Eric Gaidos | Curriculum Vitae

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EDUCATION

Massachusetts Institute of Technology — **Cambridge, Massachusetts**
Ph.D., Department of Physics, Center for Space Research — *Jan. 1991 - June 1996*

Massachusetts Institute of Technology — **Cambridge, Massachusetts**
M.S, Department of Aeronautical and Astronautical Engineering — *Sept. 1989 - Jan. 1991*

California Institute of Technology — **Pasadena, California**
B.S. Applied Physics, with Honors — *Oct. 1985 - June 1988*

PROFESSIONAL APPOINTMENTS

University of Hawai'i at Mānoa — **Honolulu, Hawaii**
***Professor**, Department of Earth Sciences* — *Sept. 2001-Present*

California Institute of Technology Jet Propulsion Laboratory — **Pasadena, California**
***Postdoctoral Associate**, Division of Geological and Planetary Sciences* — *May 1997 - May 2001*

Massachusetts Institute of Technology — **Cambridge, Massachusetts**
***Postdoctoral Associate**, Center for Space Research* — *June 1996 - May 1997*

INSTRUCTIONAL PORTFOLIO

- **Planetary Systems: A Data-Driven Approach** (post-graduate, 3 semester-hours). This advanced graduate course introduces astronomy and planetary science students to the rapidly-evolving field of exoplanet research through six modules, each centered around recently-acquired data from the ground or space. Lectures introducing the scientific and technical principles are followed by a tutored hands-on sessions with the data, during which teams of students work on projects. The students give presentations on projects for each module, and use one as the basis of a term project for which they write a AAS Research Note.
- **Scientific Writing:** (advanced post-graduate, 3 semester-hours). This advanced graduate class provides a hands-on introduction of students to the fundamentals of communicating science to a broader audience, i.e. the non-specialist scientist or the general public, through print and video media. In three previous years and the current (2020) year the students have written and published review articles in peer-reviewed journals. In another year the students developed a 20-minute video introduction on the natural history of the Hawaiian Islands, intended for visitors. https://vimeo.com/63803633
- **Voyage of the *Vicariance*: A Geography of Time** (lower division undergraduate, 3 semester hours). An undergraduate introductory course on Earth history that I developed in 2006 and have taught about once a year. The course, inspired by Charles Darwin's journey on the HMS Beagle, is structured as an imaginary sailing voyage around the world. Each lecture takes place at a different port of call where the human and physical geography is described and connected to local geology as well as global Earth processes. The voyage" also takes the students backwards from the end of the last Ice Age to the formation of Earth, and at each step they are acquainted with increasingly distant relatives on the Tree of Life, from *Homo neandertalis* to the Bacteria.

- **Origins of Solar Systems** (postgraduate, 3 semester-hours). This graduate level course addresses questions at the forefront and interface of the Earth, space and life sciences: How did the Earth and other planets form? How common are planets around other stars, and what are their properties? Can other planets support life and how would we detect it? Material in this course was presented through the three observational "windows" through which almost everything has been learned in this field: measurements of early events recorded in Solar System bodies and materials; astronomical observations of the process of star and planet formation; and characterization of planets around other stars. Students wrote a Science-like "Perspective" paper on a recent peer- reviewed paper of their choice or a review paper that was published in a peer-review journal.
- **Archaeology Meets the Earth and Space Sciences:** (postgraduate, 2 semester hours). Graduate seminar with multiple lectures introducing applications of techniques and instruments in the earth and space sciences to archaeological research, including imaging, LIDA, ^{14}C dating, stable isotopes, magnetic sensing, and archaeo-astronomy. Students complete assignments using data from the literature or online, and carry out a term project on a topic covered in the course.

OTHER ACADEMIC APPOINTMENTS SINCE Ph.D.

University of Göttingen — **Göttingen, Germany**
***Visiting Professor**, Institute for Astrophysics* — *Oct. - Dec. 2019*

University of Vienna — **Vienna, Austria**
***Fulbright Fellow**, Institute for Astrophysics* — *Sept. 2016 - Jan. 2017*

International Space Science Institute — **Bern, Switzerland**
Visiting Scientist — *Aug. - Sept. 2016*

Center for Space & Habitability — **Bern, Switzerland**
Visiting Professor — *May - July 2016*

Geneva Observatory — **Versoix, Switzerland**
Swiss National Science Foundation Fellow — *Apr. - Aug. 2015*

