

CURRICULUM VITÆ

DARIUS (DARIO) MODIRROUSTA-GALIAN

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EDUCATION

- **Ph.D., Physics**, National Institute for Astrophysics (INAF), Palermo Astronomical Observatory, Palermo, Italy, 11/2018 – 10/2021.
DISSERTATION: *Theoretical Exoplanetology: of Super-Earths and Sub-Neptunes*.
ADVISOR: *Prof. Giuseppina Micela*.
- **Visiting Graduate Researcher**, California Institute of Technology (CalTech), Pasadena, United States, 2020.
ADVISOR: *Prof. David J. Stevenson*.
- **M.Sc., Planetary Science**, University College London (UCL), London, United Kingdom, 2018.
DISSERTATION: *The Interior Structure of Hot Super-Earths: Transmission Spectroscopy of Silicate Species*.
ADVISOR: *Prof. Giovanna Tinetti*.
- **B.Sc., Astrophysics**, University College London (UCL), London, United Kingdom, 2017.

PROFESSIONAL APPOINTMENTS

- **Postgraduate Associate**, Yale University, New Haven, Connecticut, United States, 11/2021.
RESEARCH: *The Geodynamics of Super-Earths and Sub-Neptunes*.
SUPERVISOR: *Prof. Jun Korenaga*.

1ST AUTHOR PUBLICATIONS

5. **Modirrousta-Galian, D.**, Maddalena, G., (2021). Of Aliens and Exoplanets: Why the Search for Life, Probably, Requires the Search for Water. *Journal of the British Interplanetary Society* 74, p.238–242.
4. **Modirrousta-Galian, D.**, Ito, Y. and Micela, G., (2021). Exploring super-Earth surfaces: Albedo of near-airless magma ocean planets and topography. *Icarus*, 358, p.114175.
3. **Modirrousta-Galian, D.**, Stelzer, B., Magaudda, E., Maldonado, J., Güdel, M., Sanz Forcada, J., Edwards, B. and Micela, G., (2020). GJ 357 b. A super-Earth orbiting an extremely inactive host star. *Astronomy & Astrophysics*, 641, p.A113.
2. **Modirrousta-Galian, D.**, Locci, D. and Micela, G. (2020). The Bimodal Distribution in Exoplanet Radii: Considering Varying Core Compositions and H₂ Envelope's Sizes. *The Astrophysical Journal*, 891(2), p.158.
1. **Modirrousta-Galian, D.**, Locci, D., Tinetti, G. and Micela, G. (2020). Hot Super-Earths with Hydrogen Atmospheres: A Model Explaining Their Paradoxical Existence. *The Astrophysical Journal*, 888(2), p.87.

OTHER PUBLICATIONS

6. Mugnai, L., **Modirrousta-Galian, D.**, Edwards, B., Changeat, Q., Bouwman, J., Morello, G., Al-Refaie, A., Baeyens, R., Bieger, M., Blain, D., Gressier, A., Guilluy, G., Jaziri, Y., Kiefer, F., Morvan, M., Pluriel, W., Poveda, M., Skaf, N., Whiteford, N., Wright, S., Yip, K., Zingales, T., Charnay, B., Drossart, P., Leconte, J., Venot, O., Waldmann, I. and Beaulieu, J., (2021). ARES. V. No Evidence For Molecular Absorption in the HST WFC3 Spectrum of GJ 1132 b. *The Astronomical Journal*, 161(6), p.284.
5. Benatti, S., Damasso, M., Borsa, F., Locci, D., Pillitteri, I., Desidera, S., Maggio, A., Micela, G., Wolk, S., Claudi, R., Malavolta, L. and **Modirrousta-Galian, D.**, (2021). Constraints on the mass and on the atmospheric composition and evolution of the low-density young planet DS Tucanae A b. *Astronomy & Astrophysics*, 650, p.A66.
4. Guilluy, G., Gressier, A., Wright, S., Santerne, A., Jaziri, A.Y., Edwards, B., Changeat, Q., **Modirrousta-Galian, D.**, Skaf, N., Al-Refaie, A., Baeyens, R., Bieger, M.F., Blain, D., Kiefer, F., Morvan, M., Mugnai, L.V., Pluriel, W., Poveda, M., Zingales, T., Whiteford, N., Yip, K.H., Charnay, B., Leconte, J., Drossart, P., Sozzetti, A., Marcq, E., Tsiraras, A., Venot, O., Waldmann, I. and Beaulieu, J.-P. (2020). ARES IV: Probing the Atmospheres of the Two Warm Small Planets HD 106315c and HD 3167c with the HST/WFC3

