

JACK JONATHAN LISSAUER

Space Science & Astrobiology Division
NASA Ames Research Center
Mail Stop 245-3
Moffett Field, CA 94035

RESEARCH INTERESTS:

Dynamical problems in planetary astrophysics.

Special interests: Planet and star formation; detection of extrasolar planets; assessing abundance of habitable planets; rotation of planets and comets; cratering; circumstellar disks; resonances and chaos; planetary rings and moons; spiral density wave theory.

EDUCATION:

University of California, Berkeley, CA

Degree: Ph.D. in Applied Mathematics, December 1982

Thesis title: Dynamics of Saturn's Rings

Thesis advisor: Frank H. Shu

Massachusetts Institute of Technology, Cambridge, MA

Degree: S.B. in Mathematics, February 1978

HONORS:

Chambliss Writing Award, American Astronomical Society, 2007

Ames Associate Fellow, NASA Ames, 2007

2006 California Space SpotBeam Award/Space Sciences, California Space Authority

Harold C. Urey Prize, Division of Planetary Sciences of the American Astronomical Society, 1992

Alfred P. Sloan Foundation Fellowship, 1987-1991

NASA Graduate Student Fellowship, 1981-1982

SPACECRAFT EXPERIENCE:

Kepler Science Co-Investigator (NASA Discovery Mission, Launched March 2009)

PLANET DISCOVERIES (with G. Marcy et al.):

GJ 876b (1998)

GJ 876c (2001)

GJ 436b (2004)

GJ 876d (2005)

DISCOVERIES OF MOONS & PLANETARY RINGS (with M. Showalter):

U XXVI Mab (S/2003 U 1) (2003 - IAUC 8209)

U XXVII Cupid (S/2003 U 2) (2003 - IAUC 8209)

μ Ring (R/2003 U 1) (2005 - IAUC 8649)

ν Ring (R/2003 U 2) (2005 - IAUC 8649)

POSITIONS HELD:

Space Scientist, AST, Planetary System

Planetary Systems Branch, Space Science (& Astrobiology) Division
NASA Ames Research Center, Moffett Field, CA (August 1996 -)

Associate Professor

Astronomy Program, Department of Earth & Space Sciences
State University of New York, Stony Brook (September 1993 - August 1996)

Assistant Professor

Astronomy Program, Department of Earth & Space Sciences
State University of New York, Stony Brook (June 1987 - August 1993)

Visiting Postdoctoral Researcher

Department of Physics and Institute for Theoretical Physics
University of California, Santa Barbara (July 1985 - June 1987)

Assistant Research Astronomer

University of California, Berkeley (January 1985 - July 1985)

NAS-NRC Resident Research Associate

NASA-Ames Research Center,
Moffett Field, CA (January 1983 - January 1985)

TEMPORARY APPOINTMENTS:

Consulting Professor

Department of Geological & Environmental Sciences, Stanford University, Palo Alto, CA
(April 2002 -)

Yuval Ne'eman Distinguished Lecturer in Geophysics, Atmosphere and Space Sciences

Tel Aviv University, Tel Aviv, ISRAEL (March 2001)

Adjunct Associate Professor

Department of Earth & Space Sciences/Department of Physics & Astronomy, State
University of New York, Stony Brook (ESS: September 1996 - June 1997; Physics &
Astronomy: July 1997 - June 2002)

Visiting Scholar

Department of Astronomy, University of California, Berkeley (June 1994 - August 1995)

Chercheur Associe

Institut d'Astrophysique de Paris, Centre National de Recherche Scientifique, Paris,
FRANCE (May - August 1993)

Visiting Assistant Research Physicist

Institute for Theoretical Physics, University of California, Santa Barbara (July - December
1992)

Professeur Invité

Department de Physique, Université de Paris VII, Paris et Observatoire de Paris, Meudon,
FRANCE (April - June 1990)

Visiting Scholar

Department of Planetary Sciences and Lunar and Planetary Laboratory, University of
Arizona, Tucson (February - March 1990)

PROFESSIONAL SOCIETY MEMBERSHIPS:

American Astronomical Society
Division of Planetary Sciences of AAS
Division on Dynamical Astronomy of AAS

International Astronomical Union

American Geophysical Union

PROFESSIONAL SERVICES:

IAU Commission 53 on Extrasolar Planets, 2006-.
Editor for Planetary Sciences, New Astronomy Reviews, 1998-.
Isaac Asimov Debate Panelist, American Museum of Natural History, NY, 2009
NASA Lunar and Planetary Geosciences Review Panel, 1989, 1991, 1999-2000, 2008.
NASA Origins of Solar Systems Program Review Panel, co-chair, 2007
Organizing Committee for Navigator Program Forum-2007
NASA Ames Liaison Scientist, JPL Navigator Program, 2005-2007.
IAU Working group on Extrasolar Planets, 2000-2006.
NASA Outer Planets Research Program Review Panel, 2005 (Rings); Jan. 2007 (Geophysics).
NSF Star and Planet Formation Review Panel, 2005
Science Content Advisory Committee for development of Planetarium Show "Worlds for Life:
Searching for Habitable Zones in the Universe", American Museum of Natural History, NY, 2000-1.
Organizing Committee, 3rd Annual Japanese-American Frontiers of Science Meeting, 2000.
Brouwer Award Committee, DDA/AAS, 1997-2000 (Chair 1999-2000)
Committee Member, DDA/AAS 1995-1998.
Universities Space Research Association, SUNY Stony Brook representative, 1987-1996.
Scientific Organizing Committee for 10th IAP Meeting, Circumstellar Dust Disks and
Planet Formation, 1994.
Organizer, Program on Planet Formation, Institute for Theoretical Physics, University of
California at Santa Barbara, July-December 1992.
NASA Discovery Program Mission Concept Review Panel, 1992.
Organizing/Editorial Committee for Protostars and Planets III conference and book, 1990.

