

## CURRICULUM VITAE

RENU MALHOTRA

### APPOINTMENTS

- 2016 to present* Louise Foucar Marshall Science Research Professor,  
and Regents Professor, The University of Arizona, Tucson, AZ
- 2011-2016* Chair, Theoretical Astrophysics Program,  
The University of Arizona, Tucson, AZ
- 2010-2011* (on sabbatical leave from the UA)  
Visiting scholar: Planetary Science Institute, Tucson, AZ,  
Institute for Advanced Study, Princeton NJ, and  
Institute for Theory & Computation, Harvard-Smithsonian Center  
for Astrophysics, Cambridge, MA.
- 2004 to present* Professor, Department of Planetary Sciences,  
The University of Arizona, Tucson, AZ
- 2000 to 2004* Associate Professor, Department of Planetary Sciences,  
The University of Arizona, Tucson, AZ
- 1991 to 2000* Staff Scientist, Lunar and Planetary Institute, Houston, TX
- 1989 to 1991* Research Associate, Planetary Sciences, Caltech, Pasadena, CA
- 1988 to 1989* Research Associate, Astronomy Department, Cornell University
- 1983 to 1988* Graduate Assistant, Physics Department, Cornell University

### EDUCATION

Ph.D., Physics, Cornell University, Ithaca, NY, August 1988.  
M.S., Physics (5 year program), Indian Institute of Technology,  
Delhi, India, 1983.

### HONORS and AWARDS

Lecar Prize, Harvard-Smithsonian Center for Astrophysics, 2018  
Thomas Gold Lecturer, Cornell University, 2018  
Appointed Regents' Professor in the Arizona state university system, 2016  
Appointed Louise Foucar Marshall Science Research Professor, 2016  
National Academy of Sciences, Elected Member 2015  
American Academy of Arts and Sciences, Elected Fellow 2015  
Galileo Circle Fellow, The University of Arizona, 2010  
Distinguished Alumnus, Indian Institute of Technology, Delhi, India-2006  
Kavli Frontiers of Science Fellow, National Academy of Sciences, 2000  
Harold C. Urey Prize, American Astronomical Society-Division for  
Planetary Sciences, 1997  
Asteroid 6698 named "Malhotra", International Astronomical Union, 1997  
President's Gold Medal for Physics, IIT-Delhi, 1983

## PUBLICATIONS

- Malhotra, R., Ito, T., Pluto on the Edge of Chaos, PNAS, 119(15) e2118692119 (2022)
- Dietrich, J., Apai, D., Malhotra, R., An Integrative Analysis of the HD219134 Planetary System and the Inner Solar System: Extending DYNAMITE with Enhanced Orbital Dynamical Stability Criteria, AJ, 163(2), id.88 (2022); ArXiv:211205337
- Malhotra, R., New results on orbital resonances, Proceedings of the International Astronomical Union, 15 (S364), 85-101 (2022); ArXiv:2111.06372
- Sharkey, B., Reddy, V., Malhotra, R., et al., Characterizing Earth Quasi-Satellite (469219) 2016 HO3 Kamo'oailewa, Nature Communications Earth & Environment, 2:231 (2021)
- Zaveri, N., Malhotra, R., Pluto's Resonant Orbit Visualized in 4D, AAS Journals, RNAAS, 5, 235 (2021)
- Reiland, N., Rosengren, A., Malhotra, R., Bombardelli, C., Assessing and Minimizing Collisions in Satellite Mega-Constellations, Advances in Space Research, 67(11):3755-3774 (2021)
- Agol, E., et al., Refining the transit timing and photometric analysis of TRAPPIST-1: Masses, radii, densities, dynamics, and ephemerides, AAS-PSJ, 2, id. 1 (2021)
- Hendler, N., Malhotra, R., Observational Completion Limit of Minor Planets from the Asteroid Belt to Jupiter Trojans, AAS-PSJ, 1, id. 75 (2020)
- Petrovich, C., Diego, J.M., Kratter, K.M., Malhotra, R., A disk-driven resonance as the origin of high inclinations of close-in planets, ApJ Letters, 902, id. L5 (2020)
- Volk, K., Malhotra, R., Dynamical instabilities in systems of multiple short-period planets are likely driven by secular chaos: a case study of Kepler-102, AJ, 160(3), id.98 (2020)
- Malhotra, R., Zhang, N., On the Divergence of First Order Resonance Widths at Low Eccentricities, MNRAS, 496:3152-3160 (2020)
- Malhotra, R., Ingersoll, A.P., Adam P. Showman (1968-2020), Icarus 345, eid 113780 (2020)
- Amato, D., Malhotra, R., Sidorenko, V., Rosengren, A.J., Lunar close encounters compete with the circumterrestrial Lidov-Kozai effect, CMDA, 132(6-7), id.35 (2020)
- Hendler, N.; Pascucci, I.; Pinilla, P.; Tazzari, M.; Carpenter, J.; Malhotra, R.; Testi, L., The evolution of dust-disk sizes from a homogeneous analysis of 1-10 Myr-old stars, ApJ, 895, article id. 126 (2020)
- Markwardt, L., Gerdes, D.W., Malhotra, R., Becker, J.C., Hamilton, S.J., Adams, F.C., 2020, Search for L5 Earth Trojans with DECam, MNRAS, 492(4), 6105-6119 (2020)
- Malhotra, R., Resonant Kuiper Belt Objects – a Review, Geoscience Letters, 6:12 (2019)
- Lan, L., Malhotra, R., Neptune's resonances in the Scattered Disk, CMDA, 131(8), article id. 39, 26 pp. (2019)
- Volk, K., Malhotra, R., Not a simple relationship between Neptune's migration speed and Kuiper belt inclination excitation, AJ, 158(2), article id. 64, 13 pp. (2019)
- Su, K.Y.L.,..., R. Malhotra, et al., Extreme Debris Disk Variability – Exploring the Diverse Outcomes of Large Asteroid Impacts During the Era of Terrestrial Planet Formation, AJ, 157(5), article id. 202, 25 pp. (2019)
- Malhotra, R., The case for a deep search for Earth's Trojan asteroids, Nature Astronomy 3:193-194 (2019)