- Camera. *The Astronomical Journal*, 161(1), p.19.
3. Pluriel, W., Whiteford, N., Edwards, B., Changeat, Q., Yip, K.H., Baeyens, R., Al-Refaie, A., Fabienne Bieger, M., Blain, D., Gressier, A., Guilluy, G., Yassin Jaziri, A., Kiefer, F., **Modirrousta-Galian, D.**, Morvan, M., Mugnai, L.V., Poveda, M., Skaf, N., Zingales, T., Wright, S., Charnay, B., Drossart, P., Leconte, J., Tsiaras, A., Venot, O., Waldmann, I. and Beaulieu, J.-P. (2020). ARES. III. Unveiling the Two Faces of KELT-7 b with HST WFC3. *The Astronomical Journal*, 160(3), p.112.
 2. Skaf, N., Bieger, M.F., Edwards, B., Changeat, Q., Morvan, M., Kiefer, F., Blain, D., Zingales, T., Poveda, M., Al-Refaie, A., Baeyens, R., Gressier, A., Guilluy, G., Jaziri, A.Y., **Modirrousta-Galian, D.**, Mugnai, L.V., Pluriel, W., Whiteford, N., Wright, S., Yip, K.H., Charnay, B., Leconte, J., Drossart, P., Tsiaras, A., Venot, O., Waldmann, I. and Beaulieu, J.-P. (2020). ARES. II. Characterizing the Hot Jupiters WASP-127 b, WASP-79 b, and WASP-62b with the Hubble Space Telescope. *The Astronomical Journal*, 160(3), p.109.
 1. Edwards, B., Changeat, Q., Baeyens, R., Tsiaras, A., Al-Refaie, A., Taylor, J., Yip, K.H., Bieger, M.F., Blain, D., Gressier, A., Guilluy, G., Jaziri, A.Y., Kiefer, F., **Modirrousta-Galian, D.**, Morvan, M., Mugnai, L.V., Pluriel, W., Poveda, M., Skaf, N., Whiteford, N., Wright, S., Zingales, T., Charnay, B., Drossart, P., Leconte, J., Venot, O., Waldmann, I. and Beaulieu, J.-P. (2020). ARES I: WASP-76 b, A Tale of Two HST Spectra. *The Astronomical Journal*, 160(1), p.8.

CONFERENCES & SEMINARS

- SEMINAR: “*Atmospheric Evaporation, Geological Outgassing, and the Bimodal Distribution of Exoplanet Radii*”, Ariel Consortium Meeting, [online], 20/09/2021.
- SEMINAR: “*Dynamical Systems and Machine Learning Approaches to Sun-Earth Relations*”, Osservatorio Astronomico di Palermo, Palermo, Italy, [online], 19/03/2021.
- SEMINAR: “*Exploring Super-Earth Interiors: Core Erosion and Envelope Metallicity*”, Osservatorio Astronomico di Palermo, Palermo, Italy, [online], 29/10/2020.
- Ariel Virtual Consortium Meeting, [online], 12/10/2020 – 14/10/2020.
- Seminar: “*ARES: Ariel Retrieval of Exoplanets School*”, Osservatorio Astronomico di Palermo, Palermo, Italy, [online], 21/06/2020.
- SEMINAR: “*Core Erosion of Super-Earths and Sub-Neptunes*”, California Institute of Technology, California, USA, [online], 05/06/2020.
- SEMINAR: “*Understanding the XUV-induced Atmospheric Erosion of Young Planets and their Evolution with Time*”, NASA JPL, California, USA, [online], 01/06/2020.
- GUEST SPEAKER: “*Understanding the XUV-induced Atmospheric Erosion of Young Planets and their Evolution with Time*”, Ariel Consortium, [online], 12/05/2020 – 14/01/2020.
- GUEST SPEAKER: “*Understanding the XUV-induced Atmospheric Erosion of Young Planets and their Evolution with Time*”, 16th GAPS meeting, Osservatorio Astronomico di Padova, Padova, Italy, 05/05/2020.
- SEMINAR: “*Exploring Super-Earth Surfaces: Albedo of Near-Airless Magma Ocean Planets and Topography*”, California Institute of Technology, California, USA, 29/04/2020.
- SEMINAR: “*Exploring Super-Earth Surfaces: Albedo of Near-Airless Magma Ocean Planets and Topography*”, Osservatorio Astronomico di Palermo, Palermo, Italy, 12/02/2020.
- GUEST SPEAKER: “*Exploring Super-Earth Surfaces: Albedo of Near-Airless Magma Ocean Planets and Topography*”, Ariel: Science, Mission & Community 2020 conference, ESA/ESTEC, Noordwijk, The Netherlands, 14/01/2020 – 16/01/2020.
- SEMINAR: “*The Importance of Theoretical Exoplanetology*”, University of Palermo, Palermo, Italy, 04/11/2019.
- SEMINAR: “*The Importance of Theoretical Exoplanetology*”, Osservatorio Astronomico di Palermo, Palermo, Italy, 29/10/2019.
- GUEST SPEAKER: “*GJ 1132 b*”, Ariel School, Village de vacances VTF Le domaine de Françon, Biarritz, France, 27/09/2019 – 06/10/2019.
- SEMINAR: “*Very Hot Super-Earths with Hydrogen Atmospheres: A Model Explaining Their Paradoxical Existence*” Telescopio Nazionale Galileo, La Palma, Spain, 16/05/2019.

