

Meet the Authors



Maxim D. Ballmer is a geophysicist interested in the formation, evolution, and present-day thermochemical structure of rocky planets. He explores numerical models of fluid dynamics to study convection in the Earth and in planetary interiors over billions of years and to test the predicted outcomes of these models with geophysical and geochemical observations. Maxim started as a geology student at the Ruhr-University Bochum (Germany) before moving on to pursue a PhD in geodynamics at ETH Zürich (Switzerland). After five years of postdoctoral research at the University of Hawaii (USA) and Tokyo Institute of Technology (Japan), he returned to ETH as a senior researcher. Since 2019, he has been a lecturer at the Department of Earth Sciences at University College London (UK).



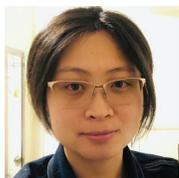
Amy Bonsor is an astrophysicist studying exoplanetary systems. She is particularly interested in how planetary systems form, the composition of planetary bodies, the role of small bodies in sculpting planetary systems, and planetary systems around white dwarfs. She is currently a Royal Society Dorothy Hodgkin Research Fellow at the Institute of Astronomy, University of Cambridge (UK).



Caroline Dorn is a geophysicist by training and is currently an exoplanet scientist at the University of Zürich (Switzerland). The focus of her research is the interior structures and compositions of distant exoplanet worlds.



Natalie R. Hinkel is a planetary astrophysicist at the Southwest Research Institute (Texas, USA). She studies the chemical interplay between stars and their planets, which are formed at the same time, by using stellar element compositions to assess the interior structure and mineralogy of exoplanets. She is the architect and maintainer of the Hypatia Catalog, the largest database of elemental abundances within nearby stars (www.hypatiacatalog.com). She is currently working on better understanding the composition of M-dwarf stars, because they are a likely place to find rocky planets. Actor George Takei (a.k.a. Mr. Sulu from the original *Star Trek* TV series) once said she was “a trailblazer.”



Wanying Kang is a geophysical fluid dynamicist who is interested in the atmosphere and ocean circulation on Earth, terrestrial bodies inside and outside our solar system, icy satellites and lava planets. She completed her PhD in applied mathematics from Harvard University (Massachusetts, USA) in 2020. After graduation, she started her postdoc at the Massachusetts Institute of Technology [MIT] (USA) sponsored by a Lorenz-Houghton Postdoctoral Fellowship. She will join MIT as an assistant professor in the fall 2022.



Thaddeus D. Komacek is an assistant professor in the Department of Astronomy at the University of Maryland, College Park (USA). He was previously a 51 Pegasi b Fellow at the University of Chicago (Illinois, USA), and received his PhD in planetary sciences from the Lunar and Planetary Laboratory, University of Arizona (USA). Thaddeus' research is

focused on studying planetary climates using techniques derived from geophysics and applying these theories and numerical models to interpret astronomical observations of exoplanet atmospheres.



Jacob Lustig-Yaeger is a postdoctoral fellow at the Johns Hopkins University Applied Physics Laboratory (Maryland, USA) where he specializes in the detection and characterization of terrestrial exoplanet atmospheres. In 2020, he completed his PhD in astronomy and astrobiology from the University of Washington (USA). His research focuses on predicting and interpreting the spectroscopic and time-dependent observable signals of habitable, uninhabitable, and uninhabited exoplanets. Working at the intersection of theory and observation, Jacob collaborates with mission teams to help develop science cases for future telescopes that will enable robust habitability assessments and biosignature searches.



Lena Noack is an associate professor at the Institute of Geological Sciences of the Free University of Berlin (FUB) (Germany). After completing her PhD studies at the University of Münster in collaboration with the German Aerospace Center (DLR) in 2012, she first became a post-doctoral researcher at the Royal Observatory of Belgium before moving to FUB in 2017 to lead a research group on geodynamics and mineral physics of planetary processes. She specializes on combining geodynamic models of the planetary interior with mineral physics, petrology, geochemistry and astrochemistry, to model the coupled interior-surface evolution of rocky planets. The goal of her studies is to be able to constrain interior and surface conditions from observational data and to gain a better understanding of the main geophysical factors and processes that influence the surface habitability of rocky planets.



Stephanie L. Olson is an assistant professor in the Department of Earth, Atmospheric, and Planetary Science at Purdue University (Indiana, USA). She was previously a T.C. Chamberlin Postdoctoral Fellow at the University of Chicago (Illinois, USA) after receiving her PhD in geochemistry from the University of California, Riverside (USA). Stephanie's research focuses on the coevolution of life and environment throughout Earth's history, on planetary habitability, and determining possible exoplanet biosignatures.