REFEREED PUBLICATIONS by JACK JONATHAN LISSAUER

1. Cuzzi, J.N., J.J. Lissauer, and F.H. Shu 1981. Density waves in Saturn's rings. *Nature* **292**, 703-707.
2. Lissauer, J.J., F.H. Shu, and J.N. Cuzzi 1981. Moonlets in Saturn's rings? *Nature* **292**, 707-711.
3. Holberg, J.B., W.T. Forrester, and J.J. Lissauer 1982. Identification of resonance features within the rings of Saturn. *Nature* **297**, 115-120.
4. Lissauer, J.J., and J.N. Cuzzi 1982. Resonances in Saturn's rings. *Astron. J.* **87**, 1051-1058.
5. Shu, F.H., J.N. Cuzzi, and J.J. Lissauer 1983. Bending waves in Saturn's rings. *Icarus* **53**, 185-206.
6. Esposito, L.W., N. Borderies, P. Goldreich, J.N. Cuzzi, J.B. Holberg, A.L. Lane, R.B. Pomphrey, R.J. Terrile, J.J. Lissauer, E.A. Marouf , and G.L. Tyler 1983. Eccentric Ringlet in the Maxwell Gap at 1.45 Saturn Radii: Multi-Instrument Voyager Observations. *Science* **222**, 57-60.
7. Lissauer, J.J., 1984. Ballistic Transport in Saturn's Rings: An Analytic Theory. *Icarus* **57**, 63-71.
8. Lissauer, J.J., S.J. Peale, and J.N. Cuzzi 1984. Ring Torque on Janus and the melting of Enceladus. *Icarus* **58**, 159-168.
9. Cuzzi, J.N., J.J. Lissauer, L.W. Esposito, J.B. Holberg, E.A. Marouf, G.L. Tyler, and A. Boishot 1984. Saturn's Rings: Properties and Processes. *Planetary Rings*, R. Greenberg and A. Brahic, eds. (Tucson: University of Arizona Press), pp. 73-199.
10. Lissauer, J.J., and D.E. Backman 1984. The Epsilon Aurigae Secondary: A Binary Embedded Within a Disk? *Astrophys. J. Lett.* **286**, L39-L41.
11. Squyres, S.W., R.T. Reynolds, and J.J. Lissauer 1985. The Enigma of the Uranian Satellites' Orbital Eccentricities. *Icarus* **61**, 218-223.
12. Shu, F.H., C. Yuan, and J.J. Lissauer 1985. Nonlinear Spiral Density Waves: An Inviscid Theory. *Astrophys. J.* **291**, 356-376.
13. Lissauer, J.J., and J.N. Cuzzi 1985. Rings and Moons: Clues to understanding the Solar Nebula. *Protostars and Planets II*, D. Black and M.S. Matthews, eds. (Tucson: University of Arizona Press), pp. 920-956.

14. Lissauer, J.J., 1985. Bending Waves and the Structure of Saturn's Rings. *Icarus* **62**, 433-447.
15. Lissauer, J.J., 1985. Can Cometary Bombardment Disrupt Synchronous Rotation of Planetary Satellites? *J. Geophys. Res.* **90**, 11289-11293.
16. Shu, F.H., L. Dones, J.J. Lissauer, C. Yuan, and J.N. Cuzzi 1985. Nonlinear Spiral Density Waves: Viscous Damping. *Astrophys. J.* **299**, 542-573.
17. Lissauer, J.J., 1985. Shepherding Model for Neptune's Arc Ring. *Nature* **318**, 544-545.
18. Lissauer, J.J., P. Goldreich, and S. Tremaine 1985. Evolution of the Janus-Epimetheus Coorbital Resonance due to Torques from Saturn's Rings. *Icarus* **64**, 425-434.
19. Lissauer, J.J., and S.J. Peale 1986. The Production of 'Braids' in Saturn's F Ring. *Icarus* **67**, 358-374.
20. Gresh, D.L., P.A. Rosen, G.L. Tyler, and J.J. Lissauer 1986. An analysis of Bending Waves in Saturn's Rings using Voyager Radio Occultation Data. *Icarus* **68**, 481-502.
21. Lissauer, J.J., 1987. Timescales for Planetary Accretion and the Structure of the Protoplanetary Disk. *Icarus* **69**, 249-265.
22. Rosen, P.A., and J.J. Lissauer 1988. The Titan -1:0 Nodal Bending Wave in Saturn's Ring C. *Science* **241**, 690-694.
23. Lissauer, J.J., S.W. Squyres, and W.K. Hartmann 1988. Bombardment History of the Saturn System. *J. Geophys. Res.* **93**, 13,776-13,804.
24. Lissauer, J.J. and C.A. Griffith, 1989. Erosion of Circumstellar Particle Disks by Interstellar Dust. *Astrophys. J.* **340**, 468-471.
25. Peale, S.J., and J.J. Lissauer 1989. Rotation of Halley's Comet. *Icarus* **79**, 396-430.
26. Greenzweig, Y., and J.J. Lissauer 1990. Accretion Rates of Planets. *Icarus* **87**, 40-77.
27. Bunch, T.E., P. Schultz, P. Cassen, D. Brownlee, M. Podolak, J. Lissauer, R. Reynolds and S. Chang, 1991. Are Some Chondrule Rims Formed by Impact Processes? Observations and Experiments" *Icarus* **91**, 76-92.
28. Rosen, P.A., G.L. Tyler, E.A. Marouf, and J.J. Lissauer 1991. Resonance Structures in Saturn's Rings probed by Radio Occultation II: Results and Interpretation. *Icarus* **93**, 25-44.
29. Lissauer, J.J., and V.S. Safronov 1991. The Random Component of Planetary Rotation. *Icarus* **93**, 288-297.