- Walsh, K. J., ..., R. Malhotra, et al., Craters, boulders and regolith of (101955) Benu indicative of an old and dynamic surface, *Nature Geoscience* 12:242-246 (2019)
- B. Rizk, C. Drouet D'Aubigny, C.W. Hergenrother, B.J. Bos, D.R. Golish, R. Malhotra, ... et al., OSIRIS-REx low-velocity particles during outbound cruise, *Advances in Space Research*, 63(1):672-691 (2019)
- Malhotra, R., Lan, L., Volk, K., Wang, X., Neptune's 5:2 Resonance in the Kuiper Belt, *AJ*, 156, article id. 55 (2018)
- Trilling, D.E., Bellm, E.C., Malhotra, R., On the Detectability of Planet X with LSST, *AJ*, 155, article id. 243, 5 pp. (2018)
- Cambioni, S., Malhotra, R., The mid-plane of the main asteroid belt, *AJ*, 155, article id. 143, 10 pp. (2018)
- Malhotra, R., Prospects for unseen planets beyond Neptune, in "Serendipities in the Solar System and Beyond", ASP Conference Series, Vol. 513, proceedings of a conference held 10-13 July 2017 at National Central University, Taiwan. Edited by Chung-Ming Ko, Chan-Kao Chang, and Po-Chieh Yu. San Francisco: Astronomical Society of the Pacific, 2018, p.45. ArXiv:1711.03444
- Strom, R.G., Marchi, S., Malhotra, R., Ceres and the terrestrial planets impact cratering record, *Icarus*, 302:104-108 (2018)
- Seaman, R., ..., R. Malhotra, et al., A near-Sun Solar System Twilight Survey with LSST, White Paper submitted in response to the Call for LSST Cadence Optimization White Papers, ArXiv:812.00466
- Apai, D., ..., R. Malhotra, et al., A comprehensive understanding of planet formation is required for assessing planetary habitability and for the search for life, White paper submitted to the NAS Committee on Exoplanet Science Strategy, ArXiv:1803.08682
- Su, K.Y.L., MacGregor, M.A., Booth, M., Wilner, D.J., Flaherty, K., Hughes, A.M., Phillips, N.M., Malhotra, R., Hales, A.S., Morrison, S., Ertel, S., Matthews, B.C., Dent, W.R.F., Casassus, S., ALMA 1.3 mm Map of the HD 95086 System, *AJ*, 154, article id. 225 (2017)
- Volk, K., Malhotra, R., The curiously warped plane of the Kuiper Belt, *AJ*, Volume 154, Issue 2, article id. 62, 16 pp. (2017)
- Wang, X., Malhotra, R., Mean motion resonances at high eccentricities: the 2:1 and the 3:2 interior resonances, *AJ*, Volume 154, article id. 20 (2017)
- JeongAhn, Y., Malhotra, R., Simplified derivation of the collision probability of two objects in independent Keplerian orbits, *AJ* 153, article id. 235, 11 pp. (2017)
- Malhotra, R., Wang, X., Eccentricity distribution in the main asteroid belt, *MNRAS* 465:4381-4389 (2017)
- Malhotra, R., Volk, K., Wang, X., Corraling a distant planet with extreme resonant Kuiper belt objects, *ApJ* 824:L22 (2016)
- Yoshida, F., Ito, T., ..., Malhotra, R., et al., Lightcurves of the Karin family asteroids, *Icarus* 269:15-22 (2016)
- Malhotra, R., The mass distribution function of planets, *ApJ*, 808, 71 (2015).
- JeongAhn, Y., Malhotra, R., The current impact flux on Mars and its seasonal variation, *Icarus*, *Icarus*, 262, 140-153 (2015)

- Su, K.Y.L., Morrison, S., R. Malhotra, et al., 2014, Debris distribution in HD 95086: A young analog of HR 8799, *ApJ*, 799, article id. 146 (2015).
- Morrison, S., and Malhotra, R., Planetary chaotic zone clearing: destinations and timescales, *ApJ*, 799, article id. 41 (2015).
- Strom, R.G., Malhotra, R., Xiao, Z., Ito, T., Yoshida, F., and Ostrach, L.R., The inner solar system cratering record and the evolution of impactor populations, *Research in Astronomy and Astrophysics*, 15(3):407-434 (2015).
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- Rodigas, T.J., Malhotra, R., Hinz, P.M., 2014, Predictions for Shepherding Planets in Scattered Light Images of Debris Disks, *ApJ*, 780, 65.
- Petrovich, C., Malhotra, R., Tremaine, S., 2013, Planets near mean motion resonances, *ApJ*, 770(1), article id. 24.
- Volk, K., Malhotra, R., 2013, Do Centaurs Preserve their Source Inclinations?, *Icarus*, 224:66-73.
- Su, K.Y.L., G.H. Rieke, R. Malhotra, et al., 2013, Asteroid belts in debris disk twins: Vega and Fomalhaut, *ApJ*, 763:118(14pp).
- Belbruno, E., Moro-Martín, A., Malhotra, R., Savransky, D., 2012, Chaotic Exchange of Solid Material between Planetary Systems: Implications for Lithopanspermia, *Astrobiology*, v. 12 n. 8. DOI: 10.1089/ast.2012.0825.
- Volk, K., Malhotra, R., 2012, The effect of orbital evolution on the Haumea (2003 EL<sub>61</sub>) family, *Icarus*, 221, 106:115.
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### INVITED CONFERENCE PRESENTATIONS

- “Some new results on interior first order mean motion resonances”, XX Brazilian Colloquium on Orbital Dynamics, Sao Paulo Brazil (virtual), December 2021
- “New results on orbital resonances”, IAU Symposium 364 – Multi-scale (time and mass) dynamics of space objects, Iasi, Romania, October 2021
- “Asteroid belt dynamics and statistics”, AAS-Division for Dynamical Astronomy, August 2020
- “Planet migration in the Solar system”, Conference for Undergraduate Women in Physics, The University of Oklahoma, Norman OK, January 2020
- “The case for a deep search for Earth’s Trojan Asteroids”, Earths in Solar Systems, Tucson AZ, September 2019
- “The Solar System – Planets/Minor Planets/Seen/Unseen”, Workshop on Planetary Science with CMB + Optical/IR Surveys”, University of Pennsylvania, Philadelphia, April 2019
- “Orbital dynamics and planetary habitability”, Pop-Up Institute on Planetary Habitability at The University of Texas at Austin, June 2018
- “Bombardment History of the Planets”, Pop-Up Institute on Planetary Habitability at The University of Texas at Austin, June 2018
- “Dynamics of Planetary Systems”, Pop-Up Institute on Planetary Habitability at The University of Texas at Austin, June 2018
- “Resonant Kuiper Belt Objects - a Review”, Planetary Sciences Distinguished Lecture, AOGS Conference, Honolulu HI, June 2018
- “Planet migration in the Solar system: a new paradigm and its LPI origins”, LPI 50th Anniversary Science Symposium, Houston, TX, March 2018
- “Prospects for Unseen Planets Beyond Neptune”, Symposium: Serendipities in the Solar System and Beyond, IANCU-Taiwan, July 2017
- “The mass function of planets”, Inner Solar Systems meeting, American Astronomical Society, AAS Meeting #230, id.#111.01, June 2017
- “Earth Trojan Asteroid Survey with the OSIRIS-REx Spacecraft–Science motivations, Science Team Meeting, Tucson AZ, April 2017
- “A few points on the dynamical evolution of the young solar system”, Planet Day, Center for Planetary Science, University of Toronto, March 2017
- “The Solar System Beyond Neptune”, Keynote talk for Workshop on Solar System Puzzles, IANCU-Taiwan, July 2016.
- “The mass function of planets in the Galaxy”, Earths in Other Solar Systems–All Hands Meeting, Tucson AZ, September 2015.
- “The Galaxy is teeming with small planets”, Lunar and Planetary Laboratory Conference, Tucson AZ, August 2015.
- “A few points on the dynamical structure of planetary systems”, SPF 1: Star and Planet Formation in the Southwest, March 2015, Biosphere 2 Center, AZ.