- GUEST SPEAKER: “*Very Hot Super-Earths with Hydrogen Atmospheres: A Model Explaining Their Paradoxical Existence*”, Ariel Consortium Meeting, Palermo, Italy, 18/03/2019 – 20/03/2019.
- SEMINAR: “*Very Hot Super-Earths with Hydrogen Atmospheres: A Model Explaining Their Paradoxical Existence*”, Osservatorio Astronomico di Palermo, Palermo, Italy, 21/01/2019.

AWARDS & GRANTS

- “Scienze Fisiche e Chimiche” – Internazionale – A.A. 2018/2019 (XXXIV ciclo), National Institute for Astrophysics (INAF)/University of Palermo (UNIPA), Palermo, Italy, 10/2018.

OUTREACH

- I am a member of the British Interplanetary Society (BIS).
- INVITED INTERVIEW: “*Did This Scorching-Hot Planet Lose - and Regain - an Atmosphere?*”, WIRED magazine, 04/2021.
- PUBLIC TALK: “Human Extinction - What Can We Learn from Exoplanets about Climate Change on Earth”, PalermoScienza (INAF, OAPa), Palermo, Italy, 19/02/2020.
- PUBLIC TALK: “From the Position of the Stars to Life in the Universe” and “Astronomy Storytelling and New Ways to Conceptualise the Universe”, Esperienza InSegna (INAF, OAPa), Palermo, Italy, 23/02/2019 – 24/02/2019.

EXPERIENCE & TEACHING

- **Mentor to Ph.D. students**, The Europlanet Early Career (EPEC) network, 2021 – Present.
- **Peer Reviewer**, Journal of the British Interplanetary Society (JBIS), London, United Kingdom, 2021 – Present.
- **Member**, Ariel Consortium, working groups: Albedo and reflected light, atmospheric chemistry, connection planet interior-atmospheres, phase-curves, prebiotic chemistry and astrobiology, upper atmosphere/star-planet interaction, and complementary science, 2018 – Present.
- **Lecturing**, Exoplanet module in the *Stellar Evolution Course, AA2021*, University of Palermo (UniPa), Palermo, Italy, 2020.
- **Observational Astronomer**, Galileo National Telescope, La Palma, Spain, 2019.
- **Tour-Guide**, University College London Observatory (UCLO), London, United Kingdom, 2016 – 2018.

PROGRAMMING

- Proficient in *Python 3/2.7*, understands *Fortran*.
- Codeveloper of the publicly available *Python 3* code RAPOC: Rosseland And Planck Opacity Converter.

EXTRA SKILLS

- Native speaker of English and Spanish, fluent in Italian.
- Trained on the safe use of lasers, University College London (UCL), London, United Kingdom, 2017.