30. Lissauer, J.J., and D.M. Kary 1991. The Origin of the Systematic Component of Planetary Rotation I: Planet on a Circular Orbit in a Two-Dimensional Disk. *Icarus* **94**, 126-159.
31. Greenzweig, Y., and J.J. Lissauer 1992. Accretion Rates of Planets II: Gaussian Distributions of Planetesimal Velocities. *Icarus* **100**, 440-463.
32. Lissauer, J.J., and G.R. Stewart 1993. Growth of Planets from Planetesimals. *Protostars and Planets III*, E.H. Levy and J.I. Lunine, eds. (Tucson: University of Arizona Press), pp. 1061-1088.
33. Kary, D.M., J.J. Lissauer, and Y. Greenzweig 1993. Nebular Gas Drag and Planetary Accretion. *Icarus* **106**, 288-307.
34. Beust, H., and J.J. Lissauer 1994. The effects of stellar rotation on the absorption spectra of comets orbiting β Pictoris. *Astron. Astrophys.* **282**, 804-810.
35. Vidal-Madjar, A., A.-M. Lagrange-Henri, P. D. Feldman, H. Beust, J.J. Lissauer, M. Deteuil, R. Ferlet, C. Gry, L.M. Hobbs, M.A. McGrath, J.B. McPhate, and H.W. Moos 1994. HST-GHRS Observations of β Pictoris: Additional Evidence for Infalling Comets. *Astron. Astrophys.* **290**, 245- 258.
36. Graps, A.L., M.R. Showalter, J.J. Lissauer, and D.M. Kary 1995. Optical Depth Profiles and Streamlines of the Uranian ϵ Ring. *Astron. J.* **109**, 2262-2273.
37. Kary, D.M., and J.J. Lissauer 1995. Nebular Gas Drag and Planetary Accretion II: Planet on an Eccentric Orbit. *Icarus* **117**, 1-24.
38. Lissauer, J.J., J.B. Pollack, G.W. Wetherill, and D.J. Stevenson 1995. Formation of the Neptune System. *Neptune and Triton*, D.P. Cruikshank, ed. (Tucson: University of Arizona Press), 37-108.
39. Porco, C.C., P.D. Nicholson, J.N. Cuzzi, J.J. Lissauer, and L.W. Esposito 1995. Neptune's Rings. *Neptune and Triton*, D.P. Cruikshank, ed. (Tucson: University of Arizona Press), 703-804.
40. Nicholson, P.D., M.R. Showalter, L. Dones, R.G. French, S.M. Larson, J.J. Lissauer, C.A. McGhee, P. Seitzer, B. Sicardy, and E. Danielson 1996. Observations of Saturn's Ring-Plane Crossings in August and November 1995. *Science* **272**, 509-515.
41. de Pater, I., M.R. Showalter, J.J. Lissauer, and J.R. Graham 1996. Keck Infrared Observations of Saturn's E and G Rings during Earth's 1995 Ring Plane Crossing. *Icarus* **121**, 195-198.
42. Lissauer, J.J., S.J. Wolk, C.A. Griffith, and D.E. Backman 1996. The Epsilon Aurigae Secondary: A Hydrostatically Supported Disk. *Astrophys. J.* **465**, 371-384.

43. Pollack, J.B., O. Hubickyj, P. Bodenheimer, J.J. Lissauer, M. Podolak, and Y. Greenzweig 1996. Formation of the Giant Planets by Concurrent Accretion of Solids and Gas. *Icarus* **124**, 62-85.
44. Duncan, M.J., and J.J. Lissauer 1997. Orbital Stability of the Uranian Satellite System. *Icarus* **125**, 1-12.
45. Squyres, S.W., C. Howell, M.C. Liu, and J.J. Lissauer 1997. Investigation of Crater 'Saturation' using Spatial Statistics. *Icarus* **125**, 67-82
46. Bauer, J., J.J. Lissauer, and M. Simon 1997. Edge-On Observations of Saturn's E and G Rings in the Near-IR. *Icarus* **125**, 440-445.
47. Lissauer, J.J., A.F. Berman, Y. Greenzweig, and D.M. Kary 1997. Accretion of Mass and Spin Angular Momentum by a Planet on an Eccentric Orbit. *Icarus* **127**, 65-92.
48. Lecavelier des Etangs, A., A. Vidal-Madjar, D.E. Backman, M. Deleuil, A.-M. Lagrange, J.J. Lissauer, R. Ferlet, H. Beust, and D. Mouillet 1997. Discovery of CI Around 51 Ophiuchi. *Astron. Astrophys.* **321**, L39-L42.
49. Lecavelier des Etangs, A., M. Deleuil, A. Vidal-Madjar, A.-M. Lagrange, D.E. Backman, J.J. Lissauer, R. Ferlet, H. Beust, and D. Mouillet 1997. HST-GHRS Observations of Candidate b Pictoris-like Circumstellar Gaseous Disks. *Astron. Astrophys.* **325**, 228-236.
50. Lagrange, A.-M., H. Beust, D. Mouillet, M. Deleuil, P.D. Feldman, R. Ferlet, L. Hobbs, A. Lecavelier des Etangs, J.J. Lissauer, M.A. McGrath, J.B. McPhate, J. Spyromilio, W. Tobin and A. Vidal-Madjar 1998. The b Pictoris Circumstellar Disk XXIV. Clues to the Origin of the Stable Gas. *Astron. Astrophys.* **330**, 1091-1108.
51. Lissauer, J.J., and J. Espresate 1998. Resonant Satellite Torques on Low Optical Depth Particulate Disks: I. Analytic Development. *Icarus* **134**, 155-162.
52. Duncan, M.J., and J.J. Lissauer 1998. The Effects of Post-Main Sequence Solar Mass Loss on the Stability of the Solar System. *Icarus* **134**, 303-310.
53. Marcy, G.W., R.P. Butler, S.S. Vogt, D. Fischer, and J.J. Lissauer 1998. A Planetary Companion to the M4 Dwarf, Gliese 876. *Astrophys. J. Lett.* **505**, L147-L149.
54. Levison, H.F., J.J. Lissauer, and M.J. Duncan 1998. Modeling the Diversity of Outer Planetary Systems. *Astron. J.* **116**, 1998-2014.
55. Lissauer, J.J., 1999. Chaotic Motion in the Solar System. *Reviews of Modern Physics* **71**, 835-845.

