

EUGENE CHIANG

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Education

- 2000* **California Institute of Technology** Pasadena, CA
Ph.D. Astronomy
Thesis: Circumstellar and Circumplanetary Disks
- 1995* **Massachusetts Institute of Technology** Cambridge, MA
S.B. Physics
Thesis: Ionization Nebulae Surrounding Supersoft X-ray Sources

Awards

- 2004* Alfred P. Sloan Research Fellow
2000 Institute for Advanced Study Long-term 5-year Member
2000 Hubble Fellow
1999 Caltech Lewis A. Kingsley Foundation Fellow
1995 National Science Foundation (NSF) Graduate Research Fellow
1995 MIT Orloff Prize for outstanding senior thesis
1995 Alan H. Barrett Prize for excellence in astrophysics at MIT

Employment

- 2005–present* **UC Berkeley Astronomy / Earth and Planetary Science** Berkeley, CA
Associate Professor
- 2001–2005* **UC Berkeley Astronomy / Earth and Planetary Science** Berkeley, CA
Assistant Professor
- 2000–2001* **Institute for Advanced Study (IAS)** Princeton, NJ
Hubble Postdoctoral Fellow / Long-term 5-year Member
- 1995–2000* **Caltech Theoretical Astrophysics** Pasadena, CA
Graduate Research Assistant
- 1994–1995* **MIT Haystack Radio Observatory** Westford, MA
NSF Undergraduate Research Assistant
- 1992–1995* **MIT Center for Space Research** Cambridge, MA
Undergraduate Research Assistant

Teaching Experience

- 2005–present* **UC Berkeley Associate Professor of Astronomy** Berkeley, CA
- Order-of-Magnitude Physics (Graduate). Three hours of lecture per week, problem sets. The art of estimating everyday quantities from the frequency of kettledrums to the minimum water depth for cliff diving. Class website: astro.berkeley.edu/~echiang/oom/oom.html
 - Galactic Dynamics (Graduate). Reading seminar on spiral structure, N-body algorithms, relaxation mechanisms, Schwarzschild's method, dynamical friction, galaxy formation. Students posed and answered their own questions by constructing their own wiki at coma.berkeley.edu/courses/ay250_f07. Beta-tested Binney & Tremaine's Second Edition of *Galactic Dynamics*, communicated errata and suggestions for future editions to S. Tremaine
 - Astrophysical Fluid Dynamics (Graduate). Three hours of lecture per week, problem sets. Core graduate course on hydrodynamics, magnetohydrodynamics. A mix of order-of-magnitude and technical problems, emphasis on developing familiarity with the astrophysical literature. Class website: astro.berkeley.edu/~echiang/fluid/fluid.html
 - Physics of Super-Earths (Graduate). Co-taught reading seminar on formation and evolution of Earth and Earth-like planets. Original problem sets accompany weekly readings. Seminar website: cips.berkeley.edu/events/superearths.html
- 2001–2005* **UC Berkeley Assistant Professor of Astronomy** Berkeley, CA
- Radiative Processes in Astrophysics (Graduate). Three hours of lecture per week, problem sets, literature review. Class website: astron.berkeley.edu/~echiang/rad/rad.html
 - Planetary Dynamics (Graduate). Three hours of lecture per week, problem sets, literature review. Class website: astron.berkeley.edu/~echiang/classmech/classmech.html
 - Accretion Disk Theory (Graduate). Co-taught reading seminar on mechanisms of angular momentum transport in astrophysical disks. Mini-lectures accompany weekly readings. Class website: astron.berkeley.edu/tac/disks.html
 - Classic Papers in Astrophysics (Graduate). Co-organized reading seminar on seminal papers in theoretical astrophysics. Seminar website: astron.berkeley.edu/tac/reading.html
 - Classic Papers in Earth and Planetary Science (Graduate). Co-organized reading seminar on seminal papers in geophysics. Seminar website: cips.berkeley.edu/seminars2003_2004
 - Planetary Astrophysics (Undergraduate). Three hours of lecture per week, problem sets, term paper, oral presentations. Class website: astron.berkeley.edu/~echiang/planet/planet.html
- 2001–present* **UC Berkeley Research Advisor** Berkeley, CA
- Graduate students in astronomy, physics, and earth and planetary science: D. Perez-Becker, A. Lee, E. Kite, R. Murray, L. Strubbe, A. Youdin
 - Undergraduate majors in astronomy, physics, and mathematics: H. M. Choi, A. Jordan, C. Culter, J. Lovering
- 1999–2000* **Caltech Research Advisor** Pasadena, CA
- Undergraduate major in physics: R. M. K. Joung (honors thesis)
- 1996–1999* **Caltech Teaching Assistant** Pasadena, CA
- Introductory Astronomy (Undergraduate)
 - Order-of-Magnitude Physics (Undergraduate)
 - Astrophysical Radiative Processes (Graduate)
 - Planetary Dynamics (Graduate)

Fall 1993

MIT Writing Center Tutor

Cambridge, MA

Taught students how to improve their prose. Critiqued and corrected scientific papers, essays, resumes and cover letters.