Harvard-Smithsonian Center for Astrophysics — **Cambridge, Massachusetts**
***Visiting Sabbatical Professor**, Institute for Theory and Computation* — *Mar. - Aug. 2015*

Max Planck Institute for Astronomy, Heidelberg — **Heidelberg, Germany**
Visiting Scientist — *July 2014 - Jan. 2015*

University of Lund — **Lund, Sweden**
***Chair of Astrobiology**, Pufendorf Institute for Advanced Studies* — *May - Nov. 2011*

University of California, Berkeley — **Berkeley, California**
***Visiting Sabbatical Professor**, Department of Earth & Planetary Sciences* — *Aug. - Dec. 2007*

Center for Astrophysics Research of Lyon — **Lyon, France**
Visiting Scientist — *Oct. 2005*

OTHER PROFESSIONAL POSITIONS:

National Academies of Science, Engineering and Medicine — **Washington, DC**
***Christine Mirzayan Fellow**, Division of Earth and Life Sciences* — *May 2001 - Sept. 2001*

Paracel, Inc. — **Pasadena, California**
***Consultant**, bioinformatics for Celera Human Genome Sequencing Project* — *1999 - May 2001*

Ecole Polytechnique de Lausanne (EPFL) — **Lausanne, Switzerland**
***Visiting Researcher**, Department of Fluid Dynamics* — *Sept. 1988 - Aug. 1989*

National Center for Space Research (CNES) — **Toulouse, France**
***Engineer**, CNES-Planetary Society Mars Balloon Project* — *Sept. 1988 - Aug. 1989*

RESEARCH INTERESTS

- **Exoplanets and their host stars:** Occurrence, evolution, and atmospheres of planets, particularly those orbiting M dwarf stars. Detection, validation, and characterization of young planetary systems. Evolution of M dwarf rotation, magnetic activity, and high-energy emission of M dwarfs and the establishment of an accurate M dwarf gyrochronology to age-date planetary systems.
- **Protoplanetary disks and planet formation:** Study of "dipper" stars with occulting circumstellar dust using space- and ground-based telescopes. Affect of water ice and short-lived radionuclides on planetesimal formation and planetary accretion.
- **Planetary Physics:** Thermal evolution, mantle convection, plate tectonics, and core magnetodynamos in Earth-like planets, and implications for ocean and atmosphere evolution.
- **Astrobiology:** Conditions on early Earth and young exoplanets and implications for prebiotic chemistry and early metabolisms. Geochemistry and geomicrobiology of subglacial lakes as analogs of icy worlds.

PUBLICATION STATISTICS

- 140 publications in peer-reviewed journals and books
- 50 as first or corresponding author
- 32 as second author

RESEARCH FUNDING ($10,977,544)

- NASA Interdisciplinary Consortia for Astrobiology Research, “Follow the Volatiles: Tracing chemical species relevant to habitability from protoplanetary disks to exoplanet atmospheres", UH PI, $1,767,647
- NASA Exoplanets Research Program, “Exploring the Nature of Terrestrial Exoplanets with MAROON-X", Co-I, $110,087 (pending)
- NSF Astronomy & Astrophysics, “Catch a Fading Star: Using Transient Dimming to Explore the Planet- Forming Zones of Young Stars", PI, $568,490 (pending)

