

## Patrick A. Taylor

---

CONTACT INFORMATION	National Radio Astronomy Observatory Central Development Laboratory 1180 Boxwood Estate Rd. Charlottesville, VA 22903 USA	<i>Office:</i> 434-296-0289 <i>Mobile:</i> 443-254-7368 ptaylor@nrao.edu www.naic.edu/~ptaylor ORCID: 0002-2493-943X
PROFESSIONAL EXPERIENCE	<b>National Radio Astronomy Observatory (NRAO)</b> <b>December 2021 onward</b> <b>Green Bank Observatory (GBO)</b>  Radar Division Head, Central Development Laboratory  <b>Lunar and Planetary Institute (USRA)</b> <b>April 2018 to December 2021</b>  Senior Scientist, Planetary Sciences, Group Lead for Planetary Radar  <b>Arecibo Observatory</b> <b>March 2009 to March 2018</b>  Scientist II, Group Lead for Planetary Radar (September 2015 to March 2018) Scientist II, Planetary Radar (July 2012 to August 2015) Postdoctoral Associate, Planetary Radar (March 2009 to July 2012)	
EDUCATION	<b>Cornell University</b> <b>August 2003 to March 2009</b>  Ph.D., Astronomy, 2009; Advisor: Jean-Luc Margot Dissertation: Tidal Interactions in Binary Asteroid Systems M.S., Astronomy, 2007  <b>University of Maryland – College Park</b> <b>August 1999 to May 2003</b>  B.S. with High Honors in Astronomy, B.S. with High Honors in Physics	
RESEARCH INTERESTS	- Radar, thermal infrared, and optical observations of small Solar System bodies - Shape reconstruction of small Solar System bodies - Dynamics of small Solar System bodies and multiple-component systems - Detection of non-gravitational forces on small Solar System bodies	
FUNDING	Current Funding: <i>Role:</i> Project Director <i>Title:</i> Next Generation Radar Designs (Green Bank radar system) <i>Principal Investigator:</i> Anthony J. Beasley (AUI) <i>Program:</i> Mid-Scale Research Infrastructure-1 (NSF) <i>Performance Period:</i> October 2021 to September 2023  Funding until December 2021: <i>Role:</i> Institutional Principal Investigator (USRA) <i>Title:</i> Arecibo Observatory Planetary Radar Program <i>Principal Investigator:</i> Flaviane C.F. Venditti (University of Central Florida) <i>Program:</i> Near-Earth Object Observations (NASA) <i>Performance Period:</i> March 2019 to March 2023	

*Role:* Science Team Member  
*Title:* Miniature Radio Frequency (Mini-RF) Instrument Science/Technical Team  
*Principal Investigator:* G. Wes Patterson (JHU Applied Physics Laboratory)  
*Program:* Planetary Missions Program Office (NASA)  
*Performance Period:* August 2020 to July 2024

*Role:* Investigation Team Member  
*Title:* Near-Earth Object Surveillance Mission (Phase A)  
*Survey Director:* Amy K. Mainzer (University of Arizona)  
*Program:* Planetary Defense Coordination Office (NASA)  
*Performance Period:* July 2020 to December 2021

#### SERVICE

Supervising postdoctoral researchers:

Anne K. Virkki	April 2016 to March 2018
Sriram S. Bhiravarasu	April 2017 to December 2019
Flaviane C.F. Venditti	May 2017 to March 2018
Sean E. Marshall	November 2017 to March 2018

Mentoring undergraduate and graduate student researchers 2009 to present  
Training colleagues to do radar observations and data analysis

Reviewer for *Planetary Science Journal*, *Icarus*, *Celestial Mechanics and Dynamical Astronomy*, *Astrophysical Journal*, *Astronomy & Astrophysics*, *Remote Sensing*, *Proceedings of the IAU General Assembly*, and *Experimental Astronomy*

Panelist and non-panelist (external) reviewer for NASA grant programs  
Panelist reviewer for James Webb Space Telescope Observing Cycle 1

Co-Science Editor of the Lunar and Planetary Institute Planetary News 2019 to 2021