Refereed Publications (47 total; boldfaced title refers to papers published since last review)

1. "On the Li and Be Tests for Brown Dwarfs," Nelson, L. A., Rappaport, S., & Chiang, E. *Astrophys. J.*, 413, 364 (1993)
2. "Time-Domain Holographic Image Storage," Shen, X. A., Chiang, E., & Kachru, R. *Optics Letters*, 19, 1246 (1994)
3. "Ionization Nebulae Surrounding Supersoft X-Ray Sources," Rappaport, S., Chiang, E., Kallman, T., & Malina, R. *Astrophys. J.*, 431, 237 (1994)
4. "A λ 3.6 cm Radio Survey of Low-Mass Weak T Tauri Stars in Taurus-Auriga," Chiang, E., Phillips, R., & Lonsdale, C. *Astron. J.*, 111, 355 (1996)
5. "Time-Dependent Calculations of Ionization Nebulae Surrounding Supersoft X-ray Sources," Chiang, E., & Rappaport, S. *Astrophys. J.*, 469, 255 (1996)
6. "Spectral Energy Distributions of T Tauri Stars with Passive Circumstellar Disks," Chiang, E. I., & Goldreich, P. *Astrophys. J.*, 490, 368 (1997)
7. "Keck Pencil-Beam Survey for Faint Kuiper Belt Objects," Chiang, E.I., & Brown, M. E. *Astron. J.*, 118, 1411 (1999)
8. "Spectral Energy Distributions of Passive T Tauri Disks: Inclination," Chiang, E.I., & Goldreich, P. *Astrophys. J.*, 519, 279 (1999)
9. "Angular Momentum Transport in Particle and Fluid Disks," Quataert, E., & Chiang, E. I. *Astrophys. J.*, 543, 432 (2000)
10. "Apse Alignment of Narrow Eccentric Planetary Rings," Chiang, E. I., & Goldreich, P. *Astrophys. J.*, 540, 1084 (2000)
11. "Spectral Energy Distributions of Passive T Tauri and Herbig Ae Disks: Grain Mineralogy, Parameter Dependences, and Comparison with Observations," Chiang, E. I., Joung, M. K., Creech-Eakman, M., Qi, C., Kessler, J., Blake, G., & van Dishoeck, E. F. *Astrophys. J.*, 577, 1077 (2001)
12. "Apsidal Alignment in Upsilon Andromedae," Chiang, E. I., Tabachnik, S., & Tremaine, S. *Astron. J.*, 122, 1607 (2001)
13. "Infrared Views of the TW Hya Disk," Weinberger, A. J., Becklin, E. E., Schneider, G., Chiang, E. I., Lowrance, P. J., Silverstone, M., Zuckerman, B., Hines, D., & Smith, B. A. *Astrophys. J.*, 566, 409 (2002)
14. "ISO LWS Spectra of T Tauri and Herbig AeBe Stars," Creech-Eakman, M.J., Chiang, E.I., Joung, R.M.K., Blake, G.A., & van Dishoeck, E.F. *Astron. & Astrophys.*, 385, 546 (2002)
15. "Excitation of Orbital Eccentricities of Extrasolar Planets by Repeated Resonance Crossings," Chiang, E. I., Fischer, D., & Thommes, E. *Astrophys. J. Letters*, 564, L105 (2002)
16. "Eccentricity Excitation and Apsidal Resonance Capture in the Planetary System Upsilon Andromedae," Chiang, E. I., & Murray, N. *Astrophys. J.*, 576, 473 (2002)
17. "A Collisional Family in the Classical Kuiper Belt," Chiang, E. I. *Astrophys. J. Letters*, 573, L65 (2002)
18. "On the Plutinos and Twotinos of the Kuiper Belt," Chiang, E. I., & Jordan, A. B. *Astron. J.*, 124, 3430 (2002)
19. "Excitation of Orbital Eccentricities by Repeated Resonance Crossings: Requirements," Chiang, E. I. *Astrophys. J.*, 584, 465 (2003)

