*Updated on 12 June 2017*

# Davide PERNA – Curriculum Vitæ

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| **Birth place and date** | Rome (Italy), 11 April 1979 |
| **Languages (spoken/written)** | Italian (native), English (fluent), French (fluent) |
| **Current position (since June 2017)** | Marie Skłodowska-Curie fellow (AstroFIt2 COFUND action) at INAF – Osservatorio Astronomico di Roma (Italy) |
| **Professional address and contacts** | INAF-OAR,Via Frascati 33, Monte Porzio Catone (Roma), 00078 Italy<br>+39 0694286468 / davide.perna@oa-roma.inaf.it |

**Research topics and specialties**

Formation and evolution of the solar system – Asteroid-comet-TNO continuum – Primitive small bodies – Sample return missions – Origin of terrestrial volatiles – Distant cometary activity.

Approach: modeling of the physical properties (composition, size, shape, rotation, internal structure, cometary environment) of the solar system small bodies (asteroids, Centaurs, comets, trans-Neptunian objects), using multi-technique (photometry, spectroscopy, high angular resolution imaging) and multi-wavelength (from near ultraviolet to thermal infrared) ground-based and space-based observations.

## Education

- *PhD in Astronomy and Astrophysics (8 March 2010) – "European Label"*
  Co-tutoring between Observatoire de Paris (France) and Università di Roma Tor Vergata (Italy)
  Thesis title: "Physical properties of asteroid targets of the Rosetta space mission, and of minor bodies of the outer Solar System" (supervisors: M. A. Barucci / E. Dotto)
- *Degree in Physics (14 July 2006) – Marks: 110/110*
  Università di Roma Tor Vergata
  Thesis title: "Discovery and physical characterization of Near-Earth Objects" (supervisor: E. Dotto)

## Past positions

- *March 2012 – May 2017*: Fixed-term researcher at LESIA – Observatoire de Paris
- *September 2010 – March 2012*: Post-doc at INAF – Osservatorio Astronomico di Capodimonte (Italy)
- *December 2009 – September 2010*: Research fellow at INAF – Osservatorio Astronomico di Roma
- *November 2006 – October 2009*: Doctoral fellowship (Università di Roma Tor Vergata)
- *April 2004 – December 2004*: Co.co.co. at INAF-OAR (CINEOS project: devoted to the discovery and physical characterization of small bodies of the solar system)

**Publications (h-index = 14)**

- 50 refereed publications (*14 as 1st author / 7 as 2nd / 8 as 3rd*), among which:
  - 3 **invited** publications (*2 as 1st author*)
- 12 other publications (*5 as 1st author*):
  - 5 deliverables for the European projects NEOShield and NEOShield-2 (*4 as 1st author*)
  - 6 proceedings of conferences (*1 as 1st author*)
  - 1 article in the ESO The Messenger journal
- 65 abstracts in international conferences (*17 as 1st author*), among which:
  - 2 **invited** talks
- 5 'Minor Planet Center' Electronic Circulars (discoveries of 4 near-Earth asteroids and 1 comet)
- 83 'Minor Planet Center' Circulars (astrometry and discoveries of main belt asteroids)

**Main responsabilities and professional experiences**

- Responsible of Work Packages for the European projects NEOShield (FP7) and NEOShield-2 (H2020) (devoted to the study of near-Earth objects and their impact risk; www.neoshield.net):
  - NEOShield WP2 "NEO Physical properties" (2012-2015)
    - Coordinated teams: Paris Observatory (LESIA + IMCCE, France), DLR-Berlin (Germany), CNRS-Nice Observatory (France), Fraunhofer-EMI (Germany), Queen's University Belfast (UK)
  - NEOShield WP9 "Global response campaign roadmap" (2012-2015)
    - Coordinated teams: Paris Observatory (LESIA + IMCCE, France), DLR-Berlin (Germany), Astrium/Airbus (Germany, UK), Deimos Space (Spain), Cars Sagan Center (USA), TsNIIMash (Russia)
  - NEOShield-2 WP10 "NEO Observations and data reduction/analysis" (2015-2017)
    - Coordinated teams: Paris Observatory (LESIA + IMCCE, France), INAF (OAR + OAPD, Italy), Queen's University of Belfast (UK), Deimos Space (Spain)
- Co-I of the SIMBIO-SYS instrument onboard the ESA BepiColombo space mission
- Member of the Science Team of the JAXA Hayabusa 2 space mission
- Co-I of the MaNAC camera and of the MaRIS spectrometer, for the MarcoPolo space mission project (proposed for the ESA Cosmic Vision M-class mission opportunities, not selected)
- Co-I of the SOVAG spectrograph for the T1M telescope (Pic du Midi)
- PI of observing programmes:
  - 1 "guaranteed time" programme (30 nights) at ESO-NTT (2015 – 2017)
  - 4 programmes (36 hours in total) at ESO-VLT (2011 – 2016)
  - 6 programmes (24 nights in total) at TNG (2009 – 2013)

