

Pierre Vernazza

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Professional experience

- Jan 2013 – Present Researcher at CNRS (CR1), LAM, FR.
May 2011 – Dec 2012 Research Fellow at the European Southern Observatory, DE.
Dec 2010 – Apr 2011 Visiting scientist at Laboratoire d'Astrophysique de Marseille (LAM), FR.
Dec 2007 – Nov 2010 Research Fellow at the European Space Agency (ESTEC), NL.
Jan 2007 – Apr 2007 Visiting scientist at Massachusetts Institute of Technology, Cambridge, USA.
Sep 2006 – Nov 2007 Teaching and research assistant, Paris VII University, FR.

Education

- 2015 – 2016 HDR, Aix-Marseille University (LAM). Defense: may 17th, 2016.
2003 – 2006 Ph.D. in Astronomy, Paris Observatory (LESIA). Defense: september 29th, 2006.
Subject: *Study of the physical properties of Asteroids*. Supervisor: M. Fulchignoni.

Supervision of graduate (PhD) students

- 2016 – 2019 Alexis Drouard
Supervisor: P. Vernazza (LAM), Co-supervisor: J. Gattacceca (CEREGE)
2015 – 2018 Thomas Ronnet (now Post doc at Lund Univ, Sweden with A. Johansen)
Supervisor: O. Mousis (LAM), Co-supervisor: P. Vernazza (LAM)
2013 – 2016 Michael Marsset (now Post doc at MIT, USA with F. E. DeMeo)
Supervisor: P. Vernazza (LAM)
Co-supervisors: C. Dumas (ESO/TMT) and A. Delsanti (LAM)

Scientific activities/responsibilities

- 2018 – Co-I of the MERTIS instrument onboard BepiColombo.
2017 – 2019 PI of an ESO Large Programme on VLT/SPHERE (152h in service mode). The science goal is to constrain the density of a substantial fraction of the largest asteroids.
2004 – 2017 i) PI of more than 30 successful observing proposals on the largest ground based telescopes (VLT, NTT, TNG, IRTF) as well as the airborne telescope SOFIA.
ii) PI of several laboratory ion irradiation experiments on various minerals and meteorites to simulate the effect of the solar wind irradiation on these materials (see Vernazza et al. 2006, 2009, 2013).

- 2014 – Co-PI of the FRIPON network. The aim of FRIPON is to determine the source regions of meteorites and to recover meteorites just after their fall. We foresee operations for about 10 years. See <https://www.fripon.org/>.
- 2015 PI of a mission proposal on asteroid science (*Nautilus*) in response to the ESA call for the M4 mission (more than 180 supporters).
- 2013 PI of a white paper on asteroid science (*Insider*) in response to the ESA call for ideas for future L-class missions. We proposed to explore the interior of primordial asteroids and the origin of Earth's water. The white paper was selected for presentation in Paris.
- 2010 Co-PI of a mission proposal with P. Lamy on Trojan science (*Trojan's odyssey*) in response to the ESA call for the M3 mission (see Lamy et al. 2012)

Publications

Author or co-author of 72 papers among which 20 papers as first author (including 2 letters in Nature and 2 book chapters; the main ones are listed below) and 12 papers as second author (including 4 papers behind one of my PhD students).

P. Vernazza, M. Broz, A. Drouard, et al. The impact crater at the origin of the Julia family detected with VLT/SPHERE? *A&A* **618**, 2018.

P. Vernazza & P. Beck. Composition of Solar System Small Bodies. In *Planetesimals: Early Differentiation and Consequences for Planets* (L. T. Elkins-Tanton, B. P. Weiss, eds.), Cambridge University Press, 2017.

P. Vernazza, J. Castillo-Rogez, P. Beck et al. Different origins or different evolutions? Decoding the spectral diversity among C-type asteroids. *AJ* **153**, 2017.

P. Vernazza, M. Marsset, P. Beck, R. P. Binzel et al. Compositional Homogeneity of CM Parent Bodies. *AJ* **152**, 2016.

P. Vernazza, M. Marsset, P. Beck, R. P. Binzel, M. Birlan, R. Brunetto, F. E. DeMeo, Z. Djouadi, C. Dumas, S. Merouane, O. Mousis, B. Zanda. Interplanetary Dust Particles as Samples of Icy Asteroids. *The Astrophysical Journal* **806**, 10p. (2015).

P. Vernazza, B. Zanda, R. P. Binzel, T. Hiroi, F. E. DeMeo, M. Birlan, R. Hewins, L. Ricci, P. Barge, M. Lockhart. Multiple and Fast: The Accretion of Ordinary Chondrite Parent Bodies. *The Astrophysical Journal* **791**, 22p. (2014).

P. Vernazza, M. Delbo, P.L. King, M.R.M. Izawa, J. Olofsson, P. Lamy, F. Cipriani, R. P. Binzel, F. Marchis, B. Merin, A. Tamanai. High surface porosity as the origin of emissivity features in asteroid spectra. *Icarus* **221**, 1162-1172, 2012.

P. Vernazza, R.P. Binzel, A. Rossi, M. Fulchignoni, M. Birlan. Solar wind as the origin of rapid reddening of asteroid surfaces. *Nature* **458**, 993-995, 2009.

P. Vernazza, R. P. Binzel, C. A. Thomas, F. E. DeMeo, S. J. Bus, A.S. Rivkin, A. Tokunaga. Compositional differences between meteorites and near-Earth asteroids. *Nature* **454**, 858-860, 2008.

P. Vernazza, R. Brunetto, G. Strazzulla, M. Fulchignoni, P. Rochette, N. Meyer-Vernet, I. Zouganelis. Asteroid colors: a novel tool for magnetic field detection ? The case of Vesta. *Astronomy & Astrophysics* **451**, L43-L46, 2006.