56. Espresate, J., and J.J. Lissauer 1999. The Effect of Collisions on the Resonant Satellite Torque Distribution. *Planetary Space Sci.* **47**, 629-641.
57. Bodenheimer, P., O. Hubickyj, and J.J. Lissauer 2000. Models of the *In Situ* Formation of Detected Extrasolar Giant Planets. *Icarus* **143**, 2-14.
58. Rivera, E.J., and J.J. Lissauer 2000. Stability Analysis of the Planetary System Orbiting ν Andromedae. *Astrophys. J.* **530**, 454-463.
59. Wuchterl, G., T. Guillot, and J.J. Lissauer 2000. Giant Planet Formation. *Protostars and Planets IV*, V. Mannings, A.P. Boss and S.S. Russell, eds. (Tucson: University of Arizona Press), 1081-1109.
60. Lissauer, J.J., and R.G. French 2000. HST High-Resolution Backscatter Image of Saturn's G Ring. *Icarus* **146**, 12-18 + cover.
61. Lissauer, J.J., L. Dones, and K. Ohtsuki 2000. Origin and Evolution of Terrestrial Planet Rotation. *Origin of the Earth and Moon*, R.M. Canup and K. Righter, eds. (Tucson: University of Arizona Press), 101-112.
62. Lissauer, J.J., and E.J. Rivera 2001. Stability Analysis of the Planetary System Orbiting ν Andromedae. II: Simulations using new Lick Observatory fits. *Astrophys. J.* **554**, 1141-1150.
63. Espresate, J., and J.J. Lissauer 2001. Resonant Satellite Torques on Low Optical Depth Particulate Disks: II. Numerical Simulations. *Icarus* **152**, 29-47.
64. Marcy, G.W., R.P. Butler, D. Fischer, S.S. Vogt, J.J. Lissauer, and E.J. Rivera 2001. A Pair of Resonant Planets Orbiting GJ 876. *Astrophys. J.* **556**, 296-301.
65. Rivera, E.J., and J.J. Lissauer 2001. Dynamical Models of the Resonant Pair of Planets Orbiting the Star GJ 876. *Astrophys. J.* **558**, 392-402.
66. Lissauer, J.J., E.V. Quintana, E.J. Rivera, and M.J. Duncan 2001. The Effect of a Planet in the Asteroid Belt on the Orbital Stability of the Terrestrial Planets. *Icarus* **154**, 449-458.
67. Chambers, J.E., E.V. Quintana, M.J. Duncan, and J.J. Lissauer 2002. Symplectic Algorithms for Accretion in Binary Star Systems. *Astron. J.* **123**, 2884-2894.
68. Matese, J.J. and J.J. Lissauer 2002. Characteristics and Frequency of Weak Stellar Impulses of the Oort Cloud. *Icarus*, **157**, 228-240.
69. Quintana, E.V., J.J. Lissauer, J.E. Chambers and M.J. Duncan 2002. Terrestrial Planet Formation in the α Centauri System. *Astrophys. J.* **576**, 982-996.

70. French, R.G., C.A. McGhee, L. Dones and J.J. Lissauer 2003. Saturn's Wayward Shepherds: The Peregrinations of Prometheus and Pandora. *Icarus* **162**, 143-170.
71. Thommes, E.W., and J.J. Lissauer 2003. Resonant Inclination Excitation of Migrating Giant Planets. *Astrophys. J.* **597**, 566-580.
72. Walter, F.M., G. Herczeg, A. Brown, D. Ardila, G.F. Gahm, C.M. Johns-Krull, J.J. Lissauer, M. Simon and J. A. Valenti 2003. Mapping the Circumstellar Environment of T Tauri with Fluorescent H₂ Emission. *Astron. J.* **126**, 3076-3089.
73. Dobrovolskis, A.R. and J.J. Lissauer 2004. The Fate of Ejecta from Hyperion. *Icarus* **169**, 462-473.
74. Matese, J.J. and J.J. Lissauer 2004. Perihelion Evolution of Observed New Comets Implies the Dominance of the Galactic Tide in Making Oort Cloud Comets Discernable. *Icarus* **170**, 508-513.
75. Dunn, D.E., L.A. Molnar, J.T. Niehof, I. de Pater and J.J. Lissauer 2004. Microwave Observations of Saturn's Rings: Anisotropy in Directly Transmitted and Scattered Saturnian Thermal Emission. *Icarus* **171**, 183-198.
76. Butler, R.P., S.S. Vogt, G.W. Marcy, D.A. Fischer, J.T. Wright, G.W. Henry, G. Laughlin and J.J. Lissauer 2004. A Neptune-Mass Planet Orbiting the Nearby M Dwarf GJ 436. *Astrophys. J.* **617**, 580-588.
77. Verbanac, G., I. de Pater, M. Showalter and J.J. Lissauer 2005. Keck Infrared Observations of Saturn's Main Rings bracketing Earth's August 1995 Ring Plane Crossing. *Icarus* **174**, 241-254.
78. Rivera, E.J., J.J. Lissauer, R.P. Butler, G.W. Marcy, S.S. Vogt, D.A. Fischer, T.M. Brown, G. Laughlin and G.W. Henry 2005. A ~7.5 Earth-Mass Planet Orbiting the Nearby Star, GJ 876. *Astrophys. J.* **634**, 625-640.
79. Hubickyj, O., P. Bodenheimer and J.J. Lissauer 2005. Accretion of the Gaseous Envelope of Jupiter around a 5 - 10 Earth-Mass Core. *Icarus* **179**, 415-431.
80. Matese, J.J., D.P. Whitmire and J.J. Lissauer 2005. A Widebinary Solar Companion as a Possible Origin of Sedna-like Objects. *Earth, Moon & Planets* **97**, 459-470.
81. Showalter, M.R., and J.J. Lissauer 2006. The Second Ring-Moon System of Uranus: Discovery and Dynamics. *Science* **311**, 973-977 + cover. First published online in *Science Express* 2005/12/22.
82. Gomes, R.S., J.J. Matese, and J.J. Lissauer 2006. A Distant Planetary-Mass Solar Companion May Have Produced the High-Perihelion Scattered Disk. *Icarus* **185**, 589-601.