20. "Resonance Occupation in the Kuiper Belt: Case Examples of the 5:2 and Trojan Resonances," Chiang, E. I., Jordan, A. B., Millis, R. L., Buie, M. W., Wasserman, L. H., Elliot, J. L., Kern, S. D., Trilling, D. E., Meech, K. M., & Wagner, R. M. *Astron. J.*, 126, 430 (2003)
21. "Resonant and Secular Families of the Kuiper Belt," Chiang, E. I., Loring, J.L., Millis, R. L., Buie, M. W., Wasserman, L. H., & Meech, K. J. *Earth, Moon, & Planets*, First Decadal Review of the Edgeworth-Kuiper Belt special issue, 92, 49 (2003)
22. "Procedures, Resources and Selected Results of the Deep Ecliptic Survey," Buie, M.W., Millis, R.L., Wasserman, L.H., Elliot, J.L., Kern, S.D., Clancy, K.B., Chiang, E.I., Jordan, A.B., Meech, K.J., Wagner, R.M., & Trilling, D.E. *Earth, Moon, & Planets*, 92, 113 (2003)
23. "The Dynamic Neptunian Ring Arcs," de Pater, I., Gibbard, S., Chiang, E. I., Hammel, H., Macintosh, B., Marchis, F., Martin, S., Roe, H. G., & Showalter, M. *Icarus*, 174, 263 (2005)
24. "Three-Dimensional Dynamics of Narrow Planetary Rings," Chiang, E. I. & Culter, C. J. *Astrophys. J.*, 599, 675 (2004)
25. "Particle Pile-ups and Planetesimal Formation," Youdin, A. N. & Chiang, E. I. *Astrophys. J.*, 601, 1109 (2004)
26. "The Circumbinary Ring of KH 15D," Chiang, E. I. & Murray-Clay, R. A. *Astrophys. J.*, 607, 913 (2004)
27. "A Signature of Planetary Migration: The Origin of Asymmetric Capture in the 2:1 Resonance," Murray-Clay, R. A. & Chiang, E. I. *Astrophys. J.*, 619, 623 (2005)
28. "The Deep Ecliptic Survey: A Search for Kuiper Belt Objects and Centaurs. II. Dynamical Classification, the Kuiper-Belt Plane, and the Core Population," Elliot, J.L., Kern, S.D., Clancy, K.B., Gulbis, A.A.S., Millis, R.L., Buie, M.W., Wasserman, L.H., Chiang, E. I., Jordan, A.B., Trilling, D.E., & Meech, K.J. *Astron. J.*, 129, 1117 (2005)
29. "Neptune Trojans as a Testbed for Planet Formation," Chiang, E. I., & Lithwick, Y. *Astrophys. J.*, 628, 520 (2005)
30. "On the Location of the Snow-Line in Protoplanetary Disks," Lecar, M., Podolak, M., Sasselov, D., & Chiang, E. *Astrophys. J.*, 640, 1115 (2006)
31. "Spatially Resolving the Inner Disk of TW Hydrae," Eisner, J. A., Chiang, E. I., & Hillenbrand, L. A. *Astrophys. J. Letters*, 637, 133 (2006)
32. "**Dust Dynamics, Surface Brightness Profiles, and Thermal Spectra of Debris Disks: The Case of AU Microscopii**," Strubbe, L. E., & Chiang, E. I. *Astrophys. J.*, 648, 652 (2006)
33. "**Brownian Motion in Planetary Migration**," Murray-Clay, R. A., & Chiang, E. I. *Astrophys. J.*, 651, 1194 (2006)
34. "**A Brief History of Trans-Neptunian Space**," Chiang, E. I., Lithwick, Y., Murray-Clay, R., Buie, M., Grundy, W., & Holman, M. Refereed review chapter in *Protostars and Planets V*, eds. B. Reipurth, D. Jewitt, & K. Keil, University of Arizona Press, 895 (2007)
35. "**Collisional Particle Disks**," Lithwick, Y., & Chiang, E. *Astrophys. J.*, 656, 524 (2007)
36. "**Spectrally Dispersed K-Band Interferometric Observations of Herbig Ae/Be Sources: Inner Disk Temperature Profiles**," Eisner, J. A., Chiang, E. I., Lane, B. F., & Akeson, R. L. *Astrophys. J.*, 657, 347 (2007)
37. "**Binaries in the Kuiper Belt**," Noll, K. S., Grundy, W. M., Chiang, E. I., Margot, J.-L., & Kern, S. D. Refereed review chapter in *The Kuiper Belt*, University of Arizona Press (2007)
38. "**The Formation of Ice Giants in a Packed Oligarchy: Instability and Aftermath**," Ford, E. B., & Chiang, E. I. *Astrophys. J.*, 661, 602 (2007)
39. "**The Origin of the Young Stars in the Nucleus of M31**" Chang, P., Murray-Clay, R., Chiang, E., & Quataert, E. *Astrophys. J.*, 668, 236 (2007)

