)
- **Spanish:** Advanced

Interests

Social Sciences	Transversal & quantitative analysis of modern societies' evolution, geopolitics, economy, contemporary crisis/drifts, risks and resilience, information theory
Sport	Martial art (black belt), free diving (lev. 2), gymnastics, kitesurf, mountaineering
Other	Astro-photography , Saxophone, writing (poetry/essays), philosophy, debate

Selected Publications

2025 **Picouet, V.**, *Milliard, B., Grange, R., Picot, L., Balard, P., Lin, Z., et al.*
Optimized cooling system for balloon-borne astronomy: the FIREBall-2 solution, JATIS, 11(2), 024001 (2025). doi:10.1117/1.JATIS.11.2.024001

2025 **Miles, D., Picouet, V.**, *Lin, Z., Cevallos-Aleman, I., Schiminovich, D., et al.*
The 2023 Flight of the Faint Intergalactic-medium Redshifted Emission Balloon, Astrophysical Journal Supplement Series, 278(2), 58 (2025). doi:10.3847/1538-4365/add15c

2025 **Picouet, V.**
Stratospheric Balloon Payloads for Astronomy: the challenge of coping with rising complexity, arXiv e-prints, arXiv:2501.16047 (2025). arXiv:2501.16047

2025 **Picouet, V.,** , *Kyne, G., Hamden, E., Valls-Gabaud, D., Miles, et al.*
Delta-doped electron-multiplying charge-coupled device for photon-starved ultraviolet astronomy: modeling, performance, trade-offs, and prospects for future upgrades, JATIS, 11(1), 011206 (2025). doi:10.1117/1.JATIS.11.1.011206

2024 **Picouet, V.**
Bridging the UV gap between HST and HWO in France: The interest of suborbital/CubeSats projects, in *SF2A-2024: Proceedings of the Annual Meeting of the French Society of Astronomy and Astrophysics*, 461–464 (2024). ADS entry

2023 **Picouet, V.**, *Arnouts, S., Ilbert, O., de la Torre, S., Sawicki, M., et al.*
HSC-CLAUDS survey: The star formation rate functions since $z \sim 2$ and comparison with hydrodynamical simulations, Astronomy & Astrophysics 675, A164 (2022)

2022 **Desprez, G.**, ***Picouet, V.***, *Arnouts, S., Sawicki, M., Moutard, T., et al.*
CFHT Large Area U-band Deep Survey: Data release of CLAUDS–HSC-SSP–VIRCAM combined photometry & photometric redshifts, A&A, 670, A82 (2022)

2022 **Picouet, V.**, *Picouet, T.*
Tackling the issue of image processing via plugins: pyds9plugin, ADAS (2022)

2020 **Picouet, V.**, *Milliard, B., Kyne, G., Vibert, D., Schiminovich et al.*
End-to-end ground calibration and in-flight performance of the FIREBall-2 instrument Journal of Astronomical Telescopes, Instruments, and Systems, 6,p. 044004 (2020)

References

- **Milliard Bruno**
  Lab. d'Astrophysique de Marseille
  Bruno.Milliard@lam.fr
- **Pr. Christopher Martin**
  Director, Caltech Optical Observatories
  Edward C. Stone Professor of Physics
  California Institute of Technology
  martinc@caltech.edu
- **Stephane Arnouts**
  Head of the LAM laboratory
  Lab. d'Astrophysique de Marseille
  Stephane.Arnouts@lam.fr
- **David Valls Gabaud**
  Observatoire de Paris
  david.valls-gabaud@obspm.fr
- **Pr. David Schiminovich**
  Associate Professor and Chair
  Co-Director, Columbia Astrophysics Lab
  Department of Astronomy
  ds@astro.columbia.edu
- **Olivier La Marle**
  Head of CNES Space Science dpt
  Centre National d'Etude Spatiale
  Olivier.LaMarle@cnes.fr