

HILKE ELISABETH SCHLICHTING

Department of Earth, Planetary, and Space Sciences
University of California, Los Angeles
595 Charles Young Drive East,
Los Angeles, CA 90095-1567

E-mail: hilke@ucla.edu
Phone: 310-825-5130

Degrees:

Ph.D., Astrophysics, California Institute of Technology, 2009, Advisor: Re'em Sari
Master of Science, Astrophysics, California Institute of Technology, 2007
Master of Arts, University of Cambridge, 2007
Master of Natural Sciences, Theoretical Physics, University of Cambridge, 2004
Bachelor of Arts, Physics, University of Cambridge, 2004

Employment:

Visiting Professor, EAPS, Massachusetts Institute of Technology, 2017 - Current
Associate Professor, Physics & Astronomy, UCLA, 2016-Current
Associate Professor, Earth, Planetary and Space Sciences, UCLA, 2015-Current
Assistant Professor, Physics, Massachusetts Institute of Technology, 2015-2017
Assistant Professor, EAPS, Massachusetts Institute of Technology, 2013-2017
Hubble Postdoctoral Fellow, University of California, Los Angeles, 2010-2013
Postdoctoral Fellow, Canadian Institute for Theoretical Astrophysics, 2009-2010

Honors & Awards:

- Kavli Frontiers of Science Fellow, U.S. National Academy of Sciences, 2015
- Asteroid (9522) Schlichting, named 2014
- Elected Member of Elisabeth-Schiemann-Kolleg, Max Planck Society, 2014
- Chancellor's Award for Exceptional Accomplishments in Postdoctoral Research, University of California, Los Angeles, 2012
- Hubble Fellowship, NASA, 2010
- Best Poster Prize, WE-Heraeus Physics School on "The Early Phase of Planet Formation", 2008
- Reed-Fellowship, California Institute of Technology, 2004
- New Hall Scholarship, University of Cambridge, 2004
- Fellow of the Cambridge European Society, Cambridge European Trust, 2004
- Studienstiftung des deutschen Volkes, 2003
- European Trust Bursary, Cambridge European Trust, 2001

Undergraduate Students:

Matthew Heising, Fall 2013, Spring 2014, Fall 2014 (now graduate student, Harvard University)
Ekapob Kulchoakrunsun, Fall 2013, Spring 2014, Fall 2014, Spring 2015 (now graduate student, Brown University)
Romero, Robert, Spring 2014

Ph.D. Students:

Gupta, Akash, UCLA, Fall 2017- Current

Biersteker, John, MIT, Fall 2014 – Current
Inamdar, Niraj, MIT, Spring 2014- August 2016, PhD August 2016
Gonzales, Alexandria, MIT, Fall 2014-2016 (Masters project)

Postdoctoral Scholars:

Piso, Ana-Maria, UCLA, Fall 2016 – Fall 2017

Teaching:

UCLA: EPSS 9, Solar Systems and Planets, Spring 2017, Average Evaluation 7.8/10, level: large undergraduate for none majors

EPSS 219, Planetary and Orbital Dynamics, Winter 2017, level: graduate

MIT: 12.425/12.625/8.926J, Extrasolar Planets, Physics & Detection Techniques, Spring 2014, Spring 2015, Spring 2016, Average Evaluation: 6.4/7, level: undergraduate & graduate

12.098/12.S680, The Formation & Evolution of Planetary Systems, Fall 2014, Average Evaluation: 6.8/7, level: undergraduate & graduate

I developed this course as an investigation into the current understanding of how planets form combining orbital dynamics, geochemical constraints and astrophysical observations.

Summer/Winter Schools:

Lecturer Planet Formation Summer School, 2015, Niels Bohr Institute, Copenhagen, Denmark

Lecturer Winter Workshop on Planetary Astrophysics, 2009, Kavli Institute for Astronomy & Astrophysics, Peking University, China

Public Lectures:

UCLA Meteorite Gallery, University of California, Los Angeles, 2016

Observing Night, Wellesley College, 2015,

Astronomy Society, Santa Barbara City College, 2015

Astronomy & Space Exploration Society, University of Toronto, 2010

University Service:

UCLA EPSS representative to the legislative assembly, 2017-

UCLA EPSS Faculty Search Committee, 2016/2017

UCLA EPSS Diversity Committee, 2016/2017

MIT EAPS Graduate Student Admissions Committee, 2013/2014, 2014/2015

MIT EAPS Department Lecture Series Committee 2014/2015

MIT EAPS Faculty Search Committee, 2013/2014

MIT Ivy Plus Symposium, Speaker, 2014

EAPS Undergraduate Advisor, 2014/2015

External Service:

Referee for Nature, ApJ, ApJL, AJ, Icarus and MNRAS

NASA Review Panel

Hubble Fellow Selection Committee, 2014

Reviewer for The Israel Science Foundation, 2013

Reviewer for The French Research Agency, 2012

Hubble Space Telescope Time Allocation Committee, 2011, 2015
Scientific Organizing Committee:

- Transformative Astrophysics with WFIRST, Pasadena (2016)
- 4th Session of the Sant Cugat Forum on Astrophysics, Spain (2016)
- Formation and Dynamical Evolution of Exoplanets, Aspen (2017)
- Dynamics across all Scales, Berlin, Germany (2018)
- Exoplanets II, Cambridge, UK (2018)

Publications:

Summary: 30 peer-reviewed publications (25 published, 1 accepted, 4 under review, 3 invited book chapters), 14 first author papers, 10 second author papers, 6 papers led by student authors directly supervised)

Submitted Publications: (*= student author directly supervised)

- 1) *Chapter 14: Atmosphere Impact Losses*, **Hilke E. Schlichting** & S. Mukhopadhyay, book chapter, 2016, submitted to Space Science Reviews, Springer
- 2) * *Low-Density Super Earths: Formation and Evolution*, S. Ginzburg, N. Inamdar & **Hilke E. Schlichting**, book chapter, 2016, accepted, Springer
- 3) *Constraints on the Growth and Spin of the Supermassive Black Hole in M32 from high Cadence visible Light Observations*, R. Chary, G. Hallinan, L. K. Harding, N. S. Saini, & **Hilke E. Schlichting**, 2017, ApJ, submitted
- 4) *Avoiding resonance capture in multi-planet extrasolar systems*, M. Pan & **Hilke E. Schlichting**, 2017, ApJ, submitted
- 5) *Formation of Super-Earths*, **Hilke E. Schlichting**, 2017, Exoplanet Handbook, Springer, submitted

Refereed Publications: (*= student author directly supervised)

- 1) **Detection of Exoplanetary oblateness using transit depth variations*, John Bierstecker & **Hilke E. Schlichting**, 2017, 154, 164
- 2) *Using Ice and Dust Lines to constrain the Surface Densities of Protoplanetary Disks*, D. Powell, R. Murray-Clay & **Hilke E. Schlichting**, 2017, ApJ, 840, 93
- 3) **Super-Earth Atmospheres: Self-consistent Gas Accretion and Retention*, Sivan Ginzburg, **Hilke E. Schlichting** & Re'em Sari, 2016, ApJ, 825, 29
- 4) **Stealing the Gas: Giant Impacts & the Large Diversity in Exoplanet Densities*, Niraj Inamdar & **Hilke E. Schlichting**, 2016, ApJ, 817, L13
- 5) **A Search for Ringed Exoplanets using Kepler Photometry*, Matthew Z. Heising, Geoffrey W. Marcy & **Hilke E. Schlichting**, 2015, ApJ, 814, 81
- 6) *CHIMERA: A wide-field, multi-color, high-speed photometer at the prime focus of the Hale telescope*, L. K. Harding, G. Hallinan, J. Milburn, P. Gardner, N. Konidaris, N. Singh, M. Shao, J. Sandhu, G. Kyne & **Hilke E. Schlichting**, 2016, MNRAS, 457, 3036
- 7) **Formation of Super-Earths & Mini-Neptunes with Giant Impacts*, Niraj Inamdar & **Hilke E. Schlichting**, 2015, MNRAS, 448, 1751

