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# Adam Greenberg

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<i>Education</i>	<b>University of California, Los Angeles</b> 2012-2017 MS, Astronomy, completed (3.94 GPA) PhD (exp. Fall 2017)
	<b>Columbia University</b> 2008-2012 BA, Astrophysics, Mathematics (3.86 GPA) Cum Laude
<i>Work experience</i>	<b>NASA FDL</b> 2016-2016 Researcher Collaborated with a team of data scientists to determine which deflection technologies are best suited to prevent potential asteroid impacts. Co-wrote white-paper on results, and gave presentation at Microsoft Technology Center in Silicon Valley.
	<b>UCLA</b> 2012-2017 Teaching Assistant Taught lab sessions and graded for several astronomy courses, including a heavily computational course on signal processing and its applications to the search for extraterrestrial intelligence (SETI).
	<b>UCLA</b> 2012-2017 Graduate Student Researcher Conducted research in the fields of shape reconstruction from asteroid radar data, and orbit determination from both optical and radar astrometric measurements. Also worked on projects relating to radio signal processing and feature detection.
	<b>Columbia University Medical Center</b> 2008-2010 Computing Cluster Manager Set up and administered a computing grid in the Biostatistics department to reduce simulation time. Wrote several genomic data retrieval and processing programs which are still in use.
<i>Research summary</i>	<b>Exoplanetary science</b> 2011-2012 Created libraries to detect, quantify, and catalog white dwarf transit events within data collected by the GALEX space satellite.
	<b>Asteroid shape modelling</b> 2012-2016 Using the Arecibo Observatory, collected radar images of the asteroid 1566 Icarus and used these data to put bounds on the 3D shape of the target. Developed new techniques for inverting radar images into 3D models. Implemented these techniques in the C programming language, and applied these techniques to data. Published results.
	<b>Radio signal processing</b> 2012-2016 Helped to lead a group of undergraduate students in creating a full radio-signal processing pipeline, for the search for extraterrestrial intelligence (SETI). This process included taking data with the Greenbank Telescope, and programming an efficient system of filters to detect radio-frequency interference in the data. Published results.
	<b>Orbit determination</b> 2012-2017 Created Python-based tools to fit asteroid orbits to optical and radar astrometric data and automatically detect and quantify signatures of non-gravitational orbital perturbations. Published results.

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## *Publications*

- Verma, Ashok; Margot, Jean-Luc; Greenberg, Adam H., “Prospects of Dynamical Recovery of General Relativity Parameter  $\beta$  and Solar Quadrupole Moment  $J_2$  with Asteroid Radar Astronomy”, *The Astrophysical Journal* (submitted, 2017)
- Greenberg, Adam H.; Margot, Jean-Luc; Verma, Ashok K.; Taylor, Patrick A.; Naidu, Shantanu P.; Brozovic, Marina.; Benner, Lance A. M. , “Asteroid 1566 Icarus’s Size, Shape, Orbit, and Yarkovsky Drift from Radar Observations”, *The Astronomical Journal*, Volume 153, Issue 3, article id. 108, 16 pp. (2017)
- Greenberg, Adam H.; Margot, Jean-Luc, “Improved Algorithms for Radar-based Reconstruction of Asteroid Shapes”, *The Astronomical Journal*, Volume 150, Issue 4, article id. 114, 10 pp. (2015)
- Greenberg, Adam H.; Margot, Jean-Luc; Verma, Ashok K.; Taylor, Patrick A.; Susan E. Hodge, “Yarkovsky Drift Detections for 159 Near-Earth Asteroids”, (submitted, *The Astronomical Journal*, 2017)
- Greenberg, Adam H.; McGuire, Chris; Kavner, Abby; “The Automatic Peak EXtractor (APEX) – A New Tool for X-Ray Diffraction Feature Extraction”, (in preparation)
- Biddle, Lauren I.; Pearson, Kyle A.; Crossfield, Ian J. M.; Fulton, Benjamin J.; Ciceri, Simona; Eastman, Jason; Barman, Travis; Mann, Andrew W.; Henry, Gregory W.; Howard, Andrew W.; Williamson, Michael H.; Sinukoff, Evan; Dragomir, Diana; Vican, Laura; Mancini, Luigi; Southworth, John; Greenberg, Adam; Turner, Jake D.; Thompson, Robert; Taylor, Brian W.; Levine, Stephen E.; Webber, Matthew W., “Warm ice giant GJ 3470b - II. Revised planetary and stellar parameters from optical to near-infrared transit photometry”, *Monthly Notices of the Royal Astronomical Society*, Volume 443, Issue 2, p.1810-1820 (2014)
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## *Conference proceedings*

- Greenberg, A.; Erasmus, N.; Nesvold, E. R.; van Heerden, E.; Galache, J. L.; Dahlstrom, E.; Marchis, F. , “The Deflector Selector: A Machine Learning Framework for Prioritizing Deflection Technology Development”, *Planetary Defense Conference* (2017)
- Greenberg, Adam; Margot, Jean-Luc; “Non-Gravitational Perturbations And The Importance Of Radar Observations On Neo Trajectory Determination”, *Planetary Defense Conference* (2017)
- Lesyna, Larry; Margot, Jean-Luc; Greenberg, Adam; Shinde, Akshay; Alladi, Yashaswi; Prasad MN, Srinivas; Bowman, Oliver; Fisher, Callum; Gyalay, Szilard; McKibbin, William; Miles, Brittany E.; Nguyen, Donald; Power, Conor; Ramani, Namrata; Raviprasad, Rashmi; Santana, Jesse, “The Benefits of Adding SETI to the University Curriculum and What We Have Learned from a SETI Course Recently Offered at UCLA”, *American Astronomical Society, AAS Meeting #229, id.333.03*, (2017)
- McGuire, Chris; Greenberg, Adam; Santamari-Perez, David; Makhluif, Adam; Kavner, Abby, “Isothermal equation of state of Fe<sub>5</sub>Si<sub>3</sub> up to 96 GPa”, *COMPRES Annual Meeting*, (2016)
- Raissi, Chedy; Lamee, Mehdi; Mosiane, Olorato; Vassallo, Corinne; Busch, Michael W.; Greenberg, Adam; Benner, Lance A. M.; Naidu, Shantanu P.; Duong, Nicholas, “New Approaches For Asteroid Spin State and Shape Modeling From Delay-Doppler Radar Images”, *American Astronomical Society, DPS meeting #48, id.326.11*, (2016)
- Taylor, P. A.; Richardson, J. E.; Rivera-Valentin, E. G.; Rodriguez-Ford, L. A.; Zambrano-Marin, L. F.; Nolan, M. C.; Howell, E. S.; Benner, L. A. M.; Brozovic, M.; Naidu, S. P.; Jao, J. S.; Lee, C. G.; Giorgini, J. D.; Busch, M. W.; Marshall, S. E.; Margot, J. L.; Greenberg, A. H.; Ghigo, F. D.; Shepard, M. K.; Schmelz, J. T. , “Radar Observations of Near-Earth Asteroids from Arecibo and Goldstone”, *47th Lunar and Planetary Science Conference*, (2016)
- Greenberg, Adam; Margot, Jean-Luc, “Improved Algorithms for Radar-Based Reconstruction of Asteroid Spin States and Shapes”, *American Astronomical Society, DPS meeting #47, id.307.04*, (2015)