- “The dynamical history of our solar system”, 39th COSPAR Scientific Assembly, 14-22 July 2012, in Mysore, India.
- “The solar system in time”, Women in Science and Technology, Indian Institute of Technology, New Delhi, India, March 8, 2011
- “Planet migration”, AOGS 2010 – 7th Annual Meeting, Hyderabad, India, July 5-9, 2010.
- “Planet migration in the solar system”, ‘Putting our Solar System in Context’, European Science Foundation Conference, Obergurgl, Austria, April 25-30, 2010.
- “Planet migration in the solar system”, ‘Exoplanets Rising’ – a conference at the Kavli Institute for Physics, Santa Barbara CA, Mar 29–April 2, 2010.
- “Basics of planet migration theory”, UCF Winter School 2010: Exoplanets for Planetary Scientists, Orlando FL, Jan 6-8, 2010.
- “On the importance of a few dwarf planets”, AAS meeting, June 8-11, 2009
- “Finding order in Kuiper Belt chaos”, Theoretical Institute for Advanced Research in Astrophysics, Hsinchu, Taiwan, December 12-16, 2008
- “Planetary scattering and migration: lessons from Pluto”, and “Dynamical clearing”, Great Planet Debate: a Scientific conference and Educator workshop, Applied Physics Laboratory, Laurel, MD, August 14-16, 2008
- “Bombardment of the Terrestrial Planets and Migration history of the giant planets”, Formation, Composition and Early Evolution of Outer Giant and Dwarf Planets and of their Satellites, conference at NASA-Ames, December 6-7, 2007
- “Secular resonances in planetary systems”, Annual Meeting of the AAS Division for Dynamical Astronomy–American Astronomical Society, Halifax, Nova Scotia, June 25-29, 2006.
- “Planets in debris disks”, May Symposium: A decade of extra-solar planets around normal stars, Space Telescope Science Institute, May 1-5, 2005.
- “Exo-planetary debris disks”, Planet Formation Conference, Aspen Institute for Physics, Aspen, CO, Feb 8-12, 2005.
- “The Kuiper Belt”, TPF/Darwin Conference, San Diego CA, July 26-29, 2004.
- “Dynamics of exo-planetary systems”, Astrophysics of Planetary Systems, Cambridge MA, May 17-20, 2004.
- “Asteroids, KBOs and other debris in planetary systems”, Planet Formation Conference, Kavli Institute for Theoretical Physics, UC–Santa Barbara, CA, March 15–19, 2004.
- “Outer Solar System Science with the InterStellar Probe”, *Exploring the Outer Heliosphere*, National Academies, Beckman Institute, UC-Irvine, 6–7 May 2003.
- “Kuiper Belt Dust”, *First Decadal Review of the Edgeworth-Kuiper Belt*, Antofagasta, Chile, March 10-14, 2003.
- “Chaos and Stability in Planetary Systems”, *American Physical Society – April 2002 Meeting*, Albuquerque, NM, April 20-23, 2002.
- “Stability of Planetary Systems”, *Gordon Research Conference on Origins of Solar Systems*, Connecticut College, New London, CT, June 17-22, 2001.
- “Separatrix crossing phenomena in the Solar system”, *Workshop on Nonlinear Astrophysics*, University of Florida, Gainesville, FL, 15-17 February 2001
- “Chaos and stability in the Solar system”, *Frontiers of Science*, National Academy of Sciences, Irvine, CA, 22-23 September 2000

- “Kuiper Belt Dynamics”, *Kuiper Belt Workshop*, 3-4 September 1998, Lowell Observatory, Flagstaff, AZ.
- “Orbital Resonances and Chaos in the Solar System”, *International Workshop on Planetary Sciences*, 3-6 November 1997 in Rio de Janeiro, Brazil.
- “The Kuiper Belt: a review”, *23rd General Assembly of the International Astronomical Union*, 18-26 August 1997 in Kyoto, Japan.
- “The Kuiper Belt: A window on the early Solar system”, *Harold C. Urey Prize Lecture*, Annual Meeting of the Division for Planetary Sciences of the American Astronomical Society, July 28-August 1, 1997, Cambridge, MA.
- “Dynamical structure in the Kuiper Belt”, *28th Annual Meeting of the Division of Dynamical Astronomy*, 13–16 April 1997, Flagstaff, AZ.
- “Implications of the Kuiper Belt for the Solar system”, *Asteroids, Comets and Meteors Conference*, July 10 1996, Versailles, France.
- “The Origin of Pluto’s orbit and implications for the Kuiper Belt”, *Kuiper Belt Workshop*, June 8 1996, Toronto, Canada.
- “Orbital dynamics and tidal evolution of the Icy Galilean satellites”, *Icy Galilean Satellites Conference*, Feb 1 1994, San Juan Capistrano, CA.
- “Dynamical models for pulsar-planet systems”, *Aspen Winter Conference on Astrophysics: Millisecond Pulsars*, Jan 3-7, 1994, Aspen, CO.
- “Heliocentric motion of Pluto”, *Pluto–Charon Conference*, July 5-9, 1993, Flagstaff, AZ.
- “Orbital resonances and chaotic dynamics in the Solar System”, *Marlar Graduate Lectures*, August 10-14, 1992, Department of Space Physics and Astronomy, Rice University.
- “Tidal Evolution of the Galilean Resonances: Implications for the Ganymede-Callisto Dichotomy”, *American Geophysical Union Spring Meeting*, May 11-16, 1992, Montreal
- “Orbital Dynamics of PSR1257+12 and its Two Planetary Companions”, *Workshop on Planets around Pulsars*, April 30-May 1, 1992, Caltech, Pasadena, CA.

### COLLOQUIA/SEMINARS

- University of Colorado, Boulder CO, April 2022
- Tsinghua University, Aerospace Engineering Seminar (virtual), December 2021
- Indian Institute of Technology-Roorkee, India, May 2021
- University of Arizona, Physics Department Colloquium, Tucson AZ, February 2020
- University of Arizona, Aerospace Engineering Seminar, Tucson AZ, February 2020
- Wittenberg University, IBM Lecture and Physics Colloquium, Springfield OH, September 2019
- Northern Arizona University, Flagstaff AZ, April 2019
- University of Houston, Physics Department Colloquium, Houston TX, November 2018
- Harvard University and Smithsonian Institution, Center for Astronomy Colloquium and Lecar Prize Lecture, Cambridge MA, September 2018
- Harvard University, Institute for Theory and Computation luncheon seminars, Cambridge MA, September 2018
- The University of Arizona, Lunar and Planetary Laboratory Colloquium, Tucson AZ, August 2018
- Cornell University, Thomas Gold Lecture, Ithaca NY, May 2018

Cornell University, Astronomy Lunch Seminar, Ithaca NY, May 2018  
 Cornell University, Joint Physics-Astronomy Colloquium, Ithaca NY, April 2018  
 Raman Research Institute, Bengaluru, India, January 2018  
 Herzberg Institute for Astronomy, Victoria BC, 25 April 2017  
 University of British Columbia, Astronomy, Vancouver BC, 24 April 2017  
 National Optical Astronomy Observatories, Tucson AZ, December 02, 2016  
 University of Chicago, Astronomy, February 24, 2016.  
 University of Florida, Astronomy, January 28, 2016.  
 UCLA iPLEX, Los Angeles CA, November 20, 2015.  
 SETI Institute, Mountain View CA, July 21, 2015.  
 Southwest Research Institute, Boulder CO, April 23, 2015.  
 University of California–Berkeley, March 17, 2015  
 University of California–Berkeley, March 15, 2015  
 Institute for Advanced Studies, Princeton NJ, April 8, 2014.  
 Colorado State University, Physics, Fort Collins CO, October 7, 2013.  
 Canadian Institute for Theoretical Astrophysics, April 22, 2013.  
 UNAM, Ensenada, Mexico, April 16-18, 2012, Lecture series on Solar System Dynamics.  
 The University of Arizona, Astrobiology, Oct 21, 2011.  
 Ohio State University, Columbus OH, Sep 22, 2011.  
 Institute for Theory and Computation, Harvard-Smithsonian Center for Astrophysics,  
 Cambridge MA, Apr 7, 2011.  
 Tata Institute for Fundamental Research, Mumbai, India, March 9, 2011.  
 Southwest Research Institute, Boulder CO, Feb 15, 2011.  
 Rutgers University, New Brunswick NJ, Oct 8, 2010.  
 Institute for Advanced Study, Princeton NJ, Sep 23, 2010.  
 Joint NOAO-SO Colloquium, Tucson AZ, Nov 05, 2009.  
 Lunar and Planetary Institute, Houston TX, Dec 5, 2008.  
 Lowell Observatory, Flagstaff AZ, September 11, 2008.  
 LaPLace Center for Astrobiology, The University of Arizona, March 28, 2008.  
 Arizona State University, School for Earth and Space Exploration, August 29, 2007)  
 The University of Arizona, Theoretical Astrophysics (February 20, 2006).  
 Harvard University, Center for Astrophysics (September 15, 2005)  
 Harvard University, Institute for Theory and Computation (September 13, 2005)  
 Southwest Research Institute, Boulder CO (May 23, 2005)  
 Caltech, Pasadena CA (April 26, 2005)  
 University of California, Santa Cruz CA (April 8, 2005)  
 National Optical Astronomy Observatories, Tucson AZ (April 01, 2005)  
 Planetary Science Institute, Tucson AZ (2004)  
 The University of Arizona, Mathematics (2004)  
 University of California, Berkeley (2002)  
 The University of Arizona, Theoretical Astrophysics (2002)  
 Northwestern University, Evanston IL, (2002)  
 The University of Arizona, Mathematics (2002)  
 Ohio State University, Columbus OH (2002)