Arecibo Scheduling Advisory Committee 2015 to 2018

Small Bodies Assessment Group Steering Committee 2017 to 2020

Scientific organizing committee:  
- 8<sup>th</sup> NAIC/NRAO School on Single-Dish Radio Astronomy 2015  
- 5<sup>th</sup> Workshop on Binaries in the Solar System 2019

Program Committee for the Lunar and Planetary Science Conference 2019 to 2021

#### ORGANIZATIONS

- American Astronomical Society
- Division for Planetary Sciences and Division on Dynamical Astronomy
- American Geophysical Union
- Small Bodies Assessment Group

#### AWARDS

- Asteroid 9286 Patricktaylor
- New York NASA Space Grant Consortium Graduate Fellowship 2003 to 2004

#### RECENT INVITED TALKS

2022 June 9: NASA Small Bodies Assessment Group, Washington, DC, *Planetary Radar with the Green Bank Telescope*

2022 March 31: UCLA Planetary Science Seminar, Los Angeles, CA, *The Past, Present, and Future of Planetary Radar with the Green Bank Telescope*

2022 March 16: Green Bank Observatory Community Zoom, Green Bank, WV, *Planetary Radar with the Green Bank Telescope*

2021 June 16: LPI Interns Planetary Science Seminar Series, Houston, TX, *Asteroids: Finding Them Before They Find Us*

2020 July 21: Summer Undergraduate Program for Planetary Research Seminar Series, Houston, TX, *Radar Observations of Solar System Objects*

2019 August 5: Keynote for the Society of Amateur Radio Astronomers, Green Bank, WV, *Radar Observations of Solar System Objects*

2019 February 20: Arecibo Observatory Futures Workshop, San Juan, PR, *Arecibo Planetary Radar System Sustainability and Upgrades*

2018 September 19: Colloquium at Green Bank Observatory, Green Bank, WV, *Radar Observations of Solar System Objects*

2018 February 26: International Symposium on Dust & Parent Bodies, Chiba, Japan, *Radar Observations of 3200 Phaethon*

SELECT RECENT  
PUBLICATIONS

López-Quendo, A., D.E. Trilling, A. Gustafsson, A.K. Virkki, E.G. Rivera-Valentín, M. Granvik, C.O. Chandler, J. Chatelain, **P.A. Taylor**, and L.F. Zambrano-Marin, *Physical Characterization of 2015 JD<sub>1</sub>: A Possibly Inhomogeneous Near-Earth Asteroid*, *Planetary Science Journal*, 3, 189, 2022.

Rozek, A., S.C. Lowry, B. Rozitis, L.R. Dover, **P.A. Taylor**, A.K. Virkki, S.F. Green, C. Snodgrass, A. Fitzsimmons, J. Campbell-White, S. Sajadian, V. Bozza, M.J. Burgdorf, M. Dominik, R.F. Jaimes, T.C. Hinse, M. Hundtermark, U.G. Jorgensen, P. Longa-Pena, M. Rabus, S. Rahvar, J. Skottfelt, and J. Southworth, *Physical Properties of Near-Earth Asteroid (2102) Tantalus from Multi-Wavelength Observations*, *Monthly Notices of the Royal Astronomical Society*, stac1835, 2022.

Zambrano-Marin, L.F., E.S. Howell, **P.A. Taylor**, S.E. Marshall, M. Devogèle, A.K. Virkki, D.C. Hickson, E.G. Rivera-Valentín, F.C.F. Venditti, and J.D. Giorgini, *Radar and Optical Characterization of Near-Earth Asteroid 2019 OK*, *Planetary Science Journal*, 3, 138, 2022.

Reddy, V., and 99 colleagues (including **P.A. Taylor**), *Apophis Planetary Defense Campaign*, *Planetary Science Journal*, 3, 123, 2022.

Rivera-Valentín, E.G., H.M. Meyer, **P.A. Taylor**, E. Mazarico, S.S. Bhiravarasu, M.C. Nolan, A.K. Virkki, N.L. Chabot, *Arecibo S-band Radar Characterization of Mercury's North Polar Deposits*, *Planetary Science Journal*, 3, 62, 2022.