Vivien Parmentier is associate professor of physics at the University of Oxford (UK). He studies the atmospheres of hot giant exoplanets, where there is a plethora of available observations. He studies how interaction between radiative transfer, atmospheric dynamics, chemistry, and cloud formation shapes the observable properties of these planets. His work aims at separating intrinsic properties of exoplanets, such as their elemental compositions, to environment driven properties, such as their temperature-driven chemical composition or their cloud content.



Keith D. Putirka is a professor at the California State University, Fresno (USA). In addition to exoplanets, he studies volcanoes and their mantle underpinnings, and, more recently, California wildfires and the effects of forest management on fire intensity and spread. When he's not working, which is most of the time, he's either out hiking

with his wife and daughters or, when they're too busy (also most of the time), he's watching baseball or attempting to supplement his income at Santa Anita or Del Mar.



Paul B. Rimmer is an astrochemist at the University of Cambridge (UK) working on planetary atmospheric chemistry and chemical kinetics across multiple phases. Paul wants to find out how origins of life scenarios can inform the chances of finding life on exoplanets and whether future detection of biosignatures on multiple planets may be able to help us test origins of life scenarios.



Sukrit Ranjan is a planetary photochemist at Northwestern University (Illinois, USA) interested in life as a planetary phenomenon, and, in particular, the origin of life on Earth and the search for it elsewhere. His research focuses on using radiative transfer, aqueous chemistry, and atmospheric photochemical models to constrain environmental conditions on early Earth, to constrain theories on the origin of life, to model exoplanets orbiting other stars, and to identify observations that might indicate life.



Sarah Rugheimer is an astrophysicist at the University of Oxford (UK) working on how to detect life on an exoplanet by looking for atmospheric biosignatures. Her research interests are in modeling the atmosphere and climate of extrasolar planets, with a particular focus on atmospheric biosignatures in Earth-like planets as well as modeling early Earth conditions.



Laura K. Schaefer works at the boundary between astronomy and planetary science. She earned a PhD in astrophysics from Harvard University (Massachusetts, USA) and is now Assistant Professor of Geological Sciences at Stanford University (California, USA). She studies the chemical and physical processes that occur during planet formation and differentiation and how they might lead to the earliest atmospheres of rocky planets. Her work focuses on the coevolution of the atmosphere and the planetary interior on both short and long timescales. She has used these models to explore the history and compositional evolution of the atmospheres of Earth, Venus, Jupiter's moon Io, and rocky exoplanets.



Oliver Shorttle is an Earth scientist working between the Institute of Astronomy and the Department of Earth Sciences at the University of Cambridge (UK). He investigates the processes that build habitable, and inhabited, planets by following the path of life-essential elements from protoplanetary disks, through to their distribution among

planetary oceans, atmospheres, and interiors, and their eventual incorporation into prebiotic chemistry. Outside of science, he will be spending time with his family and experiencing all the chaos and joy that young children bring.



Cayman T. Unterborn is a geoscientist and astrophysicist whose research is primarily in understanding the interior structure, mineralogy, and dynamic state of rocky exoplanets. His work blends mineral physics, observational astronomy, and geophysical modeling to understand the diversity of rocky exoplanets and their potential for hosting life over geologic timescales. He received his PhD from the Ohio State University (USA) in 2016. After graduating, he joined Arizona State University (USA) as a School of Earth and Space Exploration Fellow. He is currently a research scientist at the Southwest Research Institute (Texas, USA) in the Space Sciences and Engineering Division.



Siyi Xu is an astronomer who studies planetary systems around white dwarf stars. She has used different telescopes, such as the *Hubble Space Telescope*, the *Spitzer Space Telescope*, the *Very Large Telescope*, and the *Keck Telescope* to study the dust, gas, asteroids, and planets around white dwarfs. In 2010, Siyi received a BS in astronomy from the University of Nanjing (China). In 2014, she earned a PhD in astronomy from the University of California, Los Angeles (USA) and worked as a postdoctoral fellow at the European Southern Observatory (Germany). Currently, Siyi is an astronomer at the Gemini Observatory (Hawaii, USA), a program under the NSF's National Optical-Infrared Astronomy Research Laboratory (NOIRLab; Arizona, USA).

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