**Other experiences, honours and information**

- Asteroid (7989) Pernadavide named in my honour
- Journals served as referee: Astronomical Journal, Monthly Notices of the Royal Astronomical Society, Icarus, Planetary and Space Science, Scientific Reports (Nature)
- Organizer of the international workshop "Strategical and scientific aspects of the asteroid impact threat: the NEOShield perspective" (10 talks and 60 participants; Helsinki, Finland, 3 July 2014)
- Qualified for higher education teaching in France
- Associated to COSPAR – Committee on Space Research

**Teaching, supervising, outreach activities**

- *Academic teaching* (topics: planetology, space missions, exoplanets, astrophysics):
  - Observatoire de Paris, France (2013 – 2017): 22 hours (Master in Planetology)
  - USTH, Vietnam (2013 – 2017): 100 hours (Master in Space Sciences)
  - Univ. Tor Vergata (2010 – 2012): 32 hours (PhD in Astronomy; II level Master in Science and Space Technology; Master in Physics)
  - UNESP, Brasil (2011): 10 hours (PhD in Physics)
- *Supervisor of Internships, Master and PhD theses*:
  - *2016-2019 (3 years)*: N. Bott (PhD in Astronomy and Astrophysics, Observatoire de Paris, France): "Nature and evolution of the surface of Mercury"
  - *2015-2017 (3 years)*: T. Hromakina (PhD in Astronomy, co-tutoring between Observatoire de Paris, France, and Kharkiv National University, Ukraine): "Physical properties of the outer solar system small bodies"
  - *2016 (4 months)*: N. Bott (master thesis in Planetology at Obs. de Paris, student from Univ. Paris Sud, France): "Spectrophotometry of Trojan asteroids (624) Hektor and (911) Agamemnon"
  - *2015 (8 months)*: F. Bisi (master thesis in Physics, co-tutoring with E. Dotto at INAF-OAR, student from Univ. Tor Vergata): "Light-curves and densities of Trans-Neptunian Objects"
  - *2015 (6 months)*: P. Deshapriya (master thesis in Astrophysics at Obs. de Paris, student from USTH, Vietnam): "Spectrophotometry of the cometary nucleus of 67P/Churyumov-Gerasimenko"
  - *2014 (4 months)*: C. Feller (master thesis in Astrophysics at Obs. de Paris, student from Univ. Paris 7, France): "Physical properties of comet 29P/S-W1, as observed with the AKARI space telescope"
  - *2010 (4 weeks)*: S. Ieva (internship at INAF-OAR, student from Univ. Tor Vergata): "V-type asteroids"
  - *2010 (5 weeks)*: C. Lantz (internship at INAF-OAR, student from Univ. Paris 7, France): "Photometry and physical properties of Trans-Neptunians Objects"
- *Outreach*:
  - *2003 – 2010*: INAF-OAR, member of the DivA group (several hundreds of hours of experience)
  - *2010 – 2016*: INAF-OACN/Obs. de Paris, several events for students and the general public

**Main skills**

- Photometric and spectroscopic (near ultraviolet to thermal infrared) data acquisition/reduction/analysis, using space (Rosetta/OSIRIS, AKARI, Herschel) and ground-based telescopes (VLT, NTT, TNG, ...)
- Multivariate statistical analysis, for the modeling and interpretation of very large data sets (e.g. dealing with millions of degrees of freedom for the analysis of the images of comet 67P/Churyumov-Gerasimenko from the OSIRIS camera onboard the Rosetta mission)
- Radiative transfer models, to constrain the presence and the physical state of ices, silicates and organic compounds on planetary surfaces
- Modeling of the rotational properties of small bodies, to constrain their internal structure
- Photometric modeling of cometary images, to quantify, e.g., the mass loss or the dimension of the nucleus

**Main collaborators**

- **Italy**: E. Dotto, E. Mazzotta Epifani (INAF-OAR), G. Strazzulla (INAF-OACt), A. Rossi (IFAC-CNR), G.P. Tozzi, J.R. Brucato (INAF-OAA), E. Perozzi (ASI), G. Cremonese (INAF-OAPd), F. Capaccioni, C. Carli (INAF-IAPS)
- **France**: M.A. Barucci, S. Fornasier, F. Merlin, E. Lellouch, A. Doressoundiram (LESIA), D. Hestroffer, W. Thuillot, M. Birlan (IMCCE), R. Brunetto, F. Poulet, Y. Langevin (IAS), P. Michel, M. Delbo, B. Carry (OCA)
- **Germany**: A.W. Harris, L. Drube (DLR), T. Müeller (MPE)
- **Spain**: J. Licandro, J. de Leon (IAC), A. Campo Bagatin (Univ. of Alicante)
- **Ukraine**: I. Belskaya (IA-KNU)
- **Slovakia**: Z. Kanuchova (AI-SAS)
- **Romania**: M. Popescu (AIRA-Bucharest)
- **Unites States**: H. Campins (Univ. of Central Florida), R. Binzel (MIT), C.M. Dalle Ore (Carl Sagan Center, SETI Institute)
- **Brazil**: D. Lazzaro, A. Alvarez-Candal (Observatorio Nacional), S. Giuliatti, O. Winter (UNESP), D. Fulvio (PUC-Rio)
- **Japan**: M. Yoshikawa (JAXA), F. Usui (Kobe Univ.)
- **South Korea**: M. Ishiguro (Seoul National Univ.)