The University of Arizona, Dept. Mathematics (2001)  
 University of Colorado, Boulder CO (2001)  
 Carnegie Institution of Washington, Washington DC (2001)  
 Planetary Science Institute, Tucson AZ (2001)  
 National Optical Astronomy Observatories, Tucson AZ (2000)  
 University of Michigan, Ann Arbor MI (1999)  
 The University of Arizona, Tucson AZ (1999)  
 California Institute of Technology, Pasadena CA (1999)  
 University of Washington, Seattle WA (1997)  
 The University of Arizona, Tucson AZ (1997)  
 Massachusetts Institute of Technology, Cambridge MA (1997)  
 Institute for Astronomy, Honolulu HI (1996)  
 University of Colorado, Boulder CO (1996)  
 Lunar and Planetary Institute, Houston (1996)  
 University of Florida, Gainesville FL (1994)  
 Meudon Observatory, Meudon, France (1994)  
 Lunar and Planetary Institute, Houston TX (1994)  
 NASA-Ames Space Science Division, CA (1993)  
 Colorado State University, Fort Collins CO (1993)  
 Johnson Space Center, Houston TX (1993)  
 SouthWest Research Institute, San Antonio TX (1993)  
 Institute for Theoretical Physics, UC-Santa Barbara CA (1992)  
 University of Illinois, Urbana-Champaign IL (1992)  
 Lunar and Planetary Institute, Houston TX (1991)  
 University of Maryland, College Park MD (1991)  
 California Institute of Technology, Pasadena CA (1990)  
 California Institute of Technology, Pasadena CA (1989)  
 Cornell University, Ithaca NY (1989)  
 Cornell University, Ithaca NY (1988)

### CONTRIBUTED CONFERENCE PRESENTATIONS/ABSTRACTS

Castro-Cisneros, J.D., Malhotra, R., Rosengren, A., “Kamo’oalewa and the possibility of Co-Orbital Dynamical Outcomes of Lunar Ejecta”, International workshop on Co-orbital Motion: modeling, understanding and exploitation (Virtual), March 2022  
 Sharkey, B., Reddy, V., Malhotra, R., et al., “Earth’s quasi-satellite (469219) Kamo’oalewa may be a fragment of the Moon”, 49th Lunar and Planetary Science Conference, March 2022, at The Woodlands, Texas. LPI Contribution No. 2678, id. 1620  
 Malhotra, R., “Assessing the Origins of Earth Quasi-Satellite (469219) Kamo’oalewa ”, Alien Earths–All Hands Meeting, Tucson AZ, January 2022.  
 Malhotra, R., et al., 2021, What really goes on in the chaotic zones of the planets, from Earth to Neptune, AAS-DDA annual meeting, 53:305.04  
 Zaveri, N., Malhotra, R., 2021, Pluto’s Resonant Orbit Visualized in 4D, AAS-DDA annual meeting, 53:107.02

- Matheson, I., Malhotra, R., Rosengren, A., 2021, A measurement of the Kuiper Belt midplane from AI-classified objects, AAS-DDA annual meeting, 53:501.03
- Castro-Cisneros, J.D., Malhotra, R., Rosengren, A., 2021, Near-Earth Asteroid Kamo‘oalewa as lunar ejecta, AAS-DDA annual meeting, 53:305.03
- Pearce, L., Malhotra, R., 2021, An investigation of chaotic planetary dynamics induced by the wide stellar binary companion to Boyajian’s star, AAS-DDA annual meeting, 53:204.05
- Volk, K., Malhotra, R., Graham, S., 2021, Mapping Neptune’s resonances into the distant solar system, AAS-DDA annual meeting 53:305.01
- Markwardt, L., Gowman, G., Gerdes, D.W., Malhotra, R., Adams, F.C., 2021, Latest Results from DECam Search for L5 Earth Trojans, LPSC #2548, id.2538, March 2021
- Malhotra, R., Volk, K., 2020, Corraling a distant unseen planet with orbital resonances—an update, AAS-DPS annual meeting #52, id. 304.05, October 2020
- Volk, K., Malhotra, R., 2020, Characterizing and predicting dynamical instabilities in multiplanet systems, AAS-DPS annual meeting #52, id. 312.01, October 2020
- Volk, K., Malhotra, R., 2020, Dynamical instabilities in systems of multiple short-period planets are likely driven by secular chaos: a case study of Kepler-102, AAS-DDA annual meeting #103.1, August 2020
- Volk, K., Malhotra, R., 2020, Kepler-102: a case study for using dynamical constraints to characterize exoplanet systems, American Astronomical Society meeting #235, id. 249.04, Honolulu HI, January 2020
- Markwardt, L., Gerdes, D.W., Malhotra, R., Becker, J.C., Hamilton, S.J., Adams, F.C., 2020, Searching for L5 Earth Trojans with DECam, American Astronomical Society meeting #235, id. 329.01, Honolulu HI, January 2020
- Hendler, N., Malhotra, R., 2019, Observational completion limit of minor planets from the asteroid belt to Jupiter Trojans, Asteroid Science in the Age of Hayabusa2 and OSIRIS-REx, 2019, Tucson, AZ
- Reiland, N., Rosengren, A., Malhotra, R., Bombardelli, C., 2019, Assessing and Minimizing Collisions in Satellite Mega-Constellations, Proceedings of the Advanced Maui Optical and Space Surveillance Technologies Conference, Wailea, Maui, Hawaii, 2019
- Markwardt, L., Gerdes, D.W., Malhotra, R., Becker, J.C., Hamilton, S.J., Adams, F.C., 2019, Search for L5 Earth Trojans with DECam, EPSC-DPS Joint Meeting 2019, Geneva, Switzerland
- JeongAhn, Y., Malhotra, R., Reyes-Ruis, M., 2019, Impact fluxes on 2014 MU69 and Pluto and their variations over secular timescales, EPSC-DPS Joint Meeting 2019, Geneva, Switzerland
- Malhotra, R., 2019, Mean motion resonance widths at low and high eccentricity, American Astronomical Society, DDA meeting #50, id. #301.01
- Amato, D., Rosengren, A., Malhotra, R., Sidorenko, V., Bau, G., 2019, The dynamical demise of Luna-3 , American Astronomical Society, DDA meeting #50, id. #302.01
- Volk, K., Malhotra, R., 2019, Not a simple relationship between Neptune’s migration speed and Kuiper belt inclination excitation, American Astronomical Society, DDA meeting #50, id. #201.05
- Volk, K., Malhotra, R., 2018, A statistical exploration of the dynamical stability of Kepler