83. Quintana, E.V., and J.J. Lissauer 2006. Terrestrial Planet Formation Around Close Binary Stars. *Icarus* **185**, 1-20.
84. Marley, M.S., J.J. Fortney, O. Hubickyj, P. Bodenheimer and J.J. Lissauer 2007. On the Luminosity of Young Jupiters. *Astrophys. J.* **655**, 541-549.
85. Lissauer, J.J., and D.J. Stevenson 2007. Giant Planet Formation. *Protostars and Planets V*, B. Reipurth, D. Jewitt and K. Keil, eds. (Tucson: University of Arizona Press), 591-606.
86. Quintana, E.V., F.C. Adams, J.J. Lissauer and J.E. Chambers 2007. Terrestrial Planet Formation around Individual Stars within Binary Star Systems. *Astrophys. J.* **660**, 807-822.
87. Lissauer, J.J., 2007. Planets Formed in Habitable Zones of M Dwarf Stars Probably are Deficient in Volatiles. *Astrophys. J.* **660**, L149-L152.
88. Dobrovolskis, A.R., J. L. Alvarellos and J.J. Lissauer 2007. Lifetimes of small bodies in planetocentric (or heliocentric) orbits. *Icarus* **188**, 481-505.
89. Lissauer, J.J. and J.E. Chambers 2008. Solar and Planetary Destabilization of the Earth-Moon Triangular Lagrangian Points. *Icarus* **195**, 16-27.
90. Zhang, Z.-W. and 24 co-authors, including J.J. Lissauer, 2008. First Results from the Taiwanese-American Occultation Survey (TAOS). *Astrophys. J.* **685**, L157-L160.
91. Lissauer, J.J., O. Hubickyj, G. D'Angelo and P. Bodenheimer 2009. Models of Jupiter's Growth Incorporating Thermal and Hydrodynamics Constraints. *Icarus* **199**, 338-350.
92. Smith, A.W. and J.J. Lissauer 2009. Orbital stability of systems of closely-spaced planets. *Icarus* **201**, 381-394.
- Barnes, R., Quinn, T.R., J.J. Lissauer, and D.C. Richardson 2009. Direct Simulations of 1 Km Planetesimal Growth I: 0.4 AU. *Icarus*, in press

UNREFEREED PUBLICATIONS by JACK JONATHAN LISSAUER

Textbooks:

de Pater, I. & J. J. Lissauer 2001. *Planetary Sciences* (Cambridge, UK: Cambridge University Press), xvi + 528pp + 23 color plates. 2nd printing (with corrections) 2004.

de Pater, I. & J. J. Lissauer 2010. *Planetary Sciences, 2nd Edition* (Cambridge, UK: Cambridge University Press), submitted.

Lissauer, J. J. & I. de Pater 2011. *Planetary Processes & Habitability* (Cambridge, UK: Cambridge University Press), in preparation.

Other (Conference Proceedings, Review Book Chapters, Prize Lectures, Scientific Commentaries and Encyclopedia Articles; Exclusive of abstracts, book reviews, etc.):

*1. Lissauer, J.J., F.H. Shu and J.N. Cuzzi 1984. Viscosity in Saturn's Rings. *Proc. IAU Colloq. No. 75: Planetary Rings*, A. Brahic, ed. (Toulouse, France: Cepadues), 385-392.

*2. Lissauer, J.J., 1989. Which Stars Have Planets? *The Formation and Evolution of Planetary Systems* (Space Telescope Science Institute Symposium Series #3), H.A. Weaver and L. Danly, eds. (England: Cambridge University Press), 304-308.

*3. Lissauer, J.J., 1989. Spiral Waves in Saturn's Rings. *Dynamics of Astrophysical Disks*, J.A. Sellwood, ed. (England: Cambridge University Press), 1-16.

*4. Lissauer, J.J. and P.D. Nicholson 1990. Models of Neptune's Arc Rings. *Adv. Space Res.* **10**, (1) 231-237.

*5. Sicardy, B. and J. J. Lissauer 1992. Dynamical Models of the Arcs in Neptune's 63K Ring (1989N1R). *Adv. Space Res.* **12**, (11) 81-95.

*6. Kary, D.M. and J.J. Lissauer 1992. On the Origin of the Prograde Rotation of the Planets. *Astron. Vestnik*, **26**, (6) 54-78 (in Russian). English version: *Solar System Research* **26**, 542-570 (1993).

*7. Lissauer, J.J. and G.R. Stewart 1993. Planetary Accretion in Circumstellar Disks. *Planets Around Pulsars*, ASP Conference Series **36**, J.A. Phillips, S.E. Thorsett and S.R. Kulkarni, eds. (San Francisco: Astronomical Society of the Pacific), 217-233.

*8. Lissauer, J.J., 1993. Planet Formation. *Ann. Rev. Astron. Astrophys.* **31**, 129-174.

- *9. Kary, D.M. and J.J. Lissauer 1994. Numerical Simulations of Planet Formation. *Numerical Simulations in Astrophysics, Modelling the Dynamics of the Universe*, J. Franco, S. Lizano, L. Aguilar and E. Daltabuit, eds., (England: Cambridge University Press), 364-373.
- *10. Lissauer, J.J., 1994. Planet Formation and the Spacing of Planetary Orbits. *IAP Astrophys. Mtg. #10: Circumstellar Dust Disks and Planet Formation*, R. Ferlet and A. Vidal-Madjar, eds., (Gif sur Yvette, France: Editions Frontiers), 237-243.
- *11. Lissauer, J.J., 1994. Concluding Remarks: The Beta Pictoris Disk. *IAP Astrophys. Mtg. #10: Circumstellar Dust Disks and Planet Formation*, R. Ferlet and A. Vidal-Madjar, eds., (Gif sur Yvette, France: Editions Frontiers), 327-331.
- *12. Lissauer, J.J., 1995. Urey Prize Lecture: On the Diversity of Plausible Planetary Systems. *Icarus* **114**, 217-236.
- *13. Lissauer, J.J., 1996. Spacing of Planetary Orbits About Stars of Differing Masses. *Circumstellar Habitable Zones: Proceedings of the First International Conference*, L. R. Doyle, ed., (Menlo Park, CA: Travis House Publications), 223-228.
- *14. Sicardy, B., P.D. Nicholson, G.E. Danielson, L. Dones, R.G. French, S.M. Larson, J.J. Lissauer, C. McGhee, P. Seitzer and M.R. Showalter 1996. Hubble Space Telescope Observations of Saturn during the August and November 1995 Ring Plane Crossings. *Science with the Hubble Space Telescope - II*, P. Benveuti, F.D. Macchietto and E.J. Schreier, eds., (Baltimore: Space Telescope Science Institute), 546-552.
- *15. Lissauer, J.J., 1997. Planetary Systems: Growing Up in a Two-Parent Family? *Nature* **386**, 18-19.
- *16. Lissauer, J.J., 1997. Formation, Frequency and Spacing of Habitable Planets. *Astronomical and Biochemical Origins and the Search for Life in the Universe* (Proceedings of the 5th International Conference on Bioastronomy, IAU Colloquium # 161; Bologna, Italy: Editrice Compositori), C.B. Cosmovici, S. Boyer and D. Wertheimer, eds., 289-297.
- *17. Lissauer, J.J., 1997. Planetary Rotation. *Encyclopedia of Planetary Sciences*, J.H. Shirley and R.W. Fairbridge, eds. (London: Chapman and Hall), 608-613.
- *18. Stewart, G.R. and J.J. Lissauer 1997. Dynamics of Planetary Growth. *Reports on Astronomy* **XXIIIA**, 593-595.
- *19. Lissauer, J.J., 1997. It's Not Easy to Make the Moon. *Nature* **389**, 327-328.
- *20. Lissauer, J.J., 1998. The Birth of Planetary Systems. *Origins*, ASP Conference Series **148**, C.E. Woodward, J.M. Shull, and H.A. Thronson, Jr. eds. (San Francisco: Astronomical Society of the Pacific), 327-337.