- NASA TESS Guest Observer Cycle 3, "Mass Measurement of TESS Transiting Candidate Companions", Co-I (PI: P. Plavchan), $75,000
- NASA Exoplanets Research Program, “Comparative Evolution of Small Planets Close to Cool Stars”, PI, $298,808
- NASA Exoplanets Research Program, “Precise Near-Infrared Radial Velocity Measurements of Planet Candidates Identified by the TESS Mission”, Co-I, $478,549
- NASA TESS Guest Observer Cycle 2 “A survey of transient stellar dimming in TESS FFI lightcurves”, PI, $50,000
- NASA TESS Guest Investigator Cycle 2 “Planetary archeaology: Exploring the planet population around evolved stars with TESS”, Co-I (PI: D. Huber) $49,999
- NASA Astrophysics Data Analysis Program, “Using K2 to explore episodic stellar variability during the epoch of planet formation”, PI, $199,882
- NSF Astronomy & Astrophysics, “A new spin on M dwarf ages and evolution”, PI, $293,735
- NSF Astronomy & Astrophysics, “Refining the radii of exoplanet host stars”, Co-I (PI: D. Huber) $278,033
- NASA K2 Guest Observer – Cycle 6, “Solving the mystery of hot Jupiter inflation with K2”, Co-I (PI, D. Huber) $30,000 (completed).
- NASA K2 Guest Observer Cycle 4, “ Zodiacal Exoplanets in Time (ZEIT): The Hyades Cluster”, Co-I (PI: A. Mann) $41,259 (completed)
- Sloan Foundation Deep Carbon Observatory, Census for Deep Life, “Ice-Covered Icelandic Crater Lake Ecosystem Study”, PI, $25,000 (completed)
- NASA K2 Guest Observer Cycle 2, “Giants orbiting Giants: A search for Transiting Planets around Oscillating Red Giant-Branch Stars with K2”, Co-I (PI: D. Huber) $38,000 subaward (completed)
- NASA Origins of Solar Systems, “A combined Doppler and photometric search for signpost planets around M dwarf stars”, PI, $373,445 (completed)
- NASA Astrobiology: Exobiology and Evolutionary Biology, “Formation, evolution, and detection of planets close to cool stars”, PI, $357,063 (completed)
- NSF Astronomy & Astrophysics, Collaborative Research: “Targets for planets: a database of nearby stars suitable for exoplanet surveys”, co-PI, $174,722, (completed)
- NASA Astrobiology Institute Director’s Discretionary Fund, “Diversity, phylogeny, and genetics of the basal metazoan *Trichoplax adhaerens*”, PI, $50,000 (completed)
- NASA Graduate Student Research Program, “Physical and chemical processes in the atmospheres of planetary embryos”, PI (for N. Moskovitz), $75,000 (completed)
- NASA Terrestrial Planet Finder Foundation Science, “Observable signatures of extreme seasonality on Earth-like planets with high orbital eccentricity or high obliquity”, PI, $249,426 (completed)
- NASA Newton/XMM Telescope Observing Support, “The Nature of the Flaring Companion to HD 43162”, Co-I (PI: D. Fox), $36,400 (completed)
- NASA Astrobiology Institute Cooperative Agreement Notice 3, “The Origin, History, and Distribution of Water and its Relation to Life in the Universe”, co-I (PI: K. Meech), $5,171,596 (completed)
- NSF Biogeosciences,“Microcosm Investigations of Carbonate Reef Microbial Biogeochemistry”, PI, $79,948 (completed)
- UH University Research Council, “Microbiology of Methane and Nitrous Oxide Production in the Ka’au Crater Wetland”, O’ahu, Hawai’i, PI, $7,000 (completed)
- NSF Biocomplexity in the Environment, Coupled Biogeochemical Cycles, “Cycles of Carbon and Nitrogen in an Ice-covered Volcanic Crater Lake”, PI, $98,456 (completed)

PROFESSIONAL ACTIVITIES

Working Groups:
- *Origins Space Telescope Project*, Exoplanet Science Working Group (2017-2019)
- *NASA Transiting Exoplanet Survey Satellite Mission*, Atmospheres Working Group (2014-)
- *Thirty Meter Telescope Project*, International Science Definition Team for Exoplanets (2014-)
- *International Ocean Drilling Program*, Science Working Group on "Limits and Evolution on Earth and Beyond" (2009)
- *NASA-JPL Terrestrial Planet Finder Mission*, Science Working Group (2002-2006)

Workshop and Conference Organization:
- Session organizer: *M Dwarfs in the Light of Exoplanets*, Cool Stars 17, Barcelona, Spain, (October 2012)
- Convener: *Transiting Planets in the House of the Sun: M Dwarf Stars in their Planets*, Kula, Maui (June 2012)
- Session organizer: "Geology of Exoplanets", in *Exoplanets for Planetary Scientists*, Orlando, USA (Dec. 2010)
- Session organizer: "Hot Earths: formation, detection, and structure", in *AAS 210th Meeting*, Honolulu, Hawaii (May 2007)

Science Organizing Committees:
- *First TESS Science Meeting*, Cambridge, USA (July 2019)
- *Geology and Habitability of Terrestrial Planets*, International Space Science Institute, Bern, Switzerland (Sept. 2005)
- *2nd TPF/Darwin Meeting*, San Diego, USA (July 2004)
- *Bioastronomy*, Reykjavik, Iceland (July 2004)