- and K2 multi-planet systems, American Astronomical Society, DPS meeting #50, id. 413.04
- Lan, L., Malhotra, R., 2018, Neptune's 5:2 mean motion resonance in the Kuiper Belt, American Astronomical Society, DDA meeting #49, id. #103.03
- Su, K.Y.L., MacGregor, M.A., Booth, M., Wilner, D.J., Malhotra, A.S., Morrison, OST STDT, 2018, ALMA 1.3 Millimeter Map of the HD 95086 System – A Young Analog of the HR 8799 System, American Astronomical Society, AAS Meeting #231, id. #147.08
- Cambioni, S.; Malhotra, R.; Hergenrother, C. W.; R.; Rizk, B.; Kidd, J. N.; Drouet d'Aubigny, C.; Chesley, S. R.; Shelley, F.; Christensen, E.; Farnocchia, D.; Lauretta, D. S., 2018, An upper limit on Earth's Trojan Asteroid population from OSIRIS-REx, 49th Lunar and Planetary Science Conference, March 2018, at The Woodlands, Texas. LPI Contribution No. 2083, id. 1149
- Malhotra, R., Volk, K., 2017, The Midplane of the Kuiper Belt and Its Unexpected Warps, American Astronomical Society, DPS meeting #49, #405.11
- Cambioni, S., Malhotra, R., 2017, The Midplane of the Asteroid Belt and Its Warps, American Astronomical Society, DPS meeting #49, #201.04
- Reddy, V., Kuhm, O., Thirouin, A., Conrad, A., Malhotra, R., Sanchez, J.A., Veillet, C., Ground-based Characterization of Earth Quasi Satellite (469219) 2016 HO3, American Astronomical Society, DPS meeting #49, #204.07
- Malhotra, R., 2017, Evidence for distant Earth(s) in the Solar System, Earths in Other Solar Systems–All Hands Meeting, Tucson AZ, September 2017.
- Hergenrother, C. W.; Malhotra, R.; Rizk, B.; Kidd, J. N.; Drouet d'Aubigny, C.; Chesley, S. R.; Lauretta, D. S., A Search for Earth Trojan Asteroids with the OSIRIS-REx Spacecraft, 48th Lunar and Planetary Science Conference, March 2017, at The Woodlands, Texas. LPI Contribution No. 1964, id. 2892
- Malhotra, R., Volk, K., Wang, X., 2016, Corraling a distant unseen planet with extreme resonant Kuiper belt objects, American Astronomical Society, DPS meeting #48, #200.04
- JeongAhn, Y., Malhotra, R., et al., 2016, Spatial distribution of steep lunar craters may be linked to size-dependent orbital distribution of impactors, American Astronomical Society, DPS meeting #48, #215.07
- Volk, K., Malhotra, R., 2016, Evidence for a distant unseen solar system planet: Assessing the observational biases in the extreme Kuiper belt population, American Astronomical Society, DPS meeting #48, #120.11
- Malhotra, R., 2016, The mass distribution function of planets in the Galaxy, American Astronomical Society, DDA meeting #47, #204.01
- Volk, K., Malhotra, R., Wang, X., 2016, Dynamics of the most distant Kuiper belt objects, American Astronomical Society, DDA meeting #47, #105.03
- Wang, X., Malhotra, R., 2016, High eccentricity MMRs in the circular planar restricted three-body problem, American Astronomical Society, DDA meeting #47, #103.04
- Malhotra, R., JeongAhn, Y., Mars/Moon Impact Rate Ratio of Kilometer-Size Impactors, 47th Lunar and Planetary Science Conference, March 2016, The Woodlands, Texas. LPI Contribution No. 1903, p. 2935
- Malhotra, R., Oort Cloud Comet Encounters with Mars, Earth, Venus and Mercury, 46th

- Lunar and Planetary Science Conference, March 2015, The Woodlands, Texas. LPI Contribution No. 1832, p. 2467
- McEwen, A., Daubar, I., Ivanov, B., Oberst, J., Malhotra, R., JeongAhn, Y., Byrne, S., 2015, Current Impact Rate on Earth, Moon, and Mars, 46th Lunar and Planetary Science Conference, March 2015, The Woodlands, Texas. LPI Contribution No. 1832, p. 1854
- Jones, R.L., Zeljko, I., Malhotra, R., et al., 2014, Solar System Science with LSST, American Astronomical Society, DPS meeting #46, #214.13
- Morrison, S.J., Malhotra, R., Su, K.Y.L., 2014, The Planetary System of HD 95086 — A Young Analog of HR 8799?, American Astronomical Society, DPS meeting #46, #204.03
- Su, K.Y.L., Morrison, S.J., Malhotra, R., et al., 2014, The Debris Structures of HD 95086 — A Young Analog of HR 8799, American Astronomical Society, DPS meeting #46, #204.02
- JeongAhn, Y., Malhotra, R., 2014, The current impactor flux on Mars and its seasonal variation, American Astronomical Society, DPS meeting #46, #203.08
- Malhotra, R., 2014, A few points on the dynamical evolution of the young solar system, American Astronomical Society, DDA meeting #45, #400.01
- Morrison, S.J., Malhotra, R., 2014, Planetary chaotic zone clearing: destinations and timescales, American Astronomical Society, DDA meeting #45, #400.02
- Malhotra, R., Petrovich, C., Tremaine, S., 2013, In-situ Planet Formation: Implications for Planets near Resonances, American Astronomical Society, DPS meeting #45, #300.05
- Volk, K., Malhotra, R., 2013, Ordering Mean Motion Resonances with the Farey Tree: Application to the Kuiper Belt, American Astronomical Society, DPS meeting #45, #414.01
- JeongAhn, Y., Malhotra, R., 2013, The non-uniform distribution of the perihelia of near-Earth objects, American Astronomical Society, DPS meeting #45, #106.01
- Petrovich, C., Malhotra, R., Tremaine, S., 2013, In-situ Planet Formation: Implications for the orbital distribution around resonances, Exoplanets in Multi-body Systems in the Kepler Era, Conference at the Aspen Center for Physics.
- Belbruno, E., Moro-Martin, A., Malhotra, R., Savransky, D., 2012, Chaotic exchange of solid material between planetary systems: implications for lithopanspermia, European Planetary Science Congress EPSC2012–139.
- Volk, K., Malhotra, R., 2012, The Origin Of Resonant Kuiper Belt Objects, American Astronomical Society, DPS meeting #44, #405.06
- Volk, K., Malhotra, R., 2012, The Origin of Resonant Kuiper Belt Objects, American Astronomical Society, DDA meeting #43, #5.02
- JeongAhn, Y., Malhotra, R., 2012, On The Distribution Of Angular Orbital Elements Of Near-earth Objects, American Astronomical Society, AAS Meeting #220, #128.01
- Volk, K., Malhotra, R., 2011, Libration amplitude distributions of resonant Kuiper belt objects, Joint EPSC-DPS meeting, #2011-1517
- Malhotra, R., Jeongahn, Y., 2011, Dynamical investigations on the leading/trailing asymmetry of lunar rayed craters, Joint EPSC-DPS meeting, #2011-1215
- Minton, D.A., Malhotra, R., 2011, The sweeping  $\nu_6$  secular resonance during giant planet