- 8) *Atmospheric Mass Loss During Planet Formation*, **Hilke E. Schlichting**, Re'em Sari & Almog Yalinewich, 2015, *Icarus*, 247, 81
- 9) *Formation of Close in Super-Earths & Mini-Neptunes: Required Disk Masses & Their Implications*, **Hilke E. Schlichting**, 2014, *ApJL*, 795, 15
- 10) *Overstable Librations can Account for the Paucity of Mean Motion Resonances among Exoplanet Pairs*, P. Goldreich & **Hilke E. Schlichting**, 2014, *AJ*, 147, 32
- 11) *Dynamical and Collisional Constraints on a Stochastic Late Veneer on the Terrestrial planets*, Raymond, **Schlichting**, Hersant & Selsis 2013, *Icarus*, 226, 671
- 12) *Initial Planetesimal Sizes and the Size Distribution of Small Kuiper Belt Objects*, **Hilke E. Schlichting**, Ceser Fuentes, David Trilling 2013, *AJ*, 146, 36
- 13) *Measuring the Abundance of sub-kilometer sized Kuiper Belt Objects using Stellar Occultations*, **Schlichting** et al. 2012, *ApJ*, 761, 150
- 14) *The Last Stages of Terrestrial Planet Formation: Dynamical Friction and the Late Veneer*, **Hilke E. Schlichting**, P.H, Warren & Q.Z. Yin 2012, *ApJ*, 752, 8
- 15) *Self-consistent Size and Velocity Distributions of Collisional Cascades*, Margaret Pan & **Hilke E. Schlichting** 2012, *ApJ*, 747, 113
- 16) *Warm Saturns: On the Nature of Rings of Extrasolar Planets that Reside Inside the Ice Line*, **Hilke E. Schlichting** & Philip Chang 2011, *ApJ*, 734, 117
- 17) *Runaway Growth During Planet Formation: Explaining the Size Distribution of Large Kuiper Belt Objects*, **Hilke E. Schlichting** & R. Sari 2011, *ApJ*, 728, 68
- 18) *Using Kuiper Belt Binaries to Constrain Neptune's Migration History*, Ruth A. Murray-Clay & **Hilke E. Schlichting** 2011, *ApJ*, 730, 132
- 19) *A Single sub-km Kuiper Belt object from a stellar Occultation in archival data*, **Hilke E. Schlichting**, E. O. Ofek, M. Wenz, R. Sari, A. Gal-Yam, M. Livio, E. Nelan, S. Zucker 2009, *Nature*, 462, 895
- 20) *The Creation of Haumea's Collisional Family*, **Hilke E. Schlichting** & Re'em Sari 2009, *ApJ*, 700, 1242
- 21) *The Ratio of Retrograde to Prograde Orbits: A Test for Kuiper Belt Binary Formation Theories*, **Hilke E. Schlichting** & Re'em Sari 2008, *ApJ*, 686, 741
- 22) *Formation of Kuiper Belt Binaries*, **Hilke E. Schlichting** & Re'em Sari 2008, *ApJ*, 673, 1218
- 23) *The Self-Similarity of Shear-Dominated Viscous Stirring*, Benjamin F. Collins, **Hilke E. Schlichting** & Re'em Sari 2007, *AJ*, 133, 2389
- 24) *The Effect of Semicollisional Accretion on Planetary Spins*, **Hilke E. Schlichting** & Re'em Sari 2007, *ApJ*, 658, 593
- 25) *A study of a long water detector for cosmic-ray studies*, J. Gebauer, E. Lorenz, R. Mirzoyan, **H. Schlichting** and F. Steinbügl 2004, *NIMA* 518/1-2 pp. 198-200

Invited Talks and Colloquia (last 5 years):

2017

- Colloquium, ITC, CfA, Harvard University, *Formation of super-Earths*
- Colloquium, UC Riverside, *Planet Formation at home and abroad*

- Contributed talk, Planet formation & Evolution Meeting, Jena, Germany
- Colloquium, Max Plank Institute for Astrophysics, Munich, *Formation of Super-Earths*
- Contributed talk, Formation and Dynamical Evolution of Exoplanets, Aspen
- Contributed talk, Lunar and Planetary Science Conference, Houston
- Colloquium, Lowell Observatory, Flagstaff, *Formation of Planets at home and abroad*
- Invited Speaker, Gordon conference on ‘Origins of Solar Systems’ Mount Holyoke College
- Invited Speaker, MIRA Conference on ‘Origins of Volatiles in Rocky Worlds’ University of Michigan

