

# Mario Damiano

*Ph.D. in Astrophysics*

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## Professional experience

- 2018 - present** **JPL Postdoctoral Fellow**, Jet Propulsion Laboratory – California Institute of Technology, CA, United States.
- 2015 - present** **Research Associate**, National Institute for Astrophysics – Observatory of Palermo (INAF–OAPa), Palermo, Italy.

## Education

2019

**Ph.D. in Astrophysics**, *University College London (UCL), London, England, UK*,  
Advisors: Prof. Giovanna Tinetti, Dr. Giuseppina Micela, and Dr. Ingo Waldmann.  
Thesis title: *Data analysis of space and ground observations of exoplanetary atmosphere using Machine Learning algorithms*.

2015

**MSc Physics (Astrophysics)**, *University of Palermo (UNIPA), Palermo, Italy.*,  
Advisors: Prof. Giovanni Peres and Dr. Giuseppina Micela.  
Thesis title: *Exoplanetary atmosphere: high-resolution spectrum with instruments iLocater and HIRES*.

2013

**BSc Physics Science**, *University of Palermo (UNIPA), Palermo, Italy.*,  
Advisors: Prof. Giovanni Peres and Dr. Giuseppina Micela.  
Thesis title: *Exoplanets and stellar activity on IR-band*.

## Research interests

- Composition and dynamic of exoplanetary atmospheres;
- Spectroscopic data analysis of observations recorded by space and ground facilities;
- Spectral interpretation through information retrieval processes;
- Machine and deep learning algorithms for data analysis.

## Awards, grants, and fellowships

- JPL Postdoctoral Fellowship, NASA/JPL, 2018
- Ph.D. studentship, European Research Council (ERC) and National Institute for Astrophysics (INAF), 2015

## Languages

**Italian** Native

*Mother tongue*

**English** Proficient

*Daily practice*

## IT Skills

**Coding** Python, C, Matlab

**OS** MacOS (preferred), Linux, Windows

**Text editing** L<sup>A</sup>T<sub>E</sub>X, Microsoft Office, Apple Softwares

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## Other information

- Online courses** Advanced Courses on Udemy platform on Machine Learning (ML) and Deep Learning (DL) for Python.
- Tutoring activity** Co-advised UNIPA master student for an internship about data analysis of high-resolution spectroscopic observations.  
2017, Palermo, Italy.

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## Invited Seminars and Talks

- 2019** 'TWO LENSES FOR GLASSES: LOW- AND HIGH-RESOLUTION SPECTROSCOPIC OBSERVATIONS OF EXOPLANETARY ATMOSPHERES', Yuk luncheon seminar, California Institute of Technology, CA, US.
- 2019** 'TWO LENSES FOR GLASSES: LOW- AND HIGH-RESOLUTION SPECTROSCOPIC OBSERVATIONS OF EXOPLANETARY ATMOSPHERES', JPL luncheon seminar, Jet Propulsion Laboratory, CA, US.
- 2018** 'PLANETARY SIGNAL EXTRACTION VIA HIGH-RESOLUTION SPECTROSCOPY', Workshop for collaboration with Indian science community, University College London, London, England, UK.
- 2017** 'SPECTROSCOPIC OBSERVATIONS OF HOT-JUPITERS WITH THE HUBBLE WFC3 CAMERA', INAF-OAPa seminar series, INAF-Astronomical Observatory of Palermo (INAF-OAPa), Palermo, Italy.

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## Conference Presentations

- 2020** 'EXOPLANETARY CHARACTERIZATION THROUGH REFLECTION SPECTROSCOPY', 2<sup>nd</sup> Starshade Science Industry Partnership (SIP) forum, Boulder, CO, United States.
- 2020** 'EXOPLANETARY CHARACTERIZATION THROUGH REFLECTION SPECTROSCOPY', 235<sup>th</sup> American Astronomical Society (AAS) meeting, Honolulu, HI, United States.
- 2019** 'EXOPLANET REFLECTED LIGHT RETRIEVAL: WHAT CAN WE LEARN?', Division Planetary Science (DPS) 51 / European Planetary Science Congress (EPSC) 14, Geneva, Switzerland.
- 2018** 'PLANETARY SIGNAL EXTRACTION VIA HIGH-RESOLUTION SPECTROSCOPY', Centre for Planetary Science (CPS) meeting, Mullard Space Science Laboratory (MSSL), England, UK.
- 2017** 'NEAR-IR TRANSMISSION SPECTRUM OF HAT-P-32B USING WFC3 CAMERA ON BOARD HST', European Planetary Science Congress (EPSC) 12, Riga, Latvia.
- 2017** 'PLANETARY SIGNAL EXTRACTION VIA HIGH-RESOLUTION SPECTROSCOPY: WORK IN PROGRESS', 10<sup>th</sup> GAPS2.0 meeting, Palermo, Italy.
- 2016** 'SPECTROSCOPIC OBSERVATIONS OF HOT-JUPITERS WITH THE HUBBLE WFC3 CAMERA', Division for Planetary Sciences (DPS) 48 / European Planetary Science Congress (EPSC) 11, Pasadena, CA, US.

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## Publications

### First Author

3. *ExoReL<sup>®</sup>: A Bayesian Inverse Retrieval Framework For Exoplanetary Reflected Light Spectra*  
**Damiano, M.** & Hu, R., accepted for publication in AJ. Feb 2020.  
arXiv:2003.01814
2. *A Principal Component Analysis-based Method to Analyze High-resolution Spectroscopic Data on Exoplanets*  
**Damiano, M.**, Micela, G., Tinetti, G., ApJ, 878, 153, June 2019.  
DOI: 10.3847/1538-4357/ab22b2

1. *Near-IR transmission spectrum of HAT-P-32 b using HST/WFC3.*  
**Damiano, M.**, Morello, G., Tsiaras, A., Zingales, T., Tinetti, G., AJ, 154, 39, Jul 2017.  
DOI: 10.3847/1538-3881/aa738b

#### **Co-Author**

5. *A Population Study of Gaseous Exoplanets,*  
Tsiaras, A., Waldmann, I.P., Zingales, T., Rocchetto, M., Morello, G., **Damiano, M.**, Karpouzas, K., Tinetti, G., McKemmish, L.K., Tennyson, J., and Yurchenko, S.N., AJ, 155, 156, Mar 2018.  
DOI: 10.3847/1538-3881/aaaf75
4. *A New Approach to Analyzing HST Spatial Scans: The Transmission Spectrum of HD 209458 b,*  
Tsiaras, A., Waldmann, I.P., Rocchetto, M., Varley, R., Morello, G., **Damiano, M.**, Tinetti, G., ApJ, 832, 202, Dec 2016.  
DOI: 10.3847/0004-637X/832/2/202
3. *Detection of an Atmosphere Around the Super-Earth 55 Cancri e,*  
Tsiaras, A., Rocchetto, M., Waldmann, I.P., Venot, O., Varley, R., Morello, G., **Damiano, M.**, Tinetti, G., Barton, E.J., Yurchenko, S.N., Tennyson, J., ApJ, 820, 99, Apr 2016.  
DOI: 10.3847/0004-637X/820/2/99
2. *A chemical survey of exoplanets with ARIEL,*  
Tinetti, G., plus 242 co-authors, Exp Astron 46, 135, Sep 2018.  
DOI: 10.1007/s10686-018-9598-x
1. *The Transiting Exoplanet Community Early Release Science Program for JWST,*  
Bean, J.L., plus 96 co-authors, PASP 130k4402, Nov 2018.  
DOI: 10.1088/1538-3873/aadbf3