40. **“Inside-Out Evacuation of Transitional Protoplanetary Disks by the Magneto-Rotational Instability”** Chiang, E. I., & Murray-Clay, R. A. *Nature Physics*, 3, 604 (2007)
41. **“Vertical Shearing Instabilities in Radially Shearing Disks: The Dustiest Layers of the Protoplanetary Nebula”** Chiang, E. I. *Astrophys. J.*, 675, 1549 (2008)
42. **“The Warped Plane of the Classical Kuiper Belt”** Chiang, E. I., & Choi, H. *Astron. J.*, 136, 350 (2008)
43. **“Optical Images of an Exosolar Planet 25 Light-Years from Earth”** Kalas, P., Graham, J. R., Chiang, E. I., Fitzgerald, M. P., Clampin, M., Kite, E. S., Stapelfeldt, K., Marois, C., & Krist, J. *Science*, 302, 1345 (2008)
44. **“Atmospheric Escape from Hot Jupiters”** Murray-Clay, R. A., & Chiang, E. I. *Astrophys. J.*, 693, 23 (2009)
45. **“High Albedos of Low Inclination Classical Kuiper Belt Objects”** Brucker, M. J., Grundy, W. M., Stansberry, J. A., Spencer, J. R., Sheppard, S. S., Chiang, E. I., & Buie, M. W. *Icarus*, 201, 284 (2009)
46. **“Fomalhaut’s Debris Disk and Planet: Constraining the Mass of Fomalhaut b From Disk Morphology”** Chiang, E., Kite, E., Kalas, P., Graham, J. R., & Clampin, M. *Astrophys. J.*, 693, 734 (2009)
47. **“Forming Planetesimals in Solar and Extrasolar Nebulae”** Chiang, E., & Youdin, A. *Annual Reviews of Earth and Planetary Science*, 38 (2009, submitted)

Minor Planet Electronic Circulares / International Astronomical Union Circulares

1. Co-author of over 100 MPECs announcing discoveries of Kuiper Belt Objects
2. Chiang, E. IAUC 8044, 3 (2003): Announcement of discovery of first Neptunian Trojan

Invited Presentations

1. “Transitional Disks: Theories and Observations”
Invited review talk for 2008 Spitzer Science Conference
2. “Planet Formation in Transitional and Debris Disks”
Invited colloquium at institutions including
 - Cornell (2009)
 - Harvard ITC (2009)
 - Caltech (2009)
 - UCSD (2009)
 - University of Arizona (2007)
 - University of Texas at Austin (2007)
3. “Protoplanetary Disks: From T Tauri Stars to Debris Systems”
Invited 5-hour lecture for the 24th Jerusalem Winter School:
”Lives of Low-Mass Stars and Their Planets,” at Hebrew University (2006/2007)

Invited Presentations, continued

4. “Resonant Rings: The Kuiper Belt and Beyond”

Invited colloquium at 15+ institutions, including

- MIT (2006)
- UC Berkeley (EPS Department Distinguished Speaker) (2006)
- American Museum of Natural History, New York City (2006)
- University of Toronto (2006)
- Caltech (2005)
- Harvard-Smithsonian Center for Astrophysics (2005)
- Institute for Advanced Study (2004)
- Ohio State (2004)

5. “Order-of-Magnitude Problems in Planetary Science”

Invited 3-hour lecture for the International Planetary School in Kobe, Japan (2005)

6. “Architectures of Extra-Solar Planetary Systems”

Invited speaker and co-organizer for

- Aspen Center for Physics Conference: Origin and Evolution of Planets (2005)
- Sackler Conference at Harvard: Astrophysics of Planetary Systems (2004)

Public Outreach

1. Public lecture on “Action and Reaction: How Gravity Shapes Planetary Systems”

- San Francisco Amateur Astronomers (2009)
- Berkeley Astrophysics Roundtable (for donors; 2009)

2. Public lecture on “The Tenth Planet and Beyond”

- Berkeley CIPS Public Lecture (2006)
- Mount Tamalpais Astronomical Society (2006)
- Silicon Valley Astronomy Lecture Series (audience of 600+) (2004)
- Sonoma State “What Physicists Do” Lecture Series (2004)
- Mount Diablo Astronomical Society (2003)
- Cal Day Astronomy Department Open House (2002)

Languages Fluency in Mandarin Chinese.

References Available upon request.