McGlasson, R.A., S.E. Marshall, F.C.F. Venditti, S.P. Naidu, **P.A. Taylor**, L.A.M. Benner, M. Brozovic, J.D. Giorgini, B. Aponte-Hernandez, A.K. Virkki, A.W. Harris, J.W. Young, M. Husárik, G. Wells, D. Bamberger, and J. Tobak, *Radar and Lightcurve Observations and a Physical Model of Potentially Hazardous Asteroid 1981 Midas*, *Planetary Science Journal*, 3, 35, 2022.

Reddy, V., and 24 colleagues (including **P.A. Taylor**), *Near-Earth Asteroid (66391) Moshup (1999 KW<sub>4</sub>) Observing Campaign: Results from a Global Planetary Defense Characterization Exercise*, Icarus, 374, 114790, 2022.

Shepard, M.K., K. de Kleer, S. Cambioni, **P.A. Taylor**, A.K. Virkki, E.G. Rivera-Valentín, C. Rodriguez Sanchez-Vahamonde, L.F. Zambrano-Marin, C. Magri, D. Dunham, J. Moore, and M. Camarca, *Asteroid 16 Psyche: Shape, Features, and Global Map*, Planetary Science Journal, 2, 125, 2021.

**Taylor, P.A.**, E.G. Rivera-Valentín, and A. Bonsall, *Ground-Based Radar for Planetary Science and Planetary Defense*, Planetary Science and Astrobiology Decadal Survey (2023-2032) White Papers, Bulletin of the American Astronomical Society, 53, 4, #239, 2020.

Brozovic, M., and 19 colleagues (including **P.A. Taylor**), *Arecibo Radar Astrometry of the Galilean Satellites from 1999-2016*, Astronomical Journal 159, 149, 2020.

Greenberg, A.H., J.L. Margot, A.K. Verma, **P.A. Taylor**, and S.E. Hodge, *Yarkovsky Drift Detections for 247 Near-Earth Asteroids*, Astronomical Journal 159, 92, 2020.

**Taylor, P.A.**, E.G. Rivera-Valentín, L.A.M. Benner, S.E. Marshall, A.K. Virkki, F.C.F. Venditti, L.F. Zambrano-Marin, S.S. Bhiravarasu, B. Aponte-Hernandez, C. Rodriguez Sanchez-Vahamonde, and J.D. Giorgini, *Arecibo Radar Observations of Near-Earth Asteroid (3200) Phaethon During the 2017 Apparition*, Planetary and Space Science 167, 1-8, 2019.

Shepard, M.K., B. Timerson, D.J. Scheeres, L.A.M. Benner, J.D. Giorgini, E.S. Howell, C. Magri, M.C. Nolan, A. Springmann, **P.A. Taylor** and A.K. Virkki, *A Revised Shape Model of Asteroid 216 Kleopatra*, Icarus 311, 197-209, 2018.

Howell, E.S., C. Magri, R.J. Vervack, Jr., M.C. Nolan, **P.A. Taylor**, Y.R. Fernandez, M.D. Hicks, J.M. Somers, K.J. Lawrence, A.S. Rivkin, S.E. Marshall, and J.L. Crowell, *SHERMAN - A Shape-Based Thermophysical Model II. Application to 8567 (1996 HW<sub>1</sub>)*, Icarus 303, 220-233, 2018.

Brozovic, M., and 17 colleagues (including **P.A. Taylor**), *Goldstone and Arecibo Radar Observations of (99942) Apophis in 2012-2013*, Icarus 300, 115-128, 2018.

Naidu, S.P., L.A.M. Benner, J.L. Margot, M.W. Busch, and **P.A. Taylor**, *Capabilities of Earth-Based Radar Facilities for Near-Earth Asteroid Observations*, Astronomical Journal 152, 99, 2016.

Benner, L.A.M., M.W. Busch, J.D. Giorgini, **P.A. Taylor**, and J.L. Margot, *Radar Observations of Near-Earth and Main-Belt Asteroids*, in *Asteroids IV*, Eds. P. Michel, F.E. DeMeo, and W.F. Bottke, University of Arizona Press, 2015.

Margot, J.L., P. Pravec, **P.A. Taylor**, B. Carry, and S.A. Jacobson, *Asteroid Systems: Binaries, Triples, and Pairs*, in *Asteroids IV*, Eds. P. Michel, F.E. DeMeo, and W.F. Bottke, University of Arizona Press, 2015.