- migration: implications for models of the primordial excitation and depletion of the asteroid belt, Joint EPSC-DPS meeting, #2011-591
- Volk, K., Malhotra, R., 2011, Long-term dynamical stability of the Haumea (2003 EL61) collisional family, Joint EPSC-DPS meeting, #2011-346
- Volk, K., Malhotra, R., 2011, The Effect of Planetary Encounters on the Inclination Distribution of the Centaurs, American Astronomical Society, DDA meeting #42, #9.06
- Ito, T., Malhotra, R., Asymmetric cratering due to a steady-state NEA flux on the Moon, AOGS 2010, PS12-D1-AM2-1.02-008
- Volk, K., Malhotra, R., 2010, The Effect of Planetary Encounters on the Inclination Distribution of the Centaurs, American Astronomical Society, DPS meeting #42, #40.08
- JeongAhn, Y., Malhotra, R., 2010, Co-orbital Asteroids of Earth as Candidates for Asymmetric Impactors on the Moon, American Astronomical Society, DPS meeting #42, #13.03
- Volk, K., Malhotra, R., 2010, Resonant Pathways to the Distant Kuiper Belt, TNO Conference, Philadelphia, PA.
- Volk, K., Malhotra, R., 2010, Orbital inclination evolution and correlations with physical properties of KBOs, American Astronomical Society, DDA meeting #41, #2.03
- Malhotra, R., Ito, T., 2009, Asymmetric Impacts Of Near-earth Asteroids On The Moon, American Astronomical Society, DPS meeting #41, #27.01
- Malhotra, R., Minton, D.A., 2009, Dynamical Erosion of the Asteroid Belt and Implications for the Rate of Large Impacts on the Terrestrial Planets, American Astronomical Society, DPS meeting #41, #27.02
- Volk, K., Malhotra, R., 2009, Resonant Channels to the Distant Kuiper Belt, American Astronomical Society, DPS meeting #41, #62.03
- Malhotra, R., Minton, D.A., 2009, Speculating on Additional Planets and Debris in the OGLE-2006-BLG-109L System, AAS Meeting #214, #306.06
- Minton, D.A., Malhotra, R., 2009, Dynamical Erosion of the Asteroid Belt, American Astronomical Society, DDA meeting #40, #12.05
- Volk, K., Malhotra, R., 2009, Dynamical Pathways to the High-Perihelion Scattered Disk, American Astronomical Society, DDA meeting #40, #5.03
- Belbruno, E., Moro-Martin, A., Malhotra, R., 2009, Minimal Energy Transfer of Solid Material Between Planetary Systems, American Astronomical Society, DDA meeting #40, #2.05
- Minton, D.A., Malhotra, R., 2008, Evidence for Planet Migration in the Main Asteroid Belt: Implications for the Duration of the Late Heavy Bombardment, Workshop on the Early Solar System Impact Bombardment, held November 19-20, 2008 in Houston, Texas. LPI Contribution No. 1439., p.41-42
- Minton, D.A., Strom, R.G., Malhotra, R., 2008, Can Impactors from the Main Asteroid Belt Erase a Cometary Cratering Record on the Moon? Workshop on the Early Solar System Impact Bombardment, held November 19-20, 2008 in Houston, Texas. LPI Contribution No. 1439., p.43-44
- Malhotra, R., 2008, The Kuiper Belt of Four Gigayears Ago, American Astronomical Society, DPS meeting #40, #38.01.

- Volk, K., Malhotra, R., 2008, Reassessing the Classical Kuiper Belt as a Source of the Jupiter Family Comets, American Astronomical Society, DPS meeting #40, #47.01
- Minton, D.A., Malhotra, R., 2008, Patterns Of Depletion In The Asteroid Belt, American Astronomical Society, DPS meeting #40, #52.02
- Bailey, B., Malhotra, R., 2008, The Centaur–Jupiter Family Comet Link, American Astronomical Society, DPS meeting #40, #38.04
- Ito, T., Malhotra, R., Asymmetric Impacts of Near-Earth Asteroids on the Moon, Asteroids, Comets, Meteors 2008 held July 14-18, 2008 in Baltimore, Maryland.
- Malhotra, R., and Minton, D.A., 2008, The OGLE-2006-BLG-109L Planetary System: Prospects for a Habitable Planet American Astronomical Society, DDA meeting #39, #6.05
- Minton, D., Malhotra, R., 2008, Sweeping Resonances in the Main Asteroid Belt and the Late Heavy Bombardment, American Astronomical Society, DDA meeting #39, #14.03.
- Minton, D.A., Malhotra, R., 2008, Secular Resonance Sweeping of Asteroids During the Late Heavy Bombardment, 39th Lunar and Planetary Science Conference, (Lunar and Planetary Science XXXIX), held March 10-14, 2008 in League City, Texas. LPI Contribution No. 1391., p.2481
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- Volk, K., Malhotra, R., 2007, The Scattered Disk as a Source of the Jupiter Family Comets, American Astronomical Society, DPS meeting #39, #64.09; Bulletin of the American Astronomical Society, Vol. 38, p.1043
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- Hahn, J.M., Malhotra, R., 2004, Neptune's smooth migration into a hot Kuiper Belt, AAS-DDA Annual Meeting #35, #07.03
- Moro-Martín, A., and Malhotra, R., 2004, Signatures of Planets in Circumstellar Debris Disks, AAS Meeting 204, #82.02
- Malhotra, R., 2004, Locating sub-jovian planets and debris in exo-planetary systems, AAS-DPS Annual Meeting #36, #42.04
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- Moro-Martín, A., and Malhotra, R., 2003, Dust Outflows from Planetary Systems, AAS Meeting 203, #17.11
- Tiscareno, M.S., and Malhotra, R., 2003, The Dynamics of Known Centaurs, AAS-DDA Annual meeting #34, #02.06
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- Malhotra, R., Allen, R.L., Bernstein, G.M., Brown, M.E., Holman, M.J., Trilling, D.E., 2003, The origin of short period comets, AAS-DPS Annual meeting #35, #49.13
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- Tiscareno, M.S., and Malhotra, R., 2002, Centaurs: The Transition Between the Kuiper Belt and Jupiter-Family Comets, AAS–DPS Annual Meeting #34, #09.02
- Moro-Martín, A., and Malhotra, R., 2002, Kuiper Belt dust in the inner and outer Solar System, AAS–DPS Annual Meeting #34, #09.08
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- Hahn, J., Malhotra, R., 2000, Shepherding the Kuiper Belt Via Ragged Planet-Migration, *BAAS*, October 2000, AAS–DPS Annual Meeting, #19.06
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- Malhotra, R., Allen, R.L., Bernstein, G.M., 2001, The Edge of the Solar System, *LPSC XXXI*, paper no. 1204.
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- Malhotra, R., 1999. Neptune’s 2:1 orbital resonance in the Kuiper Belt, *LPSC XXX*, paper no. 1998.
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- Malhotra, R., 1998. Pluto’s inclination excitation by resonance sweeping, *LPSC XXIX*, paper no. 1476.
- Hahn, J. and Malhotra, R., 1998. Orbital evolution of planets embedded in a massive debris disk, *LPSC XXIX*, paper no. 1398.
- Hahn, J. and Malhotra, R., 1998. Radial migration of planets embedded in a massive planetesimal disk, AAS–DDA Annual Meeting. *BAAS* 30(4):1389.
- Malhotra, R., 1998. Outer planet orbital migration in the early Solar system, *BAAS* 30(4):1389.
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- Malhotra, R. 1993. On the capture of Pluto into the 3:2 Neptune resonance, AAS–DPS Annual Meeting, *Bull. Am. Astron. Soc.* 25(3):1137-1138.
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- Malhotra, R., Dermott, S.F., and Murray, C.D., 1986. Tidal heating of the Uranian satellites, AAS–DPS Annual Meeting, *Bull. Am. Astron. Soc.* 18(3):785.

## TEACHING & MENTORING

PhD Dissertations:

Youngmin JeongAhn - Planetary Sciences, PhD 2015  
(currently Postdoctoral Associate, KASI, Korea)

*Kathryn Volk* - Planetary Sciences, PhD 2013

(currently Associate Staff Scientist, U. Arizona)

*David A. Minton* - Planetary Sciences, PhD 2009

(currently Associate Professor, Purdue University)

*Amaya Moro-Martin* - Astronomy, PhD 2004

(currently Assistant Astronomer, Space Telescope Science Institute)

*Matthew Tiscareno* - Planetary Sciences, PhD 2004

(currently Senior Research Scientist, SETI Institute)

Post-docs

*Kathryn Volk*, 2015–2017

*Stephen Kortenkamp*, 2002-2004

*Takashi Ito*, 2002-2004

*Joseph Hahn*, 1997-2000

Other

*Jeremy Dietrich* (Astronomy, graduate student), 2021-

*David Lomeli* (Physics & Astronomy, undergraduate student), 2020-

*Jose Daniel Castro-Cisneros* (Physics, graduate student), 2020-

*Ian Matheson* (Aerospace Engineering, graduate student), 2019-

*Larissa Markwardt* (Astronomy, graduate student at University of Michigan), 2018-

*Ilia Korgachin* (Queens University-Canada, post baccalaureate student), 2020-2021