- *21. Lissauer, J.J., 1998. Formation of Planetary Systems. *Solar System Formation and Evolution*, ASP Conference Series **149**, D. Lazzaro, R. Vieira Martins, S. Ferraz-Mello, J. Fernández and C. Beaugé, eds. (San Francisco: Astronomical Society of the Pacific), 1-11.
- *22. Lissauer, J.J., 1998. On the Diversity of Planetary Systems. *Planetary Systems: The Long View* L. M. Celnikier and J. Trần Thanh Vân, eds. (Editions Frontières), 45-50.
- *23. Duncan, M.J. and J.J. Lissauer 1999. Solar System Dynamics. *The Encyclopedia of the Solar System*, P. R. Weissman, L.-A. McFadden and T. V. Johnson, eds. (San Diego: Academic Press), 809-824.
- *24. Lissauer, J.J., 1999. Three Planets for Upsilon Andromedae. *Nature* **398**, 659-660.
- *25. Lissauer, J.J., 1999. How Common are Habitable Planets? *Nature* **402**, C11-C14.
- *26. Lissauer, J.J. and D.N.C. Lin 2000. Diversity of Planetary Systems: Formation Scenarios and Unsolved Problems. *From Extrasolar Planets to Cosmology: The VLT Opening Symposium* J. Bergeron and A Renzini, eds. (Berlin: Springer), 377-390.
- *27. Lissauer, J.J., 2000. Planetary Formation and the Abundance of Habitable Planets. *Bioastronomy '99 A New Era in Bioastronomy*, ASP Conference Series **213**, G.A. Lemarchand and K. Meech, eds. (Sheridan: Chelsea, MI), 57-64.
- *28. Caldwell, D.A., W.J. Borucki and J.J. Lissauer 2000. The Vulcan Photometric Search for Transiting Giant Planets: Some Initial Results. *Bioastronomy '99 A New Era in Bioastronomy*, ASP Conference Series **213**, G.A. Lemarchand and K. Meech, eds. (San Francisco: Astronomical Society of the Pacific), 101-106.
- *29. Lissauer, J.J., G.W. Marcy and S. Ida 2000. Extrasolar Planets. *Proc. Nat. Acad. Sci. USA*, **97**, 12,405-12,406. <http://www.pnas.org/cgi/content/full/97/23/12405>
- *30. Lissauer, J.J., 2001. Time for Gas Planets to Grow. *Nature* **409**, 23-24.
- *31. Quintana, E.V., E.J. Rivera and J.J. Lissauer 2002. Dynamical Stability of the PSR1257+12 and HD83443 Extrasolar Planetary Systems. *Advances in Space Dynamics 2: Applications in Astronomy* O.C. Winter and A.F.B.A. Prado, eds. (São José dos Campos, SP, Brazil: INPE), 82-88.
- *32. Lissauer, J.J., 2002. Discovering Other Worlds. *Astronomy Now* August, 54-57.
- *33. Lissauer, J.J., 2002. Extrasolar Planets. *Nature* **419**, 355-358.
- *34. Lissauer, J.J., and D.E. Backman 2002. The b Pictoris Disk: Peculiar or Just Young? *Exotic Stars as Challenges to Evolution, IAU Colloquium #187*, ASP Conference Series **279** (San Francisco: Astronomical Society of the Pacific); C.A. Tout and W. Van Hamme, eds., 309-317.

