ROBERT S. WHARTON

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EXPERTISE

Radio Astronomy • Single Dish Telescopes • Interferometric Arrays • Pulsar Astronomy • Novel Pulsar Search Strategies • High Precision Pulsar Timing • Fast Radio Bursts • The Galactic Center • Signal Processing • Large Astronomical Data Sets

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PROGRAMMING

GENERAL: Python • C • git • Docker / Singularity • Linux • LaTeX

ASTRONOMY: Astropy • FITS • PRESTO • dspsr • PSRCHIVE • tempo / tempo2 / pint • CASA

EXPERIENCE

NASA Jet Propulsion Laboratory, Pasadena, CA   2021–2024

Postdoctoral Researcher, Planetary Radar and Radio Science Group

- Developed many Python-based pipelines to reduce the large data sets produced by the Deep Space Network radio telescopes to a standard output format and search for faint astrophysical signals
- Built and maintained Docker and Singularity containers to deploy our software across facilities
- Worked closely with my colleagues to design experiments to study pulsars and FRBs at high time resolution, use radar to monitor space debris in low Earth orbit, and probe solar plasma using spacecraft.

Max-Planck-Institut für Radioastronomie, Bonn, Germany   2017–2021

Postdoctoral Researcher, Fundamental Physics Group

- Developed a Python-based processing pipeline to take a large ($\sim$10 TB) interferometric data set from the Very Large Array (VLA), form thousands of beams, and then search each of those beams for pulsars
- Using millimeter wavelength data from the Event Horizon Telescope (EHT), I tested the EHT calibration methods on sub-second timescales by observing bright pulsars

Cornell University, Ithaca, NY   2010–2017

Graduate Research Assistant

- Using a wide range of available multiwavelength observations, I modelled the allowed population of pulsars in the Galactic center and set constraints to better motivate future searches
- Helped commission a phased-array pulsar observing mode for the Very Large Array (VLA)
- Conducted the deepest ever search for radio pulsars in orbit around the supermassive black hole at the center of our Galaxy with the VLA in phased-array mode
- Using the VLA in a new (very high data rate) fast imaging mode, I developed a beam forming software that assisted in the first precise localization of an FRB to its host galaxy

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EDUCATION

2017   Ph.D. in Physics, Cornell University

2009   B.Sc. in Physics and Mathematics, Pennsylvania State University

Last Updated: August 29, 2024