*Nihaal Zaveri* (UC-Santa Cruz, post baccalaureate student), 2020-2021

*Hamish Hay* (Planetary Sciences, graduate student), 2016-2020

*Rachel Smullen* (Astronomy, graduate student), 2016-2020

*Nathan Reiland* (Aerospace Engineering, graduate student), 2018-2020

*Theodore Broeren* (Applied Mathematics, graduate student), 2019

*Jelena Spegar* (Astronomy and Mathematics, undergraduate student), 2018

*Michael Hammer* (Astronomy, graduate student), 2018

*Adam Sutherland* (Astronomy, graduate student), 2018

*Nan Zhang* (visiting undergraduate student, Tsinghua University, China), 2018

*Lei Lan* (visiting graduate student, Tsinghua University, China), 2017–2018

*Po-yen Liu* (visiting graduate student, National Central University of Taiwan), 2017–2018

*Nathaniel Hender* (Planetary Sciences, graduate student), 2017-2020

*Saverio Cambioni* (Planetary Sciences, graduate student), 2017-2018

*Xianyu Wang* (visiting graduate student from Tsinghua University, China), 2015–2016

*Sonia Cornejo* (Latin America Summer Program, undergraduate), 2016

*Timothy Rodigas* (Astronomy, graduate student), 2012-2013

*Sarah Morrison* (Planetary Sciences, graduate student), 2011-2015

*Brenae Bailey* (Applied Mathematics, graduate student), 2007-2009

*Tatiana Michtchenko* (University of Sao Paulo, Brazil), 2002-2003

Graduate courses:

*Asteroids, Comets, Kuiper Belt Objects*: graduate elective in planetary science, 3 credit units, Fall 2011, Fall 2013, Fall 2014, Fall 2016, Fall 2018

*Solar System Dynamics*: graduate elective in astronomy, core class in planetary science, 3 credit units, Fall 2003, Fall 2005, Fall 2009, Spring 2014, Spring 2016, Spring 2018, Spring 2020, Spring 2022

*Advanced Solar System Dynamics*: graduate elective in planetary science, 3 credit units, Spring 2021

Undergraduate courses:

*The Universe and Humanity*: general education–tier 1; 3 credit units, enrollment  $\sim 40$ ; Spring 2017, Spring 2019

*Asteroids, Comets, Kuiper Belt Objects*: upper level undergraduate elective in planetary science, 3 credit units, enrollment  $\sim 5\text{--}10$ /semester; Fall 2011, Fall 2013, Fall 2014, Fall 2016, Fall 2018

*Our Golden Age of Planetary Exploration*: general education–tier II; 3 credit units, enrollment  $\sim 150$ /semester; Spring 2010

*Planet Earth: Evolution of a Habitable World*: general education–tier I; 3 credit units, enrollment  $\sim 150$ /semester; Fall 2001, Spring 2002, Fall 2002, Spring 2004, Fall 2004, Spring 2006, Spring 2007, Spring 2008

*New Views of the Solar System*: first year colloquium, 1 credit unit, enrollment  $\sim 15\text{--}20$ /semester; Spring 2005

#### NATIONAL/INTERNATIONAL SERVICE

NASA NEO-Surveyor Peer Review Board (2021-2022)

NASA Senior Review–New Horizons (2022)

Universities Space Research Association, Chair of the Council of Institutions and Member of the Board of Trustees (2020–2022)

American Academy of Arts and Sciences – Class I Section 4 Membership Panel (2019-2020)

National Academy of Sciences – service on various committees (2018–)

American Astronomical Society-Division for Dynamical Astronomy, Chair of the Vera Rubin Prize Selection Committee (2018)

American Astronomical Society-Division for Planetary Sciences, Prize Sub-Committee (2017)

American Astronomical Society-Division for Dynamical Astronomy, Vera Rubin Prize Selection Committee (2017)

American Astronomical Society-Division for Dynamical Astronomy, Awards Review Committee (2016)

Morrison Planetarium of the California Academy of Sciences, Science Advisor (2015–2016)

Celestial Mechanics Institute, Elected Member (2014–)

LSST–Science Advisory Committee (2014–2018)

Harvard University – Ad Hoc Tenure Review Committee (2013)

Aspen Center for Physics, Winter Conference on Exoplanets in Multi-body Systems in the Kepler Era, Scientific Organizing Committee (2012-2013)

American Astronomical Society-Division for Planetary Sciences 2011 Scientific Organizing Committee (chair)

Kavli Prize nomination, 2009

International Astronomical Union – Commission 7 (elected member), 2006  
 NOAO Solar System Time Allocation Committee, 2006–2008  
 NASA Outer Planets Research Program Review Panel, 2006  
 IAU Symposium on Extrasolar Planets–2007, Suzhou, China: Scientific Organizing Committee, 2005–2007  
 Protostars & Planets V (International Conference in Hawaii in 2005, book 2006): Scientific Advisory Committee, 2002–2006  
 Interstellar Probe Science and Technology Definition Team, 1999–2004  
 LPSC Program Committee 1997–2000  
 NASA Origins of Solar Systems Research Program: Management Operations Working Group, 1998–2000  
 NASA Planetary Geophysics Research Program Review panel 1998–1999  
 Kuiper Belt Workshop, Toronto, 1996: co-organiser  
 Icy Galilean Satellites Conference, San Juan Capistrano, California: Scientific Organising Committee, 1994  
 LPSC Program Committee 1993–1994  
 Referee for 5–10 professional journal papers per year  
 Reviewer for 5–10 research grant proposals per year

#### UNIVERSITY/DEPARTMENT SERVICE

LPL Promotion & Tenure Committee, Chair, 2021-2022  
 LPL Faculty Recruitment Committee, 2021-2022  
 KASI-LPL joint workshop on Apophis space mission, 2021  
 LPL Awards Committee, Chair 2019-2021  
 Invited research presentation to Steward Observatory Advisory Board, 2020  
 LPL Marketing & Branding Committee, Chair, 2019-2020  
 LPL Awards Committee, 2019-2020  
 LPL Buyout Committee (ad hoc), 2019-2020  
 University Representative to USRA, 2011–present  
 Steward Observatory Faculty Status (Promotion & Tenure Review) Committee, 2018-2019  
 College of Science Women’s Leadership Steering Committee, 2018-2019  
 LPL Awards Committee, Chair, 2018-2019  
 LPL Computer Committee, 2018-2019  
 LPL Red Team reviewer, 2018  
 UA–Reviewer for Packard Fellowship Proposals, 2018-2019  
 LPL Faculty Status (Promotion & Tenure Review) Committee, Chair, 2016–2018  
 UA–Henry Koffler Prize Selection Committee, Chair, 2017  
 LPL Professor of Practice – Promotion & Tenure ad hoc Review Committee, 2016–2017  
 LPL Awards Committee, 2016–2018  
 Theoretical Astrophysics Program, Chair, 2011–2016  
 LPL Journal Club co-organizer, 2014-2015  
 College of Science Galileo Circle Fellows Selection Committee, 2014–2016  
 LPL Faculty Status (Promotion & Tenure Review) Committee, 2013–2015



Standing member, LPL Graduate Student Candidacy Examination Committees, 2013  
 College of Science Honors Convocation, Keynote speaker, Fall 2012  
 Lunar and Planetary Laboratory–Strategic Planning Committee, 2012  
 Lunar and Planetary Laboratory–Director Search Committee, 2011  
 Lunar and Planetary Laboratory–Strategic Planning Committee, 2011  
 Lunar and Planetary Laboratory–Strategic Planning Committee, Chair, 2009  
 Academic Program Review of UA Astronomy Department, 2009  
 Lunar and Planetary Laboratory–Faculty Peer Review Committee, 2009  
 Lunar and Planetary Laboratory–Faculty Peer Review Committee, Chair, 2008  
 Lunar and Planetary Laboratory–Computer Committee, 2008, 2009  
 Lunar and Planetary Laboratory–Library Committee, Chair, 2008  
 Blitzler Award Committee, UA, 2006–2008  
 Theoretical Astrophysics Program Steering Committee, UA, 2005–present  
 UA–Templeton Steering Committee, UA, 2005–2008  
 Lunar and Planetary Laboratory–Promotion and Tenure Committee, 2005, 2006, 2007  
 Academic Program Review of UA Planetary Sciences Department, 2006  
 Review Committee for LPL–Director, UA, 2005  
 Astrobiology Faculty Search Committee, UA, 2005  
 Astrobiology Graduate Student Bessey Award Committee, UA, 2004–2007  
 Pre-tenure Advising & Review planning committee, LPL, 2003  
 Centennial Awards Committee, UA, 2002–2004  
 Representative to Oral Comprehensive Examinations for Doctoral Candidacy, 2002–2005  
 Graduate Admissions & Advising Committee, LPL 2001–2002  
 Lunar and Planetary Laboratory Action Plan Committee, 2000  
 Computer Resources Committee, LPL 2000  
 Theoretical Astrophysics Colloquium Organizer, 2000-2001

