Dr. Alex H. Parker

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Dr. Parker is an expert in observational, theoretical, statistical, and instrumentation methodologies for exploring the origin and history of the solar system, with a particular focus on its minor planet populations. His publication record includes research on asteroid family physical characteristics, Kuiper Belt dynamics, the properties of the Pluto system as seen by *New Horizons*, computational optimization techniques for minor planet discovery, statistical methodologies for characterizing the lunar cratering history, and more. Since his PhD work on the characteristics of Kuiper Belt binary systems and their implications for the origin and evolution of the outer solar system, Dr. Parker has been engaged in efforts to enhance and enable planetary exploration. He surveyed the Kuiper Belt for a post-Pluto target for the *New Horizons* mission (leading to co-discovery of the extended mission target Arrokoth). He conducted the astrodynamics analyses to determine targetability of extended mission targets, developed the mission case for long-range Kuiper Belt Object observations from New Horizons, and is now a Co-Investigator on the *New Horizons* Extended Mission. He is now PI of the largest-ever solar system program on the Hubble Space Telescope, the *Solar System Origins Legacy Survey*, and he directs a NASA SSERVI node for exploration technology development, *Project ESPRESSO*.

EDUCATION

University of Victoria, Canada — PhD Astronomy, 2011
University of Washington — BSc Physics & Astronomy, 2007 (with honors in Astronomy)
Whatcom Community College — AAS Physics, 2005 (with honors)

POST-GRADUATE APPOINTMENTS

Principal Scientist, Southwest Research Institute —2019-Present.
Senior Research Scientist, Southwest Research Institute — 2017-2019.
Research Scientist, Southwest Research Institute — 2015-2017.
Postdoctoral Researcher, Southwest Research Institute — 2014-2015.
Postdoctoral Researcher, University of California at Berkeley — 2013-2014.
Postdoctoral Fellow, Harvard-Smithsonian CfA — 2011-2013.

AWARDS AND HONORS

2017 – NASA Group Achievement Award for involvement in New Horizons Pluto flyby.
2015 – John Hunter Excellence in Plotting Contest for *Painted Stone* data visualization.
2014 – Kavli Fellow, Nataional Academy of Science.
2013 – Asteroid (345842) named “Alexparker”
2013 – CERN “Data Visualization Award” at Imagine Science Film Festival.
2010 – Recipient of the AAS Rodger Doxsey Travel Prize.
2007 – University of Washington Dean’s Scholar.
2005 – Whatcom Community College Dean’s Scholar.

FIRST-AUTHOR PEER-REVIEWED PUBLICATIONS

Parker, A. 2021. *Trans-Neptunian Space in the Post-Pluto Paradigm*. In press in "The Pluto System After New Horizons." Eds. Binzel, Grundy, Moore, Young & Stern. UA Press.

Parker, A, Horst, M., Ryan, E., Howett, H. *k-Means Aperture Optimization Applied to Kepler K2 Time Series Photometry of Titan.* PASP 131, p. 1002.

Parker, A. Buie, M., Grundy, W., Noll, K., 2016. *Discovery of a Makemakean Moon.* ApJL 825, L9-L14.

Parker, A. and 15 co-authors, 2016. *Physical Characterization of TNOs with the James Webb Space Telescope.* PASP 128, pp. 018010.

Parker, A. 2015: *The intrinsic Neptune Trojan orbit distribution: Implications for the primordial disk and planet migration.* Icarus 247, 112-125.

Parker, A. and 21 co-authors, 2013. *2011HM102: Discovery of a High-Inclination L5 Neptune Trojan in the Search for a Post-Pluto New Horizons Target*, AJ 145, 96.

Parker, A. and Kavelaars, J.J. 2012: *Collisional Evolution of Ultra-Wide Trans-Neptunian Binaries*. ApJ 744, 139.

Parker, A. and 5 co-authors, 2011. *Characterization of Seven Ultra-Wide Trans-Neptunian Binaries*. ApJ 743, 1.

Parker, A. and Kavelaars, J.J. 2010. *Pencil-Beam Surveys for Trans-Neptunian Objects: Limits on Distant Populations*. Icarus 209, 766-770.

Parker, A. and Kavelaars, J.J. 2010. *Pencil-Beam Surveys for Trans-Neptunian Objects: Novel Methods for Optimization and Characterization*. PASP 122, 549-559.

Parker, A. and 5 co-authors, 2008. *The size distribution of asteroid families in the SDSS Moving Object Catalog 4*. Icarus 198, 138-155.

OTHER RECENT PUBLICATIONS

Robbins et al. (Parker 4th author) 2021. *Depths of Pluto's and Charon's craters, and their simple-to-complex transition*. Icarus 356.

Buie et al. (Parker 5th author) 2020. *Size and Shape Constraints of (486958) Arrokoth from Stellar Occultations*. AJ 159.

Grundy et al. (Parker 6th author) 2019. *Mutual orbit orientations of transneptunian binaries*. Icarus 334.

Kiss et al. (Parker 3rd author) 2019. *The mass and density of the dwarf planet (225088) 2007 OR10*. Icarus 334.

Benecchi et al. (Parker final author) 2019. *The HST lightcurve of (486958) 2014 MU69*. Icarus 334.

Mazrouei et al. (Parker 4th author) 2019. *Earth and Moon impact flux increased at the end of the Paleozoic*. Science 363.

Porter et al. (Parker 3rd author) 2018. *High-precision orbit fitting and uncertainty analysis of (486958) 2014 MU69.* AJ 156.

Horst, S. et al. (Parker 4th author) 2017. *Laboratory Investigations of Titan Haze Formation: In Situ Measurement of Gas and Particle Composition*. Icarus.

3143 citations since 2006. *h*-index: 29.
Full publication list available on Google Scholar:
https://scholar.google.com/citations?user=lKTXrRkAAAAJ