- *35. Matese, J.J. and J.J. Lissauer 2002. Continuing Evidence of an Impulsive Component of Oort Cloud Cometary Flux. *Proc. Conf. Asteroids, Comets, Meteors*, ESA SP-500, 309-314.
- *36. Borucki, W.J., D.G. Koch, J.J. Lissauer, G.B. Basri, J.F. Caldwell, W.D. Cochran, E.W. Dunham, J.C. Geary, D.W. Latham, R.L. Gilliland, D.A. Caldwell, J.M. Jenkins and Y. Kondo 2003. The Kepler Mission: A wide-field-of-view photometer designed to determine the frequency of Earth-size planets around solar-like stars. *Future EUV/UV and Visible Space Astrophysics Missions and Instrumentation* Proc. SPIE **4854**, 123-140.
- *37. Borucki, W.J., D.G. Koch, G.B. Basri, D.A. Caldwell, J.E. Caldwell, W.D. Cochran, E. DeVore, E.W. Dunham, J.C. Geary, R.L. Gilliland, A. Gould, J.M. Jenkins, Y. Kondo, D.W. Latham and J.J. Lissauer 2003. The Kepler Mission: Finding the Sizes, Orbits and Frequencies of Earth-size and Larger Extrasolar Planets. *Scientific Frontiers in Research on Extrasolar Planets*, ASP Conference Series **297** (San Francisco: Astronomical Society of the Pacific); D. Deming and S. Seager, eds., 427-440
- *38. Borucki, W., D. Koch, A. Boss, E. Dunham, A. Dupree, J. Geary, R. Gilliland, S. Howell, J. Jenkins, Y. Kondo, D. Latham, J. Lissauer and H. Reitsema 2004. The Kepler Mission: A Technical Overview. *Second Eddington Workshop: Stellar structure and habitable planet finding, 9 - 11 April 2003, Palermo, Italy*. F. Favata, S. Aigrain and A. Wilson, eds. ESA SP-538, Noordwijk, 177 - 182.
- *39. Lissauer, J.J. 2004. Formation of Giant Planets and Brown Dwarfs. *Extrasolar Planets: Today and Tomorrow*, ASP Conference Series **321** (San Francisco: Astronomical Society of the Pacific); J.-P. Beaulieu, A. Lecavelier des Etangs and C. Terquem, eds., 271-281.
- *40. Lissauer, J.J. 2004. Concluding Remarks: Onwards Towards Extrasolar Earths! *Extrasolar Planets: Today and Tomorrow*, ASP Conference Series **321** (San Francisco: Astronomical Society of the Pacific); J.-P. Beaulieu, A. Lecavelier des Etangs and C. Terquem, eds., 421-424.
- *41. Hubickyj, O., P. Bodenheimer and J.J. Lissauer 2004. Evolution of Gas Giant Planets Using the Core Accretion Model. *Gravitational Collapse: From Massive Stars to Planets*. G. García-Segura, G. Tenorio-Tagle, J. Franco and H.W. Yorke, eds. *Rev. Mex. Astron. Astrof.* **22** 83-86.
- *42. Lissauer, J.J., E.V. Quintana, J.E. Chambers, M.J. Duncan and F.C. Adams 2004. Terrestrial Planet Formation in Binary Star Systems. *Gravitational Collapse: From Massive Stars to Planets*. G. García-Segura, G. Tenorio-Tagle, J. Franco and H.W. Yorke, eds. *Rev. Mex. Astron. Astrof.* **22** 99-103.
- *43. Thommes, E.W., and J.J. Lissauer 2005. Planet Migration *Astrophysics of Life*. M. Livio, I.N. Reid and W.B. Sparks, eds. (England: Cambridge University Press), 41-53.

- *44. Lissauer, J.J. 2005. Formation of the Outer Planets. *Space Sci. Rev.*, **116** 11-24. (Also appears in *The Outer Planets and Their Moons*. T Encrenaz, R. Kallenbach, T.C. Owen and C. Sotin, eds. ISSI Space Sciences Series **19**, 11-24.)
 - *45. Fortney, J.J., M.S. Marley, O. Hubickyj, P. Bodenheimer and J.J. Lissauer 2005. Young Jupiters are faint: new models of the early evolution of giant planets. *Astron. Nach.* **326**, 925-929.
 - *46. Lissauer, J.J. 2006. Growing Apart in Lock Step. *Science* **313**, 1054-1055.
 - *47. Lissauer, J.J., and G. D'Angelo 2006. Formation of Gas Giant Planets. *AIAA-2006-7416*. (Proceedings of *Space 2006*)
 - *48. Lissauer, J.J. 2006. Theories of Planet Formation: Future Prospects. *Space Sci. Rev.*, in press. (Also appears in *Planetary Systems and Planets in Systems*. S. Udry, W. Benz and R. von Steiger, eds. ISSI Scientific Report SR-006, 249-261.)
 - *49. Koch, D., W. Borucki, G. Basri, T. Brown, D. Caldwell, J. Christenseh-Dalsgaard, W. Cochran, E. Dunham, T.N. Gautier, J. Geary, R. Gilliland, J. Jenkins, Y. Kondo, D. Latham, J. Lissauer and D. Monet 2006. The Kepler Mission: Astrophysics and Eclipsing Binaries. *Astrophys. Space Sci.* **304**, 391-395.
 - *50. Lissauer, J.J. 2006. Planet Formation, Protoplanetary Disks & Debris Disks. *The Spitzer Space Telescope: New Views of the Cosmos*, ASP Conference Series **357** (San Francisco: Astronomical Society of the Pacific); L. Arums and W.T. Reach, eds., 31-38.
 - *51. Lissauer, J.J. and C.D. Murray 2007. Solar System Dynamics: Regular and Chaotic Motion. *The Encyclopedia of the Solar System*, 2nd Ed. P. R. Weissman, et al., eds. (San Diego: Academic Press), 787-812.
 - *52. Lissauer, J.J. 2007. Moons Under Stress: Strength and Friction Overcoming Tidal Forces Interior to Roche's Limit. *Limites et Lobes de Roche (Roche Limits and Roche Lobes, in French)*; (Paris: Vuibert) J.-M. Fadit, ed., 215-222.
 - *53. Lissauer, J.J. 2007. Extrasolar Planets. *Encyclopaedia Britannica Online*. (Chicago, Encyclopaedia Britannica), <http://www.britannica.com/eb/article-9439223/extrasolar-planet>.
 - *54. Lissauer, J.J. and Slartibartfast 2008. How Extreme can Planetary Systems be? *ASP Conference series "Extreme Solar Systems"*, Santorini, Greece, June 25th-29th 2007. ASP Conference Series **398** (San Francisco: Astronomical Society of the Pacific); D. Fischer, F. Rasio, S. Thorsett, & A. Wolszczan, eds., 491-498.
- Quintana, E.V. and J.J. Lissauer 2008. Terrestrial Planet Formation in Binary Star Systems. *Planets in Binary Star Systems* (Springer) N. Haghighipour, ed., in press.

Pilcher, C.B. and J.J. Lissauer 2009. The Quest for Habitable Worlds and Life Beyond the Solar System. *Exploring the Origin, Extent and Future of Life*. Cambridge University Press., in press.