## PUBLIC OUTREACH

Q&A with PNAS, April 2022  
 Weird orbits and how they work, Live interview with Fraser Cain/Universe Today, YouTube, April 2022  
 Migratory planets and chaos in the young solar system, Phoenix Astronomical Society meeting, March 2022  
 On Planet 9 – Interview for a podcast program, “Last Seen”, WBUR-Boston (NPR affiliate), February 2022  
 On the faint young Sun paradox – interview for Quanta magazine, January 2022  
 On Planet 9 – Interview for a documentary film, French Public TV, September 2021  
 On Planet 9 – Interview for a documentary program, ScreenGlue.com, UK, July 2021  
 Panel Discussion on “Talented Teachers with a Leadership Mindset”, IIT-Delhi Faculty Alumni Day, October 4, 2020; streamed on YouTube and FaceBook  
 Steward Observatory Advisory Board – presentation on Planet Nine, 2020  
 Plenary address and Q&A at Conference for Undergraduate Women in Physics at the University of Oklahoma, Norman, January 18, 2020

- Q&A with Babbage Radio of the Economist magazine, December 2019
- The Structure and Evolution of the Solar System, presentation to Seminarians of Sacred Heart Seminary and School of Theology, Hales Corners, Wisconsin, February 28, 2019
- Q&A with Tucson's Hard Science Fiction Writers Group, September 1, 2018
- Radio interview with Michael S. Robinson on MicRobin Radio (AM970 in New York, New York), December 9, 2017
- Prospects for Unseen Planets in the Distant Solar System, Huachuca Astronomy Club, August 11, 2017
- The Search for Planet Nine, TEDx, Portland, OR, April 2017 (> 1 million views)
- The Structure and Evolution of the Solar System, Saddlebrooke SkyGazers Club, February 12, 2017
- The Structure and Evolution of the Solar System, Sun City-Oro Valley, October 20 2016
- Pluto Matters, Benjamin Dean lecture, Morrison Planetarium, May 9, 2016
- Planet Migration, Other Earths dinner presentation, April 20, 2016
- The Structure and Evolution of the Solar System, presentation to UA Osher Lifelong Learning Institute, March 18, 2016
- Science Advisor for CalAcademy–Morrison Planetarium show, 2015-2016
- Pluto and the Kuiper Belt, UA-Summer Science Saturday Lecture Series, July 18 2015.
- The Structure and Evolution of the Solar System, presentation to UA Lifelong Learning Institute, Oct 01, 2014
- Jury panel for “The Art of Planetary Science”, UA, Oct 2014
- Tracking the Planets: Ours and Theirs, Girls Need Their Space, UA, March 29, 2014
- Fractions for Planets, art exhibit for “The Art of Planetary Science”, UA, Oct 2013
- The Early History of the Solar System, Biosphere 2, AZ, Oct 22, 2011
- Migrating planets, East Valley Astronomy Club, Mesa, AZ, Nov 5, 2009
- Migrating Planets, Arizona Senior Academy Village, October 01, 2009
- Migrating planets, LPL Public Evening Lecture, Tucson, AZ, Sep 15, 2009
- Panelist for “Expanding Your Horizons Youth Conference”, UA-WISE, Tucson, AZ, March 28, 2009
- Balancing work and family, Girl Scout Troop 794, Tucson, AZ, Feb 22, 2009
- Lessons from Pluto, Basis High School, Tucson, AZ, Oct 24, 2008
- Optical Illusions, Science Night at Catalina Foothills School District, Tucson, AZ, Dec 1, 2007
- Video program on the Late Heavy Bombardment, National Geographic, Nov 27, 2006
- Workshop on Space Science for K-12 teachers in the Catalina Foothills School District, Tucson, AZ, July 25–28, 2005
- Video program on the Solar System, Coast Learning Systems Astronomy Telecourse, September 21, 2004
- Presentation and discussion on new discoveries in the Solar System, Science Teachers Workshop, Catalina Foothills School District, Tucson, AZ, June 2004
- Popular writing/press:*
- Planetary migration: a brief history of the solar system's evolution, article in IIT-Tech Ambit, June 2021

- Prospects for Unseen Planets Beyond Neptune, presentation to the UA Osher Lifelong Learning Institute, February 19, 2021
- On the Great Conjunction of December 2020 – Interviews with National Public Radio, New York Times, KPNX TV, December 2020
- “How the planets got their spots”, *Economist* magazine, December 2019
- Interview with PBS NOVA, WGBH Educational Foundation, Boston, MA, February 25, 2019
- Q&A with Transmitter Media (New York City), January 5, 2019
- Interview with Arizona Daily Star, Nov 8, 2018
- “An Indian orbiter reached Mars five years ago, and it’s still ticking”, *Ars Technica*, October 2019
- “La mystérieuse planète X serait plus proche que prévu du Soleil”, *Le Figaro*, March 2019
- “A Journey Into the Solar System’s Outer Reaches, Seeking New Worlds to Explore”, *New York Times*, December 2018
- “Did This Wrong-way Asteroid Come from Beyond the Solar System?”, *Sky & Telescope*, May 2018
- “Elon Musk’s Tesla in Space Could Crash Into Earth”, *National Geographic News*, February 2018
- “Forget Planet 9 – there’s Evidence of a Tenth Planet Lurking at the Edge of the Solar System”, *Newsweek*, June 2017
- “UA-led OSIRIS-REx team snaps photos of Jupiter and its moons”, *Arizona Daily Star*, February 2017
- “In the motions of distant solar system objects, astronomers find hints of Planet Nine”, *Los Angeles Times*, October 2016
- “The Galaxy may be teeming with small planets”, *Arizona Daily Star–Science Supplement*, January 2016
- “Exploring our solar system’s past through Pluto”, *Arizona Science* podcast, AZPM.org, December 2015
- “Our wild wild solar system”, cover story in *National Geographic* magazine, July 2013
- NASA Solar System Exploration portal profile, <http://solarsystem.nasa.gov/people>, July 2013
- “What Would Happen If Earth and Mars Switched Places?”, *Scientific American*, blog by George Musser, June 2011
- AstroConfidential* column, *Astronomy* magazine, June 2011
- “Will Pluto ever collide with Neptune?”, *Astronomy* magazine, October 2007
- “Planets and planetary systems”, *Scholastic Encyclopedia* (2005)
- “Migrating Planets”, *Scientific American*, 281(3):56-63 (1999)
- “Chaotic planet formation”, *Nature*, 402:599-600 (1999)
- “Galileo reveals Ganymede’s secrets”, *Physics World*, March 1997
- “Bringing Order to Chaos”, *Mercury*, 26(4):33-34 (1997)
- “The Kuiper Belt: a review of the present status”, *Highlights of Astronomy*, 11A:223-228 (1998)
- “The origin of the Solar system”, *Encyclopedia of Earth Sciences*, McMillan Publishing, New York(1995)

“Pluto and Charon: Planets on the edge”, *Lun. and Plan. Infm. Bull.*, August (1993)

ℳ Numerous interviews with science journalists, on radio and in print and electronic media.