2016

- Invited Speaker, ISSI workshop on ‘The delivery of water to proto-planets, planets and satellites’ Bern, Switzerland
- Colloquium, UMass Amherst, *Impacts and the Formation of Planets at Home and Abroad*
- Small Scale Seminar, CfA, Harvard
- Invited Speaker, 4th Session of the Sant Cugat Forum on Astrophysics, Sant Cugat, Spain
- Invited Speaker, ‘Resolving planet formation in the era of ALMA and extreme AO’ meeting, Santiago, Chile
- Colloquium, University of Virginia, *Planet Formation at Home and Abroad*
- Invited Speaker, Goldschmidt Conference, Yokohama, Japan
- Invited Speaker, Exoplanets I Meeting, Davos, Switzerland
- PlanetS Seminar, ETH, Switzerland, *Crash, Boom, Bang: Impacts & the Formation of Planets at home and abroad*
- PlanetS Seminar, University of Bern, Switzerland, *Formation of Kepler Planets and its Implications for Habitability*
- Invited Guest Speaker, Simons Foundation, Simons Collaboration Origins of Life Quarterly Investigators Meetings, New York
- Physics Colloquium, University of California, Los Angeles

2015

- Colloquium, Western University, Canada, *From Shocks to Resonances: New Insights Into Planet Formation*
- Seminar, UCLA, *Atmospheric Mass Loss During Planet Formation*
- Invited Talk, Physics of Exoplanets: From Earth-sized to Mini-Neptunes Conference, Kavli Institute for Theoretical Physics, Santa Barbara
- Invited Lecturer Planet Formation Summer School, Niels Bohr Institute, Copenhagen, Denmark
- Invited Talk, International Astronomical Union 29th General Assembly Meeting, Hawaii
- Colloquium, Steward Observatory University of Arizona & NOAO
- Colloquium, University of Amsterdam, Netherlands
- Joined Princeton University/Institute for Advanced Studies Astronomy Colloquium

2014

- Seminar, Canadian Institute for Theoretical Astrophysics, *From Shocks to Resonances: New Insights Into Planet Formation*
- Joint Astronomy EPS Colloquium, University of California Berkeley, *From Shocks to Resonances: New Insights Into Planet Formation*

- Seminar, Max Planck Institute for Astrophysics, *From Shocks to Resonances: New Insights Into Planet Formation*
- Colloquium, Wesleyan University, *Planet Formation in the Kepler Era*
- Invited Talk, American Astronomical Society, *Overstable Librations & the Paucity of Mean Motion Resonances among Exoplanet Pairs*

2013

- Colloquium, CfA, Harvard, *Planet Formation in the Kepler Era*
- Colloquium, Ohio State University, *Planet Formation in the Kepler Era*
- Colloquium, University of Maryland, *Planet Formation in the Kepler Era*
- Seminar, Carnegie DTM, *Planet Formation in the Kepler Era*
- Colloquium, Federal University Rio de Janeiro, Brazil, *Planet Formation*
- Invited Plenary Talk, DPS, *The Kuiper Belt after 20 years: Past, Present & Future*
- Colloquium, University of Victoria, Canada, *Planet Formation in the Kepler Era*
- Seminar, NRC Herzberg Institute, Canada, *New Insights into Planet Formation*
- Colloquium, MIT, *New insights into Planet Formation from Kepler & our Solar System*
- Invited Talk, Gordon Research Conference, *Planet Formation in the Kepler Era*
- Colloquium, Caltech, *Planet Formation in the Kepler Era*
- Colloquium, Pomona Colleges, *Planet Formation & the Solar System*
- CAS Seminar, Johns-Hopkins University, *Planet Formation and the Solar System*
- Joined ESO/MPA/MPE/USM Astronomy Colloquium, Garching, Germany, *Recent Insights into Planet Formation*

Press Release:

- 1) *Versatile Instrument to Scout for Kuiper Belt Objects*, NASA News Release, March 3, 2016
- 2) *Losing Air, new study finds that a barrage of small impacts likely erased much of the Earth's primordial atmosphere*, MIT News Release, December 2, 2014
- 3) *Hubble Finds Smallest Kuiper Belt Object Ever Seen*, STScI News Release, December 16, 2009