Book Reviews by Jack Lissauer

- 1999 *Meteoritics* **34**, 819-820. Worlds Without End: The Exploration of Planets Known and Unknown, by John Lewis.
- 1998 *Science* **282**, 1832. Looking for Earths: The Race to Find New Solar Systems, by Alan Boss.
- 1989 *Amer. Scientist* Planets Beyond: Discovering the Outer Solar System, by Mark Littman.
- 1986 *Icarus* **67**, 341. Stability of the Solar System and Its Minor Natural and Artificial Bodies, Victor B. Szebehely, Ed.
- 1985 *J. Roy. Astron. Soc. Can.* **79**, 320-322. Rings: Discoveries from Galileo to Voyager, by James Elliot and Richard Kerr.

Obituary

Burns, J.A., J. J. Lissauer and A. Makalkin 2000. *In Memorium: Victor Sergeyevich Safronov (1917-1999)*. *Icarus* **282**, 1-3.

Oral Presentations 2009

1. "Nature and Formation of Giant Planets (+ Kepler)" UCLA, Los Angeles, CA Jan. 29.
- 2.I "Planet Formation" Solar/Extrasolar Planet Conference, Moffett Field, CA, Feb. 4.
3. "(Exo)planets & NASA's Kepler Mission" Public Library, Saratoga, CA, Feb. 19 (public talk)
4. "Exoplanets & NASA's Kepler Mission" Sacramento Valley Astronomical Society, Sacramento, CA, Feb. 20 (public talk)
5. "Extrasolar Planets & NASA's Kepler Mission" Café Scientifique, Stanford Blood Bank, Palo Alto, CA, Mar. 26 (public talk)
- 6.I "NASA's Kepler Mission" Missions for Exoplanets: 2010-2020 Meeting, Pasadena, CA, April 21.

Oral Presentations 2008

1. "(Exo)Planet Detection - Recent Observations and Prospects for Kepler" Space Science & Astrobiology Division Seminar, NASA Ames, Feb. 7.
2. "Do M Stars Host Habitable Planets?" AbSciCon, Santa Clara, CA, April 17.
3. "Terrestrial Planet Formation in Binary Star Systems; The Kepler & TESS Missions to Find Extrasolar Planets" Space Telescope Science Institute, Baltimore, MD, Aug. 13.
- 4.I "Nature and Formation of Giant Planets" Great Planet Debate, Laurel, MD, Aug. 14.
5. "Defining the Upper Limit of Planetary Size" Great Planet Debate, Laurel, MD, Aug. 15.
6. "Nature and Formation of Giant Planets" SETI Institute, Mountain View, CA, October 29.

Oral Presentations 2007

1. "What Exoplanets Tell Us About Planet Formation" Ball Aerospace, Boulder, CO, January 26.
2. "What Exoplanets Tell Us About Planet Formation" Extrasolar Planets Workshop for Journalists, Boulder, CO, January 27.
- 3.I " η_{Earth} : Current Guesses & Future Constraints" Navigator Program Forum-2007; Small- and Mid-Scale Exoplanet Missions, Moffett Field, CA, May 17.
4. "Exoplanets: Past, Present and Future" Stanford, CA, June 5.
5. "How Extreme Can Planetary Systems Be?" Observatoire de Paris, Meudon, FRANCE, June 19. (in French)
6. "How Extreme Can Planetary Systems Be?" Institut d'Astrophysique, Paris, FRANCE, June 22. (in French)
- 7.I "How Extreme Can Planetary Systems Be?" Extreme Solar Systems Conference, Santorini, GREECE, June 29.
8. "Planetary Formation & Migration" Michelson Summer Workshop, Planetary Transits: Detection to Characterization. Moffett Field, CA, July 23.
9. "Extrasolar Planets" Director's Colloquium, NASA Ames, Moffett Field, CA, July 31.
10. "What Exoplanets Tell Us About Planet Formation" SOFIA Science Lunch Talk. NASA Ames, Moffett Field, CA, September 10.
11. "Peter & Planet Building: The past two decades" Bill and Peter Fest, University of California, Santa Cruz, CA, October 15.

12. "Accumulation of Water and Other Volatiles by Planets Growing within Habitable Zones of Low Mass Stars + Kepler Mission Overview" Ames NAI Team Seminar, Moffett Field, CA, October 16.
13. "Terrestrial Planet Growth in Binary Star Systems & The Kepler Mission" Southwest Research Institute, Boulder, CO, November 6.
14. "Giant Planet Formation: Implications for Satellite Origins" Formation, Composition and Early Evolution of Outer Giant and Dwarf Planets and of their Satellites Meeting, Moffett Field, CA, December 7.

Oral Presentations 2006

- 1.I "Terrestrial Planet Formation in Binary Star Systems" Special session on planets in binary star systems, American Astronomical Society Winter Meeting, Washington, DC, January 10.
2. "The Effects of Atmospheric Opacity on Giant Planet Growth Rates" American Astronomical Society Winter Meeting, Washington, DC, January 11.
- 3.I "Formation of the Giant Planets" Planetary Sciences: challenges and discoveries, Blois, France, May 30.
4. "La Formation des Planètes Géantes" Observatoire de Paris, Meudon, FRANCE, June 6. (in French)
5. "Giant Planet Formation" Queen Mary and Westfield College, London, UNITED KINGDOM, June 9.
6. "Advantages of Low-Cost Missions to Study NEO's: Why Extensive Study will tell us more than Intensive Study" NEO Workshop, Vail, CO, June 28.
7. "Terrestrial Planet Formation in Binary Star Systems" Ames NAI Team Meeting, Moffett Field, CA, August 8.
8. "Formation of Giant Planets" American Institute of Aeronautics and Astronautics conference Space 2006, San Jose, CA, September 19.
9. "Space Science: Extrasolar Planet Discoveries & NASA's Kepler Mission" MIT Alumni Association, Google, Mountain View, CA, September 27.
10. "Terrestrial Planet Formation in Circumbinary Disks" DPS/AAS Meeting, Pasadena, CA, October 13.
11. "Meteorites and the Formation of the Solar System" Peninsula Astronomical Society, Los Altos Hills, (Public lecture), San Mateo, CA, November 3.