EXTRAMURAL PROFESSIONAL SERVICE

- **NASA Funding Proposal Review Panels:** Astrophysics Data Analysis Program; Medium-Class Explorers Missions and Missions of Opportunity; NASA Astrobiology Institute Cooperative Agreement Notice; Origins of Solar Systems
- **NSF Funding Proposal Review Panels:** Faculty Early Career Development Program
- **Manuscript Peer-Review:** *The Astrophysical Journal*; *The Astronomical Journal*; *Monthly Notices of the Royal Astronomical Society*; *Icarus*; *Journal of Geophysical Research - Planets*

SUPERVISION and MENTORING

Postdocs
- Ketil Sorenson (2004-2006) Current position: Technical University of Denmark
- Evgenya Shkolnik (2005-2006) Current position: Associate Professor, Arizona State University
- Antje Rusch (2006-2008) Current position: Fauna Marin GmbH
- Eric Hilton (2011-2012) Current position: Universe sandbox
- Joost van Summeren (2011-2012) Current position: KWR Research Institute
- Knicole Colón (2012-2013) Current position: Staff Scientist, NASA Goddard Space Flight Center

Doctoral Students
- Angelos Hannides (2002-2008, with Frank Sansone) Dissertation: *Organic matter cycling and nutrient dynamics in marine sediments*. Current Position: Assistant Professor, Coastal Carolina University

- Nicholas Moskovitz (2005-2009) Dissertation: *Spectroscopic and theoretical constraints on the differentiation of planetesimals*. Current Position: Staff Scientist, Lowell Observatory
- Andrew W. Mann (2009-2013) Dissertation: *Planets around cool stars: a spectroscopic and photometric study of M dwarfs and their planets*. Current Position: Assistant Professor, University of North Carolina

Masters Students
- Jillian Ward (2005-2008) Thesis: *Diversity and Biogeography of the Unique, Tropical Phylum Placozoa* Current position: industry
- Megan Ansdell (2013-2014) Thesis: *The near-ultraviolet luminosity function of M dwarf stars*. Current position: NASA Headquarters
- Samuel Grunblatt (2015-2016) Thesis: *Giant planets around giant stars*. Current position: Kalbfleisch Postdoctoral Fellow, American Museum of Natural History
- Larissa Nofi (2015-2016) Thesis: *A Spectrothermometry of K dwarf stars*. Current Position: Pre-doctoral Scholar, Lowell Observation / IfA University of Hawai'i
- Rena Lee (2020–) Thesis: *Multiplicity in the Beta Pictoris Moving Group*.

Bachelors Students
- Maxime Grand (2002-2003) Senior Thesis: *Precipitation, Plant Communities and Methane Fluxes in the Ka'au Crater Wetland, O'ahu, Hawai'i*, Global Environmental Sciences program, Department of Oceanography
- Aliz Axmann (2004-2005) Senior Thesis: *Dynamics of Motility in Placazoa*, Department of Mathematics
- Sean Otaga (2006-2007) Department of Civil Engineering, Department of Oceanography
- Whitney Hassett (2006-2007) Environmental Science
- Daniel Rogers (2006-2007) Visiting Student, Department of Physics, University of Massachusetts at Amherst
- Nelson Lazaga (2007-2008) NASA Space Grant Undergraduate Fellow, Department of Biology
- Melissa Ilardo (2009) Visiting Summer Student, Princeton University
- Jennifer Beyer (2010-2011) NASA Space Grant Undergraduate Fellow, Department of Geology & Geophysics
- Emily Chang (2011-2012) Global Environmental Sciences program, Department of Oceanography, *Identification and Photometry of Candidate Transiting Exoplanet Signals*
- Oana Vesa (2017) IfA NSF Research Experience for Undergraduates, Albion College
- John Bredall (2019-2020), Honors Senior Thesis: *Baby Boomers: An ASAS-SN Survey of Variable Young Stellar Objects*, Astronomy Program (with Ben Shappee)

Dissertation Committees:
- Dagny Looper (IfA)
- Brendan Bowler (IfA, 2010-2013)
- Louis Scuderi (IfA, 2013-2014)
- Megan Ansdell (IfA, 2014-2017)
- Sam Grunblatt (IfA, 2016-2019)
- Travis Berger (IfA, 2019-)
- Ashley Chontos (IfA, 2019-)
- Ryan Dungee (IfA, 2019-)

AWARDS

- Fulbright Research Fellowship, U.S.-Austrian Fulbright Commission *Sept. 2016 - Feb. 2017*
- NSF Graduate Student Fellowship *1989-1992*
- Robert